

## CHAPTER 2.0 DESCRIPTIONS OF PROJECT ALTERNATIVES

### 2.1 Introduction

This Final Environmental Impact Statement (EIS) considers five project alternatives:

- **No Build Alternative**
- Four build alternatives:
  - **Alternative 2:** Side-Lane Bus Rapid Transit (BRT)
  - **Alternative 3:** Center-Lane BRT with Dual Medians and Passing Lanes
  - **Alternative 3-Consolidated:** Center-Lane BRT with Consolidated Bus Stops, Dual Medians, and No Passing Lanes
  - **Hybrid Alternative/Locally Preferred Alternative (LPA):** Incorporates elements of Alternatives 2, 3, and 3-Consolidated; side-lane BRT between Market Street and Palm and Jordan avenues; center-lane BRT between Palm and Jordan avenues to 27th and 28th avenues; side-lane BRT between 27th and 28th avenues to 34th Avenue

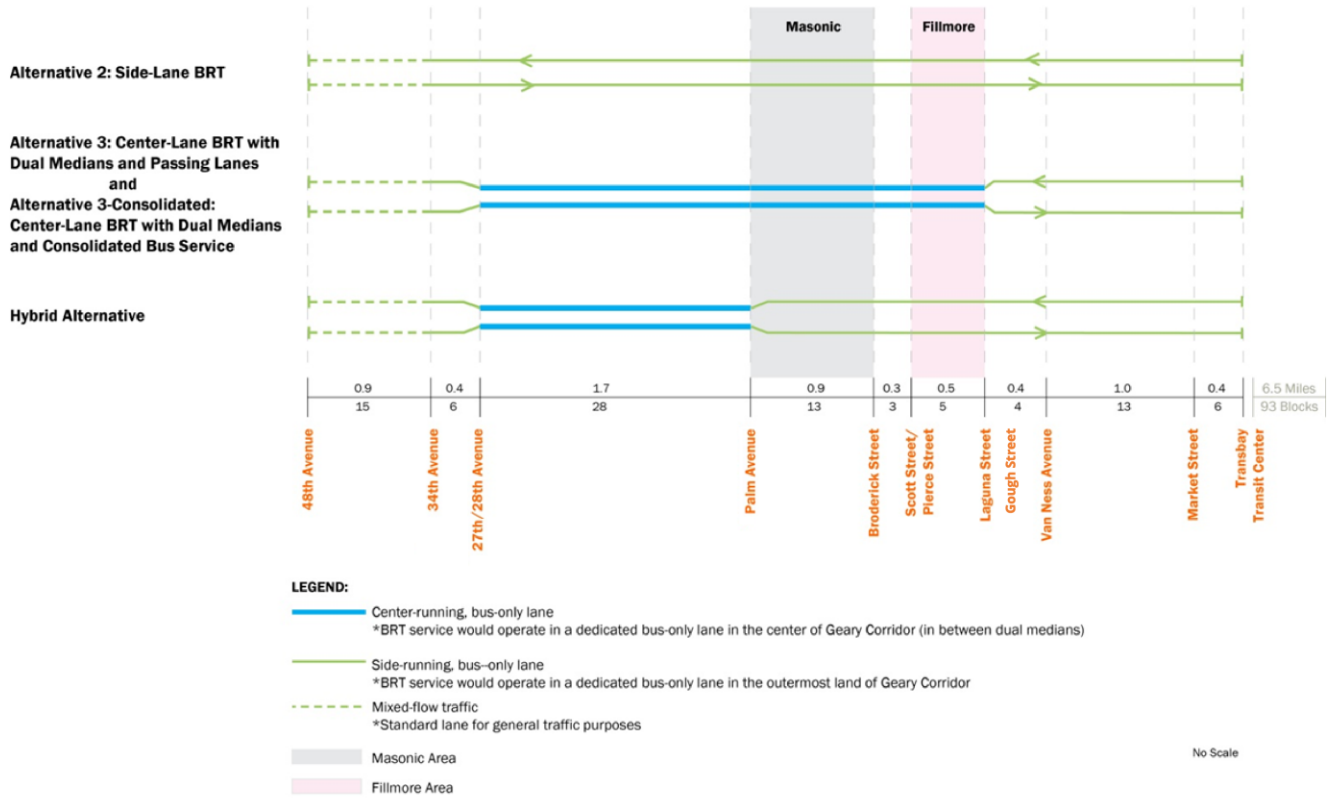
Each of the four build alternatives proposes some form of BRT service and associated physical infrastructure improvements along the Geary corridor. The build alternatives would implement physical roadway and lane changes between Market and 34th streets, but they would also implement bus service amenities and improvements between the Transbay Transit Center and 48th Avenue. Figure 2-1 provides a schematic diagram of the four build alternatives.

#### 2.1.1 | Selection of the Locally Preferred Alternative

SFCTA released the Final EIR for the Geary BRT project on December 9, 2016. As the California Environmental Quality Act (CEQA) lead agency, SFCTA certified the Final EIR, approved the project, and identified the Hybrid Alternative with five minor modifications as the LPA on January 5, 2017. SFCTA issued a Notice of Determination (NOD) on January 6, 2017. A sixth minor modification was subsequently added and analyzed in a CEQA addendum; which the SFCTA Board approved on June 27, 2017, as further discussed in Section 2.2.7.6.6.

On July 18, 2017, the SFMTA Board unanimously approved the project and concurred with the LPA, including six minor modifications. SFMTA issued a NOD on July 25, 2017.

**Figure 2-1 Schematic Diagram of the Build Alternatives**



Note: The Masonic Avenue and Fillmore Street areas are highlighted on this figure due to the major engineering constraints for implementing BRT service associated with underpasses in these areas (i.e., steep grades and narrow service roads). See Sections 10.2.5 and 10.2.6 for further details. Figure has been updated since Draft EIS/EIR with clarified labeling.  
Source: Jacobs, 2014

The six minor modifications to the Hybrid Alternative since publication of the Draft EIS/EIR are as follows and shown in Figure 2-2.

- 1) Retention of the Webster Street pedestrian bridge;
- 2) Removal of proposed BRT stops between Spruce and Cook streets (existing stops would remain and provide local and express services);
- 3) Addition of more pedestrian crossing and safety improvements;
- 4) Addition of BRT stops at Laguna Street;
- 5) Retention of existing local and express stops at Collins Street; and
- 6) Relocation of the westbound center- to side-running bus lane transition to the block between 27th and 28th avenues<sup>1</sup>

Section 2.2.7.6 provides further detail on each of these six minor modifications. Five of the six modifications were developed in direct response to public comments on the Draft EIS/EIR. One modification – the additional pedestrian improvements – was in part a response to another agency initiative (Vision Zero; described in Section 2.8.1 below) as well as in response to public comments on the Draft EIS/EIR related to concerns regarding the level of pedestrian facilities on the Geary corridor.

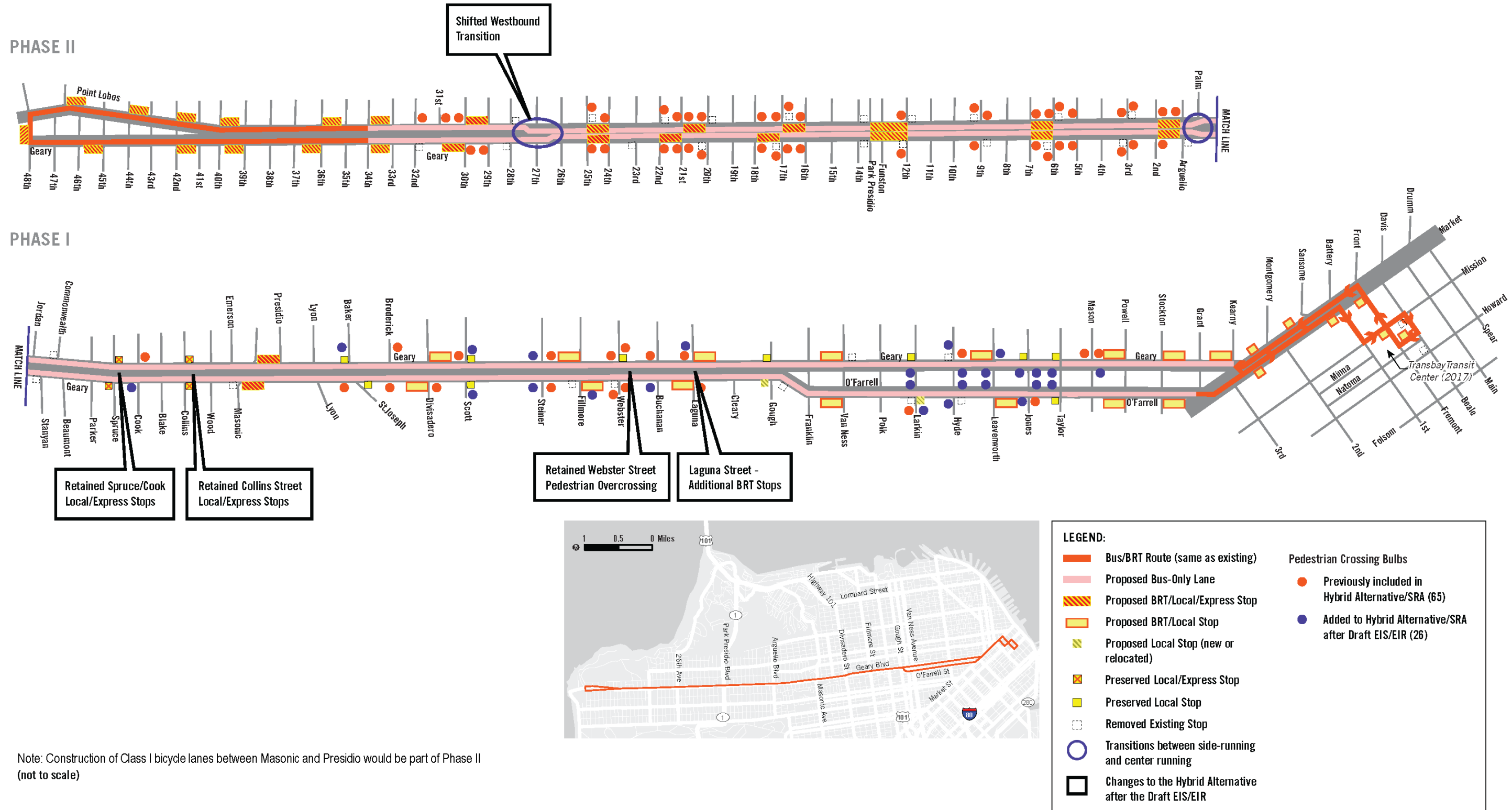
Section 2.3 provides an evaluation of all project alternatives in terms of selecting an environmentally preferable alternative and a preferred alternative.

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<sup>1</sup> This change to the Hybrid Alternative was not included in the LPA that was approved in January 2017 but rather was added and approved in June 2017. The SFCTA prepared an addendum to the Final EIR associated with this change.

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Figure 2-2 Hybrid Alternative/Locally Preferred Alternative



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## 2.1.2 | Project Setting

Geary is called *Geary Boulevard* between 48th and Van Ness avenues and *Geary Street* between Van Ness Avenue and Market Street. This document uses the term *Geary corridor* to describe the study area, including the additional streets noted below.

As shown in Figure 2-3, Geary is a major east-west arterial originating in downtown San Francisco at Market Street. Geary traverses a broad swath of neighborhoods and districts between the Financial District and the Outer Richmond.

The study area for the proposed project includes the full length of Geary Boulevard/Street from 48th Avenue to Market Street. The study area also includes other streets used by buses that primarily serve the Geary corridor. These additional streets include:

- O'Farrell Street from Gough Street to Market Street<sup>2</sup>
- Market, First, and Fremont streets, which link to the Transbay Transit Center

Befitting its status as a major east-west linkage, the Geary corridor sees some of the highest levels of transportation use of all City roadways. According to the San Francisco Municipal Transportation Agency (SFMTA), the Geary corridor sees a range of between 20,000 to about 44,000 daily auto trips (higher numbers on weekdays<sup>3</sup>) and about 50,000 daily transit trips. Transit usage is high in both eastbound and westbound<sup>4</sup> directions at most times of day and most days of the week. The Geary corridor also hosts thousands of daily pedestrian trips. A number of public transit routes serve the Geary corridor, which are described in Section 1.1.2.

Existing land uses along the Geary corridor vary considerably. Along western and central portions, primary land uses are neighborhood-scale residential and commercial areas punctuated by major medical, cultural, entertainment, and shopping activity centers. Central and eastern portions of the corridor see similar uses but at greater concentrations that reach their peaks near the eastern end of the Geary corridor in the Financial District.

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<sup>2</sup> In addition, one eastbound block of O'Farrell Street between Gough and Franklin Streets is technically named "Starr King Way" instead of O'Farrell Street.

<sup>3</sup> Traffic volumes are for the central and eastern portions of the Geary corridor. West of 34th Avenue, average daily traffic volumes are somewhat lower (16,000 vehicles per day).

<sup>4</sup> The Geary corridor travels in an east-west orientation. Eastbound buses are also considered 'inbound' lines whereas westbound buses are considered 'outbound' lines. As such, the terms eastbound/inbound and westbound/outbound are used interchangeably throughout this EIS/EIR.

Figure 2-3 Geary Corridor



Source: SFCTA, 2014



Two Geary corridor underpasses in the Fillmore Street and Masonic Avenue areas represent major engineering constraints on potential configurations for BRT service in the corridor. In both instances, multiple through-travel lanes are separated from the adjoining land uses in a below-grade trench and tunnel, with side service roads connecting to intersecting streets at the surface. These side service roads accommodate one mixed-flow travel lane and one parking lane. Buses on the Geary corridor currently operate in the mixed-flow travel lane.

Four SFMTA Muni bus routes currently serve the Geary corridor: 38 Geary Local (38), 38 Geary Rapid (38R), 38 Geary B Express (38BX), and 38 Geary A Express (38AX). Each of these routes is served by biodiesel motorcoaches.<sup>5</sup>

The 38 provides local service along Geary Boulevard, Geary Street, and O'Farrell Street from 48th Avenue to the Transbay Transit Center 24 hours a day. The 38 Geary route also includes variations west of 34th Avenue. From this point, westbound buses loop northerly to Fort Miley and the Veterans Administration (VA) Hospital, travel westerly along Point Lobos Avenue, or continue on Geary Boulevard. Eastbound buses also offer these service splits. The focus, however, of this environmental document, is on the buses that stay on Geary Boulevard.

The 38 Rapid travels the same route (with noted variations) but with fewer stops for a faster ride. The 38 Rapid operates during the day, seven days a week, but not in the late evening and early morning.

Geary's current express routes – the 38AX and 38BX only operate weekdays during the peak period in the peak direction (eastbound during the a.m. peak and westbound during the p.m. peak). These routes alleviate crowding on both the local and Rapid routes. The express routes travel on Pine and Bush streets east of Masonic Avenue. The express routes do not follow the routing variations.

The Geary corridor is also used by regional bus services and private shuttle services. In particular, Golden Gate Transit Route 92, which provides inter-regional connections to the Geary corridor from the North Bay, makes nine stops on Geary Boulevard between Park Presidio Boulevard and Webster Street. Several other Golden Gate Transit bus routes cross the Geary corridor at Van Ness Avenue.

High pedestrian volumes prevail, especially during peak commute hours. Geary has been identified by the Mayor's Pedestrian Strategy and WalkFirst Study as a high-pedestrian-injury corridor. There are several factors that degrade the pedestrian environment along the corridor, including but not limited to:

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<sup>5</sup> For a list of all bus routes operating within or across the Geary corridor, refer to Tables 3.3-1 and 3.3-2 in Chapter 3.3.

- Large portions of Geary Boulevard are very wide, ranging from 125 feet to 168 feet in width including medians, travel lanes, parking lanes, and sidewalks. Consequently, pedestrians face relatively long crossing distances with limited refuge areas and minimally marked crosswalks.
- In the segment of the corridor including Masonic Avenue and the Richmond District, several uncontrolled pedestrian crosswalks cross six or more lanes of Geary Boulevard. Here, the speed limit is 25 mph, but as many as 75 percent of vehicles have been observed reaching speeds faster than that.<sup>6</sup>
- Two pedestrian bridges at the Webster Street and Steiner Street intersections with Geary Boulevard, where lengthy or closed crosswalks limit pedestrians' ability to cross Geary Boulevard at ground level, are several decades old. Although they provide separation from traffic, the bridges are often perceived as an inconvenient and/or unsafe way of crossing Geary Boulevard due to their long and indirect ramps, change in elevation required, and some users' sense of insecurity. Additionally, the pedestrian overcrossings are not compliant with the Americans with Disabilities Act (ADA), hindering the mobility of people with disabilities.
- Left-hand turns on the corridor currently have permissive signal phasing, which allows vehicles to turn when there is no oncoming through traffic and when pedestrians are not crossing. As discussed in Section 3.5, permissive left-turn signals have a higher rate of injury than protected left turn-signals, as pedestrians may not be fully visible to turning vehicles because drivers may be distracted by other factors on the roadway, such as oncoming traffic and queuing vehicles behind them.

Several segments of the Geary corridor have disproportionately high numbers of pedestrian collisions involving seniors. Approximately 40 senior centers are located within a quarter mile of the Geary corridor. The corridor is also heavily used by people with disabilities such as wheelchair users and people with vision and hearing impairments.

The Geary corridor does not have a dedicated bicycle lane or other facility, and few bicyclists currently travel along the corridor. Geary carries the fewest bicyclists of all nearby parallel east-west streets. Counts conducted in 2008 found fewer than five bicyclists per hour in the morning and afternoon peak periods.<sup>7</sup> In SFMTA's 2015 Annual Bicycle Survey, which reported counts from the 2014 afternoon peak period (4:30 – 6:30 p.m.), a total of 15 bicycles were counted at the Geary Boulevard/Park Presidio Boulevard intersection, which is about one bicycle every eight minutes.<sup>8</sup> The Geary corridor currently has no separated right of way for bicycle facilities, so cyclists must share travel lanes with automobile and bus traffic. However, east-west travel by bicycle is accommodated by on-street bicycle lanes ("Class II") on several parallel streets including:

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<sup>6</sup> SFMTA, 2007.

<sup>7</sup> SFCTA & SFMTA, 2008. Geary Boulevard Bicycle Demand Study.

<sup>8</sup> SFMTA, 2015. Annual Bicycle Count Survey.

- Lake Street: 28th Avenue to Arguello Boulevard
- Post Street: Presidio Avenue to Steiner Street
- Turk Street: Arguello Boulevard to Masonic Avenue
- Golden Gate Avenue: Parker Avenue to Divisadero Street
- Cabrillo Street: La Playa Street to Arguello Boulevard
- Fulton Street: Baker Street to Octavia Street
- Grove Street: Baker Street to Scott Street and Van Ness Avenue to Hyde Street

### 2.1.3 | Terminology

This chapter and document as a whole describe and analyze a number of build alternatives intended to meet the purpose and need of the proposed action as expressed in Chapter 1 (Purpose and Need). Several specialized terms and concepts are used in this description and analysis, which are summarized below.

**Bus rapid transit** or BRT is a bus transit system implemented to improve the speed and capacity of service for riders. BRT systems often include dedicated bus-only lanes (further described below) as well as certain physical infrastructure and technological enhancements (also further described below). BRT can use **articulated** buses, sometimes referred to as “double” or “bending” buses.

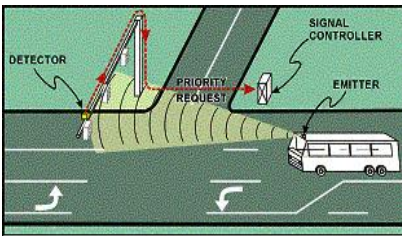
**Mixed-flow lanes** are general purpose travel lanes shared by automobiles, trucks, buses, and bicycles.

**Bus-only lanes** are designated lanes of travel – sometimes with a color distinct from other pavement – intended primarily for bus use. Certain bus-only lanes may also be used by emergency vehicles and taxis. When bus-only lanes are proposed to run within existing public right of way like the Geary corridor, bus-only lanes can be oriented to run either in the center of the street or along the outside edges. Accordingly, build alternatives considered here contemplate the use of **side-running** and **center-running** bus-only lanes at various points along the Geary corridor.

**Center-running bus-only lanes** are flanked by passenger **platforms** and narrow landscaped **median** areas that separate them from mixed-flow travel lanes.

**Side-running bus-only lanes** would run adjacent to sidewalks and would not have physical separation from adjacent, mixed-flow travel lanes.

Lanes reserved exclusively for transit are an integral part of any BRT system, allowing buses to travel without being impeded by other vehicles. Transit delays due to auto congestion, crashes, or by loading and unloading vehicles would be substantially reduced. Similarly, cars would not be impeded by bus operations such as stops to load and unload passengers.



The transit priority signal (TSP) would be programmed to prioritize green lights for approaching buses

Image credit: Kittelson & Associates

**Transit signal priority (TSP)** is a way to utilize the traffic signals to provide bus travel time and reliability improvements. At a traffic signal, TSP is programmed to prioritize green lights for approaching buses and minimize the amount of time buses wait at red lights. As such, TSP gives buses a competitive advantage at congested intersections. At key locations where buses need to shift lanes, a **queue jump** may also be used to allow buses to move through the intersection on a separate signal phase prior to mixed-flow traffic. As further discussed in Section 2.2.3.1, there are various types of TSP technology, including wireless TSP and fiber-based TSP. Wireless and fiber-based TSP have similar operational benefits; fiber-based TSP is considered more durable and to have a longer useful life.

New **BRT Stations** would be constructed or modified from existing stations to offer improved amenities for riders, including bus shelters, landscaping, and lighting. In areas with center-running bus-only lanes, BRT stations would be located on center-running platforms immediately adjacent.

For locations with side-running bus-only lanes, BRT stations would be constructed on new **bus bulbs**, sidewalk extensions that would serve as bus passenger loading platforms.

## 2.2 Description of Alternatives

### 2.2.1 | Overview

This Final EIS considers five alternatives:

- No Build Alternative
- Alternative 2: Side-Lane BRT
- Alternative 3: Center-Lane BRT with Dual Medians and Passing Lanes
- Alternative 3-Consolidated: Center-Lane BRT with Dual Medians and Consolidated Bus Service
- Hybrid Alternative/LPA

This section begins with a comparative overview of the alternatives, followed by detailed descriptions of each alternative. Each subsection below describes an alternative in the same format, with a discussion of the alternative’s transit improvements and operations first, followed by a description of the roadway and multimodal features, then any major underground utility work involved with the alternative. To minimize repetition, this section includes Subsection 2.2.3 describing features common to all build alternatives, before discussing each alternative individually.

NEPA assumes that any proposed action can be achieved through a variety of different means. To this end, NEPA requires that an EIS evaluate the environmental effects of a “reasonable range” of project alternatives.<sup>9</sup> One alternative NEPA requires is a “No Action” alternative – referred to in this document as the “No Build Alternative.” However, selection and construction of the No Build Alternative does not automatically mean “no environmental effects.” Therefore, this document describes anticipated environmental effects from the No Build Alternative and four build alternatives.

<sup>9</sup> Council on Environmental Quality, “Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Recommendations,” 46 Fed. Reg. 18026 (March 1981).

Figure 2-1 (above) and Table 2-1 (below) summarize key features of each alternative. Table 2-1 further summarizes bus service headways (the estimated time between buses) and service hours associated with each alternative for each type of bus service (Local, BRT/Rapid, and Express).

**Table 2-1 Proposed Bus-Only Lane Configurations and Frequencies by Alternative**

NO BUILD		ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 3-CONSOLIDATED	HYBRID ALTERNATIVE/LPA
<b>Bus Only Lane Configurations by Segment</b>					
Transbay Transit Center to Market Street		Side-running (within existing or previously approved bus-only lanes)			
Market Street to Gough Street		Side-running (within existing bus-only lanes)			
Gough Street to 27th/28th Avenue	None	Side-running	Side-running (Gough Street to Laguna Street) Center-running (Laguna Street to 27th Avenue)	Side-running (Gough Street to Laguna Street) Center-running (Laguna Street to 27th Avenue)	Side-running (Gough Street to Palm Avenue) Center-running (Eastbound between 27th Avenue and Palm Avenue; Westbound, between Palm Avenue and 28th Avenue)
27th/28th Avenue to 34th Avenue	None	Side-running (all build alternatives)			
34th Avenue to 48th Avenue	None (all alternatives)				
<b>Proposed A.M./P.M. Peak Period Bus Service Headways by Service Type (minutes between buses)</b>					
Local	6.0/7.5	5.5/6.0	5.5/6.0	n/a	5.5/6.0
BRT/Rapid	5.0/6.0	2.8/2.8	2.8/2.8	2.0/2.1	2.8/2.8
Express	5.0/5.0	5.5/6.0	5.5/6.0	4.5/4.5	5.5/6.0
<b>Proposed Service Hours</b>					
Local	24 hours	24 hours	24 hours	n/a	24 hours
BRT/Rapid	Approx. 6:00 A.M. to 9:30 P.M.	Approx. 6:00 A.M. to 9:30 P.M.	Approx. 6:00 A.M. to 9:30 P.M.	24 hours	Approx. 6:00 A.M. to 9:30 P.M.
Express	A.M. and P.M. peak periods (all alternatives)				

Notes: Headways for each service type represent combined headways east of 25th Avenue. In the No Build Alternative, approximately half of all local buses would turn back at 33<sup>rd</sup> Avenue to provide more service to the eastern portion of the corridor, while the remaining local buses and all Rapid buses would continue to the western end of the corridor. Similarly, in all Build Alternatives, approximately half of all BRT buses would turn back at 25th Avenue while the remaining BRT buses and all local buses (if applicable) would continue to the end of the corridor. This means that headways west of the turnaround would be approximately two times what is shown in the table (e.g. Local morning service in the No Build west of 33<sup>rd</sup> Avenue is 12 minutes). SFMTA periodically rebalances local and Rapid service in the Geary corridor to minimize crowding. As a result, existing local and Rapid service frequencies as shown in Table 3.3-1 differ slightly from assumed No Build frequencies; however, the total amount of service on the corridor across all routes is expected to remain similar to existing conditions in the No Build scenario. The No Build Alternative would continue to operate the 38 AX and BX Express routes, while the Build Alternatives would combine these services into a new 38 Express route. In the above, the No Build Alternative Express Bus headways show the combined headways for the 38 AX and BX.

- **No Build Alternative<sup>10</sup>**
  - No new BRT service or related physical infrastructure improvement. The Geary corridor would be served with previously planned/programmed transit and infrastructure improvements.

<sup>10</sup> Throughout this document, the more descriptive term “No Build Alternative” is used instead of the label “Alternative 1.”

