Transit Effectiveness Project

Implementation Workbook

DRAFT
Last Updated March 24,2014

SFMTA
Municipal
Transportation
Agency

Contents

Contents

Proposals by Route Continued

Contents

Proposals by Route Continued

Contents

About the SFMTA

Vision

San Francisco: great city, excellent transportation choices.

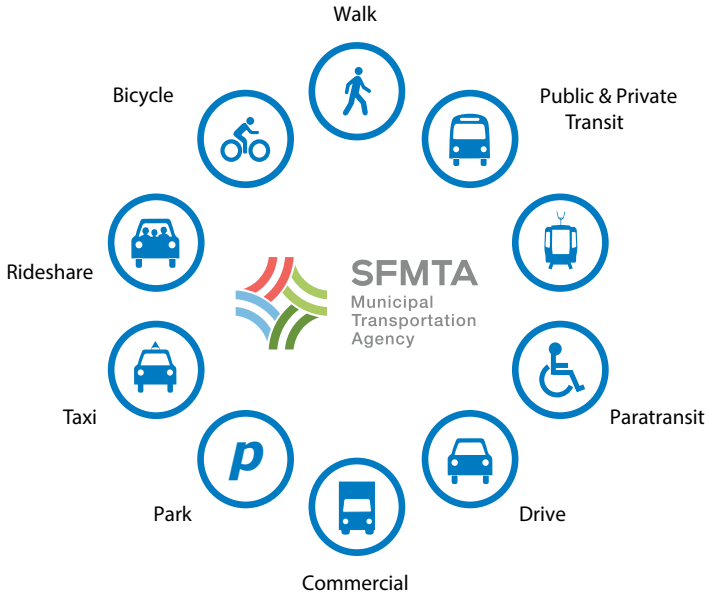
Mission Statement

We work together to plan, build, operate, regulate, and maintain the transportation network, with our partners, to connect communities.

Who We Are

The San Francisco Municipal Transportation Agency (SFMTA) is a unique organization. Created in 1999 through a voter initiative to combine the former Municipal Railway (Muni) and Department of Parking and Traffic (DPT), this resident-led change to the City Charter was designed to create an integrated transportation agency for the purpose of managing the City's streets more effectively and supporting the Transit First policy. The Agency has continued to evolve since then, merging with the Taxi Commission in March 2009, and establishing closer ties with the San Francisco Police Department's traffic enforcement detail. This evolution has created a comprehensive, multimodal agency that works to expand transportation choices for all people who live, work or play in San Francisco.

What We Do



The SFMTA plans, designs, builds, operates, regulates, and maintains one of the most diverse transportation networks in the world. Through our work, which spans the four major modes of transportation (transit, bicycle, pedestrian, automobile), we seek to balance the needs of all users, whether they are walking; bicycling; driving, riding or sharing a car; in a taxi; driving a commercial vehicle; or riding transit. SFMTA also oversees paratransit service, which serves individuals unable to use fixed-route transit service all or part of the time. The SFMTA also partners with regional transit operators who connect the city to the rest of the region using four additional transit modes (BART, commuter railroad, regional bus, and ferry). In addition to being an operator and regulator, the SFMTA has a robust planning, design, and construction function that includes reviewing all proposed land use developments with our partners; planning, designing, and building the transportation modal networks (transit and paratransit, streets, signals, bicycle, pedestrian, taxi, commercial delivery, and loading); and providing long-range forecast analyses of the fleets, facilities, and right-of-way infrastructure in the city and their relation to the region.

The SFMTA also oversees and manages on and off-street public parking in a manner that complements the policy objectives of this Transit First city. Last but not least, the Agency creates and enforces rules about the city's streets, transit system, and parking infrastructure. Combined, these efforts make an all-in-one transportation agency that directly impacts the daily life of everyone who moves about the city.

TEP Plan

San Francisco is more than just transit rich–it is transportation rich. It is a city where residents and visitors alike are empowered with the freedom to choose how they get around. Recent trends show more and more San Franciscans leaving their private cars behind, and weaving themselves into the public realm through overlapping networks of transit, taxi, bicycle, and pedestrian routes. This shift towards more sustainable transportation helps all San Franciscans–whether they live, work, or play here–by reducing greenhouse gas emissions, improving air quality, reducing congestion and noise pollution, and creating more active, more vibrant, more humane streets. These trends will move the city closer to its future vision of a more efficient, equitable, and environmentally sustainable transportation network, assuming of course that we can overcome near-term challenges that act as barriers to change. After all, it is difficult to imagine life without a personal vehicle and a two-car garage when Muni is notoriously slow and unreliable, taxis are hard to find, and many streets still prioritize fast-moving cars over the human-scale movement of people.

The focus of the Transit Effectiveness Project (TEP) is Muni: at once, the transit backbone of a transportation-rich system that connects all modes and all people, but also–unfortunately–a system that has failed to keep pace wth a changing San Francisco. The TEP represents the first major evaluation of San Francisco's mass transit system in thirty years, and combines an extensive, data-supported planning process, engagement with the community at various levels, and critical lessons learned through the implementation of pilot projects, to develop solutions that improve the end-to-end customer experience–the walk, the wait, and the ride–for all Muni customers.

Project History

In 2006, the SFMTA and the Controller's Office undertook a detailed evaluation of the existing San Francisco Municipal Railway (Muni) system to identify ways to improve service, attract more passengers, and increase efficiency. During the initial planning phase, from October 2006 to November 2007, the SFMTA collected and analyzed extensive data, which included market research on customer preferences and priorities for Muni service, changing travel patterns within the City and through the region, and route-by-route Muni ridership data. Based on this detailed research, best practices from other cities, and input from key stakeholders, the SFMTA developed a set of preliminary recommendations to update the transit network and reflect changing travel patterns. In 2008, the SFMTA conducted public outreach on its preliminary recommendations to refine and develop draft TEP recommendations for the SFMTA Board of Directors (SFMTA Board). The SFMTA Board endorsed the draft recommendations for environmental review in October 2008.

In April 2009, the SFMTA Board declared a fiscal emergency. The 2008 draft TEP recommendation helped SFMTA make strategic, targetted cuts that would allow Muni to reduce its operating costs while still protecting the vast majority of its ridership. The SFMTA Board approved an amended 2009-2010 Operating Budget and related actions, which included some route eliminations and transit service changes to route alignment, vehicle type, frequency, and hours of service; some frequency increase and route additions were also added at that time. These emergency changes helped SFMTA successfully weather the fiscal emergency. Service has largely been restored to pre-2009 levels, although some route changes have been retained, especially those that help Muni operate leaner and more efficiently.

In fall of 2011, the SFMTA initiated the environmental review (California Environmental Quality Act, or CEQA) process for the TEP, with the filing of a Notice of Preparation (NOA) on November 9, 2011. The TEP proposals initially developed in 2008 during the planning phase of the TEP were re-evaluated and refined in order to capture more recent land use and ridership trends, as well as integrate service changes that were implemented in 2009 and 2010. The implementation plan was also developed, which builds upon past planning documents and strategies to present current priorities, funding needs, and schedule for improvements. The implementation plan is continually updated to reflect the most current needs and improvements.

The SFMTA published an initial environmental study in January 2013 and the Draft Environmental Impact Report (DEIR) in July 2013, and a Response to Comments (RTC) in March 2014. All potential near-term and long-term environmental impacts are analyzed and disclosed in these documents. The implementation of TEP proposals will only move forward upon full satisfaction of anticipated CEQA requirements, and with the concurrence of the SFMTA Board of Directors. The SFMTA Board is expected to make this decision at a hearing on March 28, 2014, at which time the Final EIR is also expected to be certified.

More information on these processes can be found at http://www.sfmta.com/tep.

Goals

The TEP proposals were developed with the following goals in mind:

1. Improve Muni travel speed, reliability and safety

To improve transit speed, reliability and safety—thereby increasing the system's cost effectiveness, productivity, and attractiveness for customers— by redesigning routes; reducing travel time along high ridership corridors by optimizing transit stop locations, implementing traffic engineering changes, and constructing capital infrastructure projects to reduce stop delays; and improving safety at intersections by introducing changes (i.e. pedestrian bulbs, transit bulbs etc.) that lead to safer transit operations.

2. Make Muni a more attractive transportation mode

To make Muni a more attractive transportation mode and increase transit ridership by offering new and different services to penetrate additional travel markets and to expand the SFMTA's market share among current riders. Specifically, the proposed project would seek to serve major Origin-Destination patterns such as regional transit connections and major employment sites; to provide direct and efficient service by reducing circuitous route segments; to reduce crowding by shifting resources that will improve customer comfort and decrease pass-ups; and to redesign routes to maximize ridership.

3. Improve cost-effectiveness of Muni operations

To improve the cost effectiveness of transit operations by improving network efficiency and to reduce system redundancy by implementing service modifications that include route restructuring, frequency improvements, vehicle type changes, and reducing hours of service and frequencies on low ridership routes while increasing frequencies on crowded routes.

4. Implement the City's Transit First Policy

To fully implement the City's Transit First Policy by prioritizing transit through concrete goals that both provide clear direction for managing transportation in San Francisco and are linked to the performance measures established by Proposition E. Specifically, the proposed project would seek to provide service to all residents within a quarter mile of 95 percent of the Muni service area, to prioritize transit operations in high ridership corridors over automobile delay in order to reduce transit travel time, and to prioritize transit operations in high ridership corridors over parked vehicles in order to reduce transit travel time variability.

Implementation Tools

The TEP proposes two primary sets of changes to the transit network: (1) service and route restructuring, and (2) transit priority capital projects. These changes support a new service policy framework that clearly articulates Muni's different roles in the communities it serves, and how different routes can be designed to serve different needs.

Service Policy Framework

SFMTA proposes a new framework that reorganizes Muni service into four transit categories:

RAPID: These heavily used bus and rail lines form the backbone of the Muni system. With vehicles arriving frequently and transit priority enhancements along the routes, the Rapid network delivers speed and reliability whether customers are heading across town, or simply traveling a few blocks.

