

Application of Criteria for a Project of Air Quality Concern

Project Title: Better Market Street Project

Project Summary for Air Quality Conformity Task Force Meeting: (September 27, 2018)

Introduction San Francisco Public Works, in coordination with the Citywide Planning Division of the Planning Department, the San Francisco Municipal Transportation Agency (SFMTA), the San Francisco Public Utilities Commission (SFPUC), and the San Francisco County Transportation Authority (SFCTA), proposes to redesign and provide various transportation and streetscape improvements to Market Street. The project includes changes to and replacement/modification of: roadway configuration and private vehicle access; traffic signals; surface transit, including transit-only lanes, stop spacing, service, transit-stop location, transit-stop characteristics and infrastructure; bicycle facilities; pedestrian facilities; commercial and passenger loading; vehicular parking; and utilities. The California Department of Transportation (Caltrans) is the lead agency for the National Environmental Policy Act (NEPA). California Environmental Quality Act (CEQA) clearance is occurring concurrently through a separate process.

Figures 1-1 and 1-2 show the project vicinity and project location, respectively. The project corridor is located along the boundary of or within neighborhoods of the City and County of San Francisco, specifically, the Downtown/Civic Center, South of Market, and Financial District neighborhoods. The corridor consists the 2.2 miles of Market Street between Octavia Boulevard and Steuart Street as well as Valencia Street between Market and McCoppin streets, McAllister Street between Market Street and Charles J. Brenham Place, Charles J. Brenham Place between Market and McAllister streets, and several adjacent streets, intersecting both north and south of Market Street, including Gough Street, Page Street, 12th Street, Fell Street, Hayes Street, Ninth Street, Grove Street, Hyde Street, Eighth Street, Seventh Street, Jones Street, Golden Gate Avenue, Taylor Street, Sixth Street, Turk Street, Mason Street, Fifth Street, Ellis Street, Fourth Street, Stockton Street, O'Farrell Street, Kearney Street, Montgomery Street, Second Street, Sutter Street, Battery Street, Bush Street, First Street, Beale Street, Main Street, Drumm Street, Spear Street, and Steuart Street. All of the various proposed project elements will be constructed within the public right-of-way, and the majority will be implemented within the operational public right-of-way. The project will require a temporary encroachment permit for construction activities and a permanent encroachment permit from Caltrans for modifications within the Van Ness Avenue and Central Freeway rights-of-way. The total anticipated area of disturbance is approximately 30 acres. The typical depth of soil disturbance within the project footprint will be 14 feet, with a maximum of 16 feet for sewer work and 10 feet for SFMTA power systems. A depth of 35 feet will be required at one location with a sub-sidewalk basement. No roadway cut and fill is anticipated to be required.

The functional classification of Market Street is "Other Principal Arterial."¹

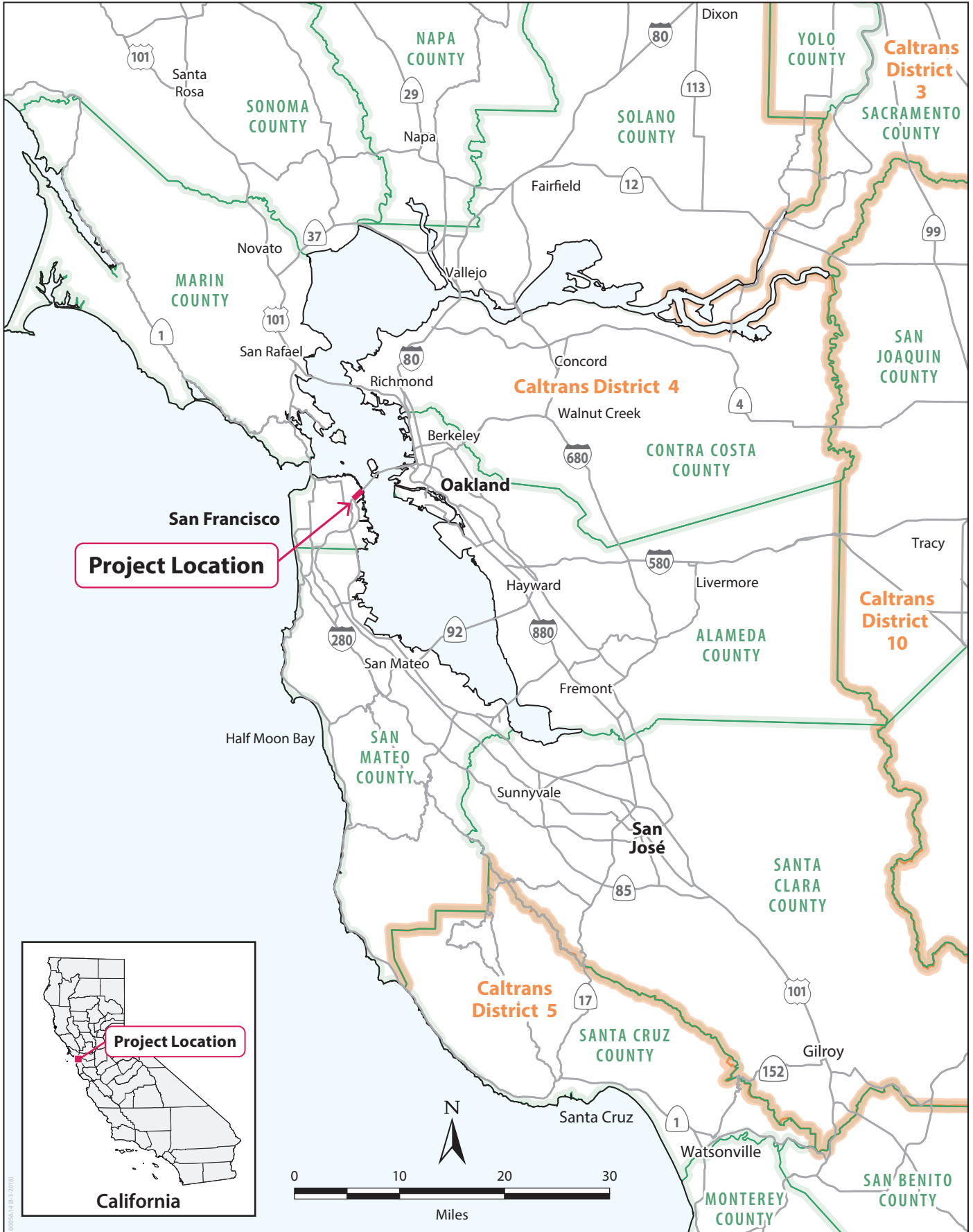
Purpose and Need

The principal purpose of the project is to increase the efficiency of the corridor for transit, bicyclists, pedestrians, and commercial vehicles and consequently make the facility safer for all modes of transportation. An ancillary purpose of the project is to bring elements of city infrastructure in the corridor, which are reaching the ends of their operational design lives, into a state of good repair. A project design option is included that reflects differences of emphasis in prioritizing different modes of transportation, principally transit.

Market Street is the main artery of the city's Muni transit system, with the majority of routes operating on or crossing Market Street. In addition to an average of approximately 250,000 transit boardings per day and private-vehicle traffic, there is substantial pedestrian use (approximately 85,000 pedestrians per weekend day on Market Street between Fourth and Fifth streets) and a substantial increase in the number of bicyclists (a 96 percent increase in bicycle traffic between 2006 and 2013). The high demand for parking and loading space from drivers of private vehicles and the low availability of non-commercial parking space in the area leads to conflicts between vehicles, double parking, and parking on the sidewalk and creates pinch zones at commercial on-street loading areas.

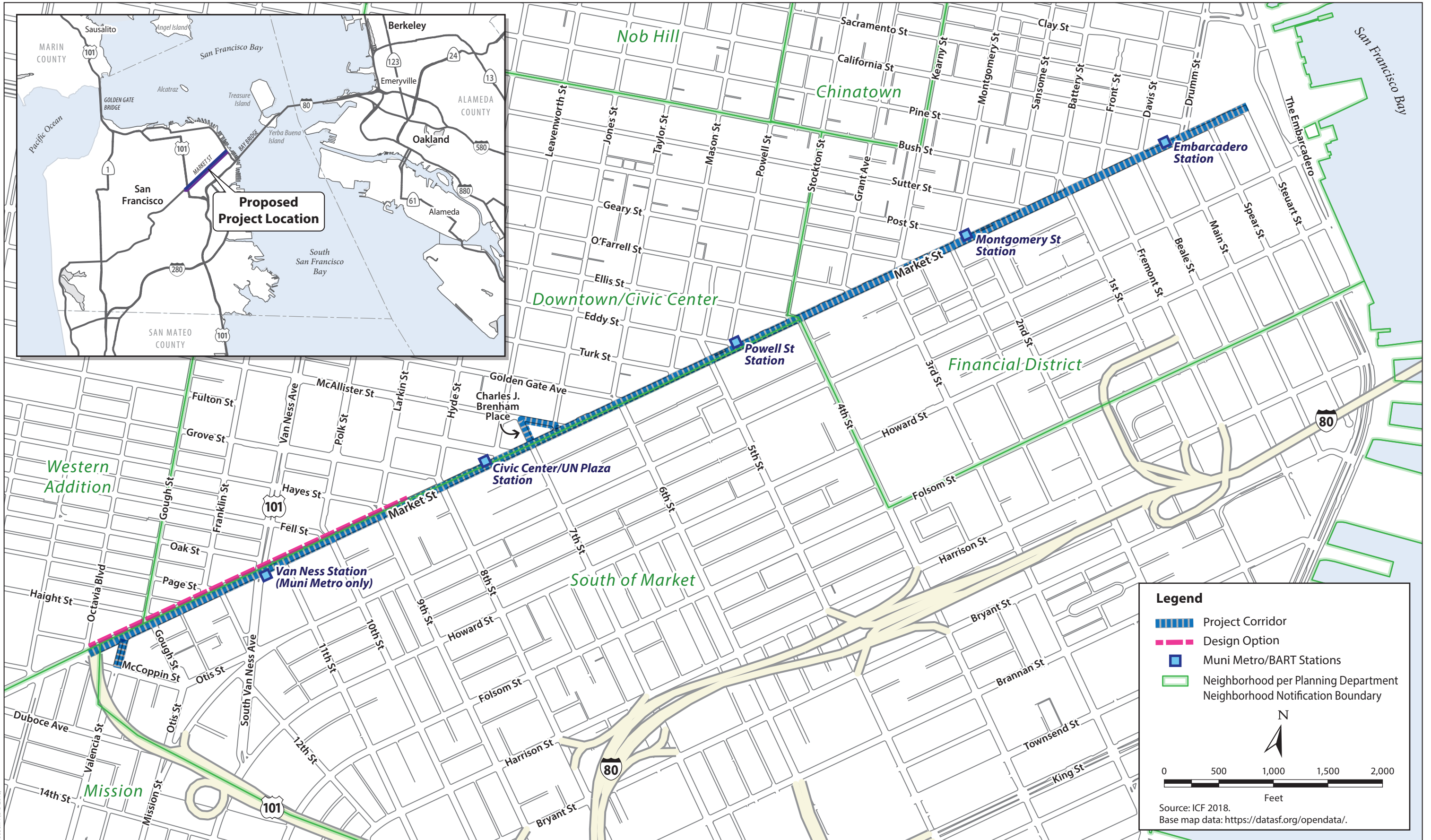
Market Street is among the slowest corridors in the Muni transit system (4.9–5.8 mph) because of conflicts between the different modes of transportation. These conflicts also contribute to a collision rate that is higher

¹ See Caltrans Road System/Functional Classification maps: http://www.dot.ca.gov/hq/tsip/hseb/crs_map/05121.pdf and http://www.dot.ca.gov/hq/tsip/hseb/crs_map/05122.pdf



Better Market Street Project

Figure 1-1
Project Vicinity



Better Market Street Project

Figure 1-2
Project Location

than the statewide average for this type of facility (67 Muni/automobile collisions and 53 bicycle or pedestrian/automobile collisions on Market Street for the period 2012–2013, the most recent data available).

Key Project Features and Analysis

- NEPA process is expected to be completed in 2019. The project will be built and open to traffic in stages, with construction potentially extending between 2020 and 2026 but not for more than 5 years at any given location.
- Project features include:
 - Four travel lanes on Market Street (two center lanes and two curb lanes between Franklin and Beale streets), with the following exceptions: up to six lanes west of Franklin Street but only three lanes east of Main and Beale streets and two lanes east of Spear Street. The project will generally convert the existing center lanes on Market Street to Muni-only lanes. These lanes will permit transit, Muni, and emergency vehicles at any time. The width of the vehicular travel lanes will remain approximately the same as under existing conditions (approximately 10 to 12 feet wide). Although the two center lanes will remain in approximately the same location, the curb side lanes will deviate from their current alignment to allow for the inclusion of new center boarding islands.
 - **Analysis:** The number of lanes, overall, will not change; including channelization, existing Market Street has up to 6 lanes between Franklin St. and Octavia Blvd., and 4 lanes elsewhere. Realignment is minor, within the existing right of way. This work will, therefore, normally fall under a 40 CFR 93.126 conformity exemption.
 - Intersection reconfigurations including, but not limited to, curb extensions for bulb-out construction to minimize crossing distances, curb pullback for bicycle lane coordination, relocation or modification of existing traffic islands, addition of small islands for bicycle lane protection, raised crosswalks at alleyways, updated curb radii to accommodate bus turn movements, and updated curb ramps to meet the latest ADA requirements and align with proposed crosswalks.
 - **Analysis:** These reconfigurations will not change channelization or the number of through lanes. They are related to pedestrian and bicycle facility improvements that will normally fall under a 40 CFR 93.126 conformity exemption.
 - Intersection reconfigurations including:
 - Addition of track alignments and modification of curb alignments at the Market Street/Charles J. Brenham Place/Seventh Street and Market Street/McAllister Street/Jones Street intersections.
 - Conversion of existing roadway to plaza space at northwest corner of Market Street/Bush Street.
 - Relocation of Lotta's Fountain, a cast-iron fountain presented to the city in 1875, to accommodate proposed traffic island reconfiguration at Market Street/Kearny Street/Geary Street.
 - **Analysis:** These reconfigurations, including the addition of a turnback loop track for streetcars (the track alignments noted above), will not add new capacity or channelization. No new through lanes or additional through tracks are added. They will therefore, normally, fall under 40 CFR 93.126 exemptions for transit and pedestrian improvements and operational measures.
 - Signal timing, control modifications, and signal relocation including: Traffic signal modifications at eight intersections (Golden Gate Avenue/Jones Street, Eddy Street/Mason Street, Turk Street/Taylor Street, McAllister Street/Charles J Brenham Place, Ellis Street/Powell Street, Ellis Street/Cyril Magnin Street, Drumm Street/California Street, and Eddy Street/Cyril Magnin Street) to accommodate new two-way/one-way changes; and two new signals at 11th and Market streets and at Steuart and Market streets.