- **Alternative 2: Side-Lane BRT**
  - BRT service would replace the existing 38 Rapid service; local and express bus service would operate.
  - From the Transbay Transit Center to 34th Avenue, BRT buses would operate in dedicated side-running bus-only lanes, replacing the existing outside travel lanes of the Geary corridor, next to the existing curbside parking lane that would remain at most locations.
  - Between 34th and 48th avenues, no bus-only lanes would be constructed; all buses would operate in mixed-flow lanes.
  - Existing 38 Local service would also operate in the dedicated bus lanes but would pull out of them to service curbside local bus stops, enabling BRT buses to pass.
- **Alternative 3: Center-Lane BRT with Dual Medians and Passing Lanes**
  - BRT service would replace the existing 38 Rapid service; local and express buses would operate.
  - This alternative would be different from Alternative 2 from Laguna Street to 27th Avenue. There, BRT and local service would operate in dedicated bus-only lanes in the center of the Geary corridor. A bus passing lane at local bus stops would enable BRT buses to pass local buses that are stopped to load and unload passengers.
  - The center-lane design would necessitate filling in the Fillmore underpass and reconfiguring the Masonic tunnel for a BRT stop.
  - In all other locations, this alternative would be similar to Alternative 2.
- **Alternative 3-Consolidated: Center-Lane BRT with Consolidated Bus Stops, Dual Medians, and No Passing Lanes**
  - Same as Alternative 3 between Laguna Street and 27th Avenue; however, BRT service would replace both 38 Rapid and 38 Local services as a new consolidated service, eliminating the need for bus passing lanes. Express buses would still operate and would use bus-only lanes.
- **Hybrid Alternative/LPA**
  - This alternative would incorporate various physical features of Alternatives 2 and 3-Consolidated in different segments, a mix intended to maximize benefits and minimize impacts.
  - BRT service would replace the existing 38 Rapid service; local and express buses would operate.

- From Transbay Transit Center to Palm Avenue, local and BRT buses would operate in existing or new side-running bus-only lanes.
- Between Palm and 27th avenues (inbound) and 28th Avenue (outbound), local and BRT buses would operate in dedicated bus-only lanes in the center of the Geary corridor, with no bus passing lanes. Every stop would serve local, BRT, and express buses.
- Between 27th/28th and 34th avenues, all buses would operate in new side-running bus-only lanes.
- Between 34th and 48th avenues, no bus-only lanes would be constructed; all buses would operate in mixed-flow lanes.
- In side-running portions of the corridor, BRT buses would have the ability to pass local buses at local stops.

## 2.2.2 | No Build Alternative

The No Build Alternative represents the baseline scenario if none of the proposed build alternatives were implemented. Under the No Build Alternative, physical infrastructure and transit service in the Geary corridor would remain unaltered except for changes associated with other City projects described below that are either planned or programmed to be implemented in the Geary corridor by the year 2020. The year 2020 is considered the opening year for all alternatives because it is the earliest year by which any of the build alternatives could be expected to be fully operational; therefore, it is also the most reasonable year for the No Build Alternative as a basis of comparison.

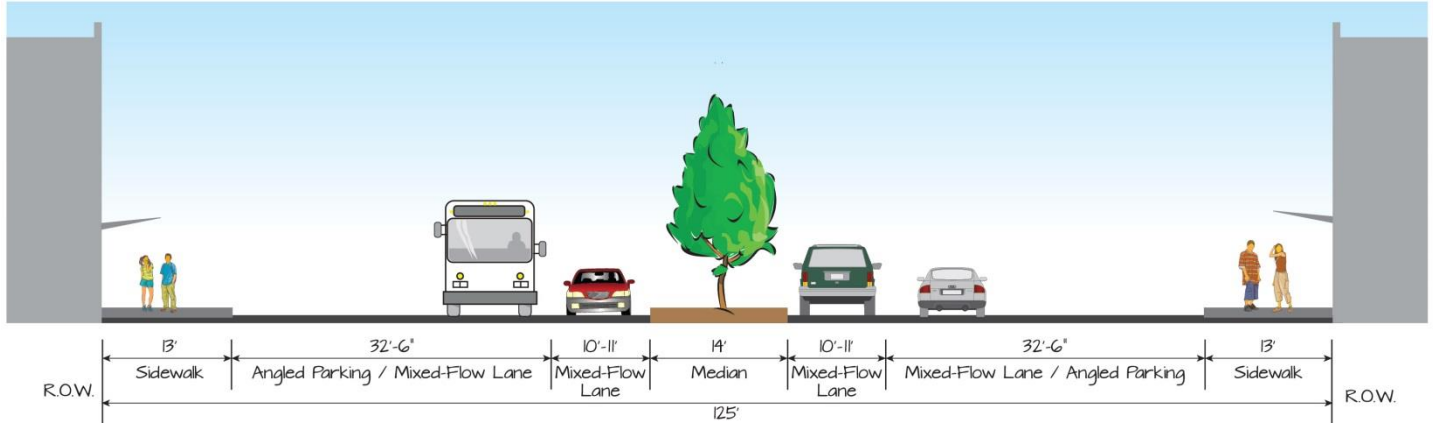
The No Build Alternative assumes no changes to existing median configurations, movement of existing through-traffic, or on-street parallel parking. Figure 2-4 depicts the cross section of the No Build Alternative west and east of Gough Street.

### 2.2.2.1 | NO BUILD ALTERNATIVE - PREVIOUSLY PLANNED/PROGRAMMED TRANSIT IMPROVEMENTS

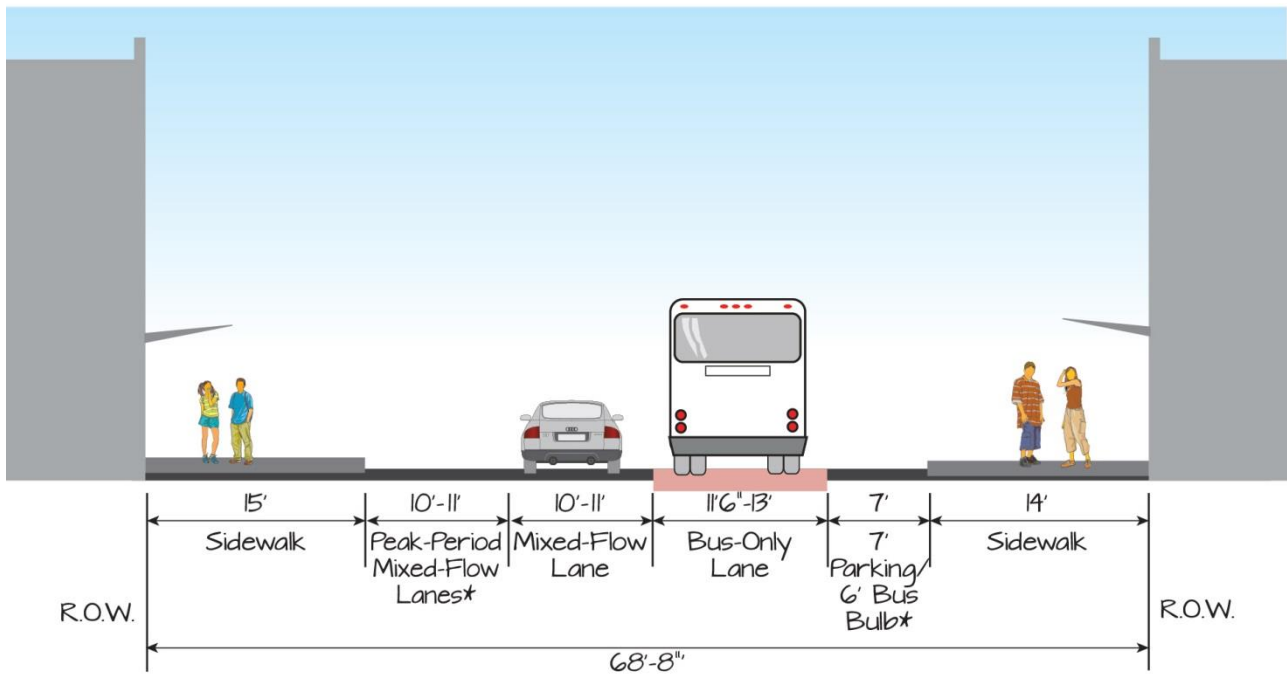
- **Bus service:** Bus service in the corridor is provided 24 hours per day, with shorter headways during peak periods than during off-peak periods. In April 2015 SFMTA implemented increases to 38 Rapid transit service frequency and new Sunday 38 Rapid service as planned in the Transit Effectiveness Project (TEP) and implemented as a part of the Muni Forward program. As a result of the recent Muni Forward service changes all 38 Rapid buses currently travel the full length of the Geary corridor. In the No Build Alternative, the Rapid service would operate at five-minute headways during the morning peak hours and at six-minute headways during the evening peak hours, as shown in Table 2-1.



**Figure 2-4 Typical Cross-Sections: No Build Alternative (No Change from Existing)**



a) Typical Section West of Gough Street



\* Depending on location

b) Typical Section East of Gough Street

Source: Jacobs, 2014



Some 38 Local buses would continue to short-turn, providing more frequent service in the highest-demand portions of the corridor, while others would travel the full corridor length. The local short line and full-length services would both operate at 12-minute headways during the morning peak period and at 15-minute headways during the evening peak period, resulting in combined headways of 6 minutes and 7.5 minutes, respectively, in locations east of 33<sup>rd</sup> Avenue.

The 38AX and 38BX services would both operate in the peak direction during peak periods with frequencies ranging between nine and 11 minutes, resulting in combined headways of five minutes.

Combined headways for all bus services in the Geary corridor would continue to be about two minutes during peak periods. The No Build Alternative assumes that future combined service frequencies would remain constant from existing conditions because more frequent peak-period service would have limited effectiveness in attracting ridership if the infrastructure to ensure competitive transit travel time and reliability is not present.<sup>11</sup>

- **Transbay Transit Center to Gough Street:** SFMTA Muni buses would use the existing bus-only lanes on Geary Street in the westbound direction and O'Farrell Street in the eastbound direction. The only changes related to bus service would be service increases by SFMTA's Transit Effectiveness Project (TEP/Muni Forward) and the opening of the new Transbay Transit Center. The expected opening in 2018 of the new Transbay Transit Center will modify the current routes of 38 Rapid and 38 Local buses south of Market Street, consistent with the routing shown in the build alternatives.
- **Gough Street to 48th Avenue:** SFMTA Muni and Golden Gate Transit buses will continue to operate in the outside mixed-flow travel lanes and serve curbside bus stations as in the existing condition.
- **Bus-only lanes in the Transbay Transit Center to Gough Street areas:** Under other previously approved projects, two portions of the Geary corridor have bus-only lanes as of 2017, or they are expected to have such lanes by 2020. Bus-only lanes are colored red to identify them as bus-only lanes, discouraging use by mixed-flow traffic. San Francisco's Transit Center District Plan (2009) proposes colored bus-only lanes within its plan boundaries. Buses will operate within the Transit Center District Plan's proposed bus-only lanes on Beale, Fremont, and Mission streets. In a separate effort in 2014, SFMTA colored the existing bus-only lanes on most of Geary and O'Farrell streets between Gough and Market streets.

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<sup>11</sup> SFMTA periodically rebalances local and Rapid service in the Geary corridor to minimize crowding. As a result, existing local and Rapid service frequencies differ slightly from assumed No Build frequencies; however, the total amount of service on the corridor across all routes is expected to remain similar to existing conditions in the No Build scenario.



New Muni Rapid Network bike racks (above) and flag signs on transit poles with solar lanterns (below).



Buses with low floors speed up boarding time by reducing the number of steps required to board the bus.

- **Transit Signal Priority (TSP):** SFMTA installed wireless next-generation TSP at signalized intersections along the Geary corridor. TSP technology allows buses to spend less time stopped at red lights. Buses are equipped with TSP transponders, which send signals to traffic lights to either extend the green light to allow approaching buses to pass through or trigger a change from red to green when it would not unduly affect crossing traffic.
- **Bus Stop Amenity Enhancements:** SFMTA is in process of upgrading bus stop amenities and legibility system-wide, beginning with stops serving the Muni Rapid Network, the name for the routes that form the backbone of the Muni network and carry nearly 70 percent of customers. Bus stops serving Muni Rapid Network routes will receive shelter enhancements including bike racks, decals, redesigned flag signs and new transit poles outfitted with solar powered lanterns. These enhancements make finding and navigating the Muni Rapid Network easier. The solar powered lanterns are intended to be installed at all stops throughout the City, with the completion of the new Muni Rapid stops expected by the end of 2018. Solar powered lanterns at local stops will be implemented starting in 2018.
- **New, low-floor buses:** SFMTA is in the process of replacing its entire fleet of 60-foot, articulated, diesel motorcoach buses with low-floor, diesel hybrid buses with three doors on the right-hand side of the vehicles, including all vehicles currently operating in the Geary corridor. These buses do not have steps as older traditional buses do. Low-floor buses thus improve accessibility for all riders and also reduce time boarding and alighting.
- **Pavement maintenance, rehabilitation, and/or resurfacing projects (selected locations):** Previously planned/programmed repair, replacement, maintenance, or other modifications to the road surface, curbs, or utilities along the corridor will occur in the No Build Alternative. San Francisco Public Works (SFPW) would resurface pavement in mixed flow lanes between 10<sup>th</sup> and 28<sup>th</sup> avenues as well as between Van Ness and Masonic avenues, as the pavement condition is below SFPW's threshold for acceptable condition.
- **New traffic signals:** New signals are planned for installation along Geary Boulevard at its currently unsignalized intersections with the following cross streets: Presidio Avenue, Cook Street, Beaumont Avenue/Commonwealth Avenue, and Palm, 22<sup>nd</sup>, and 26<sup>th</sup> avenues.
- **Replacement of traffic signal infrastructure (selected locations):** In various locations along the Geary corridor, SFMTA will replace or upgrade some traffic light controllers and traffic signal heads. SFMTA will also install mast-arm poles, which hang over travel lanes for better traffic light visibility.

- **Pedestrian countdown signals (selected locations):** These traffic signals are located at crosswalks and display both the standard symbols for walk/don't walk as well as provide a flashing numerical countdown that indicates how many seconds remain to finish crossing. By 2020, SFMTA will install pedestrian countdown signals where they do not already exist at selected signalized intersections along the Geary corridor.
- **Curb ramps:** These pavement depressions facilitate access for people who use wheelchairs and pedestrians toting strollers, carts and luggage. By 2020, SFPW will install curb ramps at some intersections along the Geary corridor that do not meet current City standards and/or ADA requirements. SFPW will prioritize locations with large populations of people who have mobility impairments.
- **Pedestrian crossing bulbs:** These pavement features, located at corners or midblock crossings, are physical extensions of the sidewalk into the travel lane nearest the curb. Pedestrian crossing bulbs increase pedestrian visibility, reduce crossing distances, slow turning vehicles, and visually narrow the roadway. The Draft EIS/EIR described SFPW's plans to implement bulbs at 14 locations along the Geary corridor including Arguello Boulevard, Palm Avenue, and Stanyan Street. Since publication of the Draft EIS/EIR in 2015, SFPW has installed some of these pedestrian crossing bulbs.
- **Bus bulbs at California Pacific Medical Center (CPMC):** Construction of this new facility at Geary Street and Van Ness Avenue is under way. Plans call for an existing (westbound) bus bulb – at Polk and Geary streets to the west side of Van Ness Avenue – to be relocated immediately alongside the new medical facility. The bus bulb that CPMC proposes to construct would be smaller than bus bulbs that would serve BRT stops. Accordingly, all build alternatives would require expansion and modification of the proposed stop here to ultimately serve as a Signature BRT stop.
- **High-Visibility Crosswalk Striping:** Crosswalks at most intersections in the Geary corridor have been upgraded with new crosswalk striping of the high-visibility “Continental” type. SFMTA will continue to upgrade crosswalks with high-visibility striping at the remaining corridor intersections.



**Bulbs maximize pedestrian space and minimize crossing distances.**

### 2.2.3 | Features Common to All Build Alternatives

In addition to the roadway infrastructure and transit system improvements associated with the No Build Alternative (see Section 2.2.2.1), this section describes the transit, roadway, and multimodal improvements, including bus-only lanes and BRT service, proposed under all build alternatives.

### 2.2.3.1 | TRANSIT IMPROVEMENTS AND OPERATIONS COMMON TO ALL BUILD ALTERNATIVES

Bus-only lane configurations would be identical for all alternatives from the Transbay Transit Center to Gough Street

The time interval between the arrivals of successive buses on the same line would be reduced, thereby increasing frequency with BRT Service. Additionally, BRT Service would include longer hours of service.

- **Bus-only lanes:** All build alternatives would feature new bus-only lanes between Gough Street and 34<sup>th</sup> Avenue, but the configuration of the lanes (i.e., side versus center lanes) in some portions of the corridor differs for each alternative. Descriptions for each respective alternative in the sections that follow as well as Figure 2-1.
- **Higher-frequency bus service:** The build alternatives would replace the current 38 Rapid service with BRT service between the Transbay Transit Center and 48th Avenue. The BRT service would have reduced headways, or time in between one bus and the next, compared to existing Rapid service headways and those assumed for the No Build Alternative.
  - Alternatives 2, 3, and the Hybrid Alternative/LPA would retain the 38 Local bus service.
  - Alternative 3-Consolidated would provide consolidated bus service rather than providing both a BRT service and a separate local service.
  - All build alternatives would replace existing 38AX and 38BX express service with a new 38 Express (38X) service. Like the 38AX and 38BX services it would replace, the 38X would be a weekday peak-period, peak-direction service – only eastbound during morning peak periods and only westbound during evening peak periods. The 38X would stop at limited stations between 48th and Masonic avenues. East of Masonic Avenue, like the 38AX and 38BX, the 38X would leave Geary and run express on Bush Street (inbound) or Pine Street (outbound) to and from downtown, but with an added stop at Van Ness, per the TEP/Muni Forward recommendations. For more information on the new 38X service, see Section 3.3.3.4. Some express bus stop locations would be re-located or removed.
- **TSP:** All build alternatives would include the installation of fiber-based TSP on all signalized intersections between 25th Avenue and Gough Street. This type of TSP technology differs from the wireless TSP that was installed (see section 2.2.2.1 regarding TSP as an element of the No Build Alternative). Fiber-based TSP requires placement of cables in underground trenches along the corridor. Wireless and fiber-based TSP have similar operational benefits; fiber-based TSP is considered more durable and to have a longer useful life.

- **Additional vehicles with low-floor design:** All build alternatives would deliver BRT service via vehicles similar to the new low-floor buses included as part of the No Build Alternative, which have recently been put into service. Each build alternative would increase the frequency of the headways assumed for the No Build Alternative; thus, the build alternatives would require additional low-floor buses above what would be required under the No Build Alternative.
- **New BRT stations:** The build alternatives would include enhanced stations with amenities at selected stop locations. Table 2-2 shows the proposed list of amenities to be included in the various types of BRT stations proposed. This table is color-coded; the colors are used in subsequent Tables 2-3 and 2-4 to denote planned stop types at locations across the Geary corridor. In addition, any curbside stations would feature bus bulbs (see Section 2.2.3.2).
  - **Market Street to Gough Street:** In this area, for all build alternatives, BRT stops would expand up to one block in length and be located on new BRT bus bulbs that would extend into parking lanes (and thereby remove parking spaces). BRT bus bulbs eliminate the need for buses to pull into and out of the curb lane at bus stops, subsequently reducing transit vehicle delay. The additional space created by the bus bulbs would allow for the inclusion of passenger amenities, such as seating or bike parking.
  - **34th Avenue to 48th Avenue:** All build alternatives propose minor added bus stop amenities at various locations. Station types, amenities, and locations are described in more detail in Tables 2-2 to 2-4.

Table 2-2 summarizes the different levels of bus stop amenities that would be provided in all build alternatives as compared to existing conditions. Both “Branded Flag” and “Signature BRT” stops refer to the amenities that would be provided at future BRT stops in addition to “Existing” amenities. Generally, “Signature BRT” refers to the amenities that would be provided within the limits of where physical infrastructure improvements are proposed (Market to 34th Avenue), while “Branded Flag” refers to way-finding improvements that would be provided at stops outside these limits (south of Market Street or west of 34th Avenue) but that are still a part of the Geary corridor. Some amenities labeled as “Existing” such as shelters and real-time information are only present at some bus stops; amenities repeated from “Existing” in other categories means they would be systematically added at each stop in the corridor with the project. In addition, all build alternatives would also include “Local-only” shelters at bus stops that BRT would not service between Market Street and 34th Avenue.

**Table 2-2 Bus Stop Types and Amenity Levels**

STOP TYPE	SERVICES PROVIDED	APPLICABLE ALTERNATIVE(S)	PROPOSED AMENITIES*
Existing	Local, Rapid, Express <sup>1</sup>	No Build	<ul style="list-style-type: none"> <li>Existing amenities (includes shelters and system maps in some locations)</li> <li>No Build Alternative amenities, including bike racks, shelter decals, redesigned flag signs, and transit poles outfitted with solar-powered lanterns as further described in Section 2.2.2.1</li> <li>System map</li> </ul>
Branded Flag	BRT, Local, Express	2, Hybrid/LPA	<ul style="list-style-type: none"> <li>Existing amenities (includes shelters and system maps in some locations)</li> <li>BRT-branded flag sign</li> <li>System map</li> </ul>
Local-only Shelter	Local, Express	2, 3, 3-Consolidated, Hybrid/LPA	<ul style="list-style-type: none"> <li>Shelter</li> <li>Shelter power feed</li> </ul>
Signature BRT	BRT, Local, Express	2, 3, 3-Consolidated, Hybrid/LPA	<ul style="list-style-type: none"> <li>Shelter</li> <li>Shelter power feed<sup>***</sup></li> <li>Communications including real-time information (i.e. NextMuni), WiFi, and system map</li> <li>BRT-branded flag sign</li> <li>Trash receptacle</li> <li>Pedestrian-scale light fixtures<sup>****</sup></li> <li>Railing along back of platform<sup>**</sup></li> <li>Custom sidewalk paving at BRT median stations<sup>**</sup></li> <li>Station landscaping (trees)</li> <li>Bus bulbs for new curbside stations with new bike racks and seating</li> </ul>

<sup>1</sup> For the build alternatives, BRT service would replace existing Rapid service. Express service does not serve every bus stop. Some amenities labeled as “Existing” such as shelters and real-time information are only present at some bus stops; amenities repeated from “Existing” in other categories means they would be systematically added at each stop in the corridor with the project.

\* Exact amenities may vary depending on location; some stops already feature some of these amenities. Amenities

\*\* For center-running stations only.

\*\*\* Provides power to shelter to enable lighting and real-time information (signs, audio).

\*\*\*\* Transit poles outfitted with solar lanterns call attention to the signage for easy passenger identification but is distinct from pedestrian-scale lighting which illuminates the passenger waiting area.



**Table 2-3 Proposed Eastbound Stop Locations**

**STOP TYPE LEGEND<sup>1</sup>**

- Existing**
- Branded-Flag: BRT and Local**
- Local-Only**
- Signature BRT: BRT + Local**

CROSS STREETS	NO BUILD ALTERNATIVE (EXISTING STOPS)	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 3- CONSOLIDATED	HYBRID ALTERNATIVE/LPA
48th / Point Lobos	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
45th	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
42nd	38, 38R, 38AX (F)	BRT, 38, 38X (F)	BRT, 38, 38X (F)	BRT, 38X (F)	BRT, 38, 38X (F)
39th	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
36th	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
33rd	38, 38R, 38AX (N)	BRT, 38, 38X (NB)	BRT, 38, 38X (NB)	BRT, 38X (NB)	BRT, 38, 38X (NB)
32nd	38, 38AX (F)	—	38 (F)	—	—
30th	38, 38AX (N)	38 (N)	38 (N)	BRT, 38X (NB)	BRT, 38, 38X (NB)
28th	38, 38AX (N)	38 (N)	38 (N)	—	—
25th	38, 38R, 38AX, 38BX (N)	BRT, 38, 38X (NB)	BRT, 38, 38X (FB)	BRT, 38X (FB)	BRT, 38, 38X (FB)
23rd	38, 38BX (N)	38 (N)	—	—	—
22nd	—	—	38 (F)	—	—
21st	—	—	—	BRT, 38X (NB)	BRT, 38, 38X (NB)
20th	38, 38R, 38BX (N)	38 (N)	—	—	—
19th	—	—	38 (F)	—	—
17th	38, 38BX (N)	38 (N)	—	BRT, 38X (NB)	BRT, 38, 38X (NB)
15th	—	—	38 (F)	—	—
14th	—	BRT, 38, 38X (NB)	—	—	—
Park Presidio	38, 38R, 38BX (N)	—	—	—	—
12th	38, 38BX (N)	38 (N)	BRT, 38, 38X (NB)	BRT, 38X (NB)	BRT, 38, 38X (NB)
9th	38, 38BX (F)	38 (F)	38 (F)	—	—
6th	38, 38R, 38BX (N)	BRT, 38, 38X (NB)	BRT, 38, 38X (FB)	BRT, 38X (NB)	BRT, 38, 38X (NB)
4th	—	38 (N)	—	—	—
3rd	38, 38BX (N)	—	—	—	—
Arguello	38, 38R, 38BX (F)	BRT, 38, 38X (NB)	BRT, 38, 38X (NB)	BRT, 38X (NB)	BRT, 38, 38X (NB)
Stanyan	38, 38BX (N)	38 (N)	—	—	—
Spruce	38, 38R, 38BX (N)	38 (N)	38 (F)	BRT, 38X (FB)	38, 38X (N)
Collins	38, 38BX (F)	38 (N)	38 (NB)	—	38, 38X (F)
Masonic	38, 38BX (N)	BRT, 38, 38X (F)	BRT, 38, 38X (F)	BRT, 38X (F)	BRT, 38, 38X (F)
Presidio	38, 38R (N)	—	—	—	—
St. Josephs / Baker	38 (F)	38 (F)	38 (N)	BRT (F)	38 (F)
Divisadero	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (F)	BRT, 38 (N)
Scott	38 (F)	38 (F)	38 (F)	—	38 (F)
Fillmore	38, 38R (N)	BRT, 38 (F)	BRT, 38 (FB)	BRT (FB)	BRT, 38 (F)
Webster	38 (N)	—	—	—	—
Laguna	38, 38R (N)	38 (N)	38 (N)	BRT (F)	BRT, 38 (N)
Gough	38 (F)	38 (N)	38 (N)	—	38 (N)
Van Ness / O'Farrell	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
O'Farrell / Larkin	38 (N)	38 (F)	38 (F)	BRT (N)	38 (F)
O'Farrell / Hyde	38 (F)	—	—	—	—
O'Farrell / Leavenworth	38 (F)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
O'Farrell / Taylor	38, 38R (N)	38 (N)	38 (N)	BRT (N)	38 (N)
O'Farrell / Powell	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
O'Farrell / Grant	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
Market / 3rd	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
Market / 1st	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
Beale / Mission	38, 38R (N)	—	—	—	—
Beale / Howard	38, 38R (F)	—	—	—	—
Transbay Transit Center	38, 38R	BRT, 38	BRT, 38	BRT	BRT, 38

<sup>1</sup> Alternative 3-Consolidated would not have local service.