GRID: Also known as "Local" routes, these long routes combine with the Rapid network to form an expansive core system that lets customers get to their destinations with no more than a short walk, or a seamless transfer.

CIRCULATORS: Also known as "Community Connectors", these lightly used bus routes predominantly circulate through San Francisco's hillside residential neighborhoods, filling in gaps in coverage and connecting customers to the core network.

SPECIALIZED: These routes augment existing service during specific times of day to serve a specific need, or serve travel demand related to special events. They include express service, owl service, and special event trips to serve sporting events, large festivals and other San Francisco activities.

Network Service Changes

The TEP includes service changes that are proposed to reduce crowding, improve system-wide neighborhood connectivity and access to regional transit, and redirect finite public resources to where they are needed most. Overall, the proposals represent a 12 percent increase in Muni service. The proposals, initially drafted by SFMTA, were presented to members of the community, and refined through an iterative process of public comment, additional data collection, and technical analysis. Specifically, these proposals include:

- Increasing frequency of transit service along heavily used corridors
- Creating new routes
- Changing existing route alignments
- Eliminating underutilized routes or route segments
- Introducing larger buses on crowded routes

- Changing the mix of local/limited/express service
- Expanding limited services

While many of these proposals can be delivered without capital changes, some of the service changes require capital investments, such as overhead wire and terminal expansions.

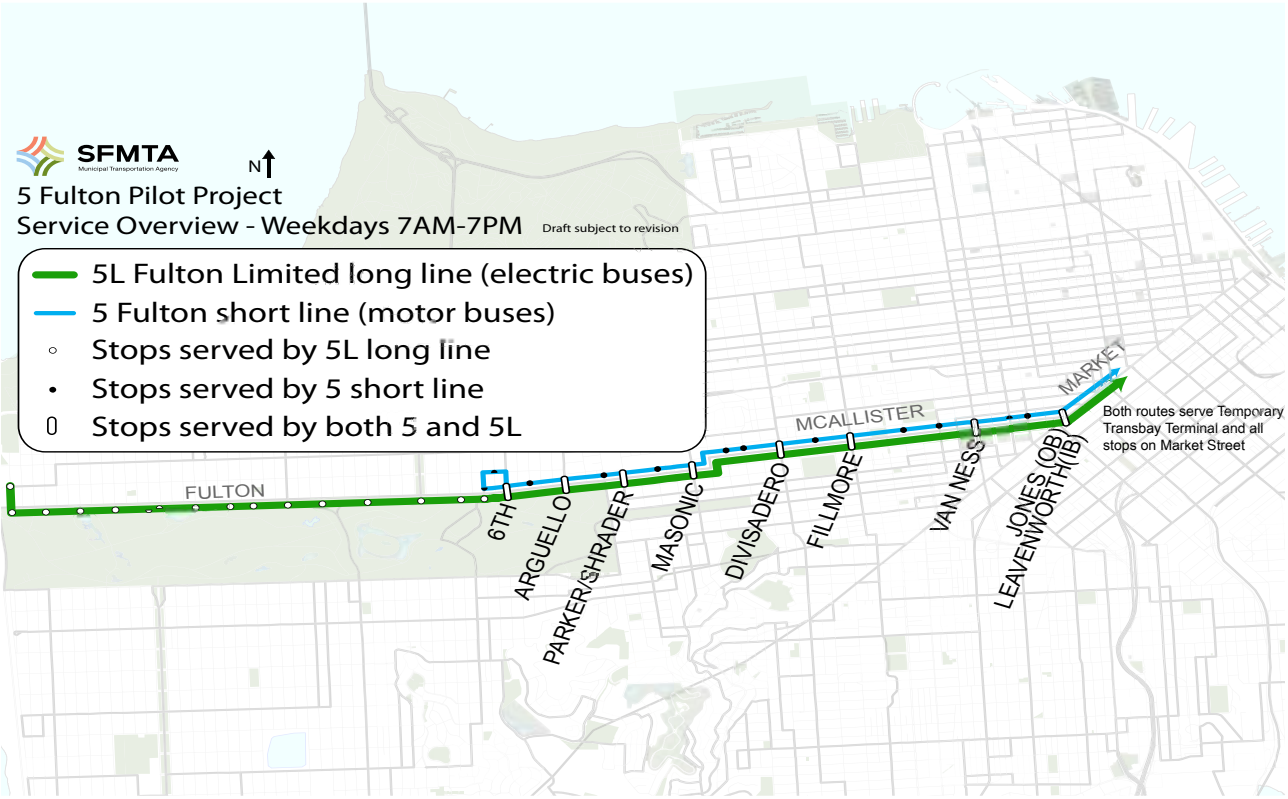
Transit Priority Investments

The TEP includes engineering improvements—also known as Travel Time Reduction Proposals (TTRPs)—designed to address transit delay, improve reliability, and increase the safety and comfort of customers along the most heavily used Rapid routes. The TTRPs include a variety of standard roadway and traffic engineering treatments that specifically address the root causes of delay and passenger frustration, including traffic congestion, transit stops that are spaced too close together, narrow travel lanes, and slow boarding times. These elements are referred to as the Transit Preferential Streets Toolkit (TPS Toolkit) in the Draft EIR and include lane modifications, traffic signal and stop sign changes, transit stop changes, parking and turn restrictions, and pedestrian improvements.

As part of the TEP, detailed proposals were developed for eleven corridors and conceptual proposals were developed for six corridors. As the TTRPs affect the allocation of scarce roadway space among different users by utilizing space for elements that prioritize transit, more than one alternative was typically proposed at the most contentious locations, each balancing different stakeholder needs and interests. The precise components of the TEP to be implemented will be decided by the SFMTA Board of Directors, who will consider the details of the project proposals as well as the results of the environmental impact analysis, following the next round of public outreach. Their work will be informed by additional community outreach occurring in spring and summer 2014.

Pilot Projects

Prior to full implementation of the TEP, three pilot projects were launched to gauge the potential costs and benefits of various TEP proposals, and refine our community outreach efforts. These pilots include: the 5L Flying Fulton pilot , the Church Street Transit-Only Lane, and the 76x Marin Headlands Express route.



5L Flying Fulton Pilot

The 5 Fulton serves nearly 20,000 customers each weekday. On October 2013, the SFMTA implemented a pilot project to improve service by converting a portion of the 5 Fulton route into limited stop service between 6th Avenue in the Richmond District and Market Street Downtown. The pilot added capacity along the more crowded portion of the route between 6th Avenue and the Transbay Terminal. In addition to restructuring the 5 Fulton service, the pilot included numerous bus stop changes and roadway geometry changes to improve safety, reliability and transit travel times. Phased implementation is targeted to begin in late 2013.

Pilot Projects

Church Street Transit-Only Lane

The Church Street Rapid Pilot was launched in March 2013, and establishes center-running, dedicated transit-and-taxi-only lanes along three blocks of Church Street, in both directions, between 16th Street and Duboce Avenue. To protect the integrity of these lanes, the pilot includes left turn restrictions, parking changes, and a red paint treatment that has proven effective at reducing transit lane violation rates in New York City and abroad. The primary goal of the pilot is to reduce congestion-related delay and improve service reliability along one of the slowest segments of the 22 Fillmor and J Church routes. The impact of the pilot on transit service, local circulation, and driver compliance rates are summarized below:

Transit Service

- The pilot has largely eliminated congestion-related delay on the J Church and 22 Fillmore through the corridor
- The pilot has been effective at improving the reliability of outbound trips through the corridor
- The pilot has been effective at reducing the frequency and magnitude of extreme delay

Local Circulation

- The pilot has not led to a significant increase in delay to personal vehicles along the Church St corridor, except at the northbound approach to Duboce Ave, where congestion was already an issue
- The pilot has not led to significant traffic diversion to parallel streets

Driver Compliance

- The red paint treatment has been very effective in reducing transit lane violations

76x Marin Headlands Express

Muni started service on the 76X Marin Headlands Express on November 17, 2012, as part of the Transit Effectiveness Project (TEP) to test:

- T**he effectiveness of service changes to address travel time and reliability concerns**: As part of the pilot, the route no longer travels south of Market Street to Caltrain, and a new terminal is located at Montgomery BART station. Additionally, remaining stops within the City of San Francisco are more widely spaced (although all connections to major Muni transfer points will remain). All of the discontinued stops are served by other high-frequency Muni lines.

- **Ridership demand for expanded service:** Route 76 previously ran on Sundays and holidays only, hourly, from 9:30 am to 6:30 pm. As part of the pilot, service has been expanded to Saturdays through a grant from the Golden Gate National Recreation Area (GGNRA).

Since the launch of the pilot project in November of 2012, the route has experienced the following highlighted improvements:

- On-time performance has improved from about 10% to 50%
- The overall one-way travel time on the route decreased roughly 18 minutes
- Between Montgomery Station and Fort Cronkhite, which is the portion of the route that remained in-effect after the pilot launch and where almost 20 stops were consolidated in each direction, the route has increased its speed at a rate of almost 40 seconds per consolidated stop

Furthermore, customers' perceptions of the 76 service have improved since the pilot launch, with riders indicating perceived improvements in route reliability, travel time, and overall transit experience.

Capital Projects

The TEP will be implemented based on funding and resources availability. As of July 2013, more than ten projects (40 miles of investment) are in the preliminary planning and engineering stages, and have funding strategies identified for construction. Since financing is complicated, the TEP work is being completed in segments. More detail can be found on the individual route pages in the "Proposals by Route" chapter.

The City and County of San Francisco 2014 Capital Plan and the San Francisco 2030 Transportation Task Force (T2030) have both recommended GO Bond funding for design and construction of the TEP. Recommended funding ranges from $150 million to $ 230 million for the Capital Plan and T2030 respecitvely and includes the following capital projects, encompassing both service-related capital improvement projects (SCI) and travel time reduction proposal projects (TTRP). Bicycle and pedestrian capital improvements will be built in coordination with the TEP to improve safe and easy access to transit.