- **Analysis:** Traffic signal modifications may, and addition of two new signals will fall under 40 CFR 93.127: exempt from regional analysis but requiring project-level “hot spot” consideration.
- Removal of the existing 23 loading bays on Market Street and creation of 22 new loading areas, either near or at the same location as the existing loading bays. New loading areas will be located at sidewalk level and shared by loading vehicles and bicyclists during off-peak travel periods. The curb within the loading areas will be mountable, allowing loading vehicles to cross through the bicycle lane to the loading area.

Removal of all parking from Market Street, including existing parking spaces east of Spear Street. Additional loading zones on cross streets and in rear alleys, or other streets, will result in part-time (i.e., time-of-day restricted) or all-day removal of parking spaces. Valencia Street between Market and McCoppin streets will have some parking removed to accommodate the new parking-protected bicycle lane. The project will result in the removal of up to six metered parking spaces on Market Street and up to 36 metered parking spaces on adjacent cross streets.

- **Analysis:** Changes to parking restrictions are normally not subject to hot spot consideration for conformity as long as they are not done in order to add a through lane. No new through lanes are provided in this case, so these changes will normally be fully exempt from conformity.
- Access Control Restrictions including restricted access to Market Street for all private vehicles between Steuart Street and Van Ness Avenue westbound (outbound) and between 10th and Beale streets eastbound (inbound). The Market Street block between Beale and Main streets will be restricted in the eastbound (inbound) direction to transit vehicles, bicycles, emergency vehicles, and paratransit only. The southbound right turn from Battery/Bush streets onto Market Street will be prohibited. Existing right-turn and left-turn regulations on Market Street will remain. Transportation network company vehicles (e.g., Uber and Lyft) will be subject to the same restricted access as private vehicles. These restrictions will be in place 24 hours a day, 7 days a week. Public transit vehicles, emergency vehicles, taxis, paratransit vehicles, and bicycles will be permitted on the entire length of Market Street within the project corridor, except for the eastbound direction between Beale and Main streets. Taxis will be permitted on the entire length of Market Street within the project corridor, except for eastbound (inbound) between Beale and Main streets. Commercial vehicles may be permitted for loading activities only during off-peak hours in the off-peak direction (i.e., westbound [outbound] in the morning peak hours and eastbound [inbound] in the evening peak hours).
 - **Analysis:** This project feature should be exempt under 40 CFR 93.126 as an operational measure. Private vehicle traffic (eastbound) will be diverted to 10th St. and then parallel streets (such as Mission Street) south of Market. Traffic studies show that the AADT on Mission will increase, but still be well below the level (125,000) normally considered significant for hot spot analysis and truck percentages remain small. Therefore, even if it is found that 40 CFR 93.127 will apply, the project should not be a POAQC.
- Sidewalks, bicycle lanes, and utility infrastructure modification and reconstruction. A continuous bicycle lane will be constructed, in part at sidewalk level.
 - **Analysis:** All of these project features will normally be considered fully exempt under 40 CFR 93.126.
- Transit-stop spacing. New stop locations will accommodate both rapid service for some bus lines and surface-running streetcars as well as local service through local bus routes. The length and width of existing transit boarding islands will be increased to meet ADA standards. Some existing transit boarding islands will be removed or relocated. Wheelchair ramps will be constructed to serve the F line. Access to the proposed transit boarding islands will continue to be from marked crosswalks. Replacement stops will

have the time, transit information, and advertisements. Transit shelters will be included at all transit stops along the corridor, and some stops will include features such as ticket vending machines and closed-circuit television cameras for security enforcement.

A new counterclockwise F-line track loop (F loop) running one way westbound (outbound) along McAllister Street between Market Street and Charles J. Brenham Place and one way southbound along Charles J. Brenham Place between McAllister and Market streets will be constructed in the roadway to give the F-line surface-running streetcar line the ability to switch from running westbound (outbound) to running eastbound (inbound) using the new loop. The F loop will travel in the existing westbound lane on McAllister Street and the existing southbound Charles J Brenham Place lane. All F-loop movements will be controlled by the traffic signal. Therefore, the F-loop turn movements will have dedicated signal phases, which will hold all conflicting traffic movements while the streetcar completes its movement. The F-loop intersections will have special train signals that will tell the F-line operator which way the track switch is set and whether the train has the right-of-way (i.e., the green light for the general traffic). There will also be bicycle signals and "TRAIN COMING" blank-out signs to emphasize the F-loop movements and warn other street users about the train movement.

- **Analysis:** These transit operational and safety improvements will not add new through tracks to increase capacity. Transit improvements are intended to increase average speed, and the F loop will allow additional streetcars to use the existing line on lower Market Street, but these operational changes will normally be considered exempt from conformity requirements under 40 CFR 93.126.

Not a Project of Air Quality Concern (40 CFR 93.123(b)(1))

(i) New or expanded highway projects with significant number/increase in diesel vehicles?

- This is not a new or expanded highway project.

(ii) Affects intersections at LOS D, E, or F with a significant number of diesel vehicles?

- (ii) All intersections within the area of conformity analysis are known or assumed to operate at Level of Service (LOS) E or F during peak periods.
- (iii) Trucks are a small percentage (2.1%) of average annual daily traffic (AADT), and AADT on both Market and Mission Streets is well below 125,000 in both the Build and No Build Alternatives.
- (iv) With restriction of private vehicle use, heavy vehicles (buses and trucks) will become a larger percentage of total traffic. However, AADT on Market Street east of Van Ness Avenue is less than 20,000 at all locations, and less than 52,000 even in 2040 for cross streets and Mission Street. Heavy diesel volume is less than 10,000 in all analysis years. A portion of transit vehicles are all-electric, and the Muni is converting most of its non-electric bus fleet to hybrids, so by the horizon year the heavy diesel contribution to bus emissions should be lower than it is at present.
- (v) Between 10th and Beale Streets, eastbound traffic will be restricted to transit, commercial delivery, and medallion taxi vehicles. Eastbound private vehicle traffic will be diverted to parallel streets south of Market, such as Mission Street at 10th Street. Private vehicle traffic will be restricted at all locations east of Van Ness Avenue.
- (vi) The project may help reduce vehicular traffic via modal shift to walking, biking, and transit.

(iii) New bus and rail terminals and transfer points?

- Not Applicable. Although Market Street is a major transit corridor, the project does not include bus and rail terminals.

(iv) Expanded bus and rail terminals and transfer points?

- Not Applicable. Although Market Street is a major transit corridor, the project does not include bus and rail terminals.

(v) Affects areas identified in PM10 or PM2.5 implementation plan as site of violation?

- The project site is not in and does not affect locations, areas, or categories of sites that are identified in a PM10 or PM2.5 implementation plan.
- The immediate project area is not a site of PM10 or PM2.5 violation or possible violation.

Future Traffic Volumes

The project focuses on transit, bicycle, and pedestrian improvements. Traffic volumes overall are low (less than 20,000 AADT) on Market Street east of Van Ness Avenue, the area of concern for conformity purposes, in both opening and horizon years. Traffic volume is higher at and west of Van Ness Avenue, but no significant changes to the number of traffic lanes or other new traffic restrictions are proposed in that area.

Recommendation

The project should not be a Project of Air Quality Concern (POAQC) because:

- While most project intersections currently operate and will operate at LOS E or worse during peak periods, the project will not change this.
- AADT is well below 125,000.
- Market Street is not a truck route. Truck traffic is primarily commercial deliveries and is about 2.1% of AADT. Given the total AADT and truck percentage, significant truck volumes (more than 10,000 AADT) are not expected.
- While diesel buses are used on Market Street and will become a larger percentage of total traffic after private vehicles are restricted, the AADT will remain less than 10,000 in 2040. A portion of transit traffic on Market Street is electrically powered and produces no localized pollutant emissions. Even combining both bus and truck traffic, it is not possible for diesel vehicles to reach the 10,000 diesel AADT threshold required for more detailed analysis. In addition, the San Francisco Muni has been converting its diesel fleet to hybrid buses since 2005, with a goal of complete conversion over time, which further reduces diesel emissions.
- The additional signals will not substantially change traffic flow; they are at locations with traffic volumes below 10,000 AADT in 2040 and are the only currently unsignalized intersections on lower Market Street (east of Van Ness Avenue).
- Except for the new signals and, possibly, diversion of private vehicles off Market Street at 10th Street and revised channelization to reflect turn restrictions from cross streets to Market Street, the BMS Project includes actions that will be exempt from conformity under 40 CFR 93.126.

RTP ID# (required) 17-05-0016				
TIP ID# (required) SF-130001				
Air Quality Conformity Task Force Consideration Date 9/27/2018				
Project Description (clearly describe project) In San Francisco: Market Street from Steuart Street to Octavia Boulevard: improve roadway, including resurfacing; sidewalk and transit boarding improvements; transit connections and reconstruction; traffic signals including two new signals; transportation circulation changes; and utility relocation and upgrade. See attached project description for more information.				
Type of Project: Streetscape, transit improvement, and bicycle lanes. Modify channelization and existing signals to direct private vehicle traffic off portions of Market Street, modify commercial vehicle loading zones and redirect some commercial vehicle traffic off Market Street, add signals at Steuart and 11 th Streets. See attached project description for more details.				
County San Francisco	Narrative Location/Route & Postmiles In downtown San Francisco, on Market Street between Steuart Street and Octavia Boulevard.			
Lead Agency: San Francisco Dept. of Public Works				
Contact Person (SF DPW) Cristina Calderón Olea	Phone# 415-558-4004	Fax# N/A	Email Cristina.c.olea@sfdpw.org	
Federal Action for which Project-Level PM Conformity is Needed (check appropriate box)				
<i>Categorical Exclusion (NEPA)</i>	<input checked="" type="checkbox"/> EA or Draft EIS	<input type="checkbox"/> FONSI or Final EIS	<input type="checkbox"/> PS&E or Construction	<input type="checkbox"/> <i>Other</i>
Scheduled Date of Federal Action: Summer 2019				
NEPA Delegation – Project Type (check appropriate box)				
<input type="checkbox"/>	<input type="checkbox"/> Section 326 – Categorical Exclusion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Section 327 – Non-Categorical Exclusion	
Current Programming Dates (as appropriate)				
	PE/Environmental	ENG	ROW	CON
Start	2015	2019	Existing street R/W	2022
End	2019	2021	-	2024
Project Purpose and Need (Summary): (please be brief) Market Street is San Francisco's civic backbone, connecting water to hills, businesses to neighborhoods, and cultural centers to recreational opportunities. The redesign will make Market Street more pedestrian, bicycle, and transit oriented, helping to reduce air pollution emissions by encouraging non-motorized travel to and around San Francisco's central core. See attached project description for more information.				

Surrounding Land Use/Traffic Generators (especially effect on diesel traffic)

Central-city, downtown office/commercial and public use area. Transit and commercial vehicles are a substantial portion of the total volume, but do not dominate it (5.1% trucks and buses along Market Street). About 70% of transit vehicles along Market Street are electric, and the Municipal Railway non-electric bus fleet has been converting to diesel-electric hybrid since 2005; some conventional diesel buses do and will continue to operate on Market.

Brief summary of assumptions and methodology used for conducting analysis

Transit vehicle trips on Market Street, which are approximately 3% of total vehicle volumes, comprise 70% electric (streetcars, trolley buses) and 30% diesel-electric hybrid and conventional diesel buses (Goyne pers. comm. 2018). Commercial vehicles (delivery trucks) represent approximately 2.1% of total vehicle volumes and are conservatively assumed to be all diesel.

Except for transit-only lanes, private vehicles (i.e., taxis and trucks) are currently allowed to travel on Market Street. However, private automobiles traveling eastbound on Market Street are required to turn right at 10th and 6th Streets. Left-turn movements from Market Street are prohibited for all private vehicles, except at Valencia Street in the westbound direction and Franklin and Drumm Streets in the eastbound direction.

The project will restrict access to Market Street for all private vehicles between Steuart Street and Van Ness Avenue westbound and between 10th and Beale Streets eastbound. The Market Street block between Beale and Main streets will be restricted in the eastbound direction to transit vehicles, bicycles, emergency vehicles, and paratransit only. The southbound right turn from Battery and Bush Streets onto Market Street will be prohibited. Existing required right-turn and left-turn regulations on Market will also remain. Taxis will be permitted on the entire length of Market Street within the project corridor except for the eastbound direction between Beale and Main Streets.