**BUS SERVICE DEFINITIONS**

**38 Local (38)** buses run 24 hours and make all stops on the Geary corridor.

**38 Express (38AX, 38BX, 38X)** buses run only during commute hours and in commute directions (i.e., west to east in the a.m. and east to west in the p.m.).

**38 Rapid (38R)** buses run from early morning to the evening and make limited stops on the Geary corridor.

38: 38 Local bus service and stop (serves 97 stops along Geary corridor daily); 38R: 38 Rapid bus service and stop (serves 48 stops along Geary corridor daily); 38AX: Geary A Express (serves 25 stops during weekday peak periods only) 38BX: Geary B Express (serves 34 stops during weekday peak periods only); BRT: BRT service and stop; 38X: Proposed New 38 Express Service; —: No bus stop

**Table 2-4 Proposed Westbound Stop Locations**

STOP TYPE LEGEND<sup>1</sup>

Existing
Branded-Flag; BRT and Local
Local-Only
Signature BRT; BRT + Local

<sup>1</sup> Alternative 3-Consolidated would not have local service.

N = Near Side Stop
F = Far Side Stop
NB = Near Side Full Block Stop
FB = Far Side Full Block Stop

BUS SERVICE DEFINITIONS

**38 Local (38)** buses run 24 hours and make all stops on the Geary corridor.

**38 Express (38AX, 38BX, 38X)** buses run only during commute hours and in commute directions (i.e., west to east in the a.m. and east to west in the p.m.).

**38 Rapid (38R)** buses run from early morning to the evening and make limited stops on the Geary corridor.

CROSS STREETS	NO BUILD ALTERNATIVE (EXISTING STOPS)	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 3-CONSOLIDATED	HYBRID ALTERNATIVE/LPA
48th / Point Lobos	38, 38R, 38AX (F)	BRT, 38, 38X (F)	BRT, 38, 38X (F)	BRT, 38X (F)	BRT, 38, 38X (F)
46th / Point Lobos	38, 38R, 38AX (F)	BRT, 38, 38X (F)	BRT, 38, 38X (F)	BRT, 38X (F)	BRT, 38, 38X (F)
44th / Point Lobos	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
42nd / Point Lobos	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
40th	38, 38R (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
36th	38, 38R, 38AX (N)	BRT, 38, 38X (N)	BRT, 38, 38X (N)	BRT, 38X (N)	BRT, 38, 38X (N)
33rd	38, 38R, 38AX (N)	BRT, 38, 38X (FB)	BRT, 38, 38X (FB)	BRT, 38X (FB)	BRT, 38, 38X (FB)
30th	38, 38AX (N)	38 (N)	38 (N)	BRT, 38X (NB)	BRT, 38, 38X (NB)
28th	38, 38AX (N)	38 (N)	38 (N)	-	-
25th	38, 38R, 38AX, 38BX (N)	BRT, 38, 38X (FB)	BRT, 38, 38X (NB)	BRT, 38X (NB)	BRT, 38, 38X (NB)
22nd	38, 38BX (N)	38 (N)	38 (F)	-	-
21st	-	-	-	BRT, 38X (NB)	BRT, 38, 38X (NB)
20th	38, 38R, 38BX (N)	38 (N)	-	-	-
19th	-	-	38 (F)	-	-
17th	38, 38BX (N)	38 (N)	-	BRT, 38X (NB)	BRT, 38, 38X (NB)
15th	-	-	38 (F)	-	-
14th	-	BRT, 38, 38X (FB)	-	-	-
Park Presidio	38, 38R, 38BX (F)	-	-	-	-
12th	38, 38BX (N)	38 (N)	BRT, 38, 38X (FB)	BRT 38X (FB)	BRT, 38, 38X (FB)
9th	38, 38BX (F)	38 (F)	38 (F)	-	-
6th	38, 38R, 38BX (N)	BRT, 38, 38X (NB)	BRT, 38, 38X (NB)	BRT, 38X (FB)	BRT, 38, 38X (FB)
3rd	38, 38BX (N)	38 (N)	-	-	-
Arguello	38, 38R, 38BX (N)	BRT, 38, 38X (FB)	BRT, 38, 38X (FB)	BRT, 38X (FB)	BRT, 38, 38X (FB)
Commonwealth	38, 38BX (F)	38 (F)	-	-	-
Spruce	38, 38R, 38BX (N)	38 (N)	38 (F)	BRT, 38X (NB)	38, 38X (N)
Collins	38, 38BX (N)	38 (N)	38 (F)	-	38, 38X (N)
Presidio Ave	38, 38R, 38BX (F)	BRT, 38, 38X (F)	BRT, 38, 38X (F)	BRT, 38X (F)	BRT, 38, 38X (F)
St. Josephs / Baker	38 (F)	38 (F)	38 (N)	BRT (N)	38 (F)
Divisadero	38, 38R (N)	BRT, 38 (N)	BRT, 38 (F)	BRT (N)	BRT, 38 (N)
Scott	38 (N)	38 (N)	38 (N)	-	38 (N)
Fillmore	38, 38R (F)	BRT, 38 (F)	BRT, 38 (NB)	BRT (NB)	BRT, 38 (F)
Webster	38 (N)	38 (N)	-	-	38 (N)
Laguna	38, 38R (N)	38 (N)	38 (N)	-	BRT, 38 (N)
Gough	38 (F)	38 (F)	38 (F)	BRT (F)	38 (F)
Van Ness / Geary	38, 38R (N)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
Geary / Larkin	38 (F)	38 (F)	38 (F)	BRT (F)	38 (F)
Geary / Hyde	38 (F)	-	-	-	-
Geary / Leavenworth	38, 38R (F)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
Geary / Jones	38 (F)	38 (F)	38 (F)	-	38 (F)
Geary / Taylor	38 (F)	38 (F)	38 (F)	BRT (F)	38 (F)
Geary / Powell	38, 38R (F)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
Geary / Stockton	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
Geary / Kearny	38, 38R (F)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
Market / Montgomery	38, 38R (F)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
Market / Sansome	38, 38R (F)	BRT, 38 (F)	BRT, 38 (F)	BRT (F)	BRT, 38 (F)
Fremont / Market	38, 38R (N)	BRT, 38 (N)	BRT, 38 (N)	BRT (N)	BRT, 38 (N)
Mission / Beale	38 (F)	-	-	-	-
Transbay Transit Center	38, 38R	BRT, 38	BRT, 38	BRT	BRT, 38

38: 38 Local bus service and stop (serves 97 stops along Geary corridor daily); 38R: 38 Rapid bus service and stop (serves 48 stops along Geary corridor daily); 38AX: Geary A Express (serves 25 stops during weekday peak periods only) 38BX: Geary B Express (serves 34 stops during weekday peak periods only); BRT: BRT service and stop; 38X: Proposed New 38 Express Service; -: No bus stop



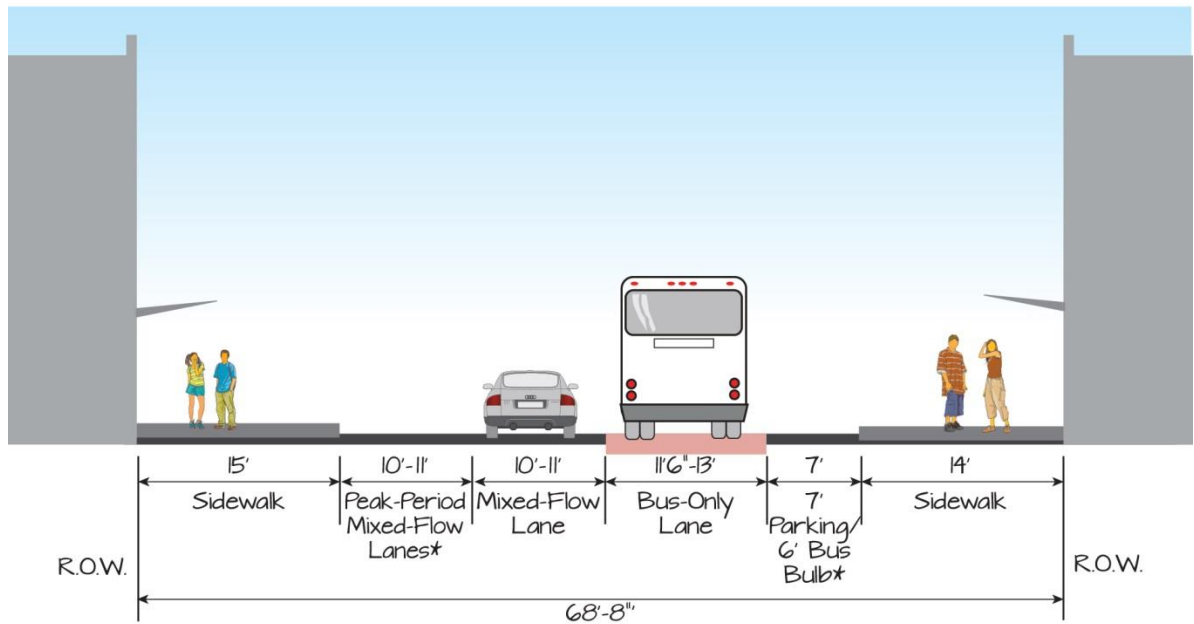
### 2.2.3.2 | ROADWAY AND MULTIMODAL CHANGES COMMON TO ALL BUILD ALTERNATIVES

- **Pavement Rehabilitation:** New bus-only lanes are proposed to be a red color.<sup>12</sup> The red color could be achieved through the use of paint, thermoplastic coatings, and/or “color-integrated” paving material such as concrete or asphalt. Different colorization methods would likely be used in different locations.
  - In median locations where construction of new center-running bus-only lanes is required, the process would consist of creation of a new travel lane from subsurface to top pavement.
  - In the course of constructing side-running bus-only lanes, the project may need to rehabilitate the lane surface. This work would be coordinated with the rehabilitation efforts of SFPW to minimize disruption to the communities along the corridor.
  - The actual composition of the final roadway pavement and color treatment and level of roadway rehabilitation would be determined during the design process.
- **Mixed-Flow Travel Lanes and On-Street Parking Changes:**
  - **Market Street to Gough Street:** Minor changes to lane configurations and signal operations on Geary and O’Farrell streets at the Powell Street and Stockton Street intersections would shift the buses away from right-turning vehicles at these heavy-turn locations.
  - **Gough Street to 34th Avenue:** Mixed-flow traffic would be two lanes in each direction. From Gough Street to Scott Street, the change to two lanes would be a reduction from the current four lanes in each direction. From Scott Street to Park Presidio Boulevard, the change to two lanes would be a reduction of one lane from three lanes. Figure 2-5 depicts a typical cross-section view of the Geary corridor east of Gough Street. A lane of parallel on-street parking would generally be provided on the north and south sides of the Geary corridor. Existing diagonal parking between 33rd and 15th avenues would be replaced with parallel parking to provide enough space to create a bus-only lane in each direction.

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<sup>12</sup> As part of a separate SFMTA program, existing bus-only lanes east of Van Ness Avenue were red-colored in 2014. These would be incorporated into the build alternatives and would be assumed to continue operation as part of the No Build Alternative.

**Figure 2-5 Proposed Cross-Section - East of Gough Street**

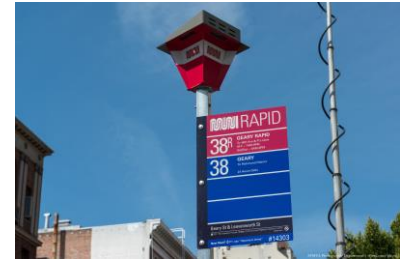


\* Depending on location

Source: Jacobs, 2014

- **34th Avenue to 48th Avenue:** No changes proposed to mixed-flow travel lanes or on-street parking. Due to relatively less transit ridership and lower traffic volumes in this portion of the Geary corridor, none of the build alternatives propose any new bus-only lanes for this segment; however, the branding of the service including BRT bus stops would continue in this part of the corridor. BRT vehicles would operate in existing mixed-flow travel lanes. See Table 2-4.
- **Loading Spaces:** Each of the build alternatives would require the relocation or removal of some commercial and passenger loading zones in the Geary corridor. Where feasible, removed loading spaces would be replaced in close proximity to their current locations. Appendix A (Plan Drawings of the Build Alternatives and Hybrid Alternative/LPA) includes specific details.
- **Pedestrian Improvements:**
  - **Bus Bulbs:** Bus bulbs would be constructed along existing sidewalks to extend curb lines to the new side running bus lane to simplify bus positioning for patron boarding and alighting. The width of these bulbs would vary along the corridor – generally 4 feet to 8 feet, depending on local constraints.

- **Pedestrian Crossing Bulbs:** The No Build Alternative reflects 14 pedestrian crossing bulbs at corners along the Geary corridor, several of which were built since publication of the Draft EIS/EIR in 2015. The build alternatives would each construct at least an additional 51 pedestrian crossing bulbs at high-priority locations in the Geary corridor. Therefore, with construction of any of the build alternatives, a minimum of 65 new pedestrian crossing bulbs would be provided along the Geary corridor.<sup>13</sup> Pedestrian crossing bulbs would be constructed at various locations selected to improve transit access and pedestrian safety. Locations would differ by alternative. Most locations would be at corners, but some would be associated with midblock crossings. Some bulb locations were selected to improve safety for pedestrians accessing transit stops; others were selected to address intersections with high injury rates.
- **Other Improvements,** such as pedestrian countdown signals, curb ramps,<sup>14</sup> and enhanced intersection lighting, would be installed at some locations under the No Build Alternative conditions and at more locations under the build alternatives. Specifics for each build alternative are discussed in subsequent subsections.
- **Tree Removal/Replacement:** The streetscape modifications proposed as part of each build alternative require some tree removal from both center median areas and sidewalk areas. The build alternatives would require the removal of between 156 and 268 trees along the Geary corridor. For each build alternative, a new tree would be planted for each tree removed. See Section 4.13.4 for additional information regarding tree removal/replacement.
- **Left Turns:** To reduce conflicts with the bus-only lanes and increase pedestrian safety,<sup>15</sup> left turns by mixed-flow traffic would be restricted at various locations, while some build alternatives would add new, protected left turns in different locations. The left-turn locations would vary by alternative and proposed bus stop locations (see Figures 2-9, 2-13, 2-17, and 2-20).



**New Muni Rapid Network flag signs on transit poles with solar lanterns (above) and bike racks (below)**



**New Muni Rapid Network shelter with shelter decals and map**

<sup>13</sup> Refinements to the Hybrid Alternative/LPA would result in construction of 77 crossing bulbs, which is 26 more than the other build alternatives. With the implementation of the Hybrid Alternative/LPA (77 crossing bulbs) and the No Build (14 crossing bulbs), a total of 91 bulbs would be built under the Hybrid/LPA.

<sup>14</sup> Curb ramps that do not currently meet the requirements set forth in the ADA Standards for Accessible Design would be upgraded.

<sup>15</sup> Pedestrian collisions involving turning vehicles, and particularly left-turning vehicles, happen disproportionately on the Geary corridor, when compared with the rest of San Francisco. This is especially true from 22nd Avenue to Cook Street, where the majority of pedestrian collisions involve a left-turning vehicle. (Source: SFCTA, 2013, Pedestrian Safety Analysis and Recommendations for Geary Corridor BRT.)

- **Pedestrian Bridge at Steiner Street:** This pedestrian overcrossing would be removed to eliminate conflicts between this structure’s piers and the proposed bus lanes, and to provide new street-grade pedestrian crossings.
- **New Signalized Crossings at Buchanan and Broderick Streets:** The build alternatives would implement a new, signalized pedestrian crossing at Buchanan Street, which intersects only the south side of the Geary corridor, to decrease the out-of-direction walking distance required to cross the Geary corridor on this long block. A new signalized crossing is also proposed at Broderick Street to address high pedestrian demand associated with medical facilities at that location.
- **Bicycle Lane between Masonic and Presidio Avenues:** All build alternatives include construction of a new Class II bicycle lane on Geary Boulevard between Masonic and Presidio avenues. This new lane would be a continuation of the proposed bicycle lane/cycle track to be constructed as part of SFMTA’s Masonic Avenue Streetscape Improvements Project (separate and independent from the Geary Corridor BRT Project; see Section 2.8.1.1). That project proposes a cycle track/bicycle lane on each side of Masonic Avenue between Geary Boulevard and Fell Street. The new bicycle lane on Geary would be facilitated by the, –redesign of the Masonic-Presidio block of Geary Boulevard associated with each of the build alternatives. Moreover, the new bicycle lane would help close a gap in the City’s bicycle network across Geary Boulevard connecting two key bicycle routes. The bicycle lane would be colored green to increase its visibility.

## 2.2.4 | Detailed Discussion of Features for Alternative 2: Side-Lane BRT

The following subsections describe improvements unique to Alternative 2 in more detail. Features common to all build alternatives are not listed in this section and instead are discussed in Section 2.2.3. Figure 2-6 depicts Alternative 2 in detail.

Alternative 2 includes new side-running bus-only lanes throughout much of the Geary corridor. These bus-only lanes would exist in the rightmost travel lane next to the existing curbside parking lane

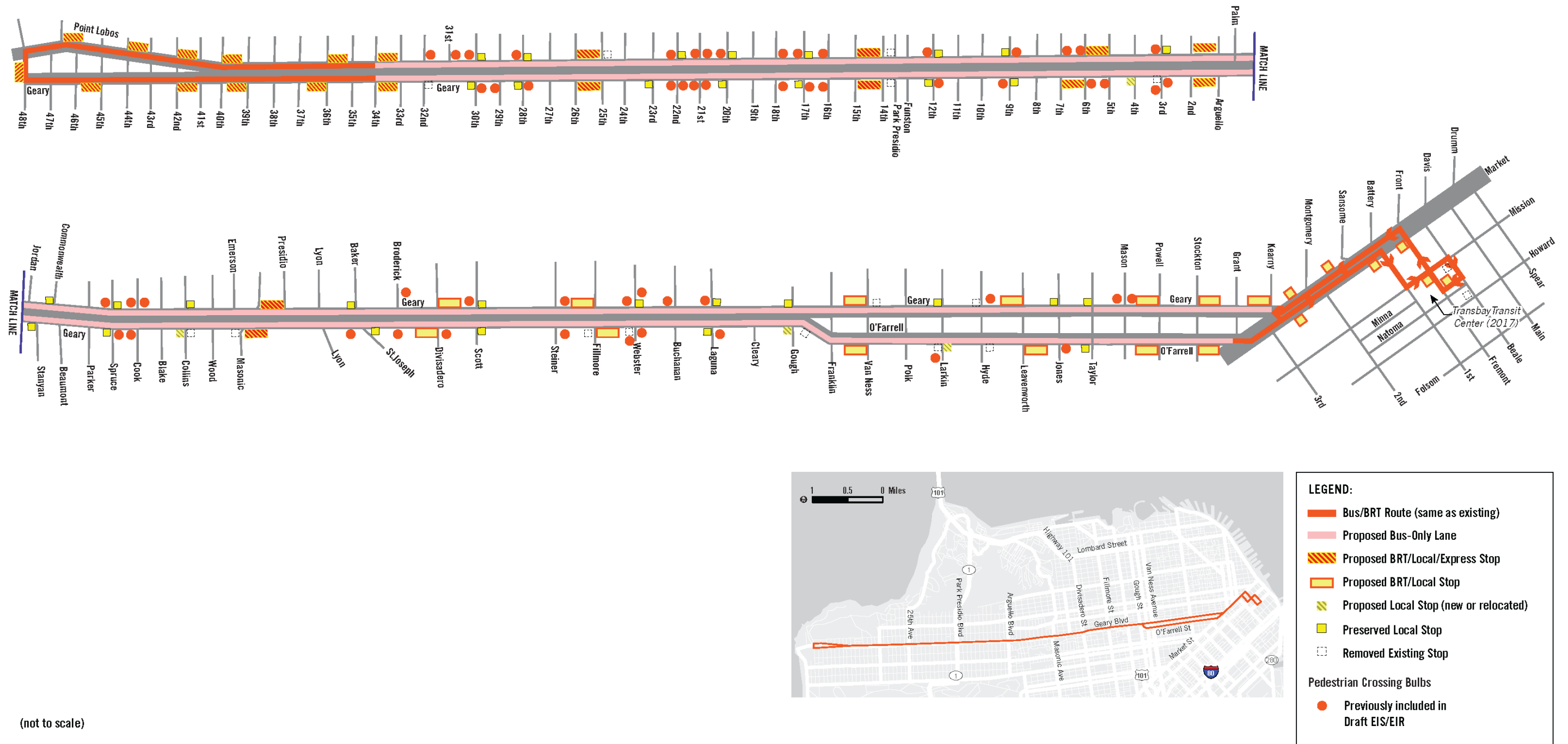
### 2.2.4.1 | ALTERNATIVE 2 TRANSIT IMPROVEMENTS AND OPERATIONS

- **Bus-Only Lanes:** As described below, depicted in Figure 2-7, and summarized in Table 2-5:
  - **Market Street to Gough Street:** Alternative 2 would retain the existing bus-only lanes on Geary Street in the westbound direction and O’Farrell Street in the eastbound direction.

- **Gough Street to 34th Avenue:** Alternative 2 would create a colorized bus-only lane in each direction of Geary Boulevard. The new bus-only lanes would be designated in the rightmost travel lane next to the existing curbside parking lane. The bus-only lane would be traversable by other vehicular traffic, i.e., cars would be able to enter the bus-only lane to make right turns, park, or enter or exit driveways.
- **34th Avenue to 48th Avenue:** None. Due to relatively lower levels of transit ridership and traffic volumes in this portion of the Geary corridor, Alternative 2 does not include any new bus-only lanes for this segment; however, the branding of the service including BRT bus stops would continue in this part of the corridor. BRT vehicles would thus operate in existing mixed-flow travel lanes.

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Figure 2-6 Alternative 2



(not to scale)

Source: SFCTA, 2017

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- **Bus Operations:** Under Alternative 2, both BRT and non-BRT bus services (38 Local, 38X, and Golden Gate Transit Route 92) would operate in the side-running bus-only lanes. Local service would be provided 24 hours per day, with shorter headways during peak periods than during off-peak periods. All local buses would travel the full length of the corridor. Some BRT service buses would short-turn, providing more frequent service in the highest-demand portions of the corridor, while others would travel the full corridor length. The local service would operate at headways of 5.5 minutes during the morning peak period and at 6-minute headways during the evening peak period. The BRT short line and full-length services would both operate at 5.5-minute headways during both peak periods (resulting in effective headways of about 2.8 minutes for locations east of 25th Avenue). The 38X would operate every 5.5 minutes inbound in the morning peak and outbound every 6 minutes in the evening peak.

BRT buses would stop only at BRT stops, while local buses would stop at all stops. At local stops, local buses would operate the same way they do today, pulling out of the bus-only lane to pick up and drop off passengers at the local curbside stop. In this way, BRT buses would be able to pass the local buses. Additional detail at key locations is provided below.

- **Fillmore Street:** In the westbound direction, the side service road would be reconfigured to accommodate one mixed-flow travel lane and one bus-only lane. In the eastbound direction, to preserve existing loading spaces on the service road, both BRT and local buses would operate in mixed-flow lanes on the existing service road.
- **Masonic Avenue:** West of Masonic Avenue, westbound buses would operate on the existing service road in a mixed-flow travel lane, which would be located adjacent to the parking lane between Emerson Street and Collins Street. Westbound buses would need to shift to the left side of the service road at Masonic Avenue in order to avoid right-turning vehicles. Alternative 2 would install a signal queue-jump at Masonic Avenue to facilitate these bus operations. East of Masonic Avenue, eastbound BRT buses would be traveling in bus-only lanes adjacent to the curb, except for an approximately 275-foot stretch between Lyon Street and Baker Street.
- **Stations and stop locations:** Please refer to Tables 2-2 through 2-4 for detail about proposed station types and locations. In general, new BRT stops (up to one block in length) would be located on new bus bulbs that would extend into parking lanes. Bus bulbs eliminate the need for buses to pull into and out of the curb lane at bus stops, subsequently reducing vehicle delay. The additional space created by the bus bulbs would allow for the inclusion of passenger amenities such as seating or bike parking.

Side-running bus-only lanes would be “permeable” for cars that need to turn right, park, or enter/exit driveways

Figure 2-7 Alternative 2 Schematic Diagram



Source: Jacobs 2014. Figure has been updated since Draft EIS/EIR with clarified labeling.