Projects have been separated into three groups, with the first group split into two sub-groups. Specifically, some of the Group 1 projects are being fast tracked for implementation in early 2014 to coordinate with previously-scheduled paving projects. The other projects included in Group 1 will go through a public outreach process begining in summer 2014. Community input from this process will shape the projects as they move into detailed design. Once funding from Construction funding is available, detailed design will have been completed on Group 1 projects and construction can begin (see below for a visual timeline of the projects).

Projects identified in Group 2 will recieve a targeted public outreach process begining in Fall 2014. These projects will be ready to move into the detailed design phase after additional funds become available. Projects placed in Group 3 are awaiting the development of intersection-specific proposals, project level CEQA review, and a funding strategy.

Transit Enhancement Projects - Fast-tracked

- 5 Fulton: Transit Enhancements (Segment 1) | Transit Bulbs on McAllister St
- 9 San Bruno: 11th St and Bayshore Blvd Transit Enhancements (Segment 1)
- 14 Mission: Transit Bulbs on Mission at Silver Coordinated with Paving
- 30 Stockton: Transit Bulbs on Columbus Street Coordinated with CS Paving
- 71 Haight-Noriega: Haight St. Transit and Streetscape Enhancements (Segment 1a)
- N Judah: Transit Bulbs on Irving Street Coordinated with Paving | 28th Ave / Judah St Accessible Boarding Island

Capital Projects

Transit Enhancement Projects - Group 1

- 5 Fulton: Transit Enhancements - Market St to 6th Ave (Segment 3)
- 8X Bayshore Express: Geneva Transit Enhancements
- 9 San Bruno: 11th St and Bayshore Blvd Transit Enhancements (Segment 2)
- 10 Sansome: Contraflow Signals
- 30 Stockton: 30 Eastern Transit Enhancements (Segment 2)
- 71 Haight-Noriega: Haight St. Transit and Streetscape Enhancements (Segment 1b)

Transit Enhancement Projects - Group 2

- J Church: J Transit Enhancements
- L Taraval: Transit and Streetscape Enhancements
- N Judah: Transit and Streetscape Enhancements
- 8X Bayshore Express: Mid-Route Transit Enhancements
- 14 Mission: Transit Enancements - Spear St to South Van Ness Ave (Segment 1)
- 14 Mission: Inner Mission Transit and Streetscape Enhancement (Sement 2)
- 14 Mission: Outer Mission Transit and Streetscape Enhancements (Sement 3)
- 22 Fillmore: 16th Street Transit and Streetscape Enhancements (Segment 1a)
- 22 Fillmore: 16th Street Transit and Streetscape Enhancements (Segment 1b)
- 28 19th Avenue: 19th Avenue Transit and Pedestrian Enhancements (Segment 1)

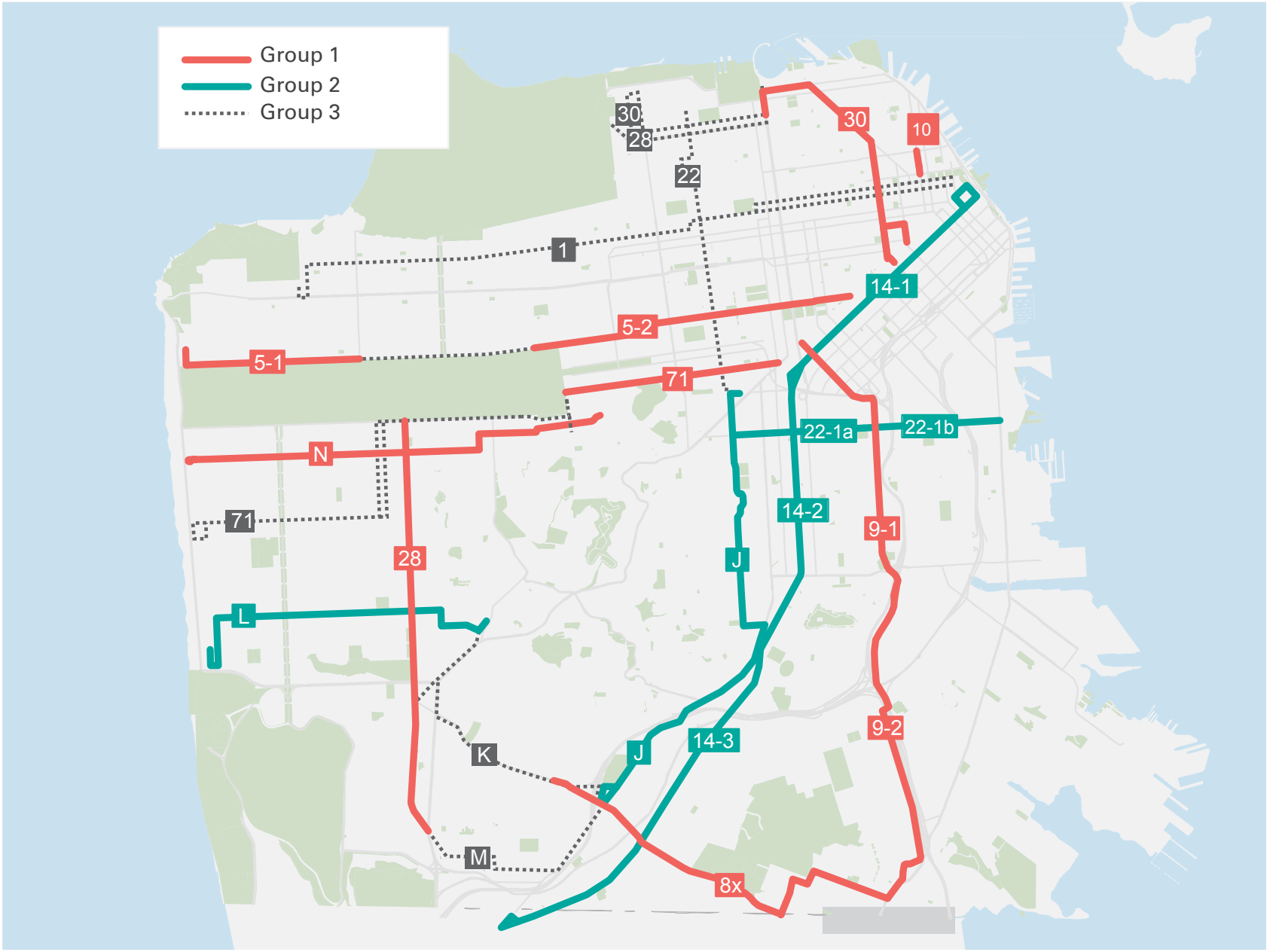
Transit Enhancement Projects - Group 3

- K-T Ingleside-Third: Transit Enhancements - West Portal to Balboa Park terminus
- M Ocean View: Transit Enhancements- West Portal to 19th Ave (Segment 1)
- M Ocean View: Transit Enhancements -19th Ave to Balboa Park terminus (Segment 2)
- 1 California: TTRP (entire route)
- 5 Fulton: Transit Enhancements - 6th Ave to 25th Ave (Segment 2)
- 6 Parnassus: Overhead Wire Extension to West Portal
- 22 Fillmore: 16th Street Transit and Streetscape Enhancements (Segment 2)