Opening Year: If facility is a highway or street, Build and Baseline LOS, AADT, % and # trucks, truck AADT of proposed facility

Opening Year for the project-level conformity analysis is 2026.¹

Analysis is focused on major changes to intersection channelization between Steuart Street and Van Ness Avenue (westbound), 10th and Beale Streets (eastbound), and Beale and Main Streets (both directions) related to private vehicle restrictions and added signalization at Steuart and 11th Streets. The remainder of the project will fall under one or more conformity exemptions (conformity exemptions that will apply to other project work include: transit improvements (no new capacity)²; bicycle/pedestrian improvements; streetscape elements that do not involve changes to the roadway; and general maintenance and utility improvement work). Therefore, analysis is focused on intersection-related criteria below.

RTP Horizon Year / Design Year: If facility is a highway or street, Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

Horizon Year for the project-level conformity analysis is 2040.

As noted above, because most of the project will fall under one or more conformity exemptions, the analysis focuses on major changes to intersection channelization between Steuart Street and Van Ness

¹ The project environmental document assumes the opening year for the proposed project would occur as early as 2020. This is the year when the first of the construction segments may be completed, although this may not occur until 2022. The project would finish construction and be fully open-to-traffic as early as 2024, but no later than 2026. Accordingly, the project-level conformity analysis evaluates traffic conditions at the full open-to-traffic year of 2026. An opening year of 2026 is consistent with MTC's regional conformity analysis for their 2017 TIP and draft 2019 TIP (the Better Market Street Project is included in the 2030 conformity analysis as it was assumed to open between 2020 and 2030).

² Note that the proposed project will increase capacity with the F-loop turnaround, which will allow for more frequent short, shuttle-type streetcar service. However, the F-loop is an electric-powered streetcar service, and the loop will not add additional main tracks on Market Street. There will be no increase in existing capacity for diesel or other fossil-fuel powered transit.

Avenue (westbound), 10th and Beale Streets (eastbound), and Beale and Main Streets (both directions) related to private vehicle restrictions and added signalization at Steuart and 11th Streets

Opening Year: If facility is an interchange(s) or intersection(s), Build and Baseline cross-street AADT, % and # trucks, truck AADT

The project will be built in several stages to minimize traffic and business disruption, starting in 2020, with all construction complete and full open to traffic in 2026.

Level of Service (LOS) analysis is not available from the traffic engineers, but Market and Mission Streets in general operate at LOS E or F during peak periods in the downtown area. All existing intersections on Market Street are signalized except for Steuart and 11th Streets; new signals will be added at those intersections. General operating characteristics of Market Street are not expected to change substantially, except for slightly higher average transit vehicle speeds east of 10th Street where eastbound private vehicle traffic will be diverted to parallel streets south of Market Street.

Tables 1 and 2 summarize available AADT along Market and Mission Streets between Steuart Street and Octavia Boulevard related to private vehicle restrictions and signalization at Steuart and 11th Streets under Opening Year Build and No-Build conditions, respectively.

Table 1. Opening (2026) Build AADT and Truck Percentages on Market Street within the Conformity Analysis Focus Area

Project Route	Cross Streets	AADT	Truck %
Market Street	Steuart Street	1,820	2.1%
Market Street	Spear Street	4,500	2.1%
Market Street	Drumm Street-Main Street	3,400	2.1%
Market Street	Davis Street-Beale Street	2,140	2.1%
Market Street	Front Street-Fremont Street	1,510	2.1%
Market Street	Battery Street-1 st Street	5,150	2.1%
Market Street	Sansome Street	2,230	2.1%
Market Street	2 nd Street	5,320	2.1%
Market Street	N. Montgomery Street	4,120	2.1%
Market Street	3 rd Street-Kearny Street	1,700	2.1%
Market Street	Grant Avenue-O'Farrell Street	3,190	2.1%
Market Street	4 th Street-Stockton Street	2,260	2.1%
Market Street	Powell Street	1,360	2.1%
Market Street	5 th Street	1,660	2.1%
Market Street	Mason Street-Turk Street	3,060	2.1%
Market Street	Taylor Street-Golden Gate Avenue	1,270	2.1%
Market Street	Jones Street-McAllister Street	2,570	2.1%
Market Street	7 th Street	780	2.1%
Market Street	Leavenworth Street	780	2.1%
Market Street	8 th Street	1,180	2.1%
Market Street	9 th Street	780	2.1%
Market Street	10 th Street	4,070	2.1%
Market Street	11 th Street	7,460	2.1%
Market Street	Van Ness Avenue	12,020	2.1%
Market Street	12 th Street-Franklin	27,450	2.1%
Market Street	Gough Street	48,160	2.1%
Market Street	Valencia Street	48,730	2.1%
Market Street	Octavia Boulevard	42,410	2.1%
Mission Street	Embarcadero	1,820	2.1%
Mission Street	Steuart Street	12,440	2.1%
Mission Street	Spear Street	13,400	2.1%
Mission Street	Main Street	15,890	2.1%
Mission Street	Beale Street	18,580	2.1%

Mission Street	Fremont Street	20,280	2.1%
Mission Street	1 st Street	25,030	2.1%
Mission Street	2 nd Street	28,290	2.1%
Mission Street	N. Montgomery Street	30,200	2.1%
Mission Street	3 rd Street	32,490	2.1%
Mission Street	4 th Street	34,300	2.1%
Mission Street	5 th Street	37,880	2.1%
Mission Street	6 th Street	34,850	2.1%
Mission Street	7 th Street	33,650	2.1%
Mission Street	8 th Street	32,830	2.1%
Mission Street	9 th Street	31,030	2.1%
Mission Street	10 th Street	25,710	2.1%
Mission Street	11 th Street	27,240	2.1%
Mission Street	Van Ness Avenue	35,730	2.1%
Mission Street	Gough and McCoppin and Otis	11,820	2.1%
Mission Street	13 th Street	46,040	2.1%
Source: Fehr and Peers 2018.			
Note: 2020 volumes developed for the project environmental document were linearly scaled to 2026 (full project opening), based on guidance from the project transportation engineers (Goynes pers. comm. 2018)			

Table 2. Opening (2026) No-Build AADT and Truck Percentages on Market Street within the Conformity Analysis Focus Area

Project Route	Cross Streets	AADT	Truck %
Market Street	Steuart Street	3,320	2.1%
Market Street	Spear Street	8,900	2.1%
Market Street	Drumm Street-Main Street	11,430	2.1%
Market Street	Davis Street-Beale Street	12,030	2.1%
Market Street	Front Street-Fremont Street	10,070	2.1%
Market Street	Battery Street-1 st Street	16,780	2.1%
Market Street	Sansome Street	13,390	2.1%
Market Street	2 nd Street	23,850	2.1%
Market Street	N. Montgomery Street	11,720	2.1%
Market Street	3 rd Street-Kearny Street	9,750	2.1%
Market Street	Grant Avenue-O'Farrell Street	8,950	2.1%
Market Street	4 th Street-Stockton Street	7,620	2.1%
Market Street	Powell Street	7,220	2.1%
Market Street	5 th Street	7,350	2.1%
Market Street	Mason Street-Turk Street	7,280	2.1%
Market Street	Taylor Street-Golden Gate Avenue	8,350	2.1%
Market Street	Jones Street-McAllister Street	11,080	2.1%
Market Street	7 th Street	9,220	2.1%
Market Street	Leavenworth Street	9,020	2.1%
Market Street	8 th Street	12,150	2.1%
Market Street	9 th Street	10,660	2.1%
Market Street	10 th Street	10,160	2.1%
Market Street	11 th Street	14,840	2.1%
Market Street	Van Ness Avenue	16,940	2.1%
Market Street	12 th Street-Franklin	27,750	2.1%
Market Street	Gough Street	46,160	2.1%
Market Street	Valencia Street	43,930	2.1%
Market Street	Octavia Boulevard	35,810	2.1%
Mission Street	Embarcadero	3,320	2.1%
Mission Street	Steuart Street	10,840	2.1%
Mission Street	Spear Street	11,400	2.1%

Mission Street	Main Street	14,390	2.1%
Mission Street	Beale Street	17,880	2.1%
Mission Street	Fremont Street	19,780	2.1%
Mission Street	1 st Street	24,570	2.1%
Mission Street	2 nd Street	27,790	2.1%
Mission Street	N. Montgomery Street	30,600	2.1%
Mission Street	3 rd Street	32,790	2.1%
Mission Street	4 th Street	34,300	2.1%
Mission Street	5 th Street	36,280	2.1%
Mission Street	6 th Street	32,850	2.1%
Mission Street	7 th Street	31,950	2.1%
Mission Street	8 th Street	30,630	2.1%
Mission Street	9 th Street	28,530	2.1%
Mission Street	10 th Street	23,910	2.1%
Mission Street	11 th Street	25,540	2.1%
Mission Street	Van Ness Avenue	35,130	2.1%
Mission Street	Gough and McCoppin and Otis	12,120	2.1%
Mission Street	13 th Street	46,040	2.1%

Source: Fehr and Peers 2018.

Note: 2020 volumes developed for the project environmental document were linearly scaled to 2026 (full project opening), based on guidance from the project transportation engineers (Goyne pers. comm. 2018)

Truck percentages do not include transit vehicles. Transit vehicle trips on Market Street, which are approximately 3% of total No-Build vehicle volumes, comprise 70% electric (streetcars, trolley buses) and 30% diesel-electric hybrid and conventional diesel buses (Goyne pers. comm. 2018).

RTP Horizon Year / Design Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT

LOS analysis is not available from the traffic engineers, but Market Street in general operates at LOS E or F during peak periods. All existing intersections on Market Street are signalized except for Stuart and 11th Streets; new signals will be added at those intersections.

Tables 3 and 4 summarize available AADT along Market and Mission Streets between Stuart Street and Octavia Boulevard related to private vehicle restrictions and signalization at Stuart and 11th Streets under Design Year Build and No-Build conditions, respectively.

Table 3. Design (2040) Build AADT and Truck Percentages on Market Street within the Conformity Analysis Focus Area

Project Route	Cross Streets	AADT	Truck %
Market Street	Steuart Street	2,100	2.1%
Market Street	Spear Street	5,200	2.1%
Market Street	Drumm Street-Main Street	4,100	2.1%
Market Street	Davis Street-Beale Street	2,700	2.1%
Market Street	Front Street-Fremont Street	2,000	2.1%
Market Street	Battery Street-1 st Street	6,200	2.1%
Market Street	Sansome Street	3,000	2.1%
Market Street	2 nd Street	7,000	2.1%
Market Street	N. Montgomery Street	5,100	2.1%
Market Street	3 rd Street-Kearny Street	2,400	2.1%
Market Street	Grant Avenue-O'Farrell Street	4,100	2.1%
Market Street	4 th Street-Stockton Street	3,100	2.1%
Market Street	Powell Street	2,200	2.1%
Market Street	5 th Street	2,500	2.1%
Market Street	Mason Street-Turk Street	3,900	2.1%

Market Street	Taylor Street-Golden Gate Avenue	1,900	2.1%
Market Street	Jones Street-McAllister Street	3,200	2.1%
Market Street	7 th Street	1,200	2.1%
Market Street	Leavenworth Street	1,200	2.1%
Market Street	8 th Street	1,600	2.1%
Market Street	9 th Street	1,200	2.1%
Market Street	10 th Street	4,700	2.1%
Market Street	11 th Street	8,300	2.1%
Market Street	Van Ness Avenue	13,000	2.1%
Market Street	12 th Street-Franklin	29,200	2.1%
Market Street	Gough Street	51,100	2.1%
Market Street	Valencia Street	51,600	2.1%
Market Street	Octavia Boulevard	45,000	2.1%
Mission Street	Embarcadero	2,100	2.1%
Mission Street	Steuart Street	13,000	2.1%
Mission Street	Spear Street	14,100	2.1%
Mission Street	Main Street	16,800	2.1%
Mission Street	Beale Street	19,700	2.1%
Mission Street	Fremont Street	21,400	2.1%
Mission Street	1 st Street	26,500	2.1%
Mission Street	2 nd Street	29,900	2.1%
Mission Street	N. Montgomery Street	32,300	2.1%
Mission Street	3 rd Street	34,800	2.1%
Mission Street	4 th Street	36,400	2.1%
Mission Street	5 th Street	40,400	2.1%
Mission Street	6 th Street	37,300	2.1%
Mission Street	7 th Street	36,100	2.1%
Mission Street	8 th Street	35,000	2.1%
Mission Street	9 th Street	33,200	2.1%
Mission Street	10 th Street	27,600	2.1%
Mission Street	11 th Street	29,200	2.1%
Mission Street	Van Ness Avenue	38,600	2.1%
Mission Street	Gough and McCoppin and Otis	12,800	2.1%
Mission Street	13 th Street	49,400	2.1%
Source: Fehr and Peers 2018.			