Table 2-5 Alternative 2 Bus-Only Lane Configuration

SEGMENT	SEGMENT LENGTH	BUS-ONLY LANE CONFIGURATION
Transbay Transit Center to Gough Street	1.5 miles   21 blocks	Side-running (within existing bus-only lanes)
Gough Street to 34th Avenue	4.1 miles   58 blocks	Side-running
34th Avenue to 48th Avenue	0.8 miles   15 blocks	None

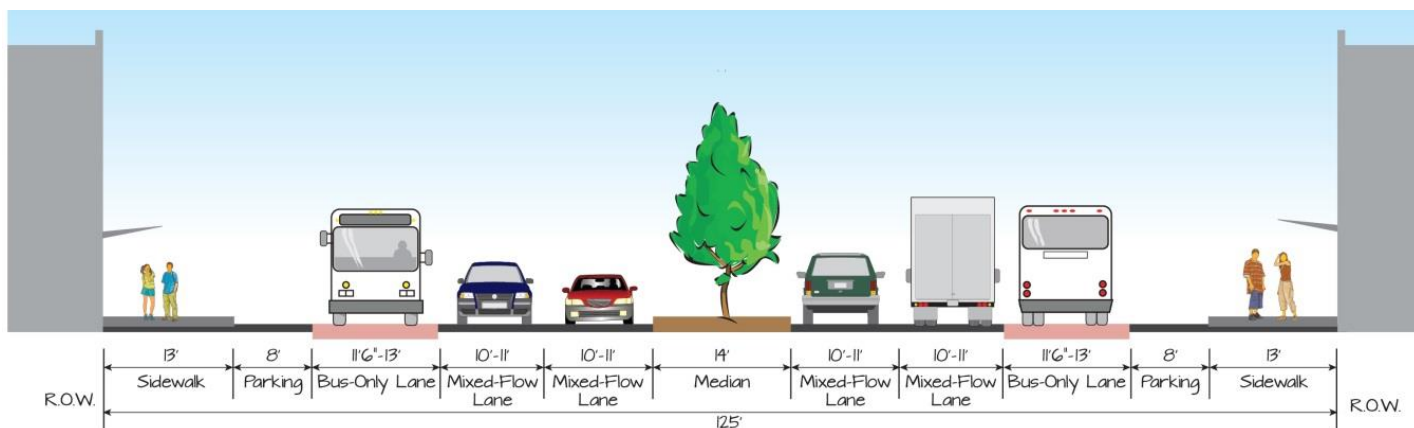
Source: Jacobs, 2014

2.2.4.2 | ALTERNATIVE 2 ROADWAY AND MULTIMODAL IMPROVEMENTS

- Mixed-Flow Travel Lanes and On-Street Parking Changes:**  
 Figure 2-8 depicts a typical cross section for Alternative 2 west of Gough Street. The street design would generally provide, in each direction, two mixed-flow travel lanes, a new bus-only lane as the rightmost travel lane, and a parking lane, retaining the raised center median. In most of the corridor, the street currently features three mixed-flow travel lanes, so this design would convert one of those lanes to bus-only use. Details for selected areas are addressed below:

- In the stretch from Gough Street to Scott Street, the existing configuration is four mixed-flow travel lanes in each direction; there, Alternative 2 would reduce the number of lanes by two in each direction.
- Near the Fillmore Street underpass, the side service roads between Webster and Steiner streets would be reconfigured to accommodate one travel lane and one bus-only lane where feasible; the existing parking on these two blocks would be removed. In the underpass itself, Alternative 2 would reduce the number of lanes by one in each direction, resulting in two mixed-flow travel lanes in each direction.
- In the vicinity of the Geary underpass at Masonic Avenue, the side service roads would be reconfigured to accommodate one travel lane and one bus-only lane where feasible. Some of the existing parking along these six blocks would be removed.
- From Park Presidio Boulevard to 27th Avenue, Geary features only two existing lanes in each direction, so the number of mixed-flow travel lanes in that segment would be unchanged.
- Between 34th Avenue and Market Street, proposed streetscape modifications included as part of Alternative 2 would require conversion of on-street parking spaces to other non-parking uses. Of the existing approximately 1,680 on-street parking spaces between 34th Avenue and Market Street, Alternative 2 would result in the removal of about 460 on-street parking spaces.

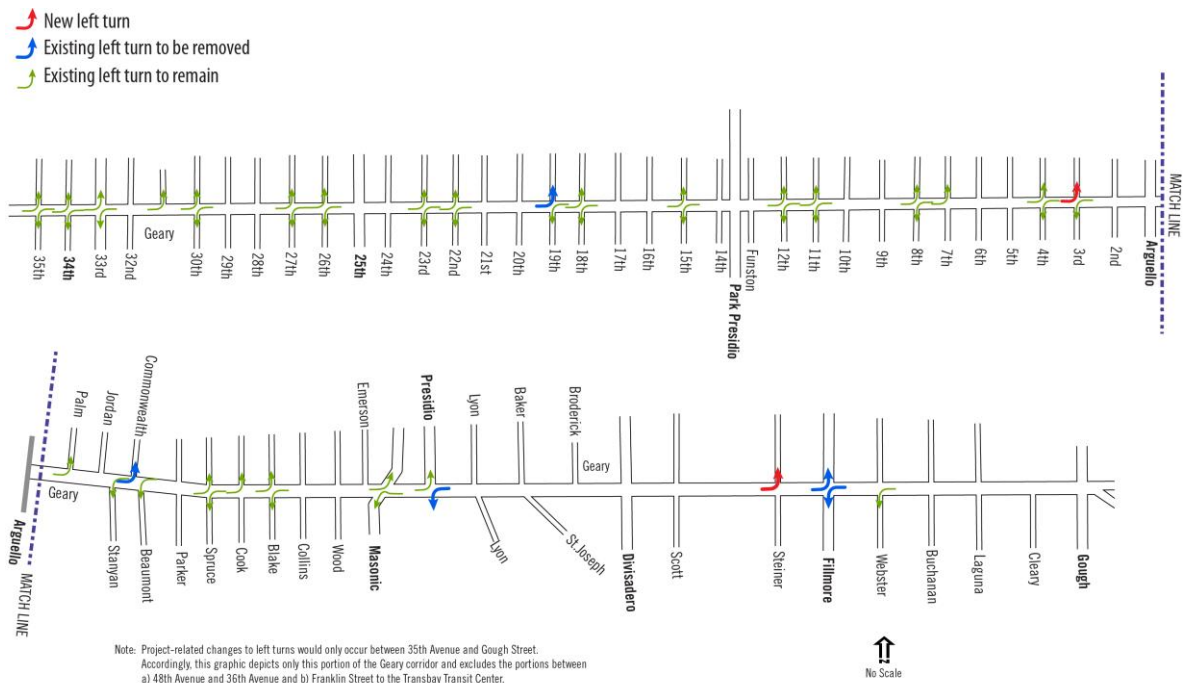
**Figure 2-8 Proposed Cross-Section of Alternative 2 - Typical Section West of Gough Street**



Source: Jacobs, 2014

- **Left Turns:** Alternative 2 would eliminate some existing left turns for mixed-flow traffic, as shown in Figure 2-9, to reduce conflicts with BRT operations and turning vehicles.
- **Pedestrian Crossing Improvements at Webster, Steiner, and Buchanan Streets:** In association with the reduction in Geary corridor travel lanes and removal of the pedestrian bridges at Webster and Steiner streets, Alternative 2 would implement at-grade pedestrian crossings at those streets, with new pedestrian refuges and pedestrian crossing bulbs. Alternative 2 would adjust signal timing to provide sufficient time for pedestrians to cross Geary corridor at Webster and Steiner streets. It would also include a new signalized pedestrian crossing at Buchanan Street.
- **Pedestrian Crossing Improvements at Broderick Street:** Alternative 2 would install a new signalized pedestrian crossing and bulbs at Broderick Street, a high-demand location associated with the Kaiser Permanente medical facilities there.
- **Driveway and Access Modification near Divisadero Street:** To accommodate a longer westbound bus stop at Divisadero, Alternative 2 proposes a change to existing access to the adjacent medical buildings east of the intersection by relocating an existing driveway.

**Figure 2-9 Proposed Left-Turn Locations for Alternative 2**



Note: This figure has been revised to reflect changes to permitted/protected left-turn conditions at Third and Seventh avenues since publication of the Draft EIS/EIR.  
 Source: SFMTA, 2017

## 2.2.5 | Detailed Discussion of Features for Alternative 3: Center-Lane BRT with Dual Medians and Passing Lanes

The following subsections describe Alternative 3 improvements in more detail. Features common to all build alternatives are not listed in this section and instead are discussed in Section 2.2.3. Figure 2-10 depicts Alternative 3 in detail.

Alternatives 3, 3-Consolidated, and the Hybrid Alternative/LPA include new center-running bus-only lanes throughout much of the Geary Corridor, creating a two-way busway in the middle of the street. New landscaped medians would be provided immediately adjacent of the busway on either side. At bus stations, these dual medians would serve as passenger loading platforms

### 2.2.5.1 | ALTERNATIVE 3 TRANSIT IMPROVEMENTS AND OPERATIONS

- **Bus-Only Lanes:** The text, Table 2-6, and Figure 2-11 below summarize where bus-only lanes would be implemented under Alternative 3.
  - **Market Street to Laguna Street:** Between Market and Gough streets, Alternative 3 would retain the existing bus-only lanes on Geary Street in the westbound direction and O’Farrell Street in the eastbound direction. Alternative 3 would extend these side-running bus-only lanes to Laguna Street;
  - **Laguna Street to 27th Avenue:** In each direction, a new center-running bus-only lane would be constructed, creating a two-way busway in the middle of the street. New dual landscaped medians would be provided immediately adjacent to the busway on either side. At bus stations, these dual medians would serve as passenger-loading platforms, to be accessed by crossing from the sidewalk at the nearest intersection. At local bus stations, Alternative 3 would provide bus passing lanes for BRT buses to bypass other buses. More detail about key locations is as follows:
    - **Fillmore Street:** Alternative 3 would replace the existing Fillmore Street underpass with a surface street, with bus lanes located in the center of the new surface street. Subsection 2.2.4.2 further describes the roadway design and operational characteristics of each of these areas.
    - **Masonic Avenue:** Alternative 3 would replace three of four existing mixed-flow travel lanes in the Masonic Avenue tunnel with two bus-only lanes and a median station. Other traffic would be redirected to an existing service road.

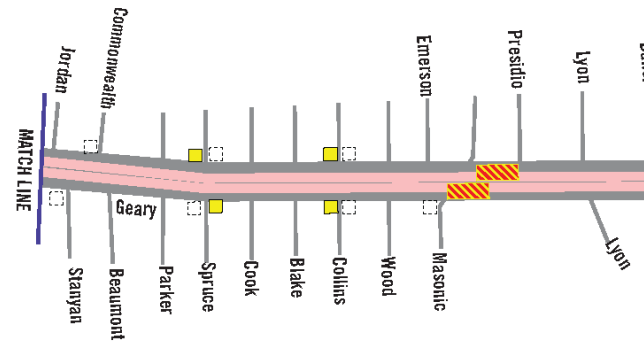
Alternative 3 would include transition areas between Gough and Laguna streets and between 26th and 27th avenues that would move buses between side-running and center-running bus-only lanes.

- **Bus Operations:** Bus service patterns and headways would be similar to Alternative 2. Alternative 3 would replace the existing 38 Rapid service with the new BRT service, retain the existing 38 Local service, and provide 38X service. The Local service would operate at headways of 5.5 minutes during the morning peak period and at six-

minute headways during the evening peak period. BRT short line and full-length services would both operate at 5.5-minute headways in both peak periods (resulting in effective headways of about 2.8 minutes for locations east of 25th Avenue). The 38X would operate every 5.5 minutes inbound in the morning peak and outbound every six minutes in the evening peak.

- **Laguna Street to 27th Avenue:** All buses would operate in the new center-running bus-only lanes. At local bus stops, the 38 Local bus would pull into a bus bay to pick up and drop off passengers. Next to this bus bay would be the bus-only lane, creating a passing zone which the BRT bus could use to bypass the stopped 38 Local bus.
- **Fillmore Street:** Buses would operate in new center-running bus-only lanes on a new surface street that would replace the current underpass.
- **Masonic Avenue:** Buses would operate in new center-running bus-only lanes in the underpass trench and tunnel, servicing a station in the trench part of the underpass.
- **All Other Locations:** Buses would operate in side-running bus-only lanes similar to Alternative 2.
- **Transitions:** Between Laguna and Gough streets, and again between 26th and 27th avenues, buses would transition to and from new center-running bus-only lanes and the new side-running bus-only lanes. Queue-jump traffic signals would use a bus-only signal phase to create gaps in traffic, allowing buses to shift across the mixed-flow travel lanes.
- **Stations and Stop Locations:** Tables 2-2 through 2-4 include details about proposed station types and locations.

Figure 2-10 Alternative 3



**LEGEND:**

- Bus/BRT Route (same as existing)
- Proposed Bus-Only Lane
- Proposed BRT/Local/Express Stop
- Proposed BRT/Local Stop
- Proposed Local Stop (new or relocated)
- Preserved Local Stop
- Removed Existing Stop
- Transitions between side-running and center running

**Pedestrian Crossing Bulbs**

- Previously included in Draft EIS/EIR

(not to scale)

Source: SFCTA, 2017

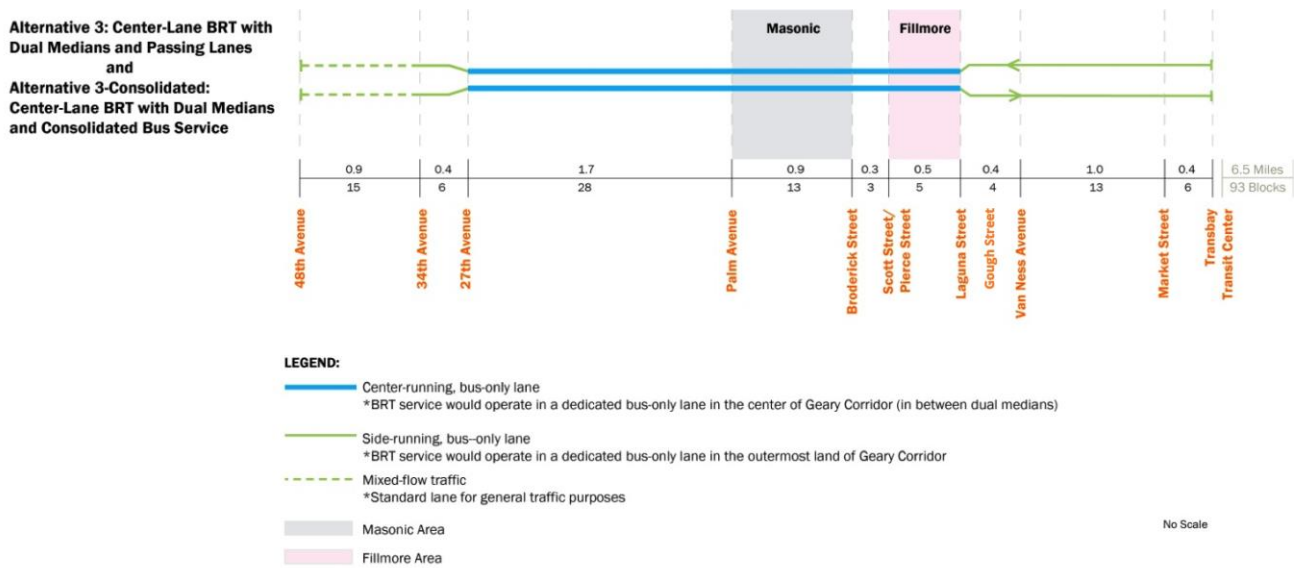
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**Table 2-6 Alternative 3 Bus-Only Lane Configuration**

SEGMENT	SEGMENT LENGTH	BUS-ONLY LANE CONFIGURATION
Transbay Transit Center to Gough Street	1.5 miles   21 blocks	Side-running (within existing bus-only lanes)
Gough Street to 27th Avenue	3.5 miles   51 blocks	Side-running (Gough Street to Laguna Street; 2 blocks) Center-running (Laguna Street to 27th Avenue; 49 blocks)
27th Avenue to 34th Avenue	0.4 miles   6 blocks	Side-running
34th Avenue to 48th Avenue	0.8 miles   15 blocks	None

**Figure 2-11 Alternative 3 Schematic Diagram**



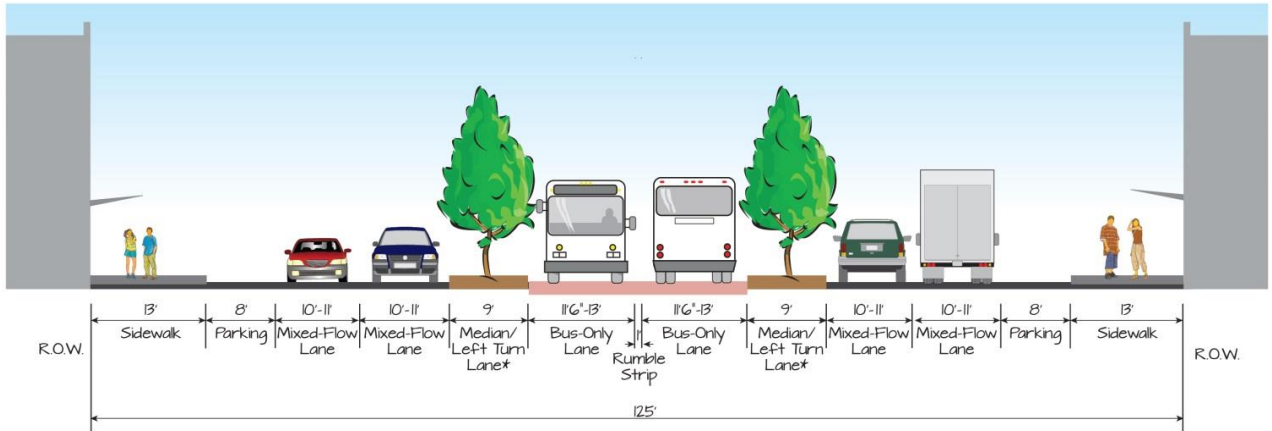
Source: Jacobs, 2014. Figure has been updated since Draft EIS/EIR with clarified labeling.

**2.2.5.2 | ALTERNATIVE 3 ROADWAY AND MULTIMODAL IMPROVEMENTS**

- Mixed-Flow Travel Lanes and On-Street Parking Changes:**  
 Alternative 3 would remove the existing center median and create center-running bus-only lanes separated from mixed-flow traffic by new medians from Gough Street to 27th Avenue. The redesigned street in this segment would feature, in each direction, a bus-only lane, a median/station platform, and two mixed-flow travel lanes. Alternative 3 would provide on-street parking where it would fit into the existing street width. Figure 2-12 depicts a typical cross section of Alternative 3 in this portion of the Geary corridor. Detail about selected locations is provided below.

- **Masonic Avenue:** Alternative 3 would retain the tunnel/underpass but would convert three of its four mixed-flow travel lanes to transit use. One westbound mixed-flow travel lane would be retained in the underpass. Outside the underpass, at-grade service roads would continue to serve mixed-flow traffic. Buses would no longer use the at-grade service roads.

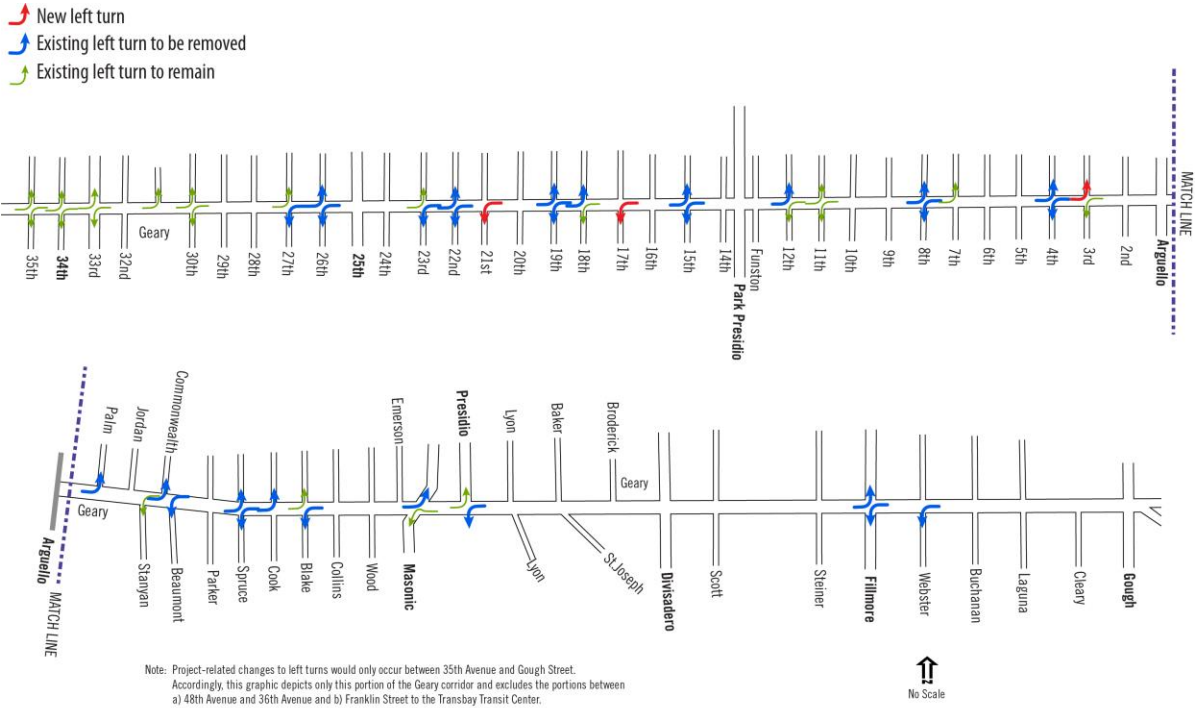
**Figure 2-12 Proposed Typical Cross-Section of Alternative 3**



Source: Jacobs, 2014

- **Median Removal; Tree Replacement:** To construct new center-lane bus-only lanes and associated platforms and medians, Alternative 3 would remove existing medians, plantings, and some center-lane areas. Landscaping with tree plantings would be placed in the new dual medians. The number of new trees planted would be at least equal to the number removed.
- **On-Street Parking:** Between 34th Avenue and Market Street, proposed streetscape modifications included as part of Alternative 3 would require conversion of on-street parking spaces to other non-parking uses. Of an existing approximately 1,680 on-street parking spaces between 34th Avenue and Market Street, Alternative 3 would result in the removal of about 430 on-street parking spaces.
- **Left Turns and Traffic Signal Modifications:** As shown in Figure 2-13, some existing left turns for mixed-flow traffic would be eliminated to provide safer and more efficient operations by reducing bus conflicts with left-turning vehicles.

**Figure 2-13 Proposed Left-Turn Locations for Alternative 3**



Note: This figure has been revised to reflect changes to permitted/protected left-turn conditions at Third and Seventh avenues since publication of the Draft EIS/EIR.  
 Source: SFMTA, 2017

Where new left-turn lanes are created, traffic signals would be programmed so that these turns would have protected signal phases (i.e., left-turn arrows) to improve safety for motorists as well as pedestrians crossing side streets. All left turns in the portion of the corridor with center-running bus-only lanes would be converted to protected left-turn arrows.

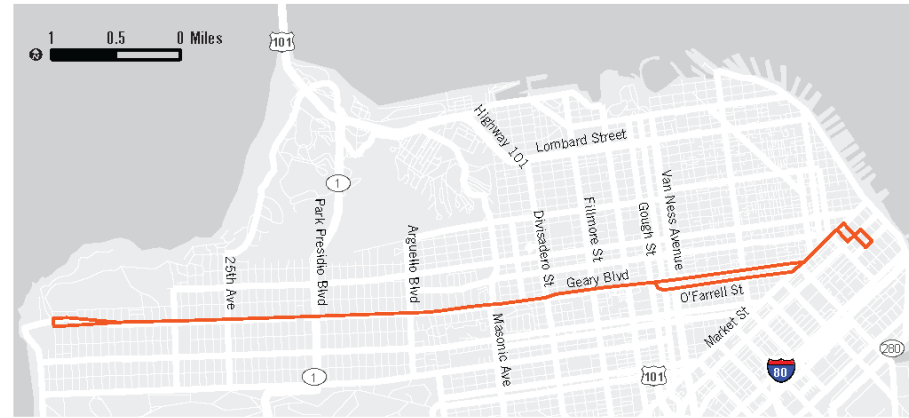
- **Major Underground Utility Work**
  - **Sewer Reconstruction or Relocation:** Coordination with the San Francisco Public Utilities Commission (SFPUC) has identified two areas where existing sewer lines would need to be reconstructed or relocated as a result of the construction of new facilities:
    - **Geary Boulevard Median Area between 4th and 14th Avenues:** This sewer would be reconstructed in place with the same depth and capacity as the existing facility. Excavation for this work would reach depths of about 16 feet.

- **Geary Boulevard between Funston and 12th Avenues:** The existing sewer along the side of the street aligns with an area designated for a proposed bus stop. Locating a station atop an existing sewer would limit the ability to access or perform maintenance on the sewer without disrupting the proposed bus stop. To address this conflict, the sewer may need to be relocated to the eastbound #1 (i.e., left-most) lane of Geary Boulevard. Construction would occur between 11th and 14th streets across all of Park Presidio Boulevard.
- **Fillmore Street:** Filling the Fillmore Street underpass would require removing part of the retaining walls, relocating existing utilities, and decommissioning an existing below-grade pump station, including removal of a portion of its structure.

### 2.2.6 | Detailed Discussion of Features for Alternative 3-Consolidated: Center-Lane BRT with Dual Medians and Consolidated Bus Service

Alternative 3-Consolidated would create a bus-only lane configuration generally identical to Alternative 3, but would have different transit operations. Key features are summarized in the subsections below. Improvements and features common to all build alternatives are not listed in this section and instead are discussed in Section 2.2.3. Figure 2-14 depicts Alternative 3-Consolidated in detail.

Figure 2-14 Alternative 3-Consolidated



**LEGEND:**

- Bus/BRT Route (same as existing)
- Proposed Bus-Only Lane
- Proposed BRT/Express Stop
- Proposed BRT Stop
- Removed Existing Stop
- Transitions between side-running and center running

**Pedestrian Crossing Bulbs**

- Previously included in Draft EIS/EIR

(not to scale)

Source: SFCTA, 2017

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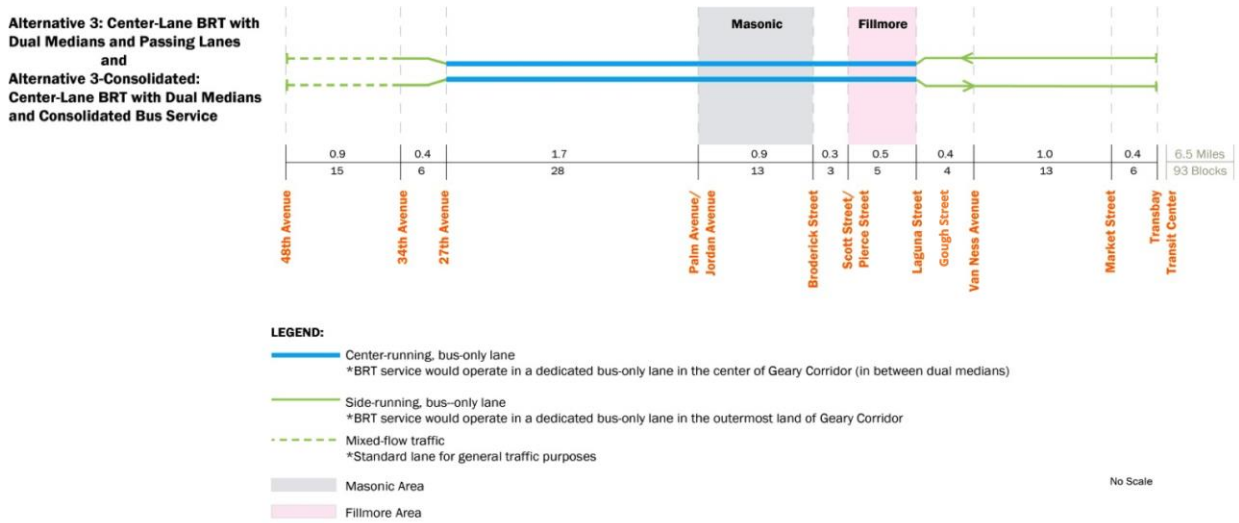
### 2.2.6.1 | ALTERNATIVE 3-CONSOLIDATED TRANSIT IMPROVEMENTS AND OPERATIONS

- **Bus-Only Lanes:** Table 2-7 summarizes where Alternative 3-Consolidated would implement bus-only lanes. Implementation would be the same as in Alternative 3; however, Alternative 3-Consolidated would not include bus bays at local stops for BRT buses to pass stopped local buses, which would provide space to retain existing on-street parking.
- **Bus Operations:** Alternative 3-Consolidated would consolidate existing 38 Local and 38 Rapid lines into one BRT line, which would operate as visually summarized in Figure 2-15. The buses would utilize the bus-only lanes similar to Alternative 3. However, all buses would stop at the same stops – no local-only stops – which would eliminate the need for bus passing. This alternative would also provide the 38X service. BRT service would operate 24 hours per day with more frequent headways during peak periods than during off-peak periods. Some BRT buses would short-turn, providing more frequent service in the highest-demand portions of the corridor, while others would travel the full corridor length. The short-turn and full-length services would both operate at four-minute headways in the morning peak period, providing combined headways of 2 minutes east of 25<sup>th</sup> Avenue. In the evening peak period, full-length buses would operate at 4.5-minute headways, with the short-turn buses operating every four minutes, providing combined headways of approximately 2.1 minutes east of 25<sup>th</sup> Avenue. The 38X would operate weekdays every 4.5 minutes inbound in the morning peak and outbound every 4.5 minutes in the evening peak.
- **Stations and Stop Locations:** Please refer to Tables 2-2 through 2-4 for detail on proposed station types and stop locations. Alternative 3-Consolidated would largely replicate Alternative 3’s station types and locations, with some exceptions:
  - **Market Street to Gough Street:** Several local-only stops proposed as part of Alternative 3 would be upgraded to BRT stops under Alternative 3-Consolidated.
  - **Gough Street to 27th Avenue:** This alternative would remove several local stops that would be included as part of Alternative 3; the remaining stops would be combined BRT and local stops.
  - **27th Avenue to 34th Avenue:** Same as Gough to 27th, except that new BRT stops would be at curbside locations here, consistent with proposed side-running bus-only lanes through this area.
  - **34th Avenue to 48th Avenue:** Same as proposed for Alternative 2, this area would retain existing curbside stops.