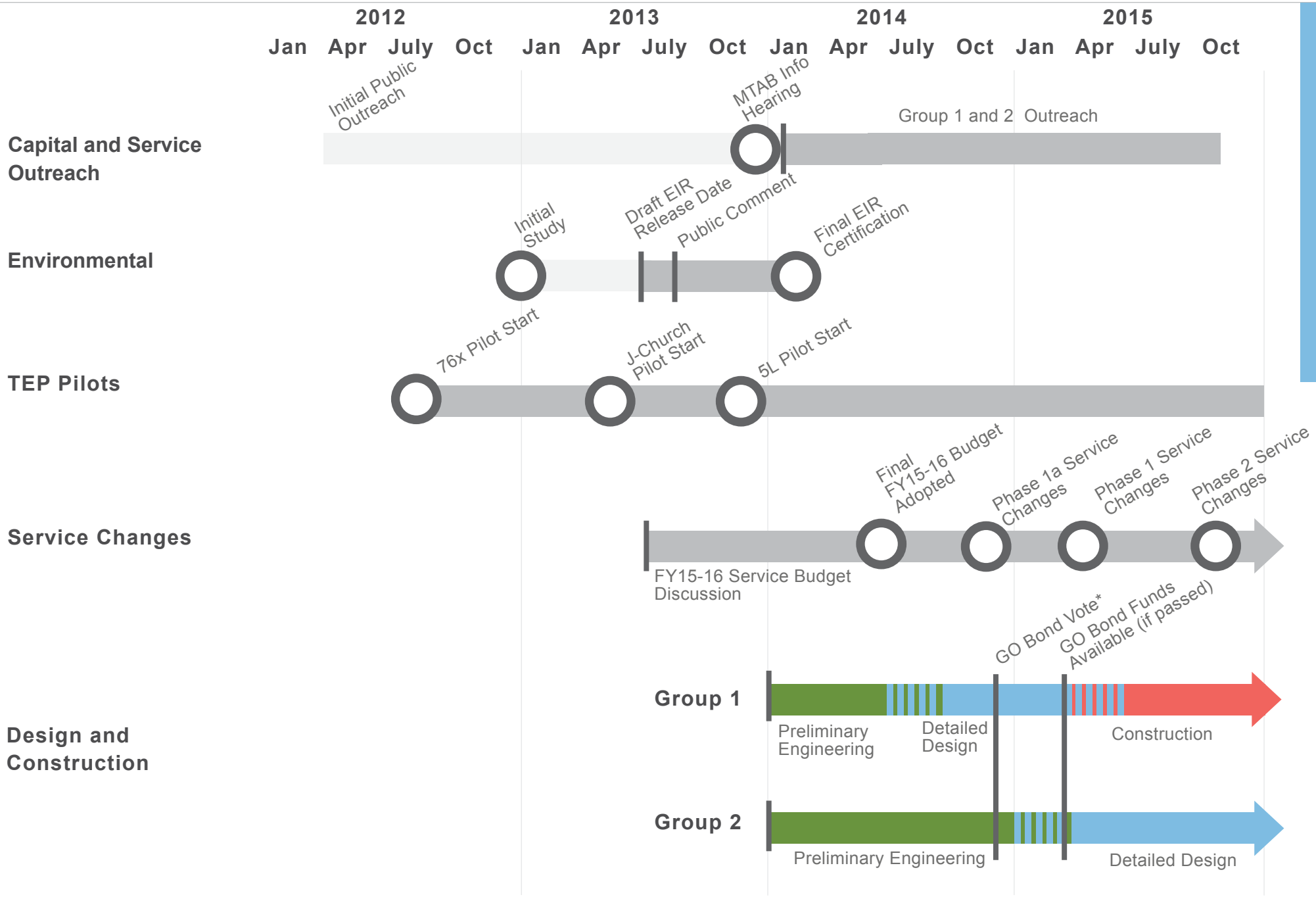
Capital Projects

- 28 19th Avenue: 19th Avenue Transit and Pedestrian Enhancements (Segment 2)
- 30 Stockton: 30 Eastern Transit Enhancements (Segment 1)
- 71 Haight-Noriega: Haight St. Transit and Streetscape Enhancements (Segment 2)

Map of Capital Projects



TEP Planning & Implementation Timeline



TEP Supportive Projects

The TEP is a specific set of projects that aim to achieve broad outcomes for the City's transit system. The SFMTA is also pursuing other projects and programs that would support transit system improvements. These include major capital initiatives such as the construction of the Central Subway; state of good repair investments; operational improvements such as systemwide all-door boarding policies, enforcement of transit-only lanes, and service management; and traffic signal priority network enhancements for transit. These projects are not part of the TEP and therefore have not been analyzed as part of the environmental review for the TEP. Rather they are ongoing SFMTA initiatives with independent utility from TEP that are underway to improve Muni service, and would be in place to complement implementation of the TEP.

The SFMTA is continuing to enhance the existing transit network to make transit more readily identifiable and easy to use. These enhancements include colorizing existing transit-only lanes, adding and upgrading bus shelters, installing real-time arrival signage, and fare pre-payment on Muni corridors. Transit Signal Priority (TSP) is an ongoing Muni program to reduce transit travel time and improve transit reliability. TSP requires coordination between bus equipment, traffic signal hardware and the Muni radio operations to turn or hold the traffic signal green as a transit vehicle approaches an intersection. The SFMTA currently has transit signal priority at 150 intersections and is working to expand transit signal priority to 600 intersections in the next three years. This signal priority expansion will rely on a combination of fiber and wireless communications between an on-board radio and a computer in the traffic signal. This program is integral to the implementation of a number of programs, such as SFgo and the Radio Communications Systems and Computer Aided Dispatch Replacement project.

Implementation Tools

The Transit Effectiveness Project consists of three components: service changes, service-related capital projects, and travel time reduction proposals. The following typology lists the various implementation tools:

Service Changes

- NR — New Route
- RE — Route Elimination
- RA — Route Alignment
- HC — Headway Change
- VC — Vehicle Type Change
- EH — Expanded Hours

Service-Related Capital Projects

- TTPI — Terminal & Transfer Point Improvements
- OWE — Overhead Wire Expansion
- SCI — Systemwide Capital Infrastructure

Travel Time Reduction Proposals (TTRP)

TS — TRANSIT STOP CHANGES

1. Remove or Consolidate Transit Stops
2. Optimize Transit Stop Locations at Intersections
3. Install Transit Bulbs
4. Install Transit Boarding Islands
5. Optimize Transit Stop Lengths
6. Convert Flag Stops to Transit Zones

LM — LANE MODIFICATIONS

7. Establish Transit-Only Lanes
8. Establish Transit Queue Jump/Bypass Lanes
9. Establish Dedicated Turn Lanes
10. Widen Travel Lanes through Lane Reductions

PR — PARKING AND TURN RESTRICTIONS

11. Implement Turn Restrictions
12. Widen Travel Lanes through Parking Restrictions

TSC — TRAFFIC SIGNAL & STOP SIGN CHANGES

13. Install Traffic Signals at Uncontrolled and Two-way Stop-controlled Intersections
14. Install Traffic Signals at All-way Stop-controlled Intersections
15. Replace All-way Stop-controls with Traffic Calming Measures at Intersections

PI — PEDESTRIAN IMPROVEMENTS

16. Install Pedestrian Refuge Islands
17. Install Pedestrian Bulbs
18. Widen Sidewalks

Service Improvements

The TEP proposes service changes for route restructuring, frequency improvements, and vehicle type changes, which will direct resources where they are needed most, reduce crowding, and improve connections to regional transit. The proposed service changes include:

- Increase overall transit service by 12%
- Redesign routes to streamline travel and improve efficiency
- Enhance neighborhood connections
- Increase frequency on popular routes
- Reduce crowding
- Modify or discontinue low-ridership routes/segments
- Expand limited-stop service

These changes will better serve Muni customers, reflect changing travel patterns within San Francisco, provide improved connection to regional transit, streamline routes for improved reliability and reduced delay, and maximize the benefits from public resources.

Service-Related Capital Improvements

Many of the Service changes can be implemented without capital investments. However, some of the proposals are dependent on or would be enhanced by service-related capital projects. These projects fall into three categories:

Terminal and Transfer Point Improvements (TTPI)

Transfer and terminal points are stops that accommodate substantial passenger interchanges and/or transit vehicle layovers. Some of the TEP route changes would require passengers to transfer at new locations and/or additional buses to layover at existing sites. The TEP proposes four TTPI projects. The TTPI projects would include some or all of the following: the installation of new switches, bypass rails, transit bulbs, and overhead wiring and poles and associated underground wiring; the expansion of transit zones for bus layovers; the reconfiguration or elimination of on-street parking; and possible sidewalk modifications.

Overhead Wire Expansion (OWE)

OWE projects would include the installation of additional overhead wires and related infrastructure (e.g., support poles up to 30-feet in height, conduit, and duct banks) for certain electric trolley coach routes. OWE projects would support service route changes by allowing Muni to use electric trolley coaches on additional streets and would make it possible for trolley coaches to pass one another on existing trolley coach routes.

Systemwide Capital Infrastructure (SCI)

The two SCI projects would include the installation of new accessible platforms to improve system accessibility across the light rail network and the extension of an existing “transit- commercial” contraflow lane on Sansome Street to optimize bus routing and reduce transit travel time. Typical dimensions of an accessible surface platform are 60 inches by 90 inches. The heights of the platforms would vary by location, but would not exceed three and one-half feet from the ground surface or six and one-half feet in total height including the height of the three- foot-high open railing.

The Service-related Capital Improvements also include two levels of analysis: program level and project level. Capital projects for which specific designs and locations have not yet been developed are evaluated at a program-level. Capital projects with sufficiently detailed designs are analyzed at a project level.

Research conducted by the SFMTA during the initial planning phase of the TEP identified the following as major causes of transit delay: intersection congestion, traffic congestion on roadways, narrow mixed-flow lanes, and closely spaced transit stops. Other sources of transit delay identified in the research were associated with dwell time, traffic signals, and transit zone operational delays (i.e., the time for transit vehicles to pull into a stop or merge back into traffic after a stop).

The SFMTA has identified a set of standard traffic engineering elements that address these issues and can reduce transit travel time when applied to streets along a transit corridor. These elements include adding transit bulbs/boarding islands; transit stop changes including moving, adding, or eliminating stops; the addition of turn lanes, turn restrictions, and transit-only lanes; pedestrian improvements such as curb extensions and other crosswalk treatments; and the removal of stop signs and installation of traffic signals or other traffic calming measures at intersections. Collectively, these tools or elements are called the Transit Preferential Streets Toolkit (TPS Toolkit).

Transit Stop Changes

Transit stop changes adjust the size, location, or type of a transit stop. Transit stop changes reduce travel time by changing the distance between stops, making boarding and alighting easier for passengers, reducing transit dwell time, and/or reducing the time it takes for a transit vehicle to move in and out of traffic.

TOOLS
1. Remove or Consolidate Transit Stops
2. Optimize Transit Stop Locations at Intersections
3. Install Transit Bulbs
4. Install Transit Boarding Islands
5. Optimize Transit Stop Lengths
6. Convert Flag Stops to Transit Zones

Lane Modifications

Lane modifications change the roadway striping. These tools are proposed to separate transit vehicles from vehicle congestion, enhance safety by widening existing travel lanes, or improve transit speed and reliability by improving traffic flow. These changes are generally implemented by modifying an existing travel lane or by removing a parking lane.

TOOLS
7. Establish Transit-Only Lanes
8. Establish Transit Queue Jump/Bypass Lanes
9. Establish Dedicated Turn Lanes
10. Widen Travel Lanes through Lane Reductions

Parking and Turn Restrictions

Parking and turn measures are primarily legislative changes and enacted by signage, striping and parking restrictions. In some cases, they could also include roadway striping changes. Turn restrictions and tow-away zones are proposed to reduce travel delay caused by turning vehicles and to increase the number of travel lanes or the width of travel lanes on a street for some or all times of day.

TOOLS
11. Implement Turn Restrictions
12. Widen Travel Lanes through Parking Restrictions

Traffic Signal and Stop Sign Changes

Intersections are typically controlled by yield signs, stop signs and traffic signals. Signalizing an intersection or removing the stop sign(s) on the street with transit would reduce delay from stop signs. Traffic calming measures could be added to intersections with Stop sign removals to help pedestrians cross the street.