Table 4. Design (2040) No Build AADT and Truck Percentages on Market Street within the Conformity Analysis Focus Area

Project Route	Cross Streets	AADT	Truck %
Market Street	Steuart Street	3,600	2.1%
Market Street	Spear Street	9,600	2.1%
Market Street	Drumm Street-Main Street	12,200	2.1%
Market Street	Davis Street-Beale Street	12,800	2.1%
Market Street	Front Street-Fremont Street	10,700	2.1%
Market Street	Battery Street-1 st Street	17,900	2.1%
Market Street	Sansome Street	14,300	2.1%
Market Street	2 nd Street	25,600	2.1%
Market Street	N. Montgomery Street	12,700	2.1%
Market Street	3 rd Street-Kearny Street	10,800	2.1%
Market Street	Grant Avenue-O'Farrell Street	10,000	2.1%
Market Street	4 th Street-Stockton Street	8,600	2.1%
Market Street	Powell Street	8,200	2.1%
Market Street	5 th Street	8,400	2.1%
Market Street	Mason Street-Turk Street	8,400	2.1%
Market Street	Taylor Street-Golden Gate Avenue	9,400	2.1%

Market Street	Jones Street-McAllister Street	12,200	2.1%
Market Street	7 th Street	10,200	2.1%
Market Street	Leavenworth Street	10,000	2.1%
Market Street	8 th Street	13,200	2.1%
Market Street	9 th Street	11,500	2.1%
Market Street	10 th Street	11,000	2.1%
Market Street	11 th Street	16,100	2.1%
Market Street	Van Ness Avenue	18,200	2.1%
Market Street	12 th Street-Franklin	29,500	2.1%
Market Street	Gough Street	49,100	2.1%
Market Street	Valencia Street	46,800	2.1%
Market Street	Octavia Boulevard	38,400	2.1%
Mission Street	Embarcadero	3,600	2.1%
Mission Street	Steuart Street	11,400	2.1%
Mission Street	Spear Street	12,100	2.1%
Mission Street	Main Street	15,300	2.1%
Mission Street	Beale Street	19,000	2.1%
Mission Street	Fremont Street	20,900	2.1%
Mission Street	1 st Street	25,900	2.1%
Mission Street	2 nd Street	29,400	2.1%
Mission Street	N. Montgomery Street	32,700	2.1%
Mission Street	3 rd Street	35,100	2.1%
Mission Street	4 th Street	36,400	2.1%
Mission Street	5 th Street	38,800	2.1%
Mission Street	6 th Street	35,300	2.1%
Mission Street	7 th Street	34,400	2.1%
Mission Street	8 th Street	32,800	2.1%
Mission Street	9 th Street	30,700	2.1%
Mission Street	10 th Street	25,800	2.1%
Mission Street	11 th Street	27,500	2.1%
Mission Street	Van Ness Avenue	38,000	2.1%
Mission Street	Gough and McCoppin and Otis	13,100	2.1%
Mission Street	13 th Street	49,400	2.1%
Source: Fehr and Peers 2018.			

Truck percentages do not include transit vehicles. Transit vehicle trips on Market Street, which are approximately 3% of total No-Build vehicle volumes, comprise 70% electric (streetcars, trolley buses) and 30% diesel-electric hybrid buses and conventional diesel buses (Goyne pers. comm. 2018).

Opening Year: If facility is a bus, rail or intermodal facility/terminal/transfer point, # of bus arrivals for Build and No Build, % and # of bus arrivals will be diesel buses

Market Street is not a designated terminal or central transfer point. This criterion, therefore, does not apply.

RTP Horizon Year / Design Year: If facility is a bus, rail or intermodal facility/terminal/transfer point, # of bus arrivals for Build and No Build, % and # of bus arrivals will be diesel buses

Market Street is not a terminal or transfer point. This criterion, therefore, does not apply.

Describe potential traffic redistribution effects of congestion relief (*impact on other facilities*)

The project is not intended to cause a change in congestion, defined as a change in LOS by one or more letter grades. Market and Mission Streets operate at LOS E or F in peak hours, but do not carry a significant number of diesel vehicles (much less than 10,000). Private and commercial vehicle traffic on Market Street will be diverted to Mission and other parallel streets, but will not change their traffic volumes significantly. Transit vehicles on Market Street will operate under improved conditions and higher average speeds, especially in the blocks where private vehicle traffic is removed. The project is intended to improve safety and efficiency of transit and non-motorized vehicle operations, not to provide general congestion relief.

Comments/Explanation/Details (please be brief)

Analysis is focused on major changes to intersection channelization at between Steuart Street and Van Ness Avenue related to private vehicle restrictions, and signalization at Steuart and 11th Streets. The remainder of the project will fall under one or more conformity exemptions. Therefore, analysis is focused on intersection-related criteria at those locations. Conformity exemptions that will apply to other project work include: transit improvements (no new capacity); bicycle/pedestrian improvements; streetscape elements that do not involve changes to the roadway; and general maintenance and utility improvement work.

See the attached project description for more details.

Recommendation: The project does not meet criteria for being a Project of Air Quality Concern (POAQC).

Attachment: EA Project Description

San Francisco Public Works, in coordination with the Citywide Planning Division of the Planning Department, the San Francisco Municipal Transportation Agency (SFMTA), the San Francisco Public Utilities Commission (SFPUC), and the San Francisco County Transportation Authority (SFCTA), proposes to redesign and provide various transportation and streetscape improvements to Market Street. The project includes changes to and replacement/modification of: roadway configuration and private vehicle access; traffic signals; surface transit, including transit-only lanes, stop spacing, service, transit-stop location, transit-stop characteristics and infrastructure; bicycle facilities; pedestrian facilities; commercial and passenger loading; vehicular parking; and utilities.

All of the various proposed project elements will be constructed on public right-of-way, and a majority of the various proposed project elements will be implemented within the operational public right-of-way. The project will require a temporary encroachment permit for construction activities and a permanent encroachment permit (for modifications within the Van Ness Avenue and Central Freeway rights-of-way) from Caltrans. The total anticipated area of disturbance is approximately 30 acres.

Typical depth of soil disturbance within the project footprint is 14", with a maximum of 16' for sewer work, and 10' for SFMTA power systems, with a depth of 35' for one location associated with a subsidewalk basement. No roadway cut and fill is anticipated to be required. The project is entirely within the area served by San Francisco's combined sewer/stormwater system, and requires no environmental regulatory approvals from state or federal regulatory agencies.

The Project corridor is located along the boundary of or within neighborhoods of the City and County of San Francisco, specifically, Downtown/Civic Center, South of Market, and Financial District neighborhoods. The corridor consists the 2.2 miles of Market Street between Octavia Boulevard and Steuart Street, as well as Valencia Street between Market and McCoppin streets, McAllister Street between Market Street and Charles J. Brenham Place, Charles J. Brenham Place between Market and McAllister streets, and several adjacent streets intersecting both north and south of Market Street, including Gough Street, Page Street, 12th Street, 11th Street, Fell Street, 10th Street, Hayes Street, 9th Street, Grove Street, Hyde Street, 8th Street, 7th Street, Jones Street, Golden Gate Avenue, Taylor Street, 6th Street, Turk Street, Mason Street, 5th Street, Ellis Street, 4th Street, Stockton Street, O'Farrell Street, Kearny Street, Montgomery Street, 2nd Street, Sutter Street, Battery Street, Bush Street, 1st Street, Beale Street, Main Street, Drumm Street, Spear Street, and Steuart Street.

Market Street is the main artery of the City's Muni transit system, with the majority of routes operating on or crossing Market Street. In addition to an average of approximately 250,000 transit boardings per day and private-vehicle traffic, there is substantial pedestrian use (approximately 85,000 pedestrians per weekend day on Market Street between 4th and 5th Streets) and a substantial increase in the number of bicyclists (a 96 % growth in bicycle traffic between 2006-2013). Market Street's collision rate (67 MUNI/auto collisions and 53 bicycle/pedestrian or pedestrian/auto collisions total on Market for the period 2012-2013, the most recent data available) that is higher than the statewide average for an urban four-lane undivided road.

Collisions Per Million Vehicle Miles Travelled	
Market St	32.0
Statewide average for urban 4-lane undivided road	1.53
Caltrans District 4 average	0.58
San Francisco County	4.7
Mission Street	6.9

Collision data: SFMTA 2012-2013; Caltrans, *2014 Collision Data on California State Highways (road miles, travel, collisions, collision rates)*

Design deficiencies that contribute to a higher than average collision rate, and pose potential hazards for all modes of transportation, include the following:

- Shared vehicle, transit, and bicycle facilities pose potentially hazardous conditions for all modes of transportation
 - High demand for parking and loading by private vehicles and low availability of non-commercial parking spaces in the area leads to conflicts between vehicles, double parking, and parking on the sidewalk, and creates pinch zones at commercial on-street loading areas.
 - Limitations for passing by trolley buses, and vehicle queuing at the near-side island stops, cause congestion
 - Curbside lane blockages at right turns or by commercial loading leads to conflicts between traffic and loading vehicles
- The lack of existing dedicated bicycle facilities east of 8th Street leads to bicyclists, transit, and vehicles competing for the same space; vehicles weaving in bus lanes; and pinch zones in lanes due to encroachment by boarding islands
 - Left turns are not defined for bicyclists at several intersections, which can make bicyclists unsure of where and how to cross at some intersections
 - Lack of intersection waiting space for bicyclists leads to unsafe conditions for bicyclists when waiting to turn
 - Rails for Muni streetcars, and BART ventilation grates, can pose a hazard for cyclists
- For pedestrians, existing wide intersection crossings lead to extended times for to clear crosswalks.
- For low-vision and mobility-impaired pedestrians, existing nonstandard brick pedestrian sidewalks that do not meet current City standards for compliance with ADA standards for slip resistance, surface smoothness, and surface visual uniformity can present substantial challenges.
- For transit users, boarding islands have limited capacity and are not ADA compliant

PURPOSE AND NEED

Market Street is among the slowest corridors in the Muni transit system (4.9-5.8 mph), due to conflicts between different modes of transportation, stop spacing and heavy passenger volumes. These conflicts also contribute to the high collision rate noted above.

The principal purpose of the project is to increase the efficiency of the corridor for transit, bicyclists, pedestrians, and commercial vehicles, and consequently make the facility safer for all modes of transportation. An ancillary purpose of the project is to bring elements of City infrastructure in the corridor that are reaching the ends of their operational design lives into a state of good repair. A project design option is included that reflect differences of emphasis in prioritizing different modes of

transportation, principally bicycles.

EXISTING CONDITION

Market Street is a major city street and a significant regional destination, functioning as the backbone of San Francisco's public, and BART's regional, transportation systems, a significant bicyclist commuter route, and a major retail portal, serving a population both within and outside the city. The project corridor crosses and is adjacent to several distinct districts and neighborhoods. Land use distribution along Market Street is primarily commercial, with few residential uses in many of the districts.

In general, there are four travel lanes on Market Street between Van Ness Avenue and Main Street. The blocks between Main and Steuart streets have three travel lanes. West of Van Ness Avenue, Market Street widens to seven travel lanes to allow for left turn lanes north onto Franklin Street and south onto Valencia Street. Valencia Street between Market and McCoppin streets has three travel lanes and one parking lane in each direction.

Private vehicles are currently permitted to travel on Market Street in non-transit only lanes, however, eastbound private vehicles are required to turn right at 10th and 6th streets. Left turn movements from Market Street are prohibited for private vehicles, except at Valencia Street in the westbound direction and Franklin and Drumm streets in the eastbound direction. Existing bicycle facilities on Market Street consist of dedicated lanes or shared lanes marked with sharrows, depending upon location.

Between Market and Mission streets, 10th Street has four travel lanes (one-way southbound) and one parking lane. McCoppin Street has two travel lanes and two parking lanes. Otis Street has four travel lanes and two parking lanes. Market Street has traffic signals at most intersections.

There are transit-only center lanes for surface public transit, taxis, and emergency vehicles between 3rd Street and Van Ness Avenue in the westbound (outbound) direction and between 12th and 3rd streets in the eastbound (inbound) direction. The transit-only lanes operate 24 hours a day, 7 days a week. Streetcar rail tracks exist in both directions on Market Street, serving the center lanes between Octavia Boulevard and Steuart Street.

Muni operates 20 bus routes and one streetcar line (F Line, on a tie-and-ballast rail track) along the surface of Market Street during the evening peak hour within the Project area (note: some bus routes travel upon, but do not stop on, Market Street). Most of these surface transit routes and the single streetcar line serve at least one of 17 curbside stops (8 inbound, 9 outbound) and 23 center boarding island stops (12 inbound, 11 outbound) within the Project area. In addition to the 20 evening peak hour bus routes, Muni operates two late night bus routes on Market Street.

Market Street has dedicated bicycle facilities, including a protected cycle track with plastic safe-hit posts and sidewalk-level bikeways between Gough Street and half-way between 9th and 8th streets in the eastbound direction, and between 8th Street and Octavia Boulevard in the westbound direction. Sharrows are painted in the curb lanes at all other locations on Market Street to indicate that bicycles and vehicles share these lanes. Valencia Street has an existing sidewalk-level bikeway in each direction between Market and McCoppin streets. Nine Ford Go-Bike pods are located along Market Street. Bicycle racks are also located at a number of locations along Market Street.

McCoppin and Otis streets have an existing sidewalk-level bikeway in the westbound direction. 10th Street between Market and Mission streets has a shared lane marked with sharrows in the southbound direction.

Existing sidewalks on Market Street are generally wider (between 25 feet and 35 feet) east of Van Ness Avenue and narrower (closer to 15 feet) west of Van Ness Avenue. Market Street sidewalks are

constructed of red bricks and generally have an 18-inch wide granite curb separating them from the roadway. Many sidewalk crossings do not contain ADA-compliant curb ramps.

A number of objects are located on the existing sidewalks, including bus shelters, trees, signage, newspaper kiosks and boxes, flower stands, public art, bicycle racks, self-cleaning bathrooms, advertising signs, bollards with chains at several intersection crossings, Alternate Water Supply System (AWSS) hydrants, and the Path of Gold Light Standards. The AWSS is a high-pressure fire suppression water supply system instituted after the 1906 earthquake to create redundancies in the city's fire suppression water supply, and includes the Twin Peaks Reservoir, two water pump stations, two storage tanks, approximately 1,600 water hydrants, sub-surface distribution pipes, gate valves, and approximately 200 underground cisterns. Approximately 65 AWSS hydrants, as well as the associated sub-surface distribution pipes and gate valves, line both sides of Market Street within the project corridor. The Path of Gold Light Standards consists of decorative light poles with a three-part top, each of which contains a light globe. The Path of Gold Light Standards is a designated historic landmark identified under Article 10 of the San Francisco Planning Code (Landmark No. 200) and is located between 1 Market Street and 2490 Market Street.