**Table 2-7 Alternative 3-Consolidated Bus-Only Lane Configuration**

SEGMENT	SEGMENT LENGTH	BUS-ONLY LANE CONFIGURATION
Transbay Transit Center to Gough Street	1.5 miles   21 blocks	Side-running (within existing bus-only lanes)
Gough Street to 27th Avenue	3.5 miles   51 blocks	Side-running (Gough Street to Laguna Street; 2 blocks) Center-running (Laguna Street to 27th Avenue; 49 blocks)
27th Avenue to 34th Avenue	0.4 miles   6 blocks	Side-running
34th Avenue to 48th Avenue	0.8 miles   15 blocks	None

**Figure 2-15 Alternative 3-Consolidated Schematic Diagram**



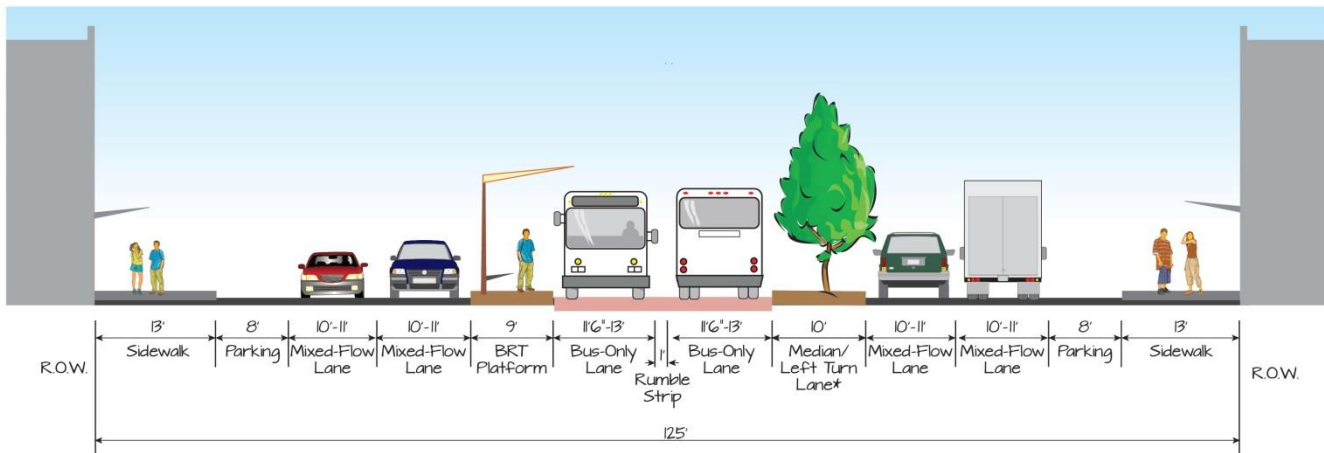
Source: Jacobs, 2014. Figure has been updated since Draft EIS/EIR with clarified labeling.

**2.2.6.2 | ALTERNATIVE 3-CONSOLIDATED ROADWAY AND MULTIMODAL IMPROVEMENTS**

- Mixed-Flow Travel Lanes and On-Street Parking Changes:** Figure 2-16 depicts a typical cross section of Alternative 3-Consolidated in the portion of the Geary corridor west of Gough Street. The street configuration for this alternative is similar to that for Alternative 3, but with no need for bus passing lanes at local stops, there would generally be sufficient space to include parking lanes. At Fillmore Street and Masonic Avenue, this alternative would provide the same treatments as in Alternative 3.



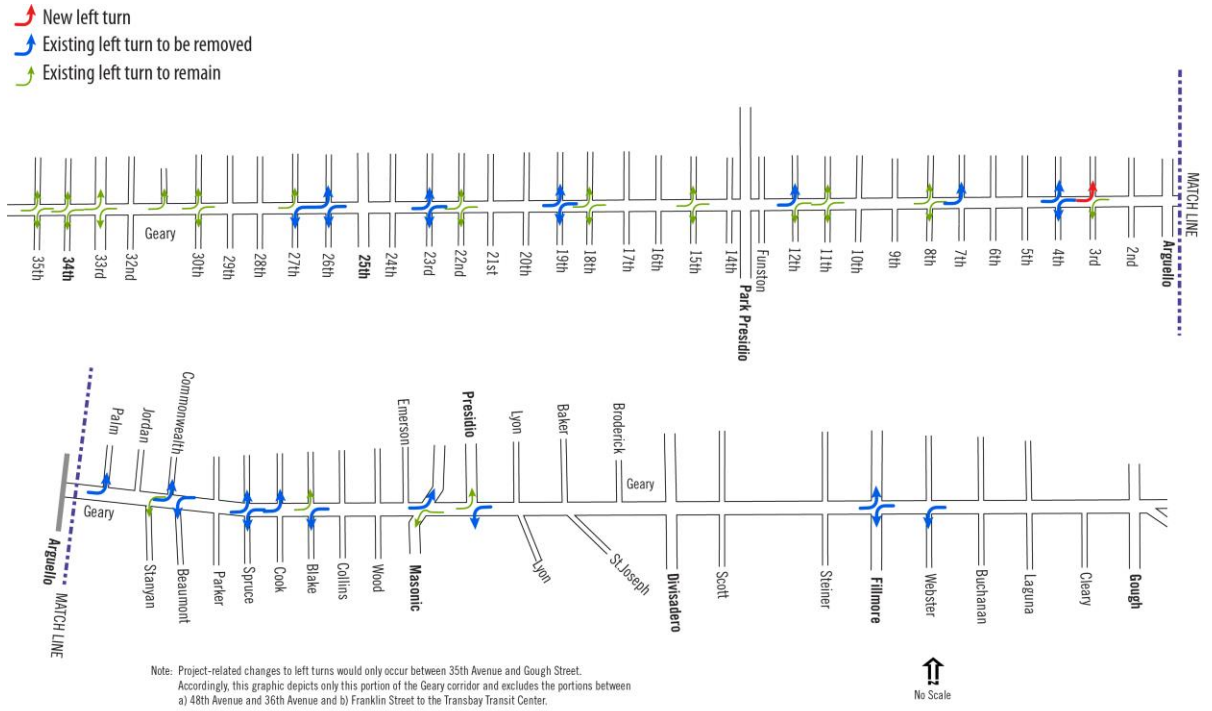
**Figure 2-16 Proposed Cross-Section of Alternative 3-Consolidated**



Source: Jacobs, 2014

- **Median Removal; Tree Replacement:** Same as proposed for Alternative 3.
- **On-Street Parking:** Between 34th Avenue and Market Street, proposed streetscape modifications included as part of Alternative 3-Consolidated would require conversion of existing on-street parking spaces to non-parking uses. Of an existing approximately 1,680 on-street parking spaces between 34th Avenue and Market Street, Alternative 3-Consolidated would result in the removal of about 210 on-street parking spaces.
- **Left Turns and Traffic Signal Modifications:** As shown in Figure 2-17, some existing left turns for mixed-flow traffic would be eliminated to provide safer and more efficient operations by reducing conflicts with left-turning vehicles. Where new left-turn lanes are created, traffic signals would be programmed so that these turns would have protected signal phases (i.e., left-turn arrows) to improve safety for motorists as well as pedestrians crossing side streets. All left turns in the portion of the corridor with center-running bus-only lanes would be converted to protected left-turn arrows.
- **Major Underground Utility Work:** Same as proposed for Alternative 3.

**Figure 2-17 Proposed Left-Turn Locations for Alternative 3-Consolidated**



Source: Jacobs, 2014

Note: This figure has been revised to reflect changes to permitted/protected left-turn conditions at Third and Seventh avenues since publication of the Draft EIS/EIR.

Source: SFMTA, 2017

### 2.2.7 | Detailed Discussion of Features for the Hybrid Alternative/LPA

The Hybrid Alternative/LPA combines various attributes of Alternatives 2 and 3-Consolidated

The Hybrid Alternative/LPA initially resulted from a robust alternatives evaluation process that preceded the Draft EIS/EIR. This process is documented in Chapter 10 (Initial Development and Screening of Alternatives). The Hybrid Alternative/LPA combines various attributes of Alternatives 2 and 3-Consolidated in different segments throughout the corridor to produce a build alternative that meets the project’s purpose and need, minimizes environmental impacts, and is customized for key segments of the diverse study corridor. The intent of the Hybrid Alternative/LPA is to provide the bus lane configurations best suited to each segment’s constraints and opportunities. As described in Chapter 10, the Hybrid Alternative was initially derived through a robust evaluation of several metrics, including:

- **Transit Performance:** Vehicle travel time; total travel time including walking and waiting times; reliability, and ridership; passenger experience;
- **System Performance:** Average person-delay for both transit users and car drivers;
- **Environmental Effects:** Anticipated parking opportunities and tree and landscaping provided; pedestrian safety and access to bus stops;
- **Cost:** Construction cost estimates, and operations and maintenance cost estimates; and
- **Construction Impacts:** Access to businesses during construction.

The project’s Citizens Advisory Committee (CAC) and Technical Advisory Committee (TAC) reviewed the analysis process for the Hybrid Alternative, and it was presented at open houses and stakeholder meetings with local agencies, merchant associations and businesses, community groups, and advocacy organizations.

Largely in response to public comments, a total of six minor modifications have been made to the Hybrid Alternative, including design changes that enhance safety and address community concerns.

Given its selection, SFMTA advanced construction phasing planning for the Hybrid Alternative/LPA. Section 2.2.7.5.7 details proposed phasing activities. The section below describes the improvements associated with the Hybrid Alternative/LPA, and Figure 2-18 depicts the Hybrid Alternative/LPA in detail.

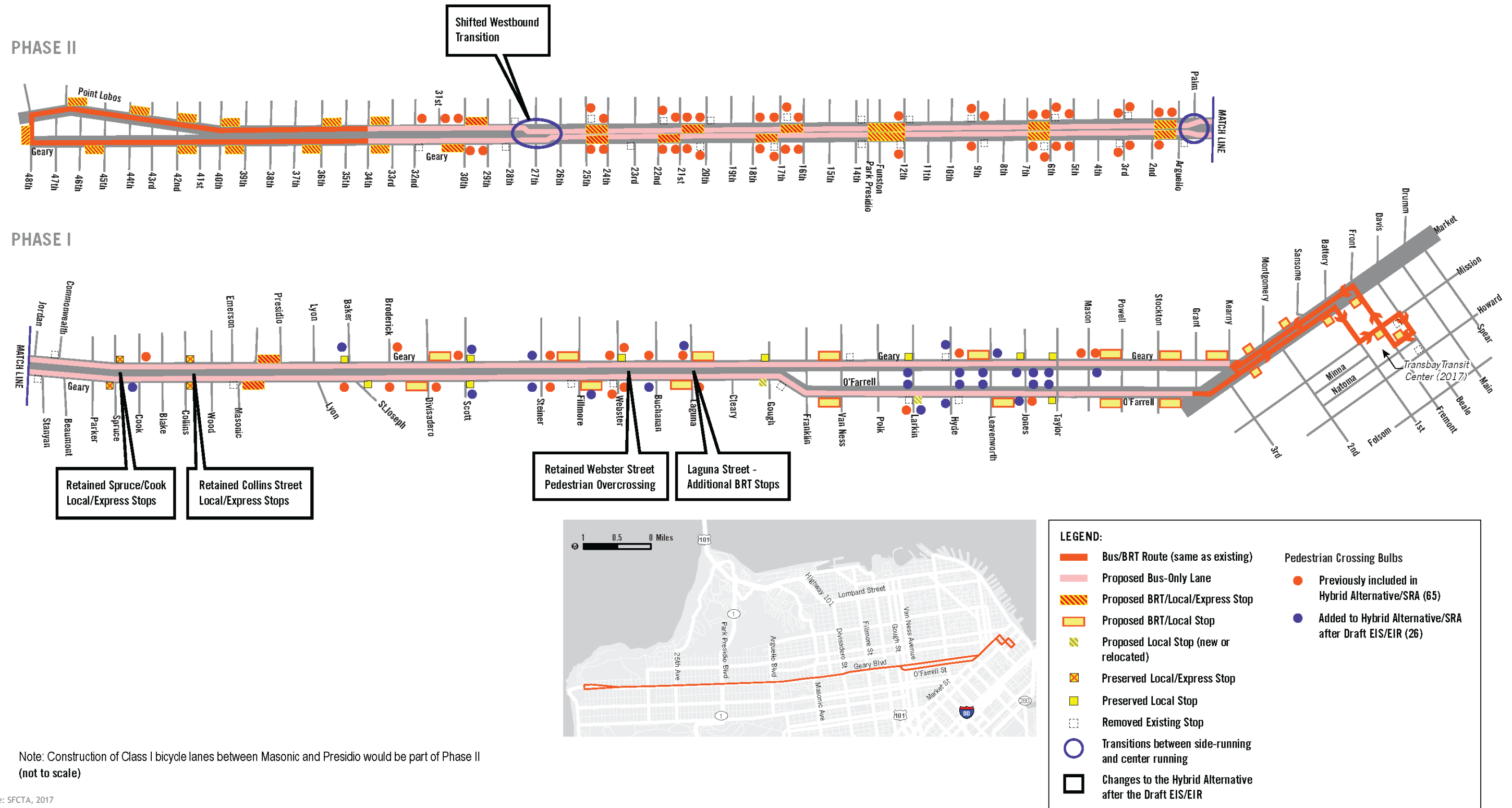
**2.2.7.1 | INCORPORATION OF NO BUILD ALTERNATIVE PROJECT FEATURES AND OPERATIONAL CHANGES**

The Hybrid Alternative/LPA, like all other build alternatives, assumes the implementation of the following service and operational changes in the Geary corridor and elsewhere in the City, all of which were described above as part of the No Build Alternative. The Hybrid Alternative/LPA would provide additional improvements beyond what is assumed as part of the No Build Alternative. For example, the Hybrid Alternative/LPA would include installation of fiber-based TSP along the Geary corridor, whereas the No Build Alternative assumes installation of wireless TSP along the Geary corridor and elsewhere in the City.

- Bus service improvements consistent with the TEP/Muni Forward in the Geary corridor and elsewhere throughout the City.
- Installation of new traffic signals at several currently unsignalized intersections in the Geary corridor (including Presidio Avenue, Cook Street, and Beaumont/Commonwealth, Palm, 22nd, and 26th avenues).
- Replacement of traffic signal infrastructure at various locations throughout the Geary corridor.
- Installation of pedestrian countdown signals so that by 2020, all signalized intersections along the Geary corridor will include these safety features.

Installation of 14 pedestrian crossing bulbs and curb ramps at various locations along the Geary corridor. The Hybrid Alternative/LPA would also install 77 additional bulbs for a total of 91 pedestrian crossing bulbs, as described in Section 2.2.7.6.3.

Figure 2-18 Hybrid Alternative/Locally Preferred Alternative



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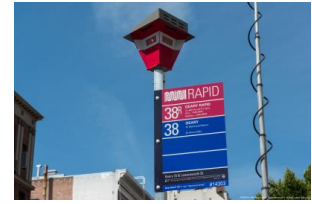
**2.2.7.2 | HYBRID ALTERNATIVE/LPA - FEATURES COMMON TO ALL BUILD ALTERNATIVES**

As discussed in Section 2.2.3, several features are common to all build alternatives. This section provides greater detail about the Hybrid Alternative/LPA’s incorporation of these features:

- **Bus-Only Lanes; Higher-Frequency Bus Service; Changes to Mixed-Flow Travel Lanes, including Permissible Left Turns and Parking and Loading Spaces; Pavement Rehabilitation; Pedestrian Improvements; Bus Bulbs:** Section 2.2.7.3 provides details.
- **TSP:** The Hybrid Alternative/LPA would include the installation of fiber-based TSP on all signalized intersections between 25th Avenue and Gough Street. This type of TSP technology differs from the wireless TSP that would be installed under the No Build Alternative in terms of long-term maintenance and operating costs, but is similar in terms of ability to improve performance at intersections.
- **Additional Vehicles with Low-Floor Design:** The Hybrid Alternative/LPA would deliver BRT service via vehicles similar to the new low-floor buses which have recently been put into service. The Hybrid Alternative/LPA would increase frequency of the headways assumed for the No Build Alternative; thus the Hybrid Alternative/LPA would require additional vehicles above what would be required under the No Build Alternative.
- **New BRT Stations:** Tables 2-2 through 2-4 include details on proposed station locations and types under the Hybrid Alternative/LPA.
- **New Signalized Crossings at Buchanan and Broderick Streets:** The Hybrid Alternative/LPA would implement new, signalized pedestrian crossings at Buchanan and Broderick streets.
- **Bicycle Lane Between Masonic and Presidio Avenues:** The Hybrid Alternative/LPA would include bicycle lanes on the one block of Geary Boulevard between Masonic and Presidio avenues, providing a critical linkage in the City’s bicycle network.

**2.2.7.3 | HYBRID ALTERNATIVE/LPA TRANSIT IMPROVEMENTS AND OPERATIONS**

- **Bus-Only Lanes:** Table 2-8 and Figure 2-19 below summarize where bus-only lanes would be implemented under the Hybrid Alternative/LPA.
  - **Market Street to Gough Street:** Same as proposed for Alternative 2, the Hybrid Alternative/LPA would retain the existing bus-only lanes on Geary Street in the westbound direction and O’Farrell Street in the eastbound direction.



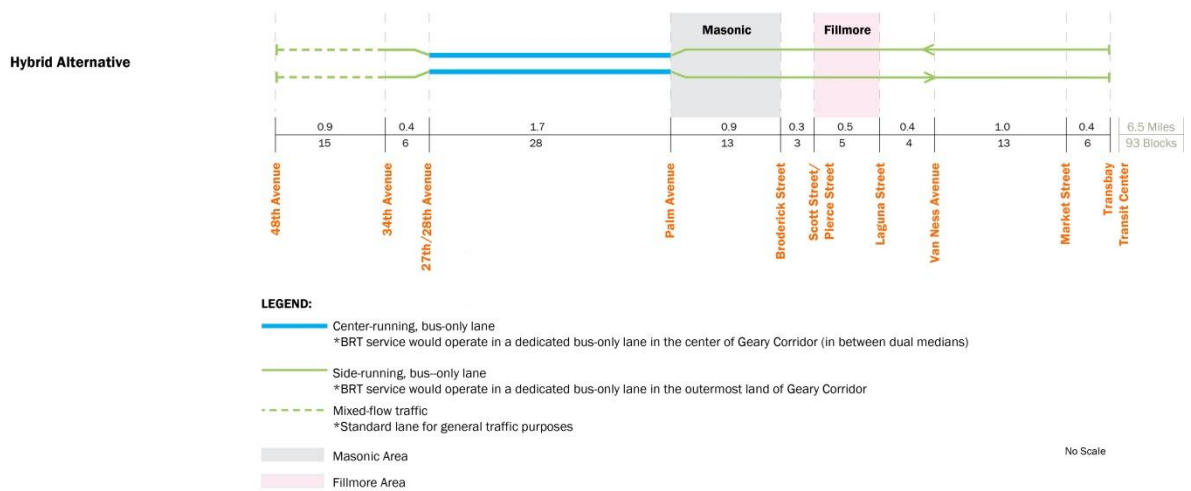
New Muni Rapid Network flag signs on transit poles with solar lanterns (above) and bike racks (below)



**Table 2-8 Hybrid Alternative/LPA Bus-Only Lane Configuration**

SEGMENT	SEGMENT LENGTH	BUS-ONLY LANE CONFIGURATION
Transbay Transit Center to Gough Street	1.5 miles   21 blocks	Side-running (within existing bus-only lanes)
Gough Street to 27th Avenue (eastbound)	3.45 miles   51 blocks	Side-running (Gough Street to Palm Avenue; 23 blocks)
Gough Street to 28th Avenue (westbound)		Center-running (Palm Avenue to 27th Avenue; 28 blocks)
27th Avenue to 34th Avenue (eastbound)	0.4 miles   6 blocks	Side-running
28th Avenue to 34th Avenue (westbound)		Side-running
34th Avenue to 48th Avenue	0.8 miles   15 blocks	None

**Figure 2-19 Hybrid Alternative/LPA Schematic Diagram**



Source: Jacobs, 2014. Figure has been updated since Draft EIS/EIR with clarified labeling.

- **Gough Street to Palm Avenue:** Same as proposed for Alternative 2, the Hybrid Alternative/LPA would create a colorized bus-only lane in each direction of Geary Boulevard, designated in the rightmost travel lane next to the existing curbside parking lane.
- **Palm Avenue to 27th and 28th Avenues:** The Hybrid Alternative/LPA would create new center-running bus-only lanes. In the eastbound direction, center-running bus-only lanes would be between Palm and 27th avenues; in the westbound direction, center-running bus-only lanes would be between Palm and 28th avenues. As with Alternative 3-Consolidated, no bus passing lanes would be provided.



- **27th and 28th Avenues to 34th Avenue:** The Hybrid Alternative/LPA would create side-running bus-only lanes from 27th Avenue to 34th Avenue in the eastbound direction and from 28th Avenue to 34th Avenue in the westbound direction.
- **34th Avenue to 48th Avenue:** None, same as proposed for all build alternatives; BRT buses would operate in mixed-flow lanes.
- **Transition Areas:** The Hybrid Alternative/LPA would create transition areas to shift the buses between the side-running and center-running bus-only lanes. There would be three transition areas: at Palm Avenue, at 27th Avenue (eastbound only), and at 28th Avenue (westbound only).
- **Bus operations:** BRT, local, and 38X bus service under the Hybrid Alternative/LPA would generally be similar to Alternative 2, as follows:
  - In locations with side-running bus-only lanes, there would be two tiers of service consisting of a Local line and a BRT line. In these locations, the Local bus line would serve all Local and BRT stops, while the BRT line would serve only the BRT stops.
  - In locations with center-running bus-only lanes – Palm Avenue to 27th and 28th avenues – the local and BRT lines would serve all stops, with fewer stops than existing. This operation eliminates the need for bus passing lanes.
  - Like Alternative 2, the Local service would operate at headways of 5.5 minutes during the morning peak period and at six-minute headways during the evening peak period. BRT short line and full-length services would each operate at 5.5-minute headways in both peak periods (resulting in effective headways of about 2.8 minutes for locations east of 25th Avenue). The 38X would operate every 5.5 minutes inbound in the morning peak and outbound every six minutes in the evening peak. Local service would operate 24 hours per day.
- **Stations and Stop Locations:** The Hybrid Alternative/LPA would have a combination of stops located on bus bulbs adjacent to the sidewalk where there are side-running bus-only lanes and stops located in the median where there are center-running bus-only lanes. Tables 2-2 through 2-4 include details about proposed station types and locations.