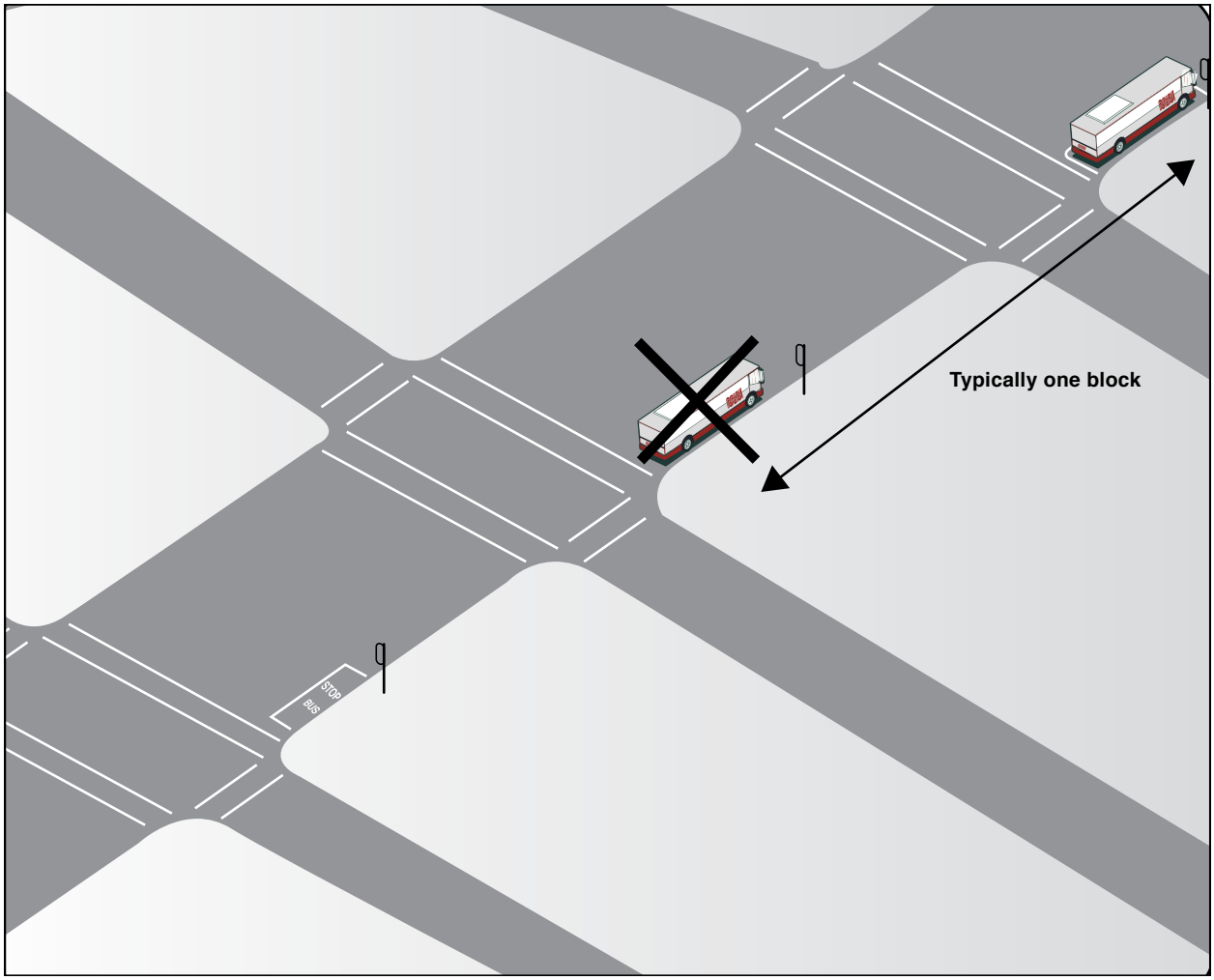
TOOLS
13. Install Traffic Signals at Uncontrolled and Two-way Stop-controlled Intersections
14. Install Traffic Signals at All-way Stop-controlled Intersections
15. Replace All-way Stop-controls with Traffic Calming Measures at Intersections

Pedestrian Improvements

Pedestrian improvements enhance access to transit, and enable transit to move with less delay and more reliability through a corridor.

TOOLS
16. Install Pedestrian Refuge Islands
17. Install Pedestrian Bulbs
18. Widen Sidewalks