As of a 2017 survey, there are 767 total trees within the project limit of work, of which 93% are various cultivars of London Plane Tree. Of the total, 360 trees or 47% were evaluated as "fair to healthy," and 407 trees or 53% were evaluated as "declining to dead", with contributing factors including scant soil quantities, poor soil quality, poor drainage, limited water, and underground constraints such as sub-sidewalk basements and existing utilities.

Market Street has a limited number of designated on-street commercial and passenger loading bays. A limited number of curb cuts exist on Market Street, allowing access to off-street parking and loading facilities.

Existing utilities along Market Street include a brick sewer line beneath Market Street, electrical components for the streetcar Overhead Contact System, electrical conduits for the Path of Gold Light Standards and traffic signals, and other subsurface utilities beneath the Market Street right-of-way. Fire hydrants, including large fire hydrants that are part of the AWSS installed following the 1906 earthquake, also are located within the Project corridor.

PROJECT ELEMENTS – MEASURES TO INCREASE THE EFFICIENCY OF THE FACILITY FOR TRANSIT, BICYCLISTS, PEDESTRIANS, AND COMMERCIAL VEHICLES

Roadways

The project will continue to provide four travel lanes on Market Street, with two center lanes and two curb lanes between Franklin and Beale streets, with the following exceptions: up to 7 lanes will be provided west of Franklin Street but only three lanes east of Main/Beale streets and two lanes east of Spear Street will be provided. The project will generally convert the existing center lanes on Market Street from to transit-only to Muni-only lanes. These lanes will permit transit only Muni and emergency vehicles at any time. The width of the center travel lanes will remain approximately the same as existing conditions (approximately 10-12' in width); the outer lanes are currently 13' to 11' wide, and will be reduced to 11'. While the 2 center lanes will remain in approximately the same location, the curb side lanes will deviate from their current alignment to allow for the inclusion of new center boarding islands.

Some intersections will be reconfigured. Intersection reconfigurations will include but are not limited to curb extension for bulbout construction to minimize crossing distance, curb pullback for sidewalk-level bikeway coordination, relocation or modification of existing traffic islands, small islands added for sidewalk-level bikeway protection, raised crosswalks at alleyways, updating of curb radii to

accommodate bus turn movements, and updating of all curb ramps will to the latest ADA requirements with realignment with proposed crosswalks. Major intersection reconfigurations include

Addition of track alignments and modification of curb alignments at Market/ Charles J. Brenham Place/ 7th Street and Market Street/ McAllister Street/ Jones Street intersections.

Conversion of existing roadway to plaza space at northwest corner of Market Street/ Bush Street.

The project will include signal timing, control modifications, and relocations of signals at all existing signal locations. Traffic signal modifications will occur at eight intersections (Golden Gate Avenue/Jones Street, Eddy Street/Mason Street, Turk Street/Taylor Street, McAllister Street/Charles J Brenham Place, Ellis Street/Powell Street, Ellis Street/Cyril Magnin Street, Drumm Street/California Street, and Eddy Street/Cyril Magnin Street) to accommodate new two-way/one-way changes. In addition, the project will install two new signals at 11th and Market streets and at Steuart and Market streets.

The project will remove the existing 23 loading bays on Market Street, and create 22 new loading areas created either near or at the same location as the existing loading bays. Most new loading areas will be located at sidewalk level and shared by loading vehicles and bicyclists during off-peak travel periods.

The curb within the loading areas will be mountable, allowing loading vehicles to cross through the sidewalk-level bikeway to the loading area.

The project will prohibit access to Market Street for all private vehicles between Steuart Street and Van Ness Avenue westbound (outbound) and between 10th and Beale streets eastbound (inbound). The Market Street block between Beale and Main streets will be restricted in the eastbound (inbound) direction to transit vehicles, bicycles, emergency vehicles, and paratransit only. Turns from Page St. onto Market Street will be restricted. Left turns from 12th St. onto Market will also be restricted. The southbound right turn from Battery/Bush onto Market Street will be prohibited. Existing required right-turn and left-turn regulations on Market Street will also remain. Transportation network company vehicles (e.g., Uber and Lyft) will be subject to the same restricted access as private vehicles. These restrictions will be in place 24 hours per day, seven days per week. Public transit vehicles, emergency vehicles, taxis, paratransit vehicles, and bicycles will be permitted on the entire length of Market Street within the project corridor except for the eastbound direction between Beale and Main streets. Commercial vehicles will be permitted for loading activities only during off-peak hours.

The project will remove all parking from Market Street, which include existing parking spaces east of Spear Street. Additional loading zones on cross streets and in rear alleys, or on other streets, will result in part-time (i.e., time-of-day restricted) or all-day removal of parking spaces. Valencia Street between Market and McCoppin streets will have some parking removed to accommodate the new parking-protected bicycle lane. The project will result in the removal of up to six metered parking spaces on Market Street, and the removal of up to 36 metered parking spaces on adjacent cross-streets.

Access Control Restrictions

The proposed project will include restricted access to Market Street for all private vehicles between Steuart Street and Van Ness Avenue westbound (outbound) and between 10th and Beale streets eastbound (inbound). The Market Street block between Beale and Main streets will be restricted in the eastbound (inbound) direction to transit vehicles, bicycles, emergency vehicles, and paratransit only.

The southbound right turn from Battery/Bush streets onto Market Street will be prohibited. Existing required right-turn and left-turn regulations on Market Street will also remain. Transportation network company vehicles (e.g., Uber and Lyft) will be subject to the same restricted access as private vehicles. Taxis will be permitted on the entire length of Market Street within the project corridor except for

eastbound (inbound) between Beale and Main streets. Commercial vehicles may be permitted for loading activities only during off-peak hours in the off-peak direction (i.e., westbound [outbound] in the morning peak hours and eastbound [inbound] in the evening peak hours).

Sidewalks

All existing sidewalks within the project footprint will be removed from the property line to the curb, and replaced. The project will remove the approximately 590,000 square feet of existing sidewalk along Market Street, between Octavia and Steuart Streets and construct approximately 660,000 square feet of sidewalk (including sidewalk-level sidewalk-level bikeways within the same limit). Existing brick sidewalk surfaces will be replaced with paving types that will provide more traction. Replacement sidewalk surfaces will meet current City standards for traction (a minimum coefficient of friction of 0.65 for a relatively flat sidewalk and 0.80 for sloped surfaces greater than 1 :20), and be consistent with the requirements of San Francisco's 1995 Downtown Streetscape Plan for special sidewalk surfaces that are applicable elsewhere in the Downtown area. The new surface will also comply with United States Access Board Public Rights-of-Way Access Advisory Committee Final Report Part III Section X02.1.6 minimum requirements for public sidewalks, that pedestrian routes on new sidewalk surfaces be as free of jointed surfaces and as visually uniform as possible.

Sidewalks east of 12th Street will generally provide a 15-foot-wide "through" (i.e., walking) zone for pedestrians. Exceptions are listed in the table below. West of 12th Street, the sidewalk through zone will be approximately 10 feet wide.

In addition to the pedestrian through zone, sidewalks will generally include a furnishing zone that will be between four and 10 feet wide, depending on whether a curbside transit island, center boarding island, or loading zone is proposed at a particular location. The furnishing zone will include trees, landscaping, street furniture, and public-art elements. In locations where curbside transit stops, center transit boarding islands, or loading zone are present, the furnishing zone will generally be four to five feet wide. Wherever there is a sidewalk without proposed transit stops or loading zones, the furnishing zone will be approximately 10 feet wide. The majority of the sidewalks along Market Street between Van Ness Avenue and Steuart Street will include these wider 10-foot furnishing zones.

Bulbouts will be installed at crosswalks where possible. Most bulbouts will shorten the side-street crossings, not the Market Street crossing. Corner curb radii along Market Street will typically be 12 to 15 feet, depending on angle of intersecting street, with up to 33-foot radii at the intersection of Taylor Street. Bulbouts will extend four to eight feet into the street and are typically 20 to 25 feet long.

Crossing distances at Market Street will depend on whether a boarding island is present and the angle of the intersecting street. Crosswalk distances at Market Street will vary from 54 feet (typical right-angle, 90-degree crossing) to 115 feet (54-degree crossing at South Van Ness Avenue). Crossing distances at side streets also will vary (typically between 40 and 50 feet).

Loading Areas

The 23 existing loading bays on Market Street between Octavia Boulevard and Steuart Street (20 for commercial loading, three for both passenger and commercial loading) will be removed and replaced by 22 loading zones either near or at the same location as the existing loading bays. Most of the loading zones will be located at sidewalk level. The curb within the loading zones will be mountable, allowing loading vehicles to cross through the bikeway to the loading area. During off-peak hours when a loading zone could be in use, the bikeway will narrow at loading zone locations; during peak hours when loading will not occur, loading zones will be used as additional bikeway space.

New commercial and passenger loading zones will be established where possible on adjacent cross

streets and along nearby alleys by converting general on-street parking spaces to commercial loading spaces, white loading passenger zones and blue accessible parking spaces. Commercial zones will accommodate truck loading and promote more use of the alleyways to access the rear of the buildings along Market Street. Nearby alleys could include Angelo's Alley and Jessie, Stevenson, and Annie streets. Up to 227 new or lengthened cross-street and alleyway commercial loading spaces will be created to provide alternative commercial loading options off of Market Street. In addition, up to 46 proposed new passenger loading zones and eight new blue accessible zones will be created on cross streets.

Bicycle Facilities

A raised sidewalk-level bikeway will be constructed on Market Street in each direction between the curb lanes and the sidewalk. The new sidewalk-level bikeway will be immediately adjacent to the sidewalk and include buffers on both sides of the lane and a distinct paving pattern or material to help identify the designated space for bicyclists. The project's sidewalk-level bikeway will meet the California Department of Transportation (Caltrans) standard for class IV separated bikeways.

The sidewalk-level bikeway will generally be separated from the adjacent curb lane by a one- to four-foot-wide buffer between the roadway curb lane and sidewalk-level bikeway. The buffer will include a standard six-inch curb (providing grade separation) and regulatory signage, fire hydrants, planted areas, and other vertical obstructions to prevent vehicles from pulling into the sidewalk-level bikeway. On the sidewalk side of the sidewalk-level bikeway, furnishings, signage, bicycle racks, and other vertical obstructions in the furnishing zones will act as a buffer between the sidewalk and the sidewalk-level bikeway. ADA-compliant detectable warning surfaces in the pavement surface between the through zone and the sidewalk-level bikeway will be installed to assist persons with limited vision in avoiding crossing into the sidewalk-level bikeway.

At curbside transit stops, the new sidewalk-level bikeway will be placed between the transit island and the sidewalk. Pedestrians will have designated places to cross the sidewalk-level bikeway when walking from the transit stop to the sidewalk.

The project will also include construction of new sidewalk-level bicycle parking, protected bicycle lanes on Valencia Street between Market and McCoppin streets, and a new buffered street-level bicycle lane between two vehicular travel lanes on the south side of Market Street between South Van Ness Avenue and 10th Street. In addition, there will be improved or new bicycle connections to other proposed and existing bicycle facilities at Beale, Sansome, Second, Fifth, Sixth, McAllister, Seventh, Eighth, 10th, 11th, Page, and Valencia streets.

Bicycle signals will be installed at most intersections to maintain the separation of vehicle traffic and bicycles. Two-stage turn-queue bicycle boxes will allow bicyclists to make two-point left turns from a designated waiting area in the far right corner of an intersection. At some locations, bicycle boxes will allow bicyclists to queue at the front of the vehicle queue during red lights.

Transit

The project will modify transit stop spacing, and new stop locations will provide both rapid service for some bus lines and surface-running streetcars as well as local service through local bus routes. The length and width of existing transit boarding islands will be increased to meet ADA standards. Some existing transit boarding islands will be removed or relocated. Wheelchair ramps will be constructed to serve the F-Line. Access to the proposed transit boarding islands will continue to be via marked crosswalks. Replacement stops will be provided with transit information signs, advertisements, and transit shelters will be included at all transit stops along the corridor.

A new counterclockwise F-Line track loop (F-loop) running one- way westbound (outbound) along McAllister Street between Market Street and Charles J. Brenham Place and one- way southbound along Charles J. Brenham Place between McAllister and Market streets will be constructed in the roadway to give the F-Line surface-running streetcar line the ability to switch from running westbound (outbound) to running eastbound (inbound) using the new loop, or from running eastbound (inbound) to running westbound (outbound). The F-loop will travel in the existing westbound lane on McAllister and the existing southbound Charles J Brenham Place lane. All F-loop movements will be controlled by the traffic signal, so the F-loop turn movements will have dedicated signal phases, which will hold all conflicting traffic movements while the streetcar completes its movement. The F-loop intersections will have special train signals that will tell the F line operator which way the track switch is set and whether they have the right-of-way (i.e., the green light for the general traffic). There will also be bicycle signals and “TRAIN COMING” blank-out signs to emphasize the F-loop movements and to warn other street users about the train movement. Construction of the F-loop will necessitate a mini-high ADA-compliant ramp and a 7’-wide by 13’-long operator restroom at the loop location.

Other Elements

There will be relocation of fire hydrants (including components of the historic AWSS to accommodate changes in curb lines); the existing AWSS cisterns below Market Street will be preserved in place.