#### 2.2.7.4 | HYBRID ALTERNATIVE/LPA ROADWAY AND MULTIMODAL IMPROVEMENTS

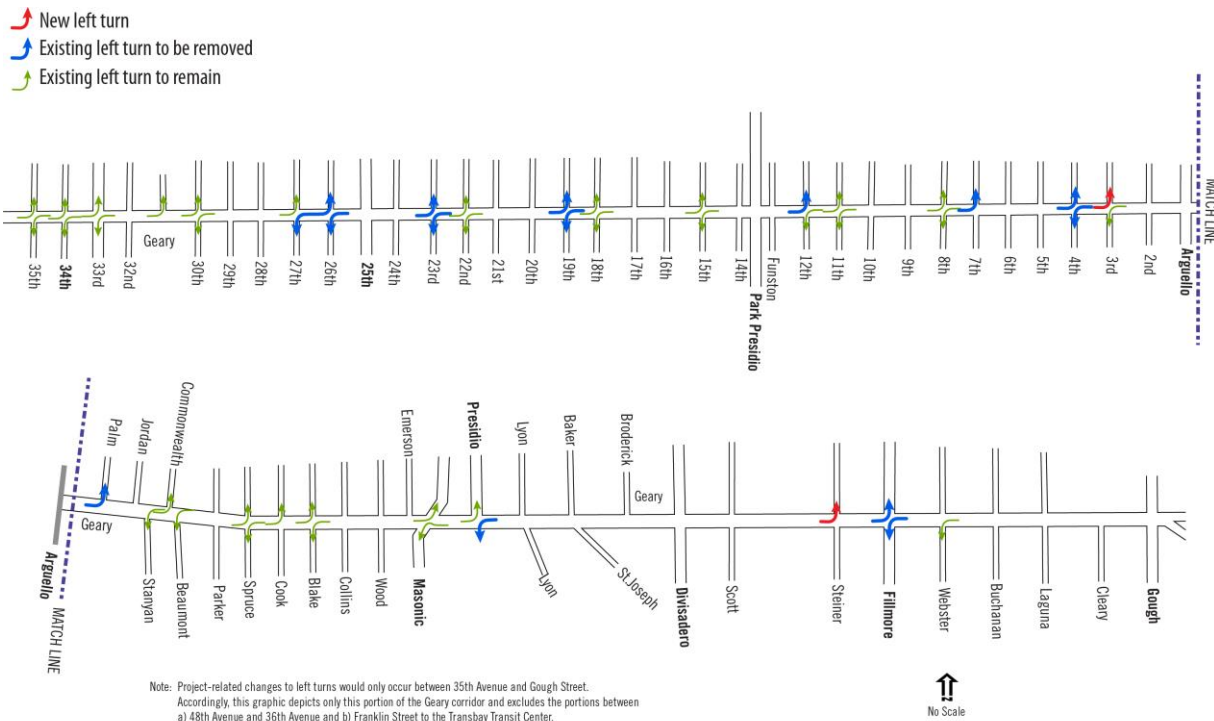
- **Mixed-Flow Travel Lanes and On-Street Parking Changes:** The street design would generally provide, in each direction, two mixed-flow travel lanes, a new bus-only lane, and a parking lane. Details by segment resemble other build alternatives, as described below:
  - **Market Street to Gough Street:** Same as proposed for all build alternatives – minor bus and mixed-flow travel lane shifts and signal operations at Geary and Stockton streets, Geary and Powell streets, O’Farrell and Powell streets, and O’Farrell and Stockton streets, to move the buses out of right-turning auto traffic at these high-turning-demand locations.
  - **Gough Street to Palm Avenue, including Fillmore Street and Masonic Avenue underpasses and Side Service Roads:** Generally the same as proposed for Alternative 2 – in each direction, the Hybrid Alternative/LPA would provide a side-running bus-only lane, two mixed-flow travel lanes, and a parking lane. At Fillmore Street and Masonic Avenue, the side service roads would be reconfigured to carry one bus-only lane and one mixed-flow travel lane where feasible.
  - **Palm Avenue to 27th and 28th Avenues:** In each direction, the Hybrid Alternative/LPA would provide a center-running bus-only lane (between Palm and 27th avenues for the eastbound lane, and Palm and 28th avenues for the westbound lane), two mixed-flow travel lanes, and a parking lane.
  - **27th and 28th Avenues to 34th Avenue:** The Hybrid Alternative/LPA would provide a side-running bus-only lane (between 27th and 34th avenues for the eastbound lane, and 28th and 34th avenues for the westbound lane), two mixed-flow travel lanes, and a parking lane.
  - **34th Avenue to 48th Avenue:** As for all build alternatives, no changes to mixed-flow travel lanes are proposed.
  - **On-Street Parking:** Between 34th Avenue and Market Street, proposed streetscape modifications included as part of the Hybrid Alternative/LPA would require conversion of existing on-street parking spaces to non-parking uses. Of an existing approximately 1,680 on-street parking spaces between 34th Avenue and Market Street, the Hybrid Alternative/LPA would result in the removal of about 410 on-street parking spaces.

- Left turns and traffic signal modifications:** As Figure 2-20 shows, some existing left turns for mixed-flow traffic would be eliminated to improve safe and efficient operations by reducing conflicts with left-turning vehicles.

Traffic signals would include protected signal phases where new left-turn lanes are created to improve motorist and pedestrian safety. All left turns in the portion of the corridor with center-running bus-only lanes would be converted to protected left turns.

- Pedestrian Crossing Improvements at Webster, Steiner, and Buchanan Streets:** In association with the reduced Geary corridor travel lanes and the removal of the pedestrian bridge at Steiner Street, the Hybrid Alternative/LPA would implement at-grade pedestrian crossings at those streets, with new pedestrian refuges and pedestrian crossing bulbs to facilitate the crossing. The Hybrid Alternative/LPA would adjust signal timing to provide sufficient time to cross Geary corridor at Webster and Steiner streets. It would also include a new signalized pedestrian crossing at Buchanan Street.
- Pedestrian Crossing Improvements at Broderick Street:** The Hybrid Alternative/LPA would install a new signalized pedestrian crossing and bulbs at Broderick Street, a high-demand location associated with the Kaiser Permanente medical facilities there.

**Figure 2-20 Proposed Left-Turn Locations for the Hybrid Alternative/LPA**



Note: This figure has been revised to reflect changes to permitted/protected left-turn conditions at 3rd and 7th avenues since publication of the Draft EIS/EIR  
 Source: SFMTA, 2017

Similar to Alternatives 3 and 3-Consolidated, the Hybrid Alternative/LPA would relocate existing sewer lines in the median between 14th and 4th avenues and between 12th and Funston avenues

- **Median Removal; Tree Replacement:** Same as proposed for Alternative 3 and 3-Consolidated, where there are center-running bus-only lanes (Palm Avenue to 27th Avenue), the Hybrid Alternative/LPA would remove the existing medians and plantings to construct the bus-only lane and its side platforms. Landscaping with tree plantings would be placed in the new dual medians, including planting of a number of new trees equal to or greater than those that would be removed during construction.
- **Major Underground Utility Work:**
  - **Sewer Reconstruction or Relocation:** Coordination with the SFPUC has identified two areas where existing sewer lines would need to be reconstructed or relocated as a result of the construction of BRT facilities:
    - **Geary Boulevard median area between Fourth and 14th avenues:** This sewer would be reconstructed in place with the same depth and capacity as the existing facility. Excavation for this work would reach depths of about 16 feet.
    - **Geary Boulevard between Funston and 12th avenues:** The sewer along the side of the street aligns with an area designated for a proposed bus stop. Locating a station atop a sewer would limit the ability to access and maintain the sewer without disrupting the proposed bus stop. To address this conflict, the sewer may need to be relocated to the eastbound leftmost lane of Geary corridor. Construction would occur between 11th and 14th avenues— across all of Park Presidio Boulevard.

#### 2.2.7.5 | SUMMARY OF CHANGES TO THE HYBRID ALTERNATIVE SINCE THE DRAFT EIS/EIR

As discussed in Section 2.1.1, a total of six minor modifications have been made to the Hybrid Alternative, including design changes that enhance safety and address community concerns.

##### 2.2.7.5.1 | RETENTION OF THE WEBSTER STREET PEDESTRIAN BRIDGE

In the Draft EIS/EIR, the Hybrid Alternative included demolition of the pedestrian bridge at Webster Street to allow for uninterrupted side-running bus-only lanes through this intersection with the Geary corridor. The Draft EIS/EIR noted that the existing pedestrian bridge did not conform to ADA requirements because of the steep grade of its access ramps. The Draft EIS/EIR proposed new ground-level crosswalks on the west and east sides of the intersection.

Comments on the Draft EIS/EIR from agencies, organizations, and individuals expressed substantial concern about removing this bridge. Many commenters questioned the safety of the proposed ground-level crossings, particularly for groups of children attending nearby schools. Appendix L (Responses to Comments) includes more information.

After publishing the Draft EIS/EIR, SFCTA and SFMTA met with stakeholder groups who submitted comments on this particular issue. In studying the issue more closely, SFCTA and SFMTA found that retaining the Webster Street bridge would impact bus service by just one second. This would have a negligible effect on transit and auto travel times throughout the corridor.

Therefore, the Hybrid Alternative/LPA would retain the Webster Street pedestrian bridge, and it also includes the following two pedestrian surface crossings on either side of the intersection:

- A straight crossing on the west side of the intersection incorporating pedestrian refuge areas; and
- A staggered crossing on the east side that would improve pedestrian sight distance at the westbound frontage road, where pedestrians would cross in front of existing bridge piers so they would not be obscured when crossing. Signal timing design would allow pedestrians to cross in one cycle, with multiple wide medians providing pedestrian refuge areas across the Geary corridor. A pedestrian barrier would be installed on the center median of the staggered crossing to guide pedestrians to the second crossing.

In the westbound direction, the Webster Street approach would not have a dedicated bus lane. Buses could either share the outside lane with right-turning vehicles, or share the through lane with frontage road traffic. A westbound side-running bus-only lane would begin after crossing the Geary Boulevard/Webster Street intersection.

#### **2.2.7.5.2 | REMOVAL OF PROPOSED BRT STOPS BETWEEN SPRUCE AND COOK STREETS**

The Hybrid Alternative in the Draft EIS/EIR proposed to add BRT stops on the north and south sides of the block of Geary Boulevard between Spruce and Cook streets (see Tables 2-3 and 2-4). Several commenters opposed the proposed BRT stops, citing concerns over the loss of the on-street parking spaces on this block. Numerous commenters cited such parking loss as detrimental to businesses.

After publishing the Draft EIS/EIR, SFCTA and SFMTA consulted extensively with stakeholders in this area about potential project changes. The local agencies ultimately proposed to modify the Hybrid Alternative to drop the two BRT stops proposed for this area. Instead, the Hybrid Alternative would incorporate the existing bus stops (westbound, on the near side of Spruce Street; eastbound, also on the near side of Spruce Street) as local and express stops. These two stops would retain their existing physical configurations under the Hybrid Alternative/LPA and retain existing local and express services.

### 2.2.7.5.3 | ADDITION OF MORE PEDESTRIAN CROSSING AND SAFETY IMPROVEMENTS

In the Draft EIS/EIR, the Hybrid Alternative proposed a total of 65 new pedestrian crossing bulbs along the Geary corridor. This total included 14 that were associated with the No Build Alternative, plus 51 more associated with the Hybrid Alternative, as well as all other build alternatives. These features addressed a key aspect of the established need for the project, namely improving unfavorable pedestrian conditions in the Geary corridor.

As noted in Section 2.1.1, a combination of an agency initiative focused on improving pedestrian safety (Vision Zero) along with responses to comments on the Draft EIS/EIR about pedestrian safety, led SFCTA and SFMTA to add the following several enhancements to the Hybrid Alternative: 26 additional pedestrian crossing bulbs (for a total of 91), a painted safety zone at Taylor and O'Farrell streets, and implementation of "daylighting" at strategic intersection locations along the Geary corridor.<sup>16</sup> The additional pedestrian crossing bulbs were added for safer travel to transit stops and to address areas where pedestrian injury rates are high.

The complete list of additional pedestrian improvements added to the Hybrid Alternative is as follows.

- **Pedestrian Crossing Bulbs:** Twenty-six additional pedestrian crossing bulbs as described below.
  - » **Mason Street/Geary Intersection:** A pedestrian crossing bulb along Mason Street at the southeast corner.
  - » **Taylor Street/Geary Intersection:** A pedestrian crossing bulb along Taylor Street at the southwest corner.
  - » **Jones Street/Geary Intersection:** Pedestrian crossing bulbs along Jones Street at the southwest and southeast corners.
  - » **Jones Street/O'Farrell Intersection:** Pedestrian crossing bulbs along Jones Street at the northeast and southwest corners.
  - » **Leavenworth Street/Geary Intersection:** Pedestrian crossing bulbs along Leavenworth Street at the northeast and southwest corners.
  - » **Leavenworth Street/O'Farrell Street Intersection:** A pedestrian crossing bulb along Leavenworth Street at the northwest corner.
  - » **Hyde Street/Geary Intersection:** Pedestrian crossing bulbs along Hyde Street and Geary at the northwest corner, and a pedestrian crossing bulb along Hyde Street at the southeast corner.
  - » **Hyde Street/O'Farrell Street Intersection:** Pedestrian crossing bulbs along Hyde Street at the northeast and southwest corners.

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<sup>16</sup> "Daylighting" is achieved by removing parking spaces adjacent to curbs around an intersection, increasing visibility for pedestrians and drivers and minimizing conflicts.



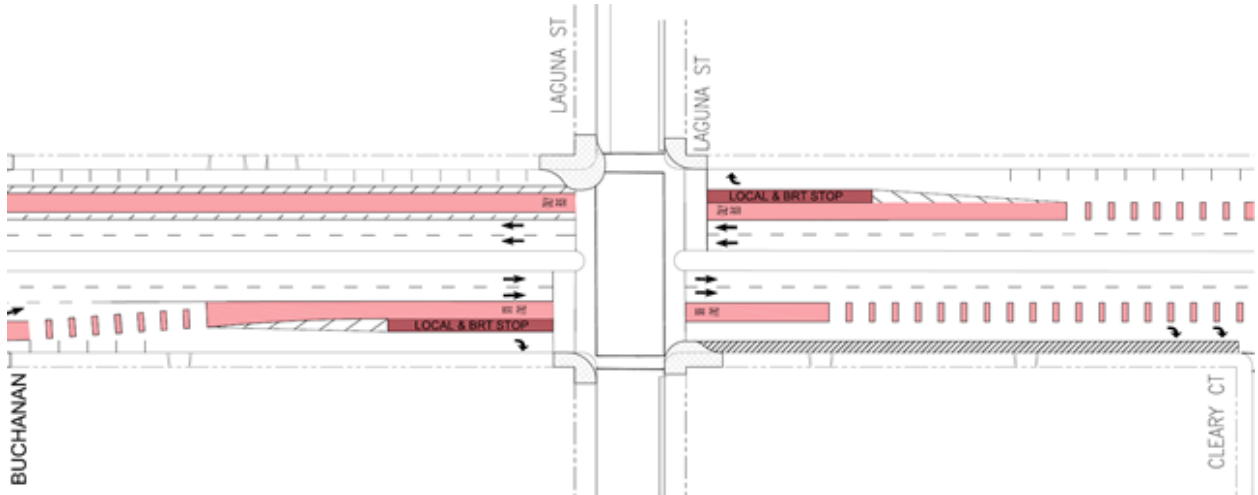
- » **Larkin Street/Geary Intersection:** A pedestrian crossing bulb along Larkin Street at the southwest corner.
- » **Larkin Street/O'Farrell Street Intersection:** Pedestrian crossing bulbs along Larkin Street at the northwest and southeast corners.
- » **Laguna Street/Geary Intersection:** A pedestrian crossing bulb along Laguna Street at the northwest corner.
- » **Buchanan Street/Geary Intersection:** A midblock pedestrian crossing bulb along the south side.
- » **Fillmore Street/Geary Intersection:** A pedestrian crossing bulb along Fillmore Street at the southeast corner.
- » **Steiner Street/Geary Intersection:** Pedestrian crossing bulbs along Steiner Street at the northwest and southwest corners.
- » **Scott Street/Geary Intersection:** Pedestrian crossing bulbs along Scott Street at the northeast and southeast corners.
- » **Baker Street/Geary Intersection:** A pedestrian crossing bulb along Baker Street at the northwest corner.
- » **Cook Street/Geary Intersection:** A pedestrian crossing bulb along Geary at the southwest corner.
- **Painted Safety Zone**
  - » **Taylor Street/O'Farrell Street Intersection:** A painted safety zone along Taylor Street at the northwest corner.
- **Daylighting**
  - » All approaches on the Geary corridor would have advanced limit lines painted and between 10 feet to 30 feet of daylighting to increase visibility of pedestrians by drivers.
  - » All side streets intersecting with the Geary corridor within the project site would have advanced limit lines painted and 5 feet to 20 feet of daylighting to increase visibility of pedestrians by drivers.

#### 2.2.7.5.4 | ADDITION OF BRT STOPS AT LAGUNA STREET

The Hybrid Alternative in the Draft EIS/EIR proposed to designate the existing curbside bus stops at Laguna Street as being served only by local buses. The change at this location would instead designate Laguna Street as a stop on the BRT line in the form of combined local/BRT stops in each direction located on new transit islands, as shown in Figure 2-21.<sup>17</sup> In the revised design, passengers would board from transit islands that would separate right-turning vehicles from the bus lane to minimize transit delay and improve traffic safety. SFCTA and SFMTA proposed this change in response to numerous comments on the Draft EIS/EIR from area residents (see Appendix L, Master Response 1b).

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<sup>17</sup> San Francisco Municipal Transportation Agency and San Francisco County Transportation Authority. *Analysis of Geary Corridor Stop Options at Laguna Street*. September 14, 2016. This memorandum is available for review at the San Francisco County Transportation Authority, 1455 Market St., 22nd Floor, San Francisco, CA 94103.

**Figure 2-21 Combined Local/BRT Bus Stop Design at Laguna Street**

Source: SFMTA and SFCTA, 2016

#### 2.2.7.5.5 | RETENTION OF EXISTING LOCAL AND EXPRESS STOPS AT COLLINS STREET

The Hybrid Alternative in the Draft EIS/EIR had proposed to remove the existing local and express bus stops at Collins Street. Modifications to the Hybrid Alternative/LPA would retain the existing bus stops in their curbside configurations. This change was made in response to comments from the community (see Appendix L, Master Response 1b).

#### 2.2.7.5.6 | RELOCATION OF THE WESTBOUND CENTER- TO SIDE-RUNNING BUS LANE TRANSITION

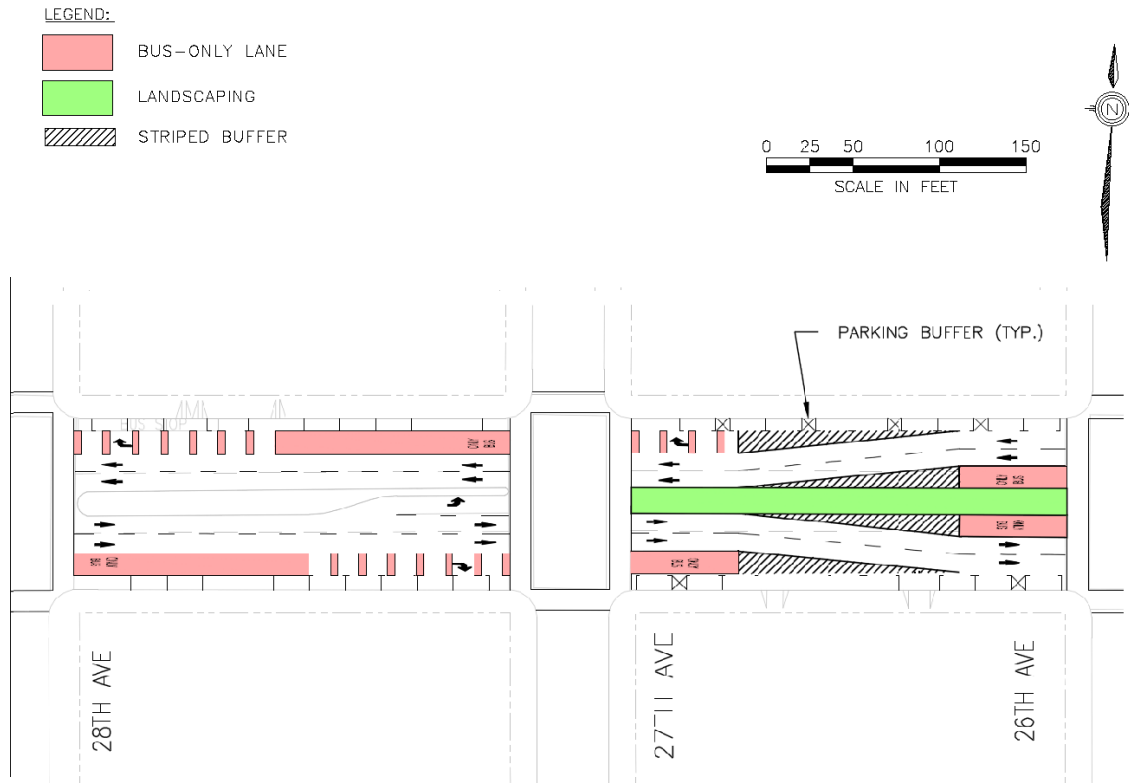
After publication of the Draft EIS/EIR, certification of the Final EIR, and selection of the LPA, SFCTA and SFMTA proposed a sixth minor change to the Hybrid Alternative regarding the transition from center- to side-running bus-only lanes in the western portion of the Geary corridor in the Outer Richmond. SFCTA approved this change in June 2017.

Figure 2-22 shows the Hybrid Alternative analyzed in the Draft EIS/EIR and Final EIR. The transition from center- to side-running bus-only lanes was placed between 26th and 27th avenues for both the eastbound and westbound bus lanes.

This transition area is on the block including Holy Virgin Cathedral (6210 Geary Boulevard), a religious and community facility.



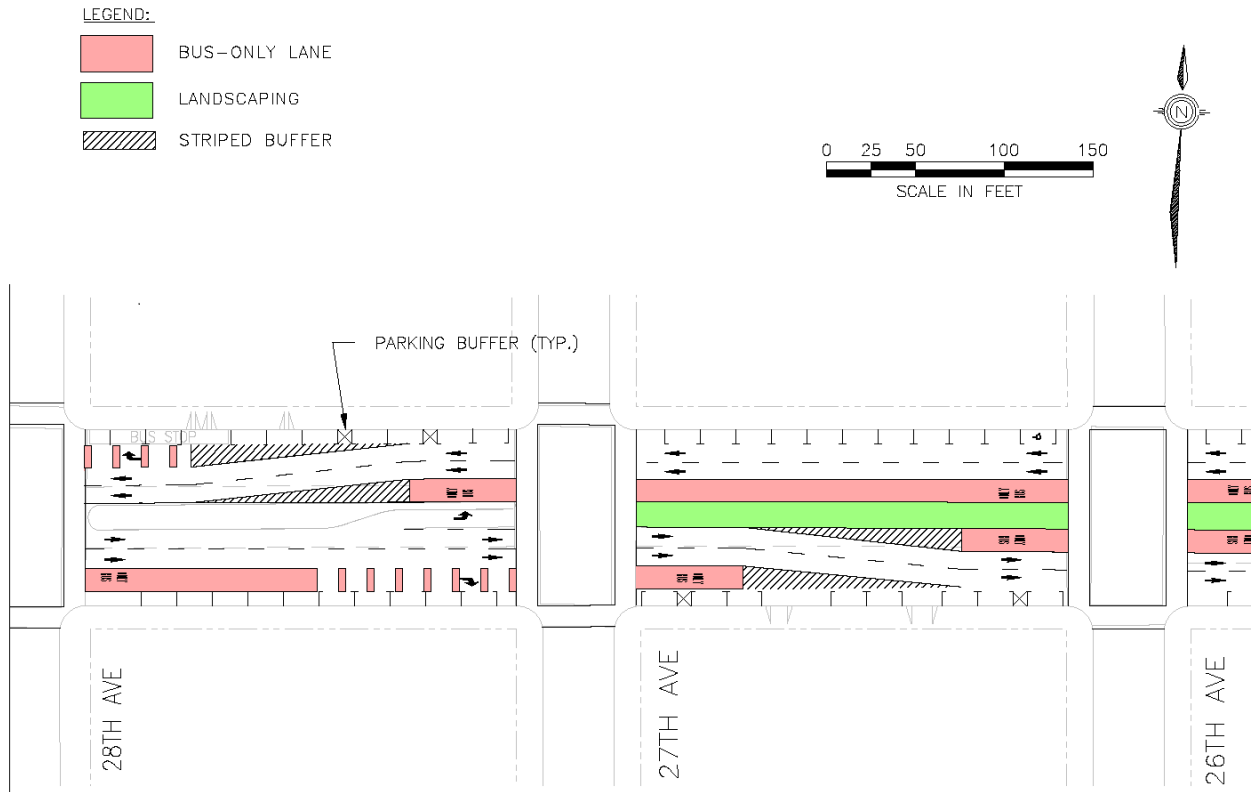
**Figure 2-22 Hybrid Alternative Bus Lane Configuration between 26th and 28th Avenues Proposed in the Draft EIS/EIR and Final EIR**



Source: SFMTA, 2017

In response to concerns from representatives of Holy Virgin Cathedral that the transition area would result in access concerns along the westbound lanes of Geary Boulevard, including on-street parking and loading areas, SFCTA and SFMTA modified the transition as follows: The westbound transition would shift one block to the west, to the block between 27th and 28th avenues; the eastbound transition would remain between 26th and 27th avenues on the south side of Geary Boulevard, opposite Holy Virgin Cathedral. Figure 2-23 depicts this change.

**Figure 2-23 Hybrid Alternative/LPA Bus Lane Configuration Change between 26th and 28th Avenues**



Source: SFMTA, 2017

**2.2.7.5.7 | HYBRID ALTERNATIVE/LPA PROPOSED CONSTRUCTION PHASING**

Since publication of the Draft EIS/EIR, certification of the Final EIR, and SFCTA’s selection of the Hybrid Alternative as the LPA, SFCTA and SFMTA have advanced their plans for project implementation and divided the project into two primary construction phases. SFCTA addressed this refinement in a June 2017 CEQA addendum that included the following:

- **Phase I** would generally entail work east of Stanyan Street where BRT would operate in side-running bus-only lanes.
- **Phase II** would include work west of Stanyan Street, where BRT operations would be in predominantly center-running bus-only lanes.

Phase I would extend the existing side-running bus-only lanes from Downtown west to Stanyan Street. Bus stops on this segment of the Geary corridor (Stanyan Street to Market Street) would also change, in accordance with project plans.<sup>18</sup> Other improvements included in Phase I would entail traffic signal work, pedestrian improvements, and new bus bulbs between Stanyan and Market streets. Signal work would include installation of new signals, queue-jump signals, new pedestrian countdown signals, and other

<sup>18</sup> All work south of Market Street will be constructed separately, as part of the Transbay Transit Center District Plan; see Section 2.8.1.2 for further details.

general modifications. Traffic signal retiming and installation of fiber TSP would be included. New pedestrian crossing bulbs and/or medians, as well as bus bulbs, would be added at various intersections. Upon completion, all intersections between Stanyan and Market streets would have continental crosswalks, advanced limit lines, and red zone intersection daylighting for improved pedestrian visibility.

The Steiner Street pedestrian overcrossing would also be removed in Phase I and replaced with at-grade, high-visibility crosswalks and pedestrian refuges. Fiber optic conduit would be installed between Stanyan and Gough streets to make the existing corridor's TSP more reliable. Utility modifications by SFPUC and SFPW coordinated with the project are likely to include water main replacements from Stanyan Street to Market Street, and sewer replacements between Van Ness and Masonic avenues.

The bicycle facility improvements on the Geary corridor between Masonic and Presidio avenues would be one exception to the geographic limits that separate Phase I and Phase II. These improvements include reconfiguring the center median island to accommodate a new dedicated bicycle facility. Due to the longer design schedule for these improvements, they would be implemented through the contracting mechanism used to deliver the Phase II improvements west of Stanyan Street. All transit improvements in this area, including bus-only lanes, bus stop consolidation, and a queue-jump traffic signal, would still be part of Phase I.

In the planned Phase II, center-running bus-only lanes would be created from 28th Avenue to Palm Avenue in the eastbound direction and between Palm to 27th avenues in the westbound direction. In center-running areas, existing medians and plantings would be removed and replaced with bus-only lanes with new dual medians and new landscaping. Phase II would also include the installation of side-running bus-only lanes from 27th and 28th avenues to 34th Avenue.