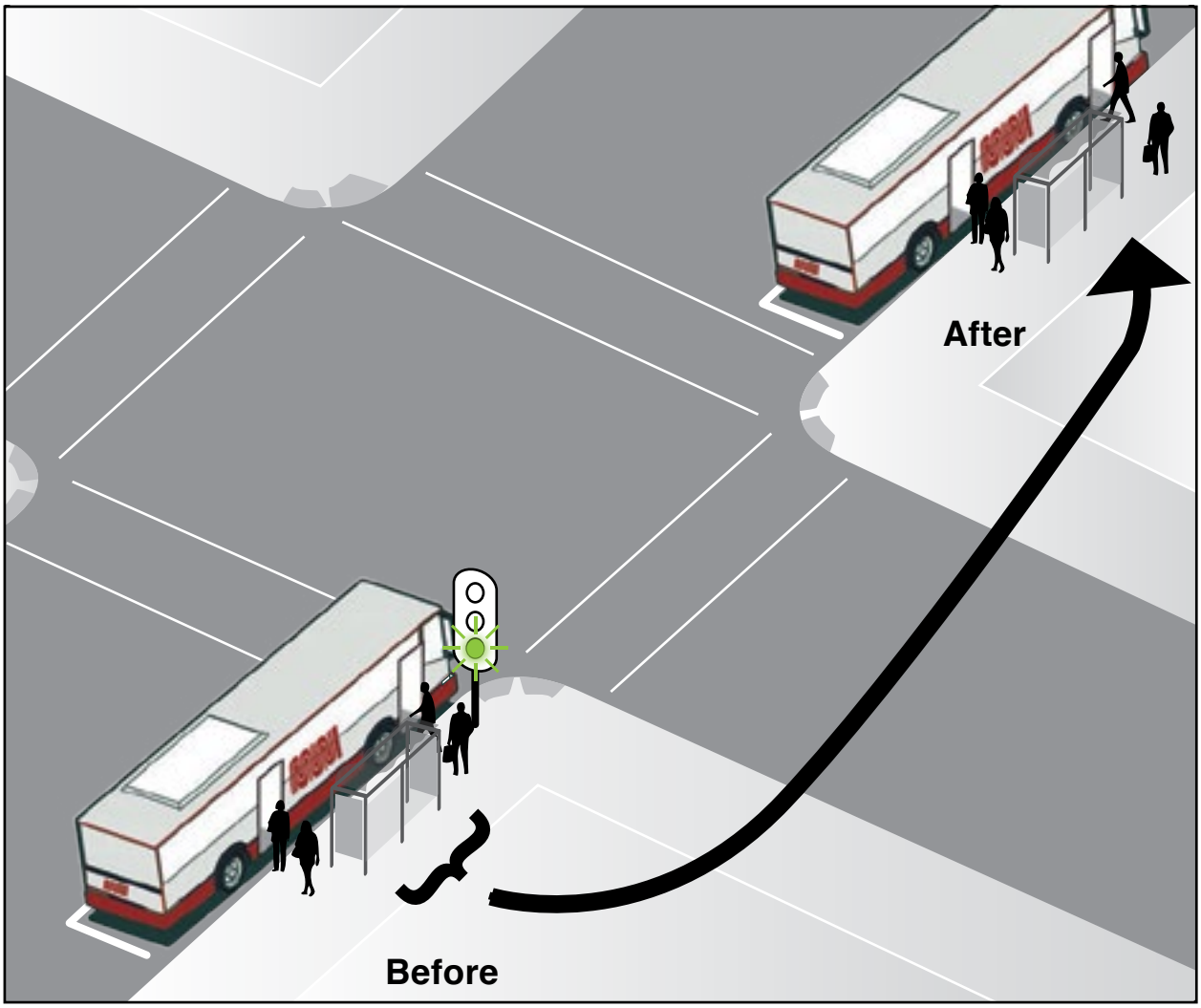
TTRP: Transit Stop Changes



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

1. Remove or Consolidate Transit Stops

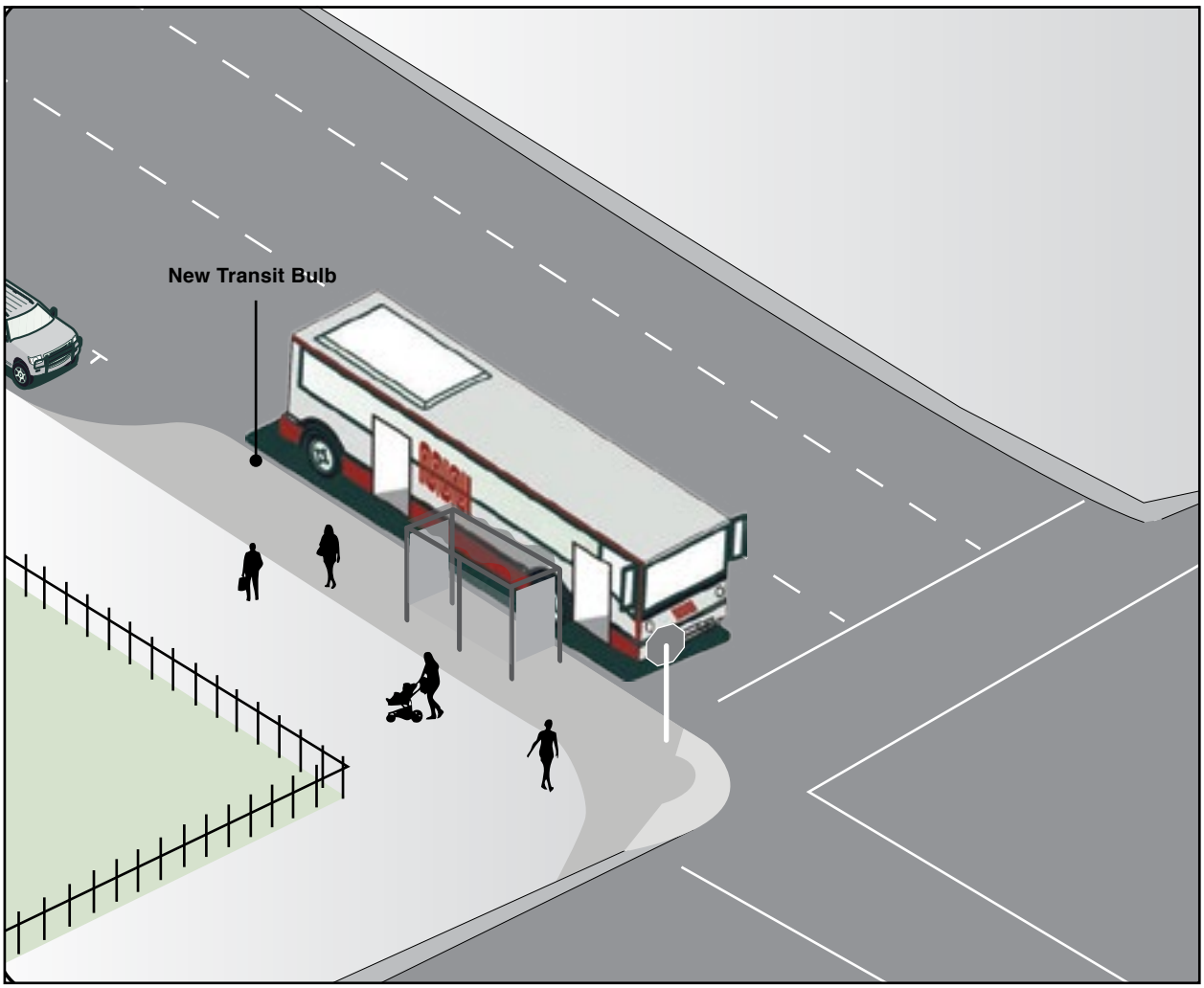
Removing closely spaced transit stops can decrease transit travel times by reducing the frequency that transit vehicles must stop to pick up and drop off passengers. Consolidating transit stops involves removing two adjacent transit stops and establishing a new transit stop at an intermediate location. Removing or consolidating stops with existing transit zones may result in the availability of additional curb space that could be used for new on-street parking, bicycle parking, parklets, or parking restrictions at intersection approaches to improve pedestrian visibility and sight distance.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

2. Optimize Transit Stop Locations at Intersections

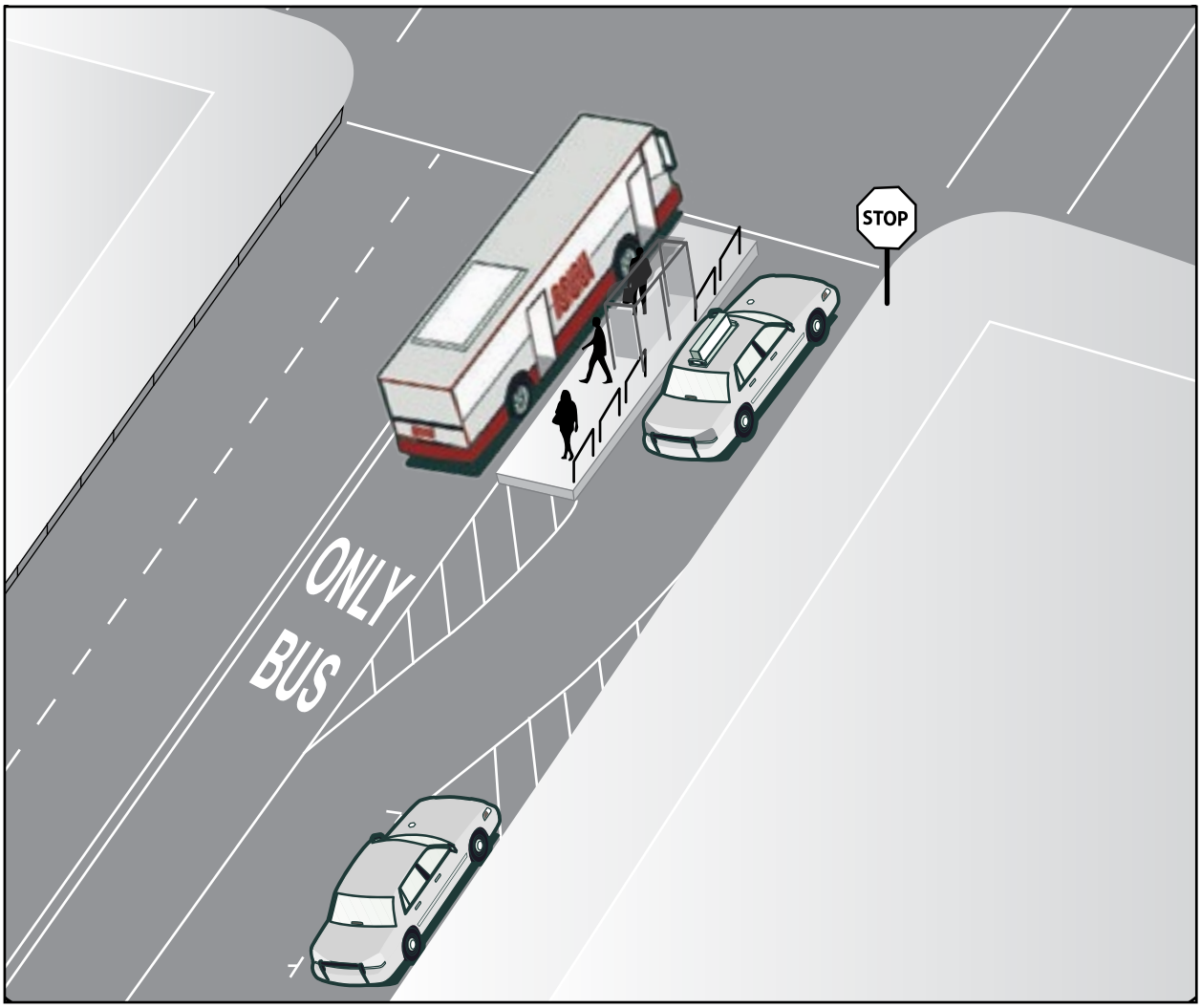
Optimizing transit stop locations at intersections can decrease transit travel times by reducing the number of times transit vehicles stop at intersections. At stop sign-controlled intersections, it is generally recommended that transit stops be located on the nearside of the intersection to enable transit vehicles to pick-up and drop-off passengers while stopped at the stop sign, rather than needing to stop a second time to conduct passenger pick-up and drop-off on the farside of the intersection. At traffic signal-controlled intersections, it is generally recommended that transit stops be located on the farside of the intersection, as depicted above, to allow transit vehicles to take advantage of existing and planned transit signal priority improvements that could allow traffic signals to hold green signals for approaching transit vehicles.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

3. Install Transit Bulbs

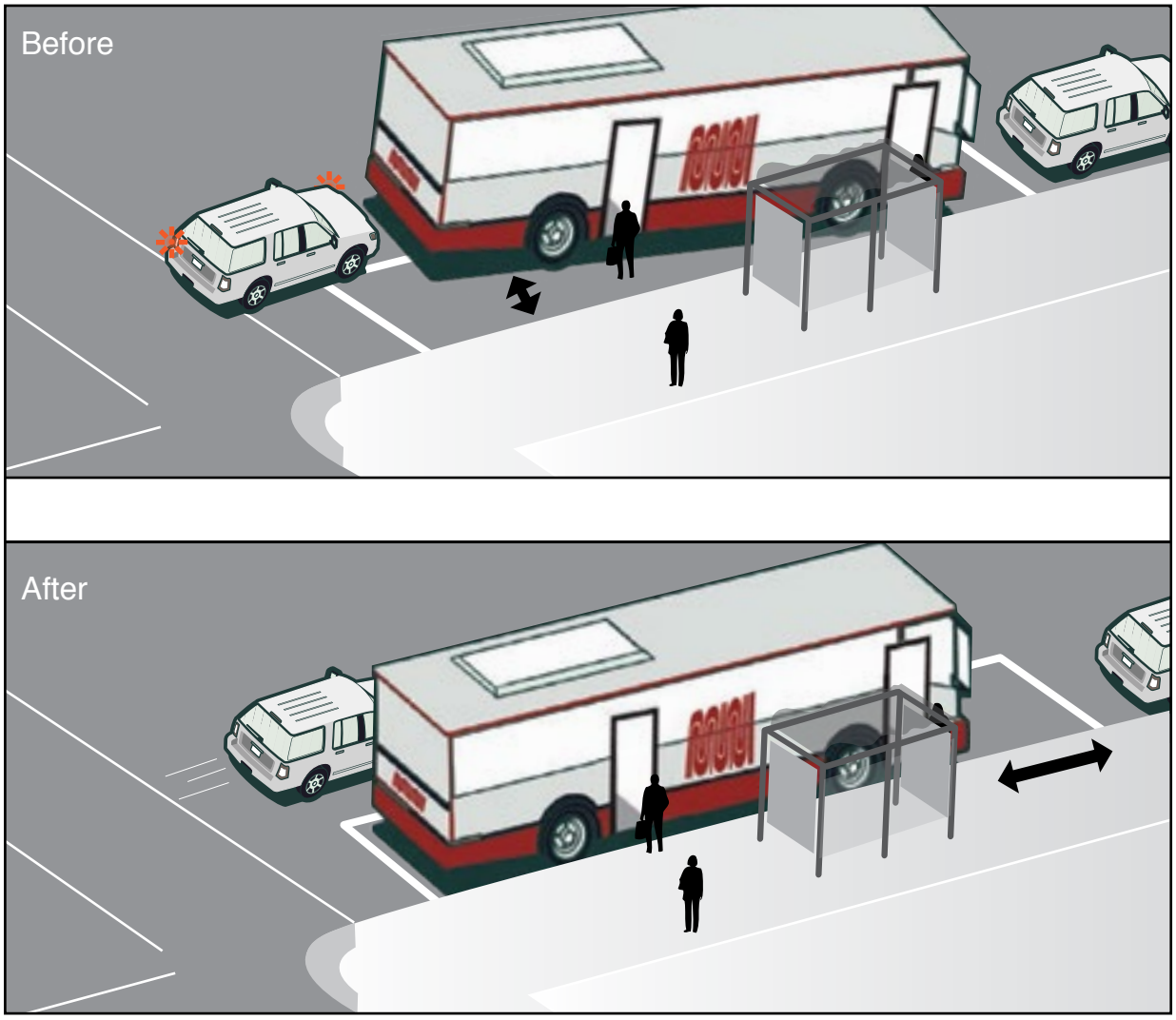
Transit bulbs are sidewalk extensions at the location of a transit stop, typically about the same width as the adjoining parking lane. They can reduce transit travel times on bus routes by eliminating the need for buses to exit and re-enter the flow of traffic to access curbside transit stops and on rail lines by providing a place for boarding passengers to wait directly adjacent to a stopped light rail vehicle (LRV), thereby eliminating the time needed for passengers to walk from the curb across a parking lane to the LRV. Transit bulbs also provide added space for customer amenities such as shelters, improve pedestrian safety by shortening the street crossing distance, and reduce the speed of turning traffic, as well as reducing sidewalk crowding at transit stop locations.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