Stormwater catch basins will be relocated or reconstructed as required by curb movements or the introduction of transit islands. Sewer/stormwater lines will be relocated due to SFPUC policy regarding facility proximity restrictions to rail. All sewer laterals within the project limits will be replaced and reconnected. Relocation of SFPUC water lines, PG&E gas and electric lines, NRG steam lines, AT&T lines, other communication lines, and existing conduits and wiring for streetlights and signals, as well as structural reinforcement of existing sub-sidewalk basements, will also be required to accommodate project improvements. Overhead Catenary Supply (OCS) pole locations will be adjusted to accommodate sidewalk widening and new OCS movements.

All existing street trees, the majority of which are also in the path of construction, will be removed and new street trees will be planted. New trees will be planted in a new alignment in the “furnishing zone” where sidewalks will be reconfigured to accommodate wider center transit boarding islands and the new sidewalk-level bikeway. Tree selection and planting will follow best arboricultural practices (see below).

The project will include the relocation of an existing BART/Muni elevator at the Civic Center Station on the north side of Market Street near United Nations Plaza to either a location approximately 200 feet west on the north side of Market Street, or to the current location of the existing staircase entrance to the station from the UN Plaza.

All existing Path of Gold light standards will be removed and replaced with new luminaires on new poles in the furnishing zone, providing illumination both for the roadway and for the streetscape.

The table below provides details of the elements summarized above:

<p>Travel lanes</p>	<p>The two center lanes will generally be 12’ wide with occasional exceptions reducing lane width to 10.5’, typically when adjacent to center boarding islands. The two curb side lanes will vary in width from 10’ to 12’ depending on geometric configuration. All lanes width are maximized to 12’ whenever possible, however when existing-to-remain features such as BART / MUNI portal entrances are present, lane width reduction may be necessary.</p> <p>Design option for the approximately 0.6-mile portion of Market Street</p>
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	<p>between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> Between 12th and 11th streets, only two remaining travel lanes will remain. These will be 12.5-13.5' wide in order to provide a minimum 26' clear width for fire department. These lanes would only be accessible to Muni, taxis, paratransit, and emergency vehicles.
<p>Intersection Reconfiguration</p>	<p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> Reconfiguration of the intersection at Franklin, Market, and 12th streets in order to incorporate a bicycle-only connection between Page and Market streets. Additional sidewalk widening will occur in order to provide a 14' wide two-way cycletrack along Page Street between Franklin and Market Street. No vehicles would be allowed to turn from westbound Market or northbound 12th streets onto Page or Franklin streets. The signal would be modified so that there would be a signal phase for the eastside Market Street crosswalk at the same time as northbound 12th Street traffic would be allowed to turn left onto Market Street only. The Page Street bicycle connection would have a signal phase with Page street traffic. Reconfiguration of the intersection at 11th and Market which would maintain the stop sign for 11th Street traffic, create a northbound 11th Street Muni only lane for approximately 120 feet, and shift the northbound bus flag stop to midblock in order to create a 65 foot-long bus boarding island. New F track alignments on 11th and on Market Street would allow for increased service flexibility and better Muni operator safety when using the 11th Street track wye. At 12th Street, the eastbound Market Street curb lane becomes a right turn only lane heading towards southbound 12th Street. In the westbound direction at the intersection of 9th/Market, the curb lane becomes a right turn only lane forcing commercial vehicles onto Larkin or Hayes streets.
<p>Access Control Restrictions</p>	<p>Turns will be prohibited onto Market Street from Page Street, Van Ness Avenue, Polk Street/Fell Street, Ninth Street, Grove Street/Hyde Street, McAllister Street/Jones Street, Golden Gate Avenue/Sixth Street, Turk Street/Mason Street, Fifth Street/Cyril Magnin Street/Eddy Street, Stockton Street, O'Farrell Street, Third Street, Montgomery Street/Post Street, Second Street, Bush Street/Battery Street, Fremont Street, Davis Street, Drumm Street (only in the southbound right-turn direction), and Main Street.</p> <p>Right turns will be required on eastbound (inbound) Market Street at 10th Street (existing) and Sixth Street (existing).</p> <p>Right turns will be required at northbound 12th Street, southbound Jones Street, southbound Mason Street (existing), northbound 11th Street (existing), northbound Second Street at Stevenson, and northbound Spear</p>

	<p>Street.</p> <p>Left turns will be required at eastbound (inbound) O’Farrell Street (existing), McAllister Street, and Turk Street.</p> <p>Turns will be prohibited at the intersection of Steuart and Mission streets to prevent private vehicles from driving north on Steuart Street.</p> <p>Design option for the approximately 500-foot portion of Market Street between 1st Street and the Sutter and Market Street intersection:</p> <ul style="list-style-type: none"> • Access to westbound Market Street for vehicles exiting the garage of the 1-Bush Street building. All private vehicles would be required to turn right onto Sutter or Sansome streets at the Market and Sutter intersection. <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> • Restricted access to Market Street for all westbound (outbound) private vehicles between Hayes Street and 12th Street, requiring a forced right turn for all private vehicles heading in the westbound (outbound) direction on Market Street at the Hayes/ Larkin Street intersection. • Required right turn of Eastbound Market St vehicles at 12th Street. • New turn restriction from eastbound (inbound) Market Street to southbound Valencia Street • Removal of access for vehicles turning from westbound (outbound) Market Street to Franklin or Page streets.
<p>Traffic Signals</p>	<p>Traffic Signal scope of work will include a transit efficiency and safety upgrade of all signals on Market St. between Steuart St. and Octavia Blvd. This includes but may not be limited to new conduits, poles, signal heads, Audio Pedestrian Signals (APS), controllers, cabinets and pull boxes. All signal timing will be designed with transit efficiency and safety as key criteria. These include:</p> <ul style="list-style-type: none"> • Modifications to eight signals to accommodate new two-way/one-way changes (potential for upgrade if signal heads, controllers, conduits, cabinets are not up to city standards). • Installation of Variable-Message Signs (VMS) • Installation of CCTV cameras at intersections along the Market Street corridor. • New conduits—square instead of U shape for additional redundancy due to track lanes. • New poles, 12” signal heads, LED pedestrian heads, 2070 Controllers, Standard Cabinets, and Type 3 pull boxes <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p>

	<ul style="list-style-type: none"> • See “Intersection Reconfiguration”, above. 																					
<p>Sidewalks</p>	<p>All existing sidewalks within the project corridor will be removed and replaced, resulting in a new curb line at the edge of the existing outside lines of the travel way. The new pedestrian through zone will be along the sidewalk nearest the right-of-way line and the furnishing zone will be between the sidewalk-level bikeway and the pedestrian through zone.</p> <table border="1"> <thead> <tr> <th>Corridor Section</th> <th>Sidewalk Width</th> <th>Pedestrian Through Zone & Furnishing Zone Widths</th> </tr> </thead> <tbody> <tr> <td>Steuart St. to Fremont St. (Embarcadero Dist.)</td> <td>19.5' to 47.5'</td> <td>15.5' to 35'</td> </tr> <tr> <td>Fremont St. to 3rd St. (Financial Dist.)</td> <td>11' to 37.5'</td> <td>11' to 30.5'</td> </tr> <tr> <td>3rd St. to 5th St. (Retail Dist.)</td> <td>28' to 37.5'</td> <td>15.5' to 30'</td> </tr> <tr> <td>5th St. to 7th St. (Mid-Market Dist.)</td> <td>21' to 37'</td> <td>17' to 30'</td> </tr> <tr> <td>7th St. to Van Ness Ave. (Civic Center Dist.)</td> <td>14' to 45.5'</td> <td>11.5' to 30'</td> </tr> <tr> <td>Van Ness Ave. to Octavia Blvd. (Octavia Dist.)</td> <td>9' to 37'</td> <td>9' to 25'</td> </tr> </tbody> </table> <p>New ADA-compliant curb ramps will be installed at all crossing locations. The new raised bikeway (see below) will occupy the outer six-12 feet of the sidewalk along the curb. The area between the two will be occupied by a streetscape-furnishing zone (4'-10' wide) with trees, benches, art installations, etc., as well as replacement luminaires (see below). Maximum depth of ground disturbance associated with ground disturbance is approx. 18", exclusive of plantings, foundations for luminaires, etc. and similar construction in the furnishing zone (for which, see below). Other facilities in the existing sidewalk, such as utility vaults, electrical cabinets, etc., may need to be adjusted vertically (< 6") or moved horizontally short distances (< 2'). Maximum depth of excavation for these adjustments is approximately two feet.</p> <p>Structural designs of building walls for sub-sidewalk basement abatements and related fill material are anticipated in order to accommodate new light-pole foundations, or new loading zone locations.</p> <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes</p>	Corridor Section	Sidewalk Width	Pedestrian Through Zone & Furnishing Zone Widths	Steuart St. to Fremont St. (Embarcadero Dist.)	19.5' to 47.5'	15.5' to 35'	Fremont St. to 3 rd St. (Financial Dist.)	11' to 37.5'	11' to 30.5'	3 rd St. to 5 th St. (Retail Dist.)	28' to 37.5'	15.5' to 30'	5 th St. to 7 th St. (Mid-Market Dist.)	21' to 37'	17' to 30'	7 th St. to Van Ness Ave. (Civic Center Dist.)	14' to 45.5'	11.5' to 30'	Van Ness Ave. to Octavia Blvd. (Octavia Dist.)	9' to 37'	9' to 25'
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	<p>and Market Street intersection:</p> <ul style="list-style-type: none"> • Widened sidewalks will be between approximately 22 and 26 feet wide in most locations. At three locations where proposed a loading bay and a 8' wide sidewalk boarding area between the loading bay and the bikeway, the sidewalk will not be widened: north side between 12th Street and the outbound Van Ness proposed stop location; north side between 11th and 10th streets; north side between 10th and the 9th Street proposed curbside transit stop. • Retain the existing crosswalk on the eastern portion of 12th Street at Market Street, unlike the proposed project. • Provide raised crosswalks at Rose, Brady, and 12th streets. • Include public art at Van Ness Avenue corners. 																		
<p>Tree Planting</p>	<p>New trees will be planted in a new alignment in the “furnishing zone” where sidewalks will be reconfigured to accommodate wider center transit boarding islands and the new sidewalk-level bikeway. Arboriculture best practices to be employed in tree planting include, but are not limited to; a fully automatic irrigation system, replacement trees sourced under a contract grow agreement to ensure specimen availability and high-quality plant stock, a soil trench system which includes a nutrient-rich engineered soil profile, adequate soil volumes, and a suspended pavement system that reduces soil compaction. Furthermore, plant installation details will consider strong wind exposure from the west and prevent “wind lean” of trees as they mature. Heavy-duty tree staking shall be used as necessary to ameliorate the effects of wind on newly planted trees throughout their establishment period.</p> <p>Public Works, in coordination with a tree-selection working group comprised entirely of local arboriculture experts, has prepared a provisional tree-species list made up of 18 different species, in order to increase species diversity to help avoid the prevalence of disease to which the current monoculture of London Planes is susceptible. The following trees are under consideration due to meeting criteria including; sidewalk suitability, wind tolerance, salt/fog tolerance, shade tolerance, drought tolerance, maintenance, and scale/ size.</p> <table border="1"> <thead> <tr> <th>Species/Cultivar</th> <th>Common Name</th> </tr> </thead> <tbody> <tr> <td><i>Ginkgo biloba</i> “Autumn Gold”</td> <td>Autumn Gold Ginkgo</td> </tr> <tr> <td><i>Ginkgo biloba</i> “Princeton Sentry”</td> <td>Princeton Sentry Ginkgo</td> </tr> <tr> <td><i>Lophostemon confertus</i></td> <td>Brisbane Box</td> </tr> <tr> <td><i>Magnolia grandiflora</i> “Majestic Beauty”</td> <td>Majestic Beauty Southern Magnolia</td> </tr> <tr> <td><i>Magnolia grandiflora</i> “Samuel Sommer”</td> <td>Samuel Sommer Southern Magnolia</td> </tr> <tr> <td><i>Pittosporum undulatum</i></td> <td>Victorian Box</td> </tr> <tr> <td>**<i>Platanus mexicana</i></td> <td>Mexican Sycamore</td> </tr> <tr> <td>**<i>Platanus racemosa</i> “Roberts”</td> <td>Roberts London Plane</td> </tr> </tbody> </table>	Species/Cultivar	Common Name	<i>Ginkgo biloba</i> “Autumn Gold”	Autumn Gold Ginkgo	<i>Ginkgo biloba</i> “Princeton Sentry”	Princeton Sentry Ginkgo	<i>Lophostemon confertus</i>	Brisbane Box	<i>Magnolia grandiflora</i> “Majestic Beauty”	Majestic Beauty Southern Magnolia	<i>Magnolia grandiflora</i> “Samuel Sommer”	Samuel Sommer Southern Magnolia	<i>Pittosporum undulatum</i>	Victorian Box	** <i>Platanus mexicana</i>	Mexican Sycamore	** <i>Platanus racemosa</i> “Roberts”	Roberts London Plane
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	<p>disturbance is approx. 18", exclusive of relocations of stormwater catch basins that will be required due to the movement of the curb line (see below).</p>
<p>Raised Sidewalk-Level Bikeway</p>	<p>A raised 56' to 8'-wide sidewalk-level bikeway will be constructed on Market Street from Steuart Street to Octavia Boulevard in each direction between the curb lanes and the sidewalk. There will be instances where space allocation requirements for the sidewalk-level bikeway will not be available in which case approximately 15% of the bicycle lanes will be at roadway level. Ramps will be constructed to return the lane to roadway level at intersections. The bikeway will be separated from the travel way by a 6" concrete curb and a 1'-4' buffer area occupied by signage, fire hydrants, landscaping, etc. ADA-compliant detectable warning surfaces (up to 3" wide) will run the length of the sidewalk-level bikeway. New ADA-compliant curb ramps will be installed at all crossing locations. Maximum depth of ground disturbance associated with ground disturbance is approximately 18", exclusive of installations in the buffer zone.</p> <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> • The sidewalk-level bikeway will continue between 11th and 12th streets.
<p>Improved or New Bicycle Connections to Other Proposed and Existing Bicycle Facilities</p>	<p>The project will construct the following:</p> <ul style="list-style-type: none"> • A bicycle lane on Valencia Street between Market and McCoppin streets which will be protected using a concrete median island. • A new concrete street-level bicycle lane between two vehicular travel lanes with 2 and 3' concrete wide buffer islands, on the south side of Market Street between South Van Ness Avenue and 10th Street. • Valencia Street between McCoppin Street and Market Street will be converted to a parking protected cycletrack. The northbound right-turn would be facilitated by the construction of a bicycle passage and a pedestrian island for the Valencia crosswalk. This will shorten the existing pedestrian crossing and allow bicycles to turn onto the eastbound Market St bikeway after they have yielded to pedestrians that may be crossing the cycletrack. • Page Street will have an improved bicycle connection to Market Street by prohibiting all motor vehicles from continuing east from Page Street onto Market Street. This allows for a pedestrian island on the north side of the Page/Franklin/Market intersection to be widened and a 7' eastbound bicycle lane to be constructed. • At 11th Street, with the proposed traffic signal and the northbound 11th boarding island, bicycle intersection paint treatment and a bicycle signal phase would be installed to allow for northbound left-turn and westbound left-turn bicycle movements. A bicycle jughandle would be constructed to facilitate the westbound left-turn