Traffic signal modifications, pedestrian improvements, bus stop changes, and construction of bus bulbs, similar to Phase I, would occur in Phase II on the segment of the Geary corridor between 34th Avenue and Stanyan Street. Fiber optic conduit would be installed between 25th Avenue and Stanyan Street to accommodate fiber TSP. Project-related sewer relocation would occur in the area between Funston and 12th avenues. In addition, coordinated sewer replacement work would likely occur between Fourth and 14th avenues.

Construction for planned Phase I improvements construction would begin after appropriate federal project approvals are received and the project design is finalized. The preliminary and detailed design for the improvements planned in Phase II would take longer to complete. No temporal or geographic overlap (except for the bicycle facility improvements described above) is anticipated in construction between Phases I and II.

Chapter 9 (Financial Analysis) includes additional details about proposed funding by phase.

## 2.3 Evaluation of Alternatives

Although the Draft EIS/EIR identified the Hybrid Alternative as the SFCTA's and SFMTA's staff-recommended alternative, and the Hybrid Alternative was subsequently adopted as the LPA, the Draft EIS/EIR did not identify the lead agency's preferred alternative under NEPA.

This section documents the lead agency's evaluation of alternatives and identification of both an environmentally preferable alternative and a preferred alternative.

In the Council on Environmental Quality's guidance document, *40 Questions*, the response to Question 4a provides the following guidance on the nature of the preferred alternative:

*The "agency's preferred alternative" is the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The concept of the "agency's preferred alternative" is different from the "environmentally preferable alternative," although in some cases one alternative may be both.*

In considering a preferred alternative, the lead agency considered many factors including:

- The ability of project alternatives to meet the purpose and need established for the project (defined in Section 1.5).
- The economic feasibility of the project alternatives.
- Environmental effects of the project alternatives.
- Local agency decision-making subsequent to publication of the Draft EIS/EIR.

Consistent with all of the above factors, as well as input received during public outreach, SFCTA and SFMTA developed a set of evaluation criteria to identify an LPA. These criteria also serve as a basis for the lead agency to identify a preferred alternative. These criteria are listed and further discussed below.

- **Transit Performance**
  - Vehicle travel time – Bus p.m. peak travel time, local and BRT service.
  - Reliability – Difference between average and 95<sup>th</sup> percentile bus travel time.
  - Ridership – Daily boardings for all Geary corridor services.
- **System Performance**
  - Person-delay (auto and transit) – Delay per person per intersection during p.m. peak along the Geary corridor.
  - Diversions – Increase in p.m. peak hour traffic on nearby parallel streets.

- **Environmental Effects**
  - Parking opportunities – Change in number of all types of curb spaces.
  - Trees and landscaping provided – Percent of existing trees retained, and the median area available for landscaping opportunities.
- **Pedestrian Access and Safety**
  - Ease of access to bus stops – Average maximum walk to closest local bus stop, and average maximum walk to closest BRT stop.
  - Pedestrian safety improvements – Opportunity for pedestrian crossing bulbs in optimal locations, and the elimination of permissive-phase left-turn signals or conversion to protected-phase signals.
- **Rail-Readiness**
  - Ease of conversion to rail – Extent of future construction to accommodate rail service.
- **Cost**
  - Construction cost – Total construction cost.
  - Operations and maintenance costs – Annual operating cost, and annual maintenance cost.
- **Construction Impacts**
  - Access to businesses during construction – Length of construction duration.

### 2.3.1 | Transit Performance

**Vehicle travel time.** As described in Section 3.3.4.5, throughout the corridor, all build alternatives would reduce BRT bus travel times by about 15 to 35 percent in 2035 compared with Rapid bus travel time in the No Build Alternative. The Hybrid Alternative/LPA would be slightly faster than Alternative 2, although slightly slower than Alternatives 3 and 3-Consolidated.

**Reliability.** Transit reliability is measured using the difference between the average bus travel time in each alternative and the 95th percentile travel time, which for a weekday round-trip commuter would correspond roughly to the worst travel time experienced on any one commute journey over a two-week period.

As described in Section 3.3.4.8, by 2035, the build alternatives would reduce 95th percentile additional travel time for the Rapid service (associated with the No Build Alternative) by approximately 2-3 minutes. (In other words, the BRT service associated with the build alternatives would outperform the Rapid service associated with the No Build Alternative). This represents a 20-percent or better reliability improvement. Differences among build alternatives would be relatively small.

**Ridership.** As described in Section 3.3.4.2, in scenarios evaluated for opening and buildout years, the No Build Alternative would attract the lowest ridership – 77,000 daily trips in 2035. Of the build alternatives, Alternative 2 would attract the lowest ridership (92,000 daily trips in 2035). Alternative 3-Consolidated would attract the highest ridership (99,000 daily trips in 2035). Alternative 3 and the Hybrid Alternative/LPA would attract ridership levels of about 95,000 daily trips in 2035.

### 2.3.2 | System Performance

**Person-delay.** The build alternatives would reduce person-delay hours during the p.m. peak hour by 12 to 16 percent relative to the No Build Alternative. Alternative 2 would reduce person-delay by 16 percent; Alternative 3 by 12 to 16 percent; and the Hybrid Alternative/LPA by 12 percent (see Sections 3.3.4.6 and 3.3.4.7).

**Diversions.** All of the build alternatives would convert one mixed-flow travel lane in each direction to bus-only lanes. The environmental analysis considered the potential for each alternative to divert traffic that would otherwise have used the Geary corridor to nearby parallel streets as a result of implementing a build alternative. Tables 3.4-7 and 3.4-8 show how Alternatives 3 and 3-Consolidated would result in the most diverted traffic during the p.m. peak hour. The Hybrid Alternative/LPA would divert somewhat fewer vehicles than Alternatives 3 and 3-Consolidated, but more than Alternative 2. The No Build Alternative would result in negligible diversions because no lane changes are anticipated.

### 2.3.3 | Environmental Effects

**Parking opportunities.** The No Build Alternative would result in minimal changes to parking in the Geary corridor. The build alternatives would result in elimination of on-street parking spaces in at least some portions of the corridor. Alternative 2 would remove about 460 on-street parking spaces (27 percent) on the Geary corridor, or about 4 percent of the total public parking supply within one to two blocks of the corridor.

In comparison, the Hybrid Alternative/LPA would remove 24 percent of spaces (about 410 of the 1,680 on-street spaces), or about 3 percent of the total nearby public parking supply.

While Alternative 2 would result in parking losses distributed throughout the corridor, the Hybrid Alternative/LPA would minimize the number of spaces lost in the Richmond District between Arguello Boulevard and 25th Avenue, the core of a retail district with very limited off-street parking.

Alternative 3-Consolidated would have the lowest removal of parking spaces – about 210 spaces, or 13 percent, of the 1,680 on-street spaces, or 2 percent of the total nearby public parking supply owing to the proposed center-lane (with no bus passing lane) operations west of Gough Street.

Alternative 3 would result in the loss of about 430 on-street spaces (26 percent of on-street parking spaces in the corridor or about 4 percent of the

total nearby public parking supply), somewhat worse than the Hybrid Alternative/LPA (about 3 percent of the total nearby public parking supply). Alternative 3 would require removal of more parking spaces on account of its inclusion of bus passing lanes at various points along the Geary corridor west of Gough Street.

**Trees and landscaping provided.** The No Build Alternative would result in minimal changes to trees in the Geary corridor. The build alternatives would retain most of the existing trees corridor-wide, but some would need to be removed and replaced to accommodate street reconfigurations.

Alternative 2 would result in the removal and replacement of up to 156 trees, while the Hybrid Alternative/LPA would remove and replace up to 182 existing trees.

These stand in contrast to Alternatives 3 and 3-Consolidated, each of which would remove and replace more trees (253 and 268, respectively) owing to the longer length of center-lane construction (and related removal of planted medians).

The Hybrid Alternative/LPA would increase the amount of landscaped median area in the corridor from 3.1 acres to 3.5 acres, a 13 percent increase, by replacing the existing single median with two new medians between approximately Palm and 27th/28th avenues.

Alternative 2 would provide about the same amount of median area as the No Build Alternative (3.1 acres).

Alternatives 3 and 3-Consolidated would provide the greatest amount of median landscaping area (3.6 acres) due to the greatest extent of new dual median construction to accommodate center-running bus-only lanes, but would also require the most tree removal.

### 2.3.4 | Pedestrian Access and Safety

**Ease of access to stops.** The build alternatives include fewer bus stops than currently exist and would remain with the No Build Alternative. Most notably, the Hybrid Alternative/LPA would consolidate local and BRT stops between Arguello Boulevard and 34th Avenue. As a result, it would increase the average spacing between local stops from 720 feet to 1,090 feet, while the average spacing between Rapid/BRT) stops would increase from 1,540 feet to 1,740 feet. Alternatives 2 and 3 would have the greatest average spacing between BRT stops – 2,180 feet – while spacing between local stops would be 840 feet for Alternative 2, and 960 feet for Alternative 3. Alternative 3-Consolidated would have an average of 1,310 feet between BRT stops.

**Pedestrian safety improvements.** The build alternatives would include additional pedestrian safety improvements beyond those included in the No Build Alternative. Alternatives 2, 3, and 3-Consolidated would include construction of 51 additional crossing bulbs. A total of 65 new pedestrian crossing bulbs would exist in the Geary corridor, including the 51 from

these build alternatives plus the 14 crossing bulbs included in the No Build Alternative. The Hybrid Alternative/LPA would include construction of 77 additional crossing bulbs, which is 26 more than the other build alternatives. With the implementation of the Hybrid Alternative/LPA (77 crossing bulbs) and the No Build (14 crossing bulbs), a total of 91 new pedestrian crossing bulbs would be located along the Geary corridor.

### 2.3.5 | Rail-Readiness

**Rail-readiness.** None of the build alternatives would preclude the possibility of future conversion to rail, nor would the No Build Alternative preclude future rail construction.

### 2.3.6 | Cost

**Construction cost.** In terms of capital construction costs, the No Build Alternative and Alternative 2 would be the least expensive options. The No Build Alternative would add no BRT features and would add only previously planned or programmed improvements to the Geary corridor.

Alternative 2 would utilize much of the existing pavement and reuse or repurpose most of the existing median.

The Hybrid Alternative/LPA would require replacement of the existing single median in the Geary corridor from Palm Avenue to 27th/28th Avenues with new bus lanes and dual medians.

Alternatives 3 and 3-Consolidated would have by far the highest costs of the alternatives considered because of extensive construction of center lanes, including through the Fillmore Street underpass area and the Masonic Avenue tunnel.

**Operations and maintenance costs.** The annual cost to operate bus service on the Geary corridor is expected to increase over time due to anticipated increases in traffic congestion and anticipated higher ridership.

Under 2020 No Build Alternative conditions, operations/maintenance are expected to cost \$36.7 million annually.

The build alternatives would improve bus travel time and reliability, attracting additional riders and necessitating further increases in service frequency to accommodate them. Annual operating and maintenance costs for Alternative 2 and the Hybrid Alternative/LPA are expected to be about \$50 million, and costs for Alternatives 3 and 3-Consolidated are estimated to be about \$46 million and \$44 million, respectively.

### 2.3.7 | Construction Impacts

**Access to businesses during construction.** All build alternatives would involve significantly more construction than the No Build Alternative. The recommended construction approach would involve construction on multiple work zones of several blocks each to minimize the length of



disruption on any one block. Thus, construction in any individual work zone would be shorter than the length of time required to construct the entire project. Moreover, all build alternatives would incorporate measures to ensure access to businesses during construction.

Of the build alternatives, Alternative 2 would require the least amount of time for construction because it would have the fewest changes to the existing roadway configuration.

In contrast, Alternatives 3 and 3-Consolidated would require the longest construction time due to proposed activities such as filling the Fillmore Street underpass and constructing bus lanes and a passenger platform in the Masonic Avenue tunnel.

The Hybrid Alternative/LPA would be in the middle of the build alternatives in terms of construction duration. Proposed construction phasing for the Hybrid Alternative/LPA is detailed above in Section 2.2.7.6.7.

### **2.3.8 | Summary**

In considering all the alternatives against the above selection criteria and project purpose and need, the No Build Alternative is notable for performing worst on several key indicators.

With regard to transit performance (including vehicle travel time, reliability and ridership), the No Build Alternative would be at least nine minutes slower than any build alternative and would be at least 20 percent less reliable than any build alternative. Travel time and reliability measures for the No Build Alternative are worse than those of the build alternatives because the No Build Alternative does not include infrastructure improvements like dedicated bus-only lanes. Consequently, the No Build Alternative would result in the highest amount of person-delay of all alternatives considered; ridership associated with the No Build Alternative would also be the lowest of all alternatives considered.

In addition, the No Build Alternative would provide the least degree of improvement to pedestrian safety in the Geary corridor. It would result in only 14 new pedestrian crossing bulbs, while the build alternatives would result in construction of an additional 51 to 77 new bulbs. The No Build Alternative also would not include signal upgrades and protected left-turn signals between Palm Avenue and 27th Avenue.

While the No Build Alternative would require substantially less construction than any of the build alternatives and would result in the removal of fewer existing parking spaces in the Geary corridor, the No Build Alternative would result in the lowest transit ridership over the long term, which translates to the least ability among alternatives to reduce long-term greenhouse gas and air pollutant emissions.

The project purpose, as defined in Chapter 1, includes improving transit performance and improving pedestrian safety and access to transit. As

summarized above and noted throughout this Final EIS, the No Build Alternative would perform worst of all alternatives considered in achieving these provisions of the project purpose.

Among build alternatives, as demonstrated above, between the Hybrid Alternative/LPA and Alternatives 2, 3 and 3-Consolidated, the Hybrid Alternative/LPA would meet the purpose and need by improving transit performance and pedestrian safety in the corridor while also reducing impacts in key areas of community concern. These key areas are highlighted below.

- The Hybrid Alternative/LPA would result in more adverse intersection impacts in 2035 (eight) than Alternative 2 (five), but it would result in fewer affected intersections than Alternatives 3 and 3-Consolidated (nine), and far fewer affected intersections than with the No Build Alternative (21).
- While Alternative 3-Consolidated would remove the least amount of existing parking spaces (12.5 percent on-street or 2 percent areawide relative to the No Build Alternative), the Hybrid Alternative/LPA would remove less parking (24 percent on-street or 3 percent areawide relative to the No Build) than Alternative 2 (27 percent on-street or 4 percent areawide relative to the No Build) and Alternative 3 (26 percent of on-street or 4 percent areawide relative to the No Build Alternative), particularly in the neighborhoods along the corridor where merchants have expressed concerns about on-street parking loss.
- While the Hybrid Alternative/LPA would result in more loss of existing trees (182) than Alternative 2 (156), it would provide more area and opportunities for new median landscaping than Alternative 2. Alternatives 3 and 3-Consolidated would result in greater losses of existing trees – 253 and 268, respectively. The No Build Alternative would not remove any trees.
- In terms of rail readiness, none of the project alternatives would preclude the possibility of future conversion to rail.

#### 2.3.8.1 | ENVIRONMENTALLY PREFERABLE ALTERNATIVE

As demonstrated in Chapter 3 (Transportation) and Chapter 4 (Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures), the alternatives have notably different construction and/or operational effects in the key areas of traffic, air quality, and noise.

**Air Quality and Noise:** The Hybrid Alternative/LPA (with or without the six modifications) would result in the greatest reduction in operational greenhouse gas emissions relative to the No Build Alternative.

Air pollutant emissions and noise/vibration effects, while not adverse for any of the build alternatives, would generally be less perceptible to sensitive receptors for the Hybrid Alternative/LPA (either with or without the six modifications) relative to Alternative 2. This is because the Hybrid

Alternative/LPA would include a substantial center-running bus-only segment; pollutant and noise/vibration associated with bus operations would be located further away from sensitive receptors than in a side-running bus-only lane configuration. Alternatives 3 and 3-Consolidated would perform similarly to the center-running portions of the Hybrid Alternative/LPA. However, both Alternatives 3 and 3-Consolidated would require intensive construction activities required to fill the Fillmore Street underpass and reconfigure the roadway through the Masonic Avenue tunnel. These activities would generate substantially more air pollutants, noise, and other disruptive impacts during construction than any of the other alternatives.

**Traffic:** The Hybrid Alternative/LPA would result in fewer (eight) intersections with adverse effects in 2035 compared with the No Build Alternative (21). Alternatives 3 and 3-Consolidated would each result in nine adversely affected intersections in 2035, and Alternative 2 would result in five.

While the Hybrid Alternative/LPA would have more adversely affected intersections than Alternative 2, the Hybrid Alternative/LPA would introduce substantially more long-term benefits not anticipated with Alternative 2. The Hybrid Alternative/LPA would also balance longer term impact reduction with less intensive short-term construction relative to Alternatives 3 and 3-Consolidated.

**Conclusion:** Based on all of these factors, pursuant to 40 CFR 1505.2, the Hybrid Alternative/LPA is the environmentally preferable alternative. Further, since the six modifications applied to the Hybrid Alternative/LPA did not result in any new or more severe environmental impacts from those described in the Draft EIS/EIR, the Hybrid Alternative/LPA would still have been identified as the environmentally preferable alternative if the six modifications had not been added.

Similarly, had the six modifications been added to any of the other build alternatives, the Hybrid Alternative/LPA would have remained the environmentally preferable alternative, as the modifications are minor in nature and would neither substantially alter any of the key differentiating impacts or benefits of the other build alternatives from what was described in the Draft EIS/EIR.

See Chapters 3 and 4 of this document for detailed analyses of impacts of the build alternatives, including the Hybrid Alternative/LPA with the six modifications.

### **2.3.8.2 | PREFERRED ALTERNATIVE**

Consistent with Code of Federal Regulations, Title 23, Part 771.125; Code of Federal Regulations, Title 40, Part 1502.14(e); and Questions 4a and 4b of the Council on Environmental Quality's *40 Questions*, this Final EIS identifies the preferred alternative.

In considering all the alternatives against the above selection criteria and project purpose and need, the Hybrid Alternative/LPA is notable for

performing well in many key factors (without including the six minor modifications added after publication of the Draft EIS/EIR).

With regard to transit performance (including vehicle travel time, reliability, and ridership), the Hybrid Alternative/LPA would substantially improve vehicle travel time and reliability over existing conditions in comparison with the No Build Alternative. In terms of ridership, the three build alternatives that incorporate center-running bus lanes each would result in markedly stronger ridership over Alternative 2 (which would feature just side-running bus-only lanes) and stronger still over the No Build Alternative. For each of these transit performance factors, the six minor modifications do not substantially alter the performance of the Hybrid Alternative/LPA (see analyses presented in Chapters 3 through 6). Therefore, the minor modifications do not affect these considerations of identifying the preferred alternative.

While Alternatives 3 and 3-Consolidated would be stronger than the Hybrid Alternative/LPA in terms of reducing transit vehicle travel time, improving reliability, and increasing ridership, these alternatives would have capital costs about 43 to 45 percent greater than the Hybrid Alternative/LPA. These higher costs are associated primarily with implementing center running bus lanes through the Fillmore Street underpass (and raising the entire Geary corridor from the existing depressed section) and the Masonic Avenue tunnel. Because of the extensive construction associated with creating at-grade travel lanes (for buses and all vehicles) through the Fillmore Street area, Alternatives 3 and 3-Consolidated would have the greatest degree of construction-period impacts, particularly in terms of air pollutant emissions and noise/vibration. These construction-period effects would be offset in part by the longer-term increases in ridership that Alternatives 3 and 3-Consolidated could achieve over all other alternatives, but the cost increment associated with these two alternatives is substantial relative to the long-term benefits. As discussed in Chapters 3 and 4, the six minor modifications do not substantially change construction related effects of the Hybrid Alternative/LPA; Alternatives 3 and 3-Consolidated would still have much more extensive construction period effects. Therefore, the six minor modifications do not affect considerations of construction impacts. Further, as noted in Chapter 9, the six minor modifications do not change the cost estimate for the Hybrid Alternative/LPA. Therefore, the six minor modifications do not affect cost considerations in selecting a preferred alternative.

Overall, the analyses in Chapters 3 through 6 demonstrate that the Hybrid Alternative/LPA, inclusive of all six minor modifications, would not result in any new adverse effects or increase the severity of any such effects that were described for the Hybrid Alternative in the Draft EIS/EIR. Moreover, these modifications still enable the Hybrid Alternative/LPA to meet the project purpose and need to enhance the performance, viability, and comfort level of transit and pedestrian travel along the Geary corridor. Moreover, all modifications were developed at least in part in response to input from the public to enhance the overall experience for passengers and pedestrians along the corridor. One modification, the additional pedestrian

improvements, was in part a response to another agency initiative (Vision Zero) as well as in response to public comments on the Draft EIS/EIR related to concerns regarding the level of pedestrian facilities on the Geary corridor. Finally, the lead agency recognizes also that local agency SFCTA, in cooperation with SFMTA, identified the Hybrid Alternative as the LPA after unanimous selections by both the SFCTA and SFMTA Boards.

Based on all of the above facts, the lead agency identifies the Hybrid Alternative/LPA as the preferred alternative.

## 2.4 Construction Plan

Each of the build alternatives would require substantial construction activities to install bus-only lanes, construct bus and pedestrian crossing bulbs, complete necessary demolitions, install station facilities, and where applicable, protect or relocate utilities.

The Geary corridor is a major thoroughfare that cannot realistically be fully closed for any extended period. To generally allow through travel during construction, the overall construction method is proposed to follow what is known as a “Staggered Multiple Block Segment Approach.” In this approach, there would be multiple active work zones, each about 5 blocks in length, each separated by about 5 blocks.

The duration of construction would differ by build alternative. Construction activities are projected to be completed in 90 to 130 weeks (about 21 to 30 months) if completed all at once for the entire corridor. The build alternatives involving the most extensive construction of center-running, bus-only lanes (Alternatives 3 and 3-Consolidated) generally have a longer duration than those with no or limited center-running bus only lanes (Alternatives 2 and the Hybrid Alternative/LPA). Section 2.2.7.5.7 includes more details about anticipated construction phasing of the Hybrid Alternative/LPA. The analytical sections of this Final EIS also include analysis of construction period effects for each alternative. Section 4.15 of the Final EIS provides further detail on construction and summarizes construction-related effects.

## 2.5 Capital Costs of Project Alternatives

As Chapter 9 (Financial Analysis) discusses in greater detail, all build alternatives have associated capital cost estimates based on conceptual, 10 percent level engineering design plans, and they are expected to be refined as the detail of design progresses toward 100-percent engineering design. The estimates, shown in Table 2-9, provide a preliminary tool to understand the relative cost of each alternative.

These costs include all the scope elements described in this chapter and analyzed in this document. Some of these scope elements are not strictly needed to provide and operate a BRT facility, but they otherwise benefit the

community in other ways or are needed to facilitate the continued management and stewardship of the City's street, streetscape, and utility systems as changes are made to the Geary corridor to accommodate BRT. These related improvements are therefore important to coordinate closely with the BRT components for construction. Examples of each type of scope element are as follows:

- **BRT Elements:** Includes new road surface and base for bus lanes where no surface exists, such as for center-running alternatives; new road surface for bus lanes where pavement condition is poor; new landscaped medians to accommodate bus lanes for center-running alternatives and segments; new bus bulbs; station platforms where none currently exist (such as for center-running bus-only lanes); station and stop passenger amenities; bus vehicles for increased service; right-turn pockets to improve bus flows; traffic signal modifications to improve bus flows and accommodate center-running bus-only lanes; and removal of the pedestrian bridges at Steiner Street (all build alternatives) and Webster Street (Alternatives 2, 3, and 3-Consolidated only) to provide bus lanes and accommodate improved street-level crossings and smoother traffic flows. In addition, elements such as underground sewer and water line relocations and replacements are needed to accommodate bus lanes, stations, and bus bulbs but represent opportunities for cost-sharing.
- **Related Improvements:** Includes new street lights; roadway base and surface repair for mixed-flow travel lanes; traffic signal modifications for pedestrian crossing enhancements; traffic signal underground communications; pedestrian crossing bulb-outs; new landscaping on existing medians; sidewalk and streetscape improvements; a street redesign between Masonic and Presidio avenues to accommodate bike lanes; and a street redesign between Gough and Scott Streets to accommodate a road diet to remove mixed-flow travel lanes.

Table 2-9 presents capital costs for the core and related improvements included in the four build alternatives, in Year of Expenditure (YOE) dollars. The total cost range of the alternatives is \$170 million to \$435 million. As Chapter 9 (Financial Analysis) describes further, the costs shown include hard construction costs, other costs such as soft costs for design engineering services, and contingencies to account for existing uncertainties that may impact project cost.

For federal funding purposes, the project cost estimate has been developed with separate costs for each scope element, and for some alternatives, including Alternative 2 and the Hybrid Alternative/LPA, the cost of the BRT scope elements is less than \$300 million, making those alternatives eligible to compete for funds from the Federal Transit Administration's Small Starts program.

For BRT elements and the related improvements, there are also opportunities for cost-sharing with other city efforts, such as for re-surfacing and utility replacements, which the project will pursue.

Any potential cost-sharing would not change the capital costs shown in Table 2-9; it would only affect which agency (SFMTA or other local agencies) would provide funding.

**Table 2-9 Capital Cost Estimates for Build Alternatives**

BUILD ALTERNATIVE	DESCRIPTION	CAPITAL COST OF BRT ELEMENTS AND RELATED IMPROVEMENTS (YOY IN MILLION \$)
Alternative 2	Side-Lane BRT	\$170
Alternative 3	Center-Lane BRT with Dual Median and Passing Lanes	\$430
Alternative 3-Consolidated	Center-Lane BRT with Dual Medians and Consolidated Bus Service	\$435
Hybrid Alternative/LPA	27th/28th Avenue to Palm Avenue - Center-Lane BRT with Consolidated Service East of Palm Avenue - Side-Lane BRT	\$300 Phase I: \$65 Phase II: \$235

Note: Phase I cost estimates include utility upgrades coordinated with the project (separate environmental clearance).  
Source: SFCTA & SFMTA, 2017

## 2.6 Operating and Maintenance Costs of Project Alternatives

Table 2-10 illustrates the annual costs for SFMTA to run vehicles and provide revenue service for the No Build and the build alternatives. These estimates include the annualized vehicle operating costs in addition to the roadway maintenance costs. The operation cost of Alternative 2 and the Hybrid Alternative/LPA are the highest, and about 30 percent higher than the No Build Alternative. Alternatives 3 and 3-Consolidated have slightly lower operation costs – 27 percent and 20 percent higher than the No Build Alternative, respectively.