4. Install Transit Boarding Islands

Transit boarding islands are raised islands within the street that allow transit vehicles to use a center lane within the roadway to pick-up and drop-off passengers at transit stops. They can reduce transit travel times on bus routes by eliminating the need for buses to exit and re-enter the flow of traffic to access curbside transit stops. Transit boarding islands also allow the bus to avoid the curb lane, which is generally slower as a result of parking maneuvers, right turns and illegal double parking. Transit boarding islands can reduce transit travel times on rail lines that operate on fixed guideways in the center of the street by providing a place for boarding passengers to wait directly adjacent to a stopped light rail vehicle (LRV), thereby eliminating the time needed for passengers to walk from the curb to the LRV.

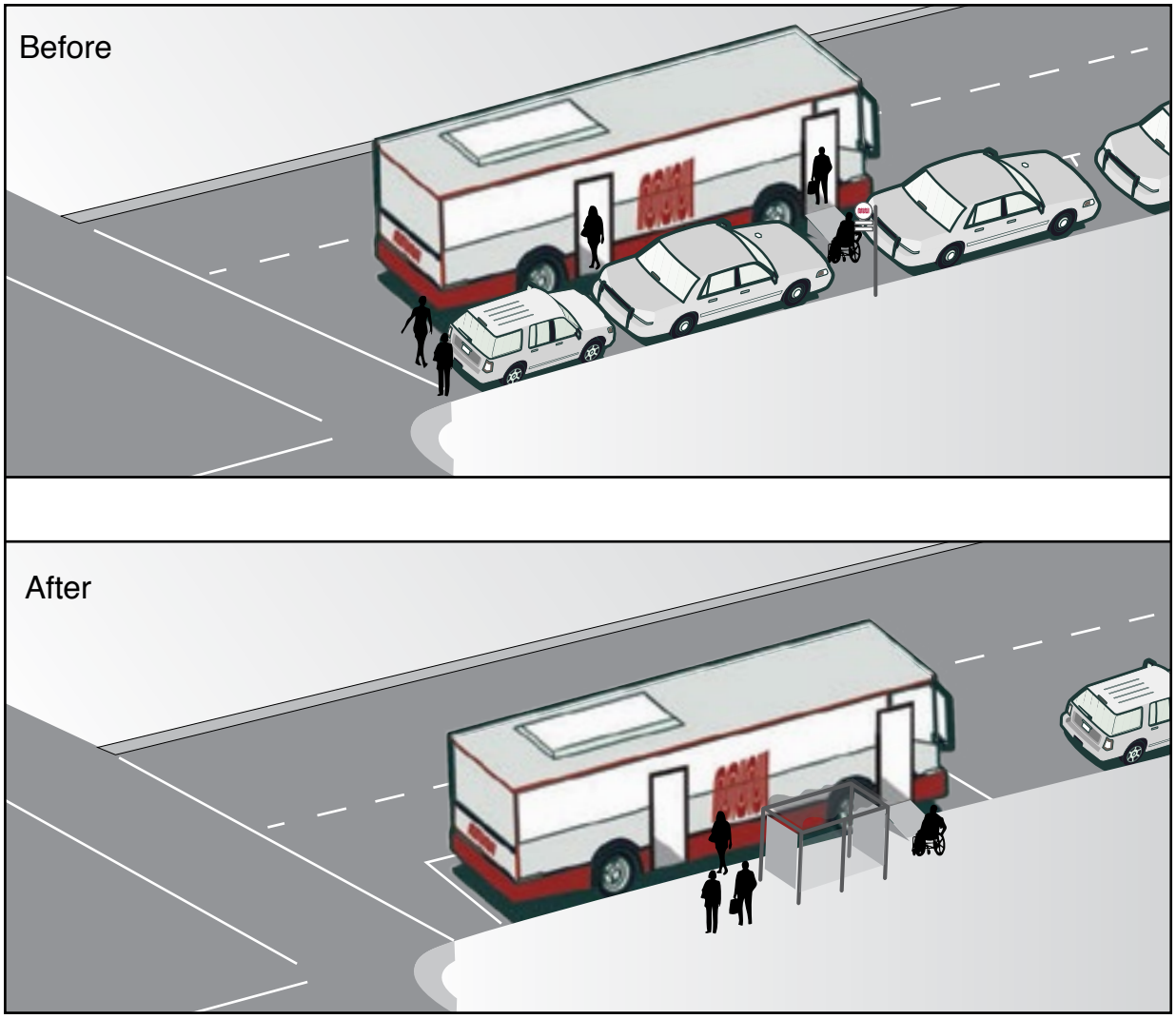


Note: The above conceptual figure is not to scale and is for illustrative purposes only.

5. Optimize Transit Stop Lengths

Optimizing transit stop lengths can reduce transit travel times by providing space for all doors of a transit vehicle to align with the curb or boarding island or by providing space for multiple buses to pick up and drop off passengers at a bus stop concurrently. Most transit stops are designed to accommodate the arrival and departure of one bus at a time; however, where transit stops serve multiple bus routes and/or bus routes with frequent service, transit stops would be designed to accommodate multiple buses at the same time, thereby reducing the delay associated with a second bus waiting to access a transit stop to pick-up and drop-off passengers.