	<p>bicycle movement while not delaying the westbound thru bicycle movement.</p> <ul style="list-style-type: none"> • At 10th Street, the existing bicycle connection to Market Street would remain the same as today but the bicycle connection from eastbound Market Street onto northbound Polk Street would be converted into a dedicated left turn bicycle pocket that will be protected by concrete on both sides. • At 8th Street, the bicycle connection from Market onto westbound Grove Street will be created via a small contraflow bicycle lane located on the northeast corner of the intersection that would be protected by a concrete island. • 7th and Charles J. Brenham Place, the northbound bicycle connection to McAllister would be improved by converting the existing Golden Gate transit bus zone into a boarding island. • On McAllister Street, the existing outbound transit bulb would be converted to a boarding island to separate transit, the F-loop, and bicycles. In addition, there would be more concrete protection for westbound Market to westbound McAllister bicyclists at the McAllister/Market intersection to separate bicyclists and the F-loop. Eastbound McAllister bicyclists will have a dedicated painted and concrete bicycle crossing so that they may reach the eastbound Market St bikeway without conflicting with the proposed F- loop tracks or the inbound 5/5R Muni routes. • At 2nd Street, there will be a two-stage bicycle queue box (for additional information on boxes, see below), bike signals, and a dedicated bicycle signal phase built to connect the 2nd Street Improvement Project (currently under construction) with Market Street and vice-versa. • At Sansome Street, there will be a two-stage bicycle queue box built in between the Market Street pedestrian island and the inbound curbside stop. There will be a dedicated bicycle signal phase to allow bicyclists to head north onto Sansome Street. <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> • Page Street will have an improved bicycle connection from Market Street. • At 11th Street, bicycles will be directed to make the westbound left-turn onto 11th by going all the way to Van Ness Ave, making a U-turn, then making a right turn onto 11th Street. The northbound 11th street bicycle lane would only serve to go to eastbound Market Street.
<p>New Bicycle Parking</p>	<p>Bicycle parking along Market Street (fifty bicycle racks per block) will be located at sidewalk-level in the furnishing zone. The one exception is the bikeshare station at 10th/Market which is proposed to be at sidewalk-level</p>

	<p>between the bikeway and the travel lane.</p>
<p>Bicycle signals</p>	<p>A bicycle signal is a three-section traffic signal that has bicycle pictograms instead of colored balls. Their construction and installation is similar to that of traffic signals. Exact locations for bicycle signals will be determined at the culmination of an ongoing analysis of vehicle turning movements and bicycle movements. They will be installed at various locations along the corridor. Bicycle signal phasing will be coordinated with traffic signal phasing, as signal phasing for all modes is controlled via the same signal controller.</p>
<p>Two-stage turn-queue bicycle boxes</p>	<p>Two-stage turn-queue bicycle boxes are tentatively proposed for eastbound left turn at Polk, SB at Polk, southbound left turn at 8th, eastbound left turn at 8th, westbound left turn at Hyde, northbound left turn at 7th, eastbound left turn at 7th, southbound left turn at Golden Gate, northbound left turn at 6th, northbound left turn at 5th, westbound left turn at 5th, northbound left turn at 2nd, westbound left turn at 2nd, eastbound left turn at Sansome St., and eastbound left turn at Davis St. Two-stage turn queue boxes offer bicyclists a safe way make left turns at multi-lane signalized intersections from a right side cycle track or bicycle lane, or right turns from a left side cycle track or bicycle lane. At midblock crossing locations, a two-stage turn queue box may be used to orient bicyclists properly for safe crossings.</p>
<p>New Streetcar Track and Overhead Wire (OCS)</p>	<p>The F-Line Track Loop consists of approximately 1000 linear feet of track and will occupy one travel lane along McAllister Street and Charles J. Brenham Place. It will allow inbound and outbound F-Line streetcars to change directions. New direct-fixed track will be installed at the following locations:</p> <ul style="list-style-type: none"> • One-way westbound along McAllister St. between Market St. and Charles J. Brenham Place. • One-way southbound along Charles J. Brenham Place between McAllister and Market streets. New track switches will be installed on Market east of McAllister to allow westbound trains to turn onto McAllister, west of McAllister to allow eastbound trains to turn onto McAllister, and a new half-grand union will be installed on Market at Charles J Brenham (to allow southbound trains to turn onto eastbound or westbound Market). New palladium-coated copper wires, track switch machines, and controllers will be provided at Market Street/McAllister Street/Charles J. Brenham Place to serve the F-Loop. <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> • New F track alignments on 11th and on Market Street would allow for increased service flexibility and better Muni operator safety when using the 11th Street track wye. Westbound trains would be able to turn directly into the southbound 11th Street track (western-most track) and trains in the northbound 11th Street track (eastern-most) would be able to turn directly into the eastbound Market Street track. The eastern-most tail track would be removed south of the existing track switch in order to accommodate a northbound 65 foot-long bus boarding island.

<p>Transit Stop Spacing Modifications</p>	<p>The existing 17 curbside stops (eight inbound, nine outbound) and 23 center boarding island stops (12 inbound, 11 outbound) will be removed and replaced by 18 curbside stops (nine inbound, nine outbound) and 11 center boarding island stops (six inbound and five outbound). New transit shelters with Nextbus signs and advertising panels will be provided.</p> <p>Rapid service will be provided for some lines (i.e., 5, 5R, 9, 9R, 7X, as well as the F-Line) as well as local service through local bus routes (i.e., 2, 6, 7, 19, 21, 31, 38, 38R, L Owl, N Owl). In addition, bus routes 14, 14R, and 14X will continue to have drop-off-only stops at Market and Steuart streets; bus routes 81X, 30X and 10 and 12 will continue to run on Market Street but will not stop. AC Transit bus routes 800 and 822 will also continue to stop on Market Street.</p> <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> The outbound F, 6, and 7 stops will move from nearside to far side at Van Ness Avenue. 																																						
<p>Transit boarding islands</p>	<p>The length of transit boarding islands will be increased to up to 210 feet where an F Line boarding platform exists (compared with 110 to 120 feet for typical existing islands); the width will be increased to approximately 9 feet (compared with 6.5 feet for typical existing islands). Maximum depth of ground disturbance associated with ground disturbance is approx. 18".</p> <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> Integrate transit boarding islands at Van Ness Avenue into the widened sidewalks and move the outbound island at Van Ness Avenue across the intersection. 																																						
<p>Loading Zones</p>	<p>Loading Zones will be constructed at the following locations:</p> <table border="1"> <thead> <tr> <th rowspan="2">Between Streets</th> <th colspan="2">Side of Market</th> </tr> <tr> <th>North</th> <th>South</th> </tr> </thead> <tbody> <tr> <td>Steuart St. and Drumm St.</td> <td>X</td> <td></td> </tr> <tr> <td>Steuart St. and Spear St.</td> <td></td> <td>X</td> </tr> <tr> <td>Beale St. and Fremont St.</td> <td></td> <td>X</td> </tr> <tr> <td>Front St. and Bush St.</td> <td>X</td> <td></td> </tr> <tr> <td>Fremont St. and 1st St.</td> <td></td> <td>X</td> </tr> <tr> <td>1st St. and 2nd St.</td> <td></td> <td>X</td> </tr> <tr> <td>Kearny St. and Montgomery St.</td> <td>X</td> <td></td> </tr> <tr> <td>Kearny St. and Grant Ave.</td> <td>X</td> <td></td> </tr> <tr> <td>3rd St. and 4th St.</td> <td></td> <td>X</td> </tr> <tr> <td>Stockton St. and Cyril Magnin St.</td> <td>X</td> <td></td> </tr> <tr> <td>5th St. and 6th St.</td> <td></td> <td>X</td> </tr> </tbody> </table>	Between Streets	Side of Market		North	South	Steuart St. and Drumm St.	X		Steuart St. and Spear St.		X	Beale St. and Fremont St.		X	Front St. and Bush St.	X		Fremont St. and 1st St.		X	1st St. and 2nd St.		X	Kearny St. and Montgomery St.	X		Kearny St. and Grant Ave.	X		3rd St. and 4th St.		X	Stockton St. and Cyril Magnin St.	X		5th St. and 6th St.		X
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	Turk St. and Taylor St.	X	
	Taylor St. and McAllister St.	X	
	6th St. and 7th St.		X
	7th St. and 8th St.		X
	Charles J. Brenham Pl. and Hyde St.	X	
	Hyde St. and Larkin St.	X	X
	Larkin St. and Polk St.	X	
	Polk St. and Van Ness Ave.	X	X
	Van Ness Ave and Page St.	X	
	<p>The size of a Loading Zone on the North side of Market St. varies between 63' to 100' with an average length of 80'. The size of a Loading Zone on the South side of Market St. varies between 32' and 100' with an average length of 75'. All Loading Zones are 16' wide plus a 1' mountable curb.</p> <p>Additionally, there are three 10' wide traditional roadway level loading zones located on the south side of Market St. between 10th St. and 11th St, 7th and 8th streets, and on the north side of Market St. between Kearny and Montgomery streets.</p> <p>Design option for the approximately 0.6-mile portion of Market Street between Octavia Boulevard and approximately 300 feet east of the Hayes and Market Street intersection:</p> <ul style="list-style-type: none"> • Restrict three proposed loading zones on the north side of Market Street between Hayes and 12th streets to paratransit vehicles, taxis, and commercial vehicles. 		
Sewer Relocations	The existing sewers along portions of Market Street and McAllister Street will be directly beneath new planned LRV track replacement. All other sewer work is for state-of-good-repair replacement. For details on sewer work, see below.		
Fire Hydrant Relocations	Catch basins affected by the movement of curb lines will be relocated horizontally (<20') or vertically (<1'), which also involves adjustment or replacement of the laterals into which they feed. Approximate depth of excavation in these cases is five feet and the maximum depth of excavation is the depth of sewer mains, approximately 12 feet. Work may extend horizontally up to eight feet into the street from the edge of the curb line.		
Stormwater catch basins	Catch basins affected by the movement of curb lines will be relocated horizontally (<20') or vertically (<1'), which also involves adjustment or replacement of the laterals into which they feed. Approximate depth of excavation in these cases is five feet and the maximum depth of excavation is the depth of sewer mains, approximately 12 feet. Work may extend horizontally up to eight feet into the street from the edge of the curb line.		
Lighting	All existing Path of Gold light standards will be removed and replaced with new luminaires on new poles in the furnishing zone, providing illumination both for the roadway and for the streetscape. A photometric study will be performed in order to meet current SFPUC lighting standards for pedestrian and traffic safety in advance of the selection of replacement luminaires.		

	<p>Lighting installed as part of the project will be required to conform to American National Standard Practice for Roadway Lighting (ANSI/IESNA RP-8-00) and the Caltrans Map Roadway Classification. To provide power to the new lighting, a N36 box will be added between every City manhole and the first streetlight pole, with associated conduit work. A second 2" GRS conduit will be installed running east to west along Market, on both sides of the roadway. New tie-in locations will be added as needed.</p>
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PROJECT ELEMENTS – STATE OF GOOD REPAIR UPGRADES

Transit

The project will replace almost all components of the F-line streetcar system, including the in-street tracks, the Overhead Catenary Supply System, the support poles for the OCS, the underground traction-power duct banks that power the OCSS, and both power substations that feed the duct.

Track Replacement

The project will replace all track from Octavia to Steuart Streets with track directly fixed to a concrete plinth. Track will be realigned by approximately three feet at several locations (see below).

Overhead Catenary Supply Replacement

The project will replace approximately 350 Path of Gold and Standard Trolley Poles in kind with new trolley steel poles on Market Street from Octavia Street to Steuart Street, and on the cross streets as needed to accommodate the trolley wire alignment. In order to continue to support the upgraded SFMTA Overhead Catenary Supply (OCS), the diameter of the poles will be increased in size. These poles may also be used to support replacement luminaires.

The project will replace all feeder/equalizer/tangent spans along Market Street from Octavia Street to Steuart Street, including approximately 100,000 feet of trolley wire. Trolley wire will largely be replaced in its existing alignment. Additional OCS wires between 10th and Eighth streets will be included to accommodate curb-lane trolleybus operations.