The build alternatives represent increases in transit service in anticipation of higher demand resulting from improved transit performance, and the service increases are intended to address crowding issues and accommodate more passengers. If service levels were to remain the same for every alternative, then, because of their improved bus travel times (see Section 3.3.4.5), the build alternatives would reflect lower vehicle operating costs than the No Build Alternative, with operating costs decreasing from No-Build to Alternative 2, further lower for the Hybrid Alternative/LPA, and lowest for Alternatives 3 and 3-Consolidated.

Note that these service plans and resulting operating costs are intended for analysis and comparison purposes only; ultimately, SFMTA will make service decisions based on the analysis of empirical ridership data and available resources, so actual service plans may vary.

**Table 2-10 Annual Operating and Maintenance Costs for Proposed Service**

COST TYPE	NO BUILD ALTERNATIVE	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 3-CONSOLIDATED	HYBRID ALTERNATIVE /LPA
Annualized Revenue Hour Vehicle Operating Cost*	\$36,471,000	\$48,409,000	\$45,586,000	\$43,322,000	\$48,340,000
Other Incremental Annualized Operating and Maintenance Costs**	\$251,000	\$1,091,000	\$596,000	\$596,000	\$858,000
<b>Total Cost</b>	<b>\$36,722,000</b>	<b>\$49,500,000</b>	<b>\$46,182,000</b>	<b>\$43,918,000</b>	<b>\$49,198,000</b>

Note: Operating and vehicle maintenance costs based on National Transit Database (NTD); other roadway maintenance accounts for paving, pothole, red lane, and landscape costs.

\* Vehicle cost type includes costs for operating the service and maintaining the vehicles.

\*\* Other cost type includes busway surface maintenance and landscaping maintenance.

Source: SFMTA, 201

Table 2-10 also shows the total annual operating and maintenance costs for each alternative of the street infrastructure improvements. The build alternatives represent an increase in maintenance cost above the No Build Alternative. Increased maintenance costs include repairs to potholes and patches to the busway for the center-running alternatives; maintenance to the colorization treatment in the side-running bus-only segments; and additional landscaping and tree maintenance costs for the medians. The Hybrid Alternative/LPA maintenance costs would be higher than those of Alternatives 3 and 3-Consolidated due to the additional cost to maintain the colorization in the side-running bus-only segments. Furthermore, although not a major component of the busway maintenance costs, paving and pothole treatments cost less for the Hybrid Alternative/LPA than Alternatives 3 and 3-Consolidated due to its shorter center-running bus-only segment, which extends from 27th Avenue to Palm Avenue.

In summary, the estimated annual operations cost for the No Build Alternative is about \$36.7 million. As shown in Table 2-10 above, annualized operations and maintenance costs for the build alternatives range from \$43.9 million for Alternative 3-Consolidated (20 percent higher compared with the No Build Alternative), to \$49.5 million for Alternative 2 (35 percent higher compared with the No Build Alternative). For the Hybrid Alternative/LPA, annualized operations and maintenance would cost \$49.2 million, about 34 percent higher compared with the No Build Alternative.



## 2.7 Alternatives Development and Screening Process

SFCTA’s Geary Corridor BRT Feasibility Study evaluated the feasibility of five conceptual design alternatives for the Geary corridor between 33rd Avenue and Van Ness Avenue. Completed in 2007, the Feasibility study found that BRT would be feasible in the Geary corridor and recommended environmental review and further design work to identify a preferred alternative.

In November 2008, the lead agency and SFCTA jointly issued federal and state required notices – Notice of Intent (NOI) and Notice of Preparation – announcing the agencies’ intention to prepare a joint NEPA/CEQA environmental document (EIS/EIR).

Appendix B includes the Notice of Intent (NOI) and the Notice of Preparation (NOP)

SFCTA undertook a comprehensive outreach effort to inform the environmental scope and alternatives development, including three public scoping meetings and meetings with a project-specific Citizens Advisory Committee (CAC), Technical Advisory Committee (TAC), and numerous stakeholder groups.

After that scoping process, SFCTA conducted two additional screening steps in response to community feedback, then conducted a full evaluation of the remaining, refined set of build alternatives. Chapter 8 of this document (Public Participation) describes these public engagement and participation efforts.

Chapter 10 (Initial Development and Screening of Alternatives) describes several alternatives and configurations initially considered but withdrawn from further analysis. Chapter 10 also summarizes the selection of a staff-recommended alternative, as required by NEPA.

### 2.7.1 | Other Alternatives Considered

Many alternatives were considered during project development that occurred from 2009 to 2013, and they were documented in the SFCTA’s 2007 Geary Corridor Bus Rapid Transit Study (“Feasibility Study”), its 2009 Alternatives Screening Report and the 2013 Design Options Screening Report.

Given the corridor’s two distinct street configurations (i.e. two narrower one-way streets east of Gough, and one much wider two-way street west of Gough) numerous design options were examined for “typical cross-sections” of the Geary corridor. Chapter 10 (Initial Development and Screening of Alternatives) contains a complete description of the alternatives development and screening process for the Geary BRT project as well as further discussion of alternatives considered and withdrawn. These include numerous design options, service options, and roadway configuration options that were considered but rejected from further consideration as part of the alternatives development and screening process.

Additional options for Geary bus service were proposed by commenters on the Draft EIS/EIR. These commenters asserted that the build alternatives (all of which feature some configuration of bus-only lanes) were too costly to construct and that many project objectives could be achieved through a more “minimal” concept, without adding any new bus-only lanes beyond those already existing east of Gough Street. The commenters stated that increasing bus service frequency within stricter bus schedules, greater synchronization of traffic signals, roadway repaving, and minor upgrades to existing bus stops would provide similar if not greater benefits than the build alternatives, particularly in the area west of Masonic Avenue.

With a few exceptions, the concept described above has similarities to the No Build Alternative that was analyzed in the Draft EIS/EIR and the Final EIS. One key exception is that the No Build Alternative would not substantially increase bus service/frequency, but would instead reflect more modest changes in bus service/frequency consistent with the TEP/Muni Forward Program. In contrast, all build alternatives feature substantially higher bus service frequency than the No Build Alternative. The No Build Alternative does not feature substantially increased bus service/frequency because the No Build Alternative would not include the infrastructure necessary to support higher service frequencies and extended service hours. Without dedicated bus-only lanes in place to ensure competitive transit travel time and reliability, over time, simply adding more buses to an increasingly congested corridor would face increasingly longer run times, which would not support the project purpose of improving transit performance and reliability. In other words, adding more buses without infrastructure improvements (dedicated bus-only lanes) would not effectively address the travel time and reliability concerns, but would instead result in increased operating costs (more labor and fuel costs needed to operate more buses) with diminishing returns in service improvement. Moreover, this concept would not substantially address another key aspect of the project purpose – improving pedestrian conditions and pedestrian access to transit in the Geary corridor. As this “more buses” concept would not improve reliability, pedestrian conditions, or the transit passenger experience, it would not meet many of the project purposes and thus was not considered further.

## 2.8 Related and Planned Projects

In addition to the projects integrated in the No Build Alternative, several projects are planned within or near the Geary corridor that could overlap with the proposed project’s construction schedule. A discussion of these other planned projects follows.<sup>19</sup>

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<sup>19</sup> These locally planned projects are also used in the cumulative impact analysis (Chapter 5) and are considered reasonably foreseeable.

## 2.8.1 | Local Projects

### 2.8.1.1 | LOCAL TRANSPORTATION PROJECTS

Several local transportation projects are planned that traverse or overlap the proposed project or are in the project vicinity. Projects expected to be implemented by the time construction begins for the Geary Corridor BRT project are described below.

**Van Ness Avenue BRT.** SFCTA and SFMTA propose to implement BRT improvements along Van Ness Avenue from Lombard Street in the north to Mission Street in the south. SFCTA completed a feasibility study for BRT for Van Ness Avenue in 2006 and concluded environmental studies in 2012. SFMTA and SFCTA Boards certified the EIR in September 2013, and the lead agency issued a Record of Decision (ROD) for the EIS in December 2013. Final design activities were completed in 2016 and construction began in November 2016. Revenue service is projected to begin in 2020.

**Central Subway Project.** The Central Subway Project is the second phase of San Francisco’s Third Street Light Rail Project. The project consists of a 1.7-mile extension of the Muni Metro T line from the Caltrain Station (Fourth and King streets) to Chinatown. The portion of the alignment between Bryant Street and Chinatown would be in a new subway. Project construction began in 2010 and is expected to be completed in 2018.

**Masonic Avenue Streetscape Improvements Project.** This SFMTA project proposes a series of improvements on Masonic Avenue between Geary Boulevard and Fell Street to more safely and efficiently accommodate the needs of all users. Major improvements include the addition of a landscaped median, raised cycle tracks, bus bulbs, and creation of a public plaza at the southwest corner of the Geary Boulevard/Masonic Avenue intersection. Construction began in July 2016 and is anticipated to end in January 2018.

**Octavia Boulevard Enhancement Project.** Guided by the Market-Octavia Area Plan, the Octavia Boulevard Enhancement Project is a series of capital projects to make the boulevard and surrounding streets safer, more pedestrian-friendly, and better at balancing competing demands. These include pedestrian crossing bulbs on Hayes Street at its intersections with Laguna and Buchanan streets (construction phase, estimated completion spring 2018); a pedestrian crossing bulb, extended center medians, and landscaping at the Oak Street/Octavia Boulevard intersection (construction phase; estimated completion spring 2018); traffic safety and streetscape upgrades from Webster Street to Market Street (concept design phase, estimated construction start in 2019); Market Street/Octavia Boulevard intersection improvements and potential circulation changes (concept design phase, estimation construction start in 2019); and sustainable streetscape upgrades along the northbound local lane of Octavia Boulevard from Page Street to Patricia’s Green (concept design phase, estimated construction start in 2019). Areawide crosswalk upgrades and other spot improvements were completed in 2015 and 2016.

RESOURCE

Other projects are planned within or near the Geary corridor, including:

- Van Ness BRT
- Central Subway Project
- Red-colored Bus-only lanes from Market to Gough Streets
- Masonic Avenue Streetscape Improvement Project
- Octavia Boulevard Enhancement Project
- Polk Street Improvement Project
- TEP/Muni Forward
- WalkFirst
- SFgo

**Polk Street Improvement Project.** As identified in the San Francisco Bicycle Plan, the Polk Street Bicycle Lane project would involve improving the existing bicycle facilities on Polk Street between McAllister and Union streets and implementing aesthetic and safety improvements. Proposed changes near Geary and O’Farrell streets include the installation of a green-painted, road-level bicycle lane with plastic safe-hit posts and a painted buffer zone to separate it from the travel lanes in the northbound direction, and a green-painted bicycle lane in the southbound direction. The project underwent alternatives development and public outreach from 2012-2014. SFMTA Board approved the project in 2015, and detailed design was completed from 2015-2016. Construction began in 2016, and it is anticipated to end in 2018.

**TEP/Muni Forward.** Initiated in 2005, the TEP was SFMTA’s comprehensive operations analysis of its transit system. The TEP’s central goal was to identify transit service improvements to improve efficiency and meet emerging travel demand patterns. The proposed improvements identified included route restructuring, frequency improvements, vehicle type changes, and bus stop and roadway changes. In 2009, SFMTA finalized its recommended improvements, which included the Geary corridor in its citywide rapid network and identified it as a high-priority route for BRT treatments. The TEP’s Draft EIR was released in 2013, and the Final EIR was certified in March 2014. After completion of environmental review, TEP improvements have been implemented under a brand of SFMTA improvements called Muni Forward. Muni Forward improvements on Geary including increased midday and peak-period transit service, as well as expansion of Rapid stop service to Sundays, have since been implemented. Other changes that would affect the Geary corridor include: the addition of a stop at Van Ness Avenue for the 38AX and 38BX lines;<sup>20</sup> and installation of transit priority improvements at the following locations:

- 32nd Avenue from California Street to Geary Boulevard;
- Geary Boulevard from 32nd Avenue to 34th Avenue;
- 34th Avenue from Geary Boulevard to Clement Street.

**San Francisco Pedestrian Safety Capital Improvement Programs: WalkFirst and Vision Zero.** WalkFirst is a five-year plan that will implement pedestrian safety upgrades at 170 priority intersections, including 25 located in this project’s study area, starting in 2014. The WalkFirst plan targets the 6 percent of streets on which 60 percent of the City’s pedestrian injuries occur. Proposed improvements at these locations include adding new bulb-outs, signal timing changes, high-visibility crosswalks, and roadway striping changes. WalkFirst is part of the City’s larger Vision Zero program, a goal to eliminate serious traffic injuries and fatalities by all modes by 2024.

**SFgo.** SFMTA operates traffic signals citywide, including along the Geary corridor. SFMTA is implementing an advanced traffic signal management program called SFgo that operates all of SFMTA’s traffic signals. Some

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<sup>20</sup> As the 38AX and 38BX lines use Bush Street and Pine Street east of Masonic Avenue, any new stops associated with the TEP would be at Van Ness Avenue and Bush Street/Pine Street, not at Van Ness Avenue and Geary Street.

traffic signals are proposed for upgrade/replacement in order to provide needed functionality for the SFgo program. The SFgo program would implement the signal priority operation needed for Geary BRT. The installation would be done in conjunction with the Geary BRT project.

**Pavement Rehabilitation.** SFPW is responsible for the maintenance of all local streets, including the Geary corridor's pavement, with the exception of State-owned and operated facilities Park Presidio Boulevard and Van Ness Avenue, which fall under the jurisdiction of Caltrans. Planned improvement projects would be coordinated with construction of the proposed BRT project and the aforementioned utility projects.

**Road Repaving and Street Safety Bond Projects.** A \$248 million Road Repaving and Street Safety Bond (Proposition B) was approved by voters in November 2011, and it was recommended as part of the citywide Ten-Year Capital Plan to improve and invest in the City's infrastructure. The bond will repave streets, make repairs to deteriorating street structures, improve streetscapes for pedestrian and bicyclist safety, improve traffic flow on local streets, and install sidewalk and curb ramps to conform to ADA requirements.

#### 2.8.1.2 | LOCAL PLANNING PROJECTS

**Better Market Street.** This project proposes to build improvements on Market Street to improve mobility between Octavia Boulevard and Steuart Street through reliable and efficient transit service and improved conditions for pedestrians and bicyclists. The initial stages of this project included preliminary studies, outreach, concept development, and identification of options to be evaluated in environmental studies (2011-2013). The project is currently undergoing environmental review, which is anticipated to be completed in 2019, with the design phase and the announcement of contract bids to follow. Construction is anticipated to begin in 2020.

**CPMC Cathedral Hill Campus.** As a component of CPMC's Long-Range Development Plan Project, the medical facility proposes to establish a new medical campus that would include a new *hospital* and new *medical office building* at the intersection of Geary Street and Van Ness Avenue. The new hospital would replace the existing Cathedral Hill Hotel and the 1255 Post Street Office Building, which comprise the entire block bounded by Geary Street, Van Ness Avenue, and Post and Franklin Streets.

The proposed *hospital* would be located on the northwest intersection of Geary Street and Van Ness Avenue. This new facility would be an about 225-foot-tall, 730,000-gross square foot, 274-bed, acute-care hospital with an underground parking garage. The entry and exit to the hospital's parking garage would be on Geary Street between Franklin Street and Van Ness Avenue. Emergency vehicles would enter and exit via Franklin Street.

The proposed *medical office building* would be located on the northeast intersection of Geary Street and Van Ness Avenue. This building would be 9 stories, about 130 feet tall, and would contain about 262,000 gross square feet of floor area along with an underground parking garage. The building's main entrance would be on Van Ness Avenue, with a dedicated passenger

#### RESOURCE

For more information on Better Market Street, visit <http://bettermarketstreet.sf.org>

drop-off location on Cedar Street. The entry to the building's parking area would be on Geary Street between Van Ness Avenue and Polk Street, and the exit would be on Cedar Street between Van Ness Avenue and Polk Street.

Van Ness Avenue would provide the main pedestrian entrances for both the proposed hospital and medical office building. An underground tunnel would provide a connection between the medical office building and hospital. Demolition of the existing hotel was completed in 2014, with construction of the hospital, medical office building, and tunnel projected to continue through 2019.

**Central SoMa Plan (Draft).** The Central SoMa Plan (draft plan released April 2013 and revised plan released August 2016) encompasses the area bounded by Market, Townsend, Second, and Sixth streets. The plan seeks to encourage and accommodate both housing and employment growth in this transit-rich area. The Draft EIR was released in December 2016. Hearings on the plan have continued through 2017.

**Japantown Cultural Heritage and Economic Sustainability Strategy.** Building off its Draft Japantown Better Neighborhood Plan (2009), the San Francisco Planning Department initiated a process in 2013 to support economic development in this area, preserve and enhance its historic and cultural uses and buildings, and make physical enhancements within the project area. Focused on the neighborhood's cultural heritage, strategies being explored include creating a community development corporation, land trust, or community benefits district; implementing physical improvements to Peace Plaza and Buchanan Mall; and others.

**Market Street Hub Project.** The Hub neighborhood was included within the boundaries of the Market Street and Octavia Area Plan, adopted in 2008. The Hub Project seeks to increase affordable housing, support transit enhancements, improve the urban form, enhance the public realm, and encourage the arts. Environmental review began in October 2016 and is expected to be completed in October 2018, with project adoption hearings expected in November 2018.

**Powell Streetscape Project.** The Powell Streetscape project will design and construct a new streetscape layout for Powell Street between Geary and Ellis streets to enhance the quality and use of the public realm, improve safety for all street users, improve cable car safety and performance, and renew transportation infrastructure. Building on the Powell Promenade parklets implemented in 2011 and the Powell Street Safety and Sidewalk Improvement Pilot implemented in 2015, the project, if approved, will implement a permanent streetscape design including wider sidewalks, reduced vehicle volumes, and improved loading for businesses and hotels. The project is expected to complete engineering and design work in 2020, and begin construction in 2021.

**Transbay Transit Center District Plan.** The San Francisco Planning Department developed this plan in 2012 with the Transbay Joint Powers Authority and the former SF Redevelopment Agency to develop San Francisco's downtown neighborhood with residential, office, and retail uses. The plan includes mechanisms to direct any increased development value to help pay for the construction of the Transbay Transit Center and other public improvements (e.g., affordable housing, public facilities, and circulation improvements). The plan builds on San Francisco's 1985 Downtown Plan that envisioned the area around the Transbay Transit Center as the heart of the new, more intensively developed downtown. All 38 Geary lines would originate/terminate at the new Transbay Transit Center once completed (as of 2014, these lines originate/terminate at the temporary Transbay Terminal at Howard and Main streets).

**Earthquake Safety and Emergency Response Bond (ESER BOND).** The improvements covered within the ESER BOND are divided into two bond measures, 2010-ESER and 2014-ESER.

2010 ESER Bond work is currently under way and includes construction of a new cistern on Funston Avenue just north of Geary Boulevard. The work involves sewer relocation on Funston Avenue from Geary Boulevard to Clement Street.

In June 2014, San Francisco voters approved the 2014 ESER Bond. This bond will include a range of improvements to the system including an extension of the AWSS pipeline in the Richmond District. The extension is planned to run beneath Geary Boulevard from 26th Avenue to 43rd Avenue.

**Sewer System Improvement Program:** Since 2012, SFPUC has been implementing a 20-year, citywide program to upgrade aging sewer infrastructure. The program is intended to improve seismic safety and improve the quality of water discharged. SFPUC's program includes replacement of sewer mains along and near the Geary corridor.

**Westside Recycled Water Project (2017–2020).** The Westside Recycled Water Project would be constructed at the SFPUC's existing Oceanside Water Pollution Control Plant (WPCP). The project would produce and deliver up to 2 million gallons per day on average of recycled water that is suitable for state-approved recycled water uses. Construction of the project began in September 2017 and is expected to be complete in spring 2020.

The WPCP planning study indicates that the pipeline is planned to cross Geary Boulevard at 39th Avenue.<sup>21</sup> Depending on the construction schedule, work associated with the WPCP may need to be coordinated with implementation of any of the build alternatives.

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<sup>21</sup> San Francisco Westside Recycled Water Project - Project Alternatives Workshop Series, Evaluation of Alternatives Prepared for SFPUC by Kennedy/Jenks Consultants, 11 February 2011.

**Eastside Recycled Water Project (2026-2029).** The Eastside Recycled Water Project would deliver recycled water to a variety of customers on the east side of the City for non-potable uses such as irrigation and toilet flushing. The project aims to save an average of 2 million gallons per day of drinking water that would otherwise be used for non-drinking purposes.

As of 2017, the project has been paused to allow for better coordination with the City's Sewer System Improvement Program. The Southeast Wastewater Treatment Plant has been preliminarily identified as a potential site and water source for the eastside recycled water facility.<sup>22</sup>

**Gas Pipeline Replacement Program.** PG&E is responsible for the improvement of the overall safety and reliability of the natural gas distribution system. Since 1985, the Gas Pipeline Replacement Program continues to work to replace aging and leak-prone sections of distribution and transmission pipelines within the San Francisco Bay Area considered vulnerable to earthquake damage, including on the Geary corridor. The focus of this effort is to replace old cast-iron pipe with modern pipe. In the City of San Francisco, 26 miles of cast-iron pipe were replaced. PG&E completed this work in December 2014.

**Water Department Projects.** The water supply infrastructure underneath the Geary corridor is aging and in need of replacement. Accordingly, the SFPUC Water Enterprises Division has projects planned to replace approximately eight lane-miles of water mains in the Geary corridor area. As of 2017, these are understood to include Geary Street from Kearny to Van Ness, Van Ness to Stanyan, and Geary Boulevard from 10th to 36th Avenues. Water main replacement within the Geary corridor would be timed to coincide with construction of the preferred alternative, consistent with the City and County of San Francisco's coordination requirements (further discussed in Section 4.6.1.2).

## 2.8.2 | Regional Projects

Planned projects of regional importance located in the study area or otherwise affecting the proposed project are discussed below.

### 2.8.2.1 REGIONAL TRANSPORTATION PROJECTS

**Doyle Drive Replacement/Presidio Parkway Project.** SFCTA, in partnership with SFMTA, Caltrans, and the Golden Gate Bridge, Highway and Transportation District, is replacing the Doyle Drive approach to the Golden Gate Bridge, which serves as a parallel route to Geary Boulevard. The Doyle Drive approach was built in 1937 as part of the Golden Gate Bridge and is part of US 101. The Doyle Drive Replacement Project, also known as the Presidio Parkway Project, would provide seismic and operational safety with widened travel lanes and provision of shoulders and a median. The project would also include landscaping to better blend into its surroundings in the adjacent Presidio National Park. Initiated in 2010, the

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<sup>22</sup> SFPUC. San Francisco Eastside Recycled Water Project. Available at: [http://sfwater.org/bids/projectDetail.aspx?prj\\_id=311](http://sfwater.org/bids/projectDetail.aspx?prj_id=311). Accessed 4/19/2017.



project's Phase I consisted of the construction of the southbound high viaduct, the southbound battery tunnel, and a temporary bypass. These elements comprise a roadway for vehicular travel until the project's completion.

Phase II included construction of the northbound high viaduct, northbound battery tunnel, main post tunnels, low viaduct, and an interchange at Girard Road. This phase of construction began in 2012 and was completed in 2015. Final project landscaping and overall project completion are expected by late 2017.

**Transbay Transit Center/Caltrain Downtown Redevelopment Project.**

The Transbay Joint Powers Authority (TJPA) is replacing the existing Transbay Terminal located in downtown San Francisco with a new 5-story transit center with one above-grade bus level, ground floor, concourse, and two below-grade rail levels serving Caltrain and future high-speed rail. A Redevelopment Area Plan has been established for transit-oriented development in the vicinity of the Transbay Transit Center, including residential, office, and general commercial uses. The project is intended to revitalize the surrounding area and accommodate future transit projects including the Caltrain Extension Project and the California high-speed rail project. The Transbay Transit Center would provide a train depot for future high-speed rail. As part of Phase II, Caltrain commuter rail service would be extended from its current terminus outside the downtown area (at Fourth Avenue and King Street) to the Transbay Transit Center. Construction of the Transbay Transit Center is under way, and it is expected to be completed in 2018.

## 2.9 Required Permits and Approvals

In addition to its own approval of the project, SFMTA as project proponent would need permits and approvals from various outside agencies prior to the start of construction. Table 2-11 shows the anticipated permits and approvals that SFMTA would be expected to obtain from outside agencies.

**Table 2-11 Anticipated Permits and Approvals**

AGENCY	APPROVAL OR PERMIT
<b>STATE</b>	
California Department of Transportation (Caltrans)	Encroachment permit(s) for work in State right-of-way areas
<b>REGIONAL</b>	
SF Bay Area Regional Water Quality Control Board (RWQCB)	General Construction Activity Stormwater Permit. A Notice of Intent to construct, which includes the Storm Water Pollution Prevention Program, must be filed with the RWQCB at least 30 days prior to any soil-disturbing activities
Metropolitan Transportation Commission	Air Quality Conformity Determination (Air Quality Conformity Task Force) -see Appendix G of this Final EIS
<b>LOCAL</b>	
SFDPH	Maher Ordinance Certification
SFPW	Tree removal permits will be required for each tree that would be potentially impacted or removed that is protected by City Ordinance 0017-06
	Night-time construction permit
	A demolition permit and Waste Diversion Plan approval
	Streetscape plan approval
SF Planning Department - Citywide	General Plan Referral -required for any proposed changes in curb-to-curb width of public right-of-way. Review by Citywide Planning; ratification by Board of Supervisors.
	General Plan Amendment - potentially required; contingent on review of design of selected/preferred alternative.
SF Planning Department/Historic Preservation Committee	The Historic Preservation Committee must issue a Certificate of Appropriateness for project design located within a landmark site
	Permitting under Article 11 of San Francisco Planning Code contingent on any required relocation of or modification to “Golden Triangle” Light Standards
SF Fire Department	Coordination regarding the Auxiliary Water Supply System
SFPUC, PG&E, and Telecommunication Companies	Coordination with utility providers regarding temporary or permanent relocation of utilities (including sewer line) through NOI and other filings with the San Francisco Street Construction Coordination Center and participation in the Committee for Utility Liaison on Construction and Other Projects (CULCOP)
	National Pollutant Discharge Elimination System Permit for construction activities, including preparation of a Stormwater Pollution Prevention Plan (SWPPP) and street flow analysis

## 2.10 Next Steps in the Environmental Process

Section 2.1.1 summarizes the earlier approval actions of both SFCTA and SFMTA regarding the project, the LPA, and the EIR.

Following publication of this combined Final EIS/ROD, SFMTA is expected to take several actions including adoption of legislation under Section 201 of the San Francisco Transportation Code to implement project-related changes to the public right of way (bus-only lanes, changes to mixed-flow lanes, changes in on-street parking, etc.).