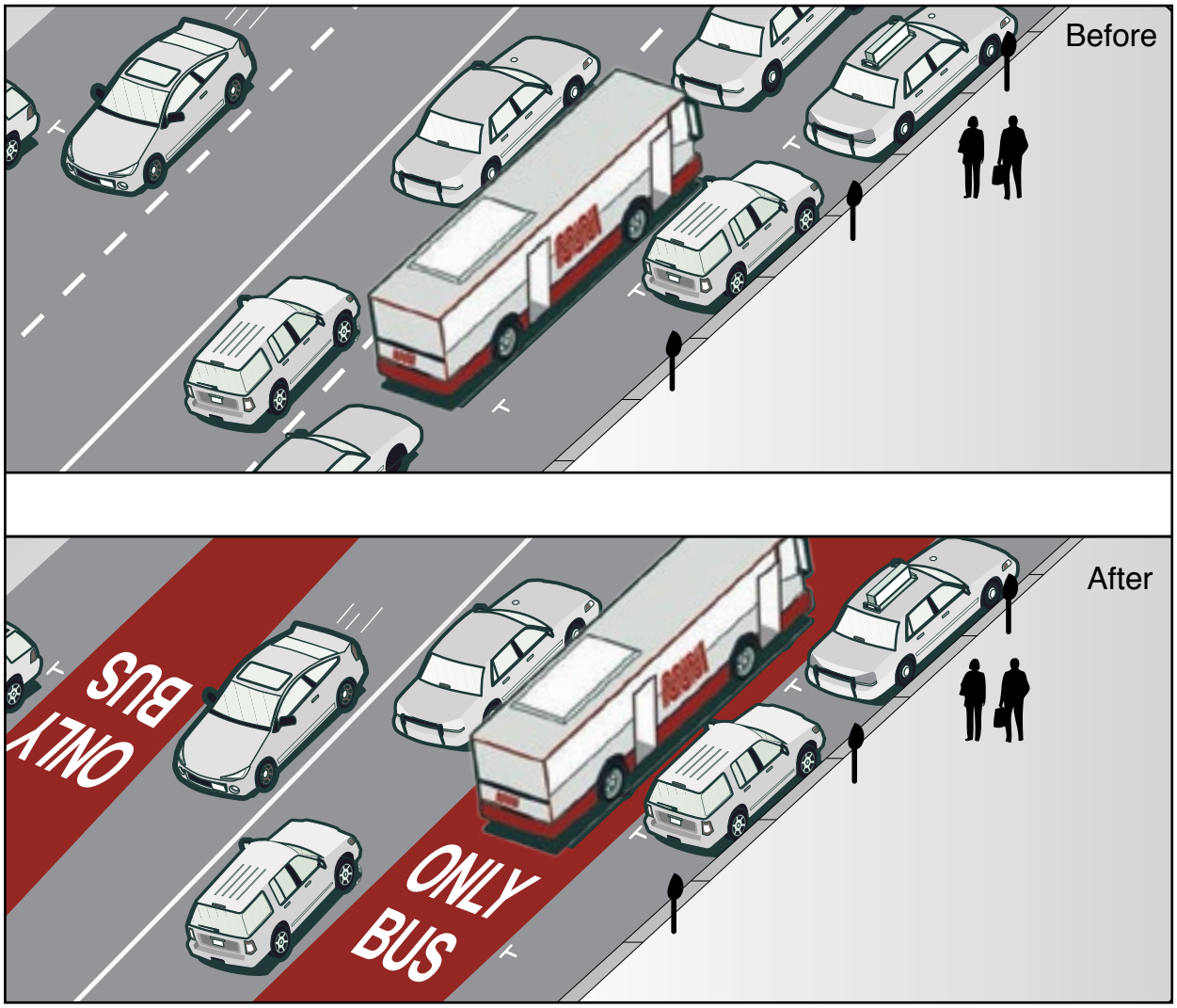
TTRP: Transit Stop Changes



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

6. Convert Flag Stops to Transit Zones

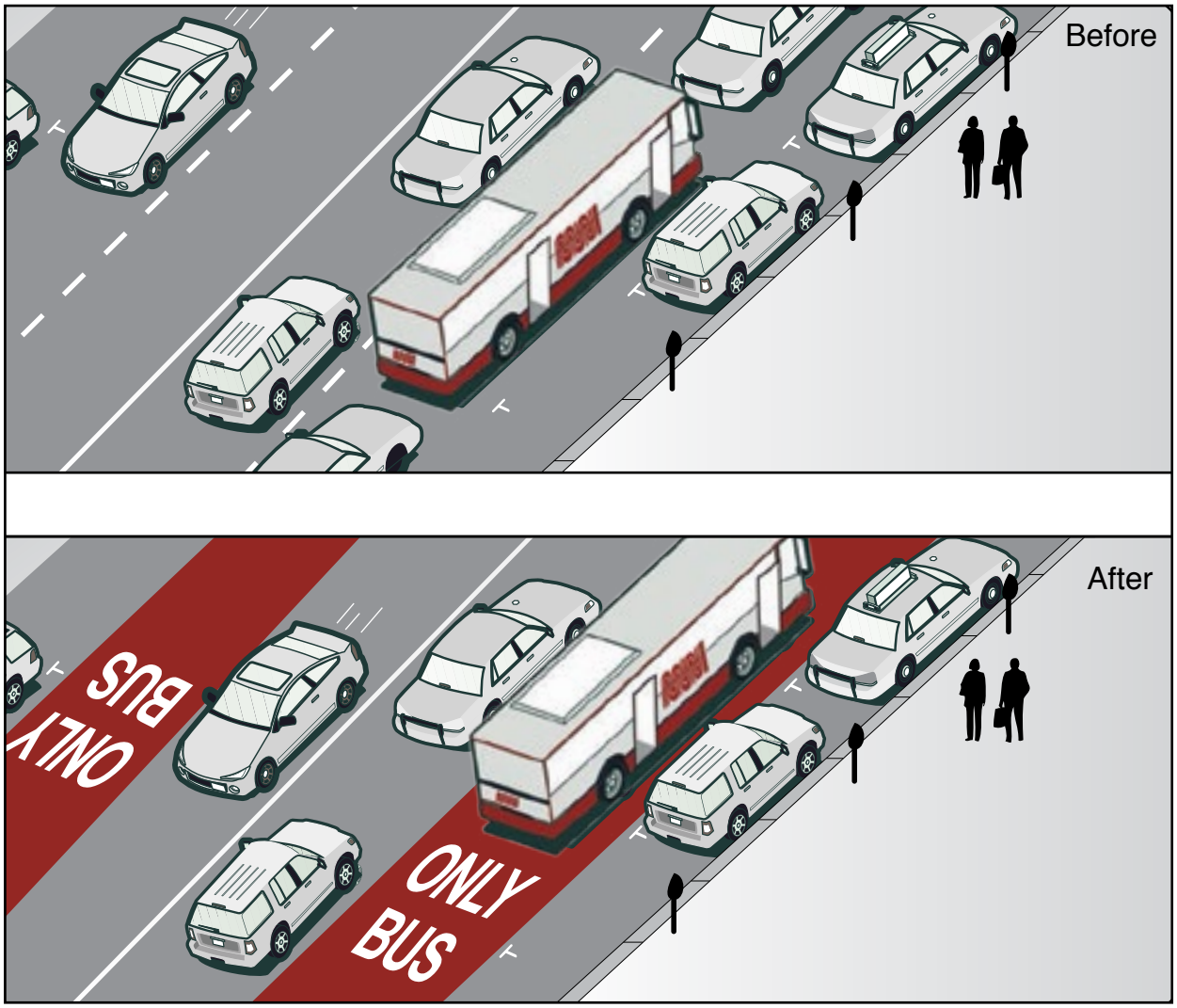
A flag stop (also referred to as a pole stop) is a transit stop without a designated curbside zone and where parking is not restricted. Some flag stops are located on streets without parking, in which case the bus can either stop in the mixed-flow lane or pull over to the curb. At flag stops adjacent to on-street parking, all passengers, including wheelchair users, must board and exit buses in the street since the bus cannot pull to the curb. Converting flag stops to transit zones can reduce transit travel times by allowing passengers to be picked up and dropped off at the curb adjacent to the sidewalk instead of in the street.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

7. Establish Transit-Only Lanes

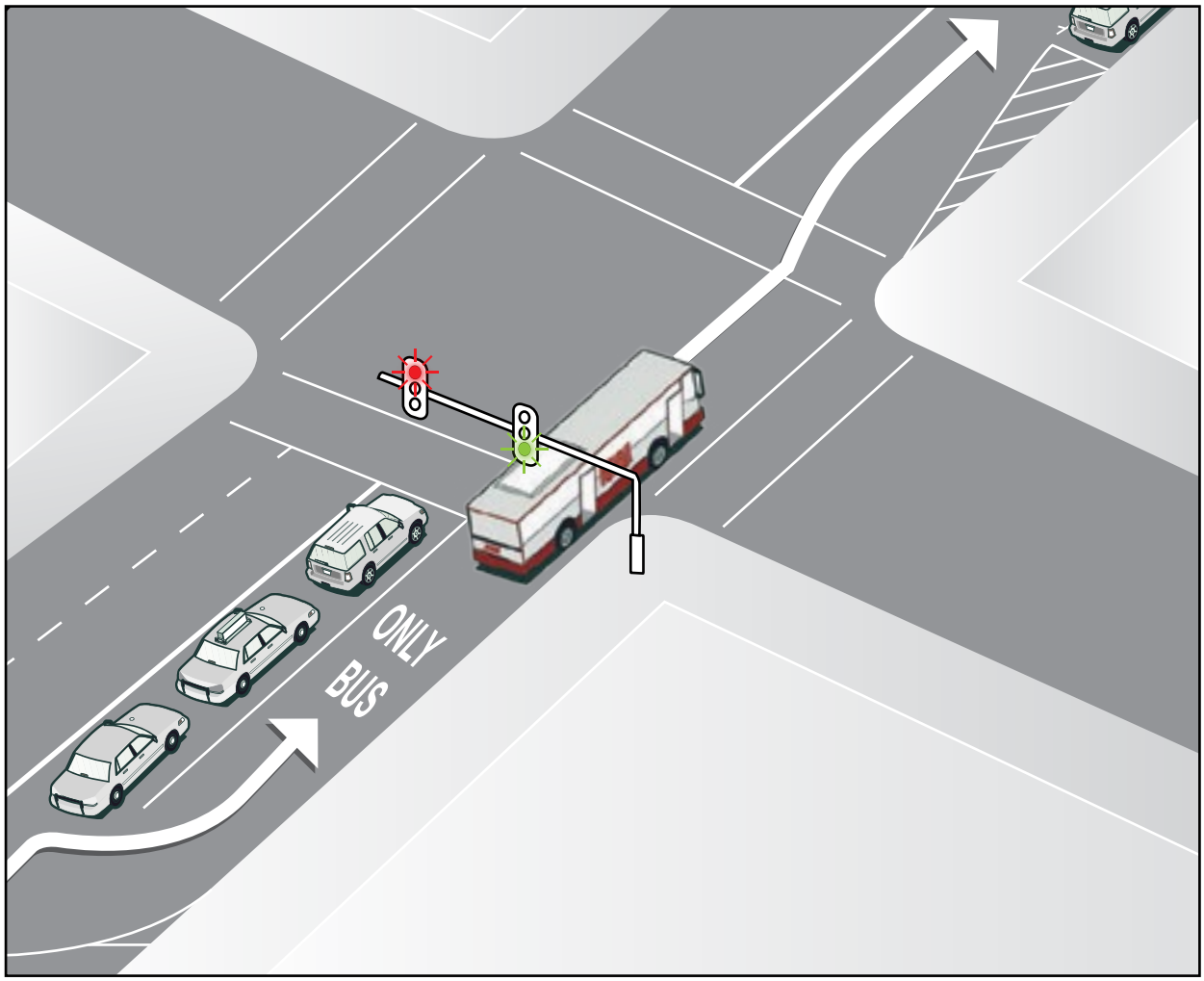
A transit-only lane is a travel lane that is dedicated for the exclusive use of transit vehicles. Transit-only lanes are typically identified with signs and pavement markings. Transit- only lanes can reduce transit travel times by allowing transit vehicles to bypass traffic congestion and avoid conflicts with other vehicles in mixed travel lanes. Non-transit vehicles are generally permitted to enter transit-only lanes to access curbside parking or to complete a turn, unless specifically prohibited. Emergency vehicles may use transit-only lanes at all times, and often taxis may also use these lanes. Transit-only lanes can be created by removing an existing travel lane or by removing a parking lane.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

7. Establish Transit-Only Lanes