Power System Replacement

Existing traction-power duct banks consist of continuous runs of ranks of electrical conduit encased in cast concrete, forming a rectangular block in cross-section, that extend the length of Market St in the project area generally along the outside of the south-side curbs, and under 2nd Street and Stevenson Street in the public right-of-way, at depths of six to 25’ below the surface. Existing duct banks will be excavated and removed, or abandoned in place. New duct banks will be constructed through the project corridor in the same alignment where they do not conflict with other project elements.

Roadway

The entire roadway and roadway base throughout the project area will be removed. The subbase will be compacted, and a new concrete street base will be placed and topped with an asphalt wearing surface. Utility castings such as manhole covers, catch basins, and similar street iron will be protected and will be adjusted to meet the new resurfaced street surface. After resurfacing, pavement markings will be reapplied.

Utilities

The project will include relocation or rehabilitation of wastewater lines, water lines, AWSS lines, Muni traction power duct banks, traffic signal and streetlight electrical lines, SFPUC power lines, and fiber

optic conduits to maintain a state of good repair. Rehabilitated utility lines will be the same size as existing lines; no additional capacity will be provided.

All existing sewage lines and some existing water-supply lines under Market Street will be replaced. The project will also include construction of a new joint trench for a number of “dry” utilities, including, but not limited to, SFMTA signals, SFPUC power lines, and Department of Technology high- speed internet infrastructure.

Electrical

There will be a complete upgrade of all the existing signal infrastructure on Market Street between Octavia and Steuart streets, which will include new poles, conduits, accessible pedestrian signal buttons, vehicle/pedestrian/bicycle signals, signal cabinets, and interconnects.

The table below provides details of the elements summarized above:

<p>Track Replacement</p>	<p>The project will replace all existing tie and ballast track from Octavia to Steuart Streets with direct fixation to a concrete plinth. The existing joints at the BART vent structures will be eliminated if possible. There will be additional joints at the F-Loop area and also at the 11th Street turnouts. These new joints will be at all track circuits and at both ends of special track work components.</p> <p>Tracks will be realigned by approximately three feet at the following locations:</p> <ul style="list-style-type: none"> • Drumm to Steuart (due to curb realignment) • Davis to Fremont (Known location of BART grates) • Octavia to 12th (due to curb realignment) <p>Removal/relocation of certain track switches will be required depending on new boarding island final locations.</p>
<p>OCS Upgrade</p>	<p>The project will replace approximately 350 trolley poles (Includes Path of Gold and Standard Trolley Poles) with new steel trolley poles along Market Street from Octavia Street to Steuart Street, and on the cross streets as needed to accommodate the trolley wire alignment. New poles will be relocated as needed within the buffer and/or furnishing zones.</p> <p>Existing eyebolts will be reused at locations where they can support the new OCS support wires, pending pull-test. New eyebolts will be installed at locations where trolley poles are not able to be installed.</p> <p>The project will replace all feeder/equalizer/tangent spans along Market Street from Octavia Street to Steuart Street. Approximately 100,000 feet of trolley wire will be replaced along Market Street from Octavia Street to Steuart Street with new 2/0 or 4/0 trolley wires. Trolley wires on cross streets will be replaced to closest special works assemblies (curve segments, switch assemblies, cross- over assemblies) as needed. Trolley wire will be replaced in existing alignment except:</p> <ul style="list-style-type: none"> • Between 10th Street and midblock between 8th Street and 7th Street (New Set of in-bound trolley wires at

	<p>curbside)</p> <ul style="list-style-type: none"> • Between 10th Street and 9th Street (Extension of out-bound trolley wires at curbside to allow trolleys to access new far side boarding island at 9th Street -- after Island, will provide switch back into center set of out-bound wires) • At Market Street and McAllister Street (modify in-bound wires from McAllister to replace crossover at center set of wires with a trailing switch, and provide new switch from center set of wires to curb side set of wires) • On Market Street between McAllister Street and 6th Street (outbound wires will need a leading switch and trailing switch to allow trolley movement from center to curb side set of wires)
<p>Muni Traction Power Upgrade</p>	<p>The project will install two sets duct banks (a minimum of four 6" PVC conduits plus two 6" spare) for future electric distribution backbone feeders at medium voltage level. Power duct banks will split North and South along Market Street, running east and west along Market Street. Duct banks will be capped on both ends at The Embarcadero and at Octavia Blvd. within the limits of the project.</p>
<p>Sewer Lines</p>	<p>Existing 3' x 5' brick sewers along the center of Market Street will be replaced with a dual sewer system under the new sidewalks on either side of Market Street. The project will construct approximately 15,000 linear feet (LF) of 12- to 33-Inch vitrified clay pipe main sewer, 1,200 LF of which will be constructed with steel.</p>
<p>Water Lines</p>	<p>The project will replace and install approximately 17,500 linear feet of 8-inch to 36-inch ductile iron pipe with associated fittings, valves, and service laterals. These will include corrosion-resistance measures including bonding joints, sacrificial anodes and isolation joints, and installation of steel casing sleeves for water mains crossing below Muni tracks at various locations. Low-pressure fire hydrants and associated fittings and valves will be replaced as needed.</p>
<p>AWSS System Elements</p>	<p>The project will included state-of-good-repair replacement of AWSS facilities as required to maintain system in state of readiness. Existing AWSS facilities will be relocated in order to accommodate new pedestrian and bus bulb outs, and related improvements to Market Street, in order to maintain access of facilities to both the San Francisco Fire Department and SFPUC. This includes relocating where necessary, AWSS hydrants and laterals, main lines, vaults and gate valves. Existing valve box and valve vault access covers will be raised as required to accommodate pavement and sidewalk grade changes.</p>
<p>Fiber Optics</p>	<p>In conformance with San Francisco's "Dig Once Ordinance", eight (8) 2" HDPE fiber conduits will be installed along Market St. with termination vaults on each side of the Market St. Vaults (48"Lx30W"x36"H) will be installed in the City right-of-way outside of</p>

	<p>the paved surface/vehicular traffic lanes, as close to the curb/gutter as possible. Existing City fiber (for public safety infrastructure, Fire and Police Communications, etc) will be relocated out of existing AT&T conduits and installed in this new facility.</p>
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CONSTRUCTION AND STAGING

Construction will begin in 2020 with work divided into separate segments of Market Street. Work will continue for at least a six-year period, including inactive periods. Construction will proceed in both directions along multiple segments simultaneously. Active construction is expected to last up two to three years per segment.

Areas of active construction on Market Street construction will vary in size but will always be separated from traffic and pedestrians by a buffer that will include a temporary barrier. All openings in the street and sidewalk will be closed by backfilling and paving or by plating over to provide a safe and adequate passageway for bicyclists, motorists, transit, and pedestrians. Adjacent to the construction zone, transit speeds will be reduced, and loading spaces will be relocated away from the construction zone when active.

Construction will typically be restricted to 8:00 AM to 5:00 PM, seven days a week, on Market Street, between Octavia Blvd and Steuart Street. Work hours will be adjusted to accommodate transit operation, bike movement, pedestrian needs and local businesses along the corridor for different phases of construction. Further study for each block and side streets will be performed in detailed design to finalize the work hours.

Some night work and weekend work may be required in areas where land uses are primarily commercial. An example of construction activity that will require both nighttime and weekend work is the construction of tracks at intersections; tracks will be constructed at each intersection over the course of one weekend to minimize potential impacts on transit riders. In addition to day-to-day hourly restrictions, the City’s construction holiday moratorium (Thanksgiving to January 1), places additional restrictions on construction work in the public right-of-way; Market Street between Fremont and Eighth streets falls under the moratorium as well as any city block where at least 50 percent of the frontage is devoted to business.

Vehicles and bicycles will be rerouted from Market Street for some stages. For utilities, limited construction may need to take place over multiple stages; any excavations will be plated. Some of the deeper excavations are required for minor changes to existing stormwater collection.

The following construction stages will occur in different orders within different segments

- Closure of center lanes to allow for construction of rail track replacements and demolition and installation of some new center transit islands. Curbside lanes will remain open to public transit. F-line streetcar service will be maintained as much as possible, but it will require substitution with bus service when travel in the center lane is not possible.
- Closure of curbside lanes for relocation and reconstruction of the curb, along with the accompanying removal and planting of trees and relocation of fire hydrants, light poles, catch basins, and other utilities; and for demolition and installation of center transit islands. The center lanes will remain open to public transit.
- Closure of sidewalks for their reconstruction, but access will be maintained by the use of temporary walkways to buildings and businesses. Curbside lanes and United Nations Plaza will

be available for pedestrian detours, while the center lanes will be available to public transit.

- Closure of intersections for the demolition, relocation, and installation of utilities that cross Market Street. All pavement work will occur in quadrants (each one-quarter of the intersection) to accommodate traffic across Market Street and transit along Market Street. Construction for each stage and sub-stage will generally proceed in the following order:
 - Mobilization of contractor equipment, facilities, materials, and personnel into construction staging areas
 - Installation of construction area signs, circulation of construction announcements
 - Establishment of work zone and perimeter buffers
 - Installation of temporary street lighting, OCS lines, and traffic signals
 - As-needed, local de-energization of the OCS lines
 - Execution of removal work, including bus platform, pavement, streetlight, signal, OCS line, and interfering underground utility removal, to prepare the work zone for construction of new infrastructure
 - Construction of infrastructure within the work zone, including large-scale underground utilities replacement or relocation; construction of pole foundations, roadway pavement, tracks, tree trenches, curb, sidewalk, bike lane, delineation, boarding islands, hydrants, streetlights, OCS systems, traffic signals and poles, streetscape features, etc.; and lane resurfacing.
 - Installation of transit stop amenities and landscaping, signage, lane striping, and lane coloring
 - Demobilization

Construction Staging

All construction and staging will occur within the operational public right-of-way. The mobilization of personnel and materials will require areas for field offices and trailers, parking, and material delivery, storage, and handling. These areas will need to be in proximity to active construction areas, ideally no more than 200 feet away. It is anticipated that the construction staging areas will be located on Market Street or adjacent side streets, within 200 feet of active construction areas, and will move in tandem with the shifting work zone. The discussions below describe the elements of the construction staging areas.

Temporarily stockpiled materials will include excavated soil, crushed concrete, reinforcing steel, imported soil, pipe, appurtenances, streetcar tracks, OCS lines, overhead poles, and other building materials that are customary of street and utility construction. Stockpiling will be needed in construction staging areas along Market Street or on adjacent side streets. Material delivery and removal as well as onsite handling will, in some cases, involve platoons of vehicles.

Temporary lighting, OCS lines, and signals will be needed. Temporary poles will most likely have above-grade foundations, such as large reinforced-concrete cylinders. Temporary poles for the OCS will be timber direct-burial poles or placed within the new foundations. The poles will be within the street right-of-way or construction staging areas, depending on the available space.

Construction equipment will include track-mounted vehicles, including, but not limited to, excavators, asphalt cold planers, asphalt pavers, dozers, and earth-compacting rollers. Conventional equipment

that can be transported on street-legal rubber-tires comprise the remaining construction vehicles.

Demolition of bus platforms, curbs, and sidewalks will require hammers, hydraulic breakers, demolition shears, pulverizers, grapples, brooms, and similar equipment.

Transportation Conditions during Construction

Vehicular traffic on the Market Street corridor will be restricted to public transit vehicles, including paratransit, but may be interrupted periodically. At least one transit travel lane will be maintained in each direction on Market Street, with a minimum temporary width of 11 feet.

Transit access will be preserved, but some stops may be temporarily relocated and the number of stops temporarily reduced. Detours along some transit routes, e.g. to Mission Street, may be required for the duration of the construction period, as described in the coordinated construction management plan or the focused construction transit plan that will be developed prior to final design and construction. Enhanced transit priority features will be provided on Mission Street during detours.

Pedestrian access throughout the corridor will be preserved, including access to transit stops and fronting land uses along or near the project corridor. However, periodic sidewalk, plaza, or crosswalk closures will occur during sidewalk reconstruction and utility work. Sidewalk improvements will be completed over multiple stages of construction to maintain access. During each stage, pedestrian access to portions of the sidewalks and United Nations plaza will be limited or narrowed but not completely restricted. Some intersection crosswalks may need to be closed, with pedestrians detoured to the nearest intersection possible. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain ADA compliance and ensure that pedestrian overcrowding will not occur at busier locations along the corridor.

Bicycle access will be temporarily detoured at some locations or along the entire corridor to streets such as Mission Street, Howard Street, and/or Folsom Street. Bicycle facility changes will be completed in multiple stages to maintain access where possible.

Commercial loading activities will take place on adjacent side streets and/or during restricted hours along Market Street (e.g., staggered hours for loading and construction). Loading within an active construction zone will not be permitted at any time. Loading areas within active construction zones will be relocated as close to the construction zone as is practical. Temporary loading zones (within a mixed-flow lane adjacent to an inactive construction zone) may be possible in some circumstances.

Emergency vehicle access will be maintained on the Market Street corridor during construction by maintaining two transit travel lanes, which could be used by emergency vehicles, within the active construction segment.

Parking along adjacent side streets will be subject to restrictions, beyond existing restrictions, to accommodate construct staging. When feasible, temporary alternative access may be provided at a location outside the construction zone or within an acceptable location within the construction zone.

In addition to the construction-related effects on transit service along Market Street, transit lines that run perpendicular to Market Street will be subject to temporary changes. In general, bus access along the Market Street corridor and the transit lines that cross the corridor will be maintained during construction. However, some bus stops or routes will be changed during the course of construction. Potentially affected transit routes include 8 Bayshore, 8AX Bayshore A Express, 8BX Bayshore B Express, 10 Townsend, 12 Folsom-Pacific, 19 Polk, 27 Bryant, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton, 82X Levi Plaza Express, and Golden Gate Transit Routes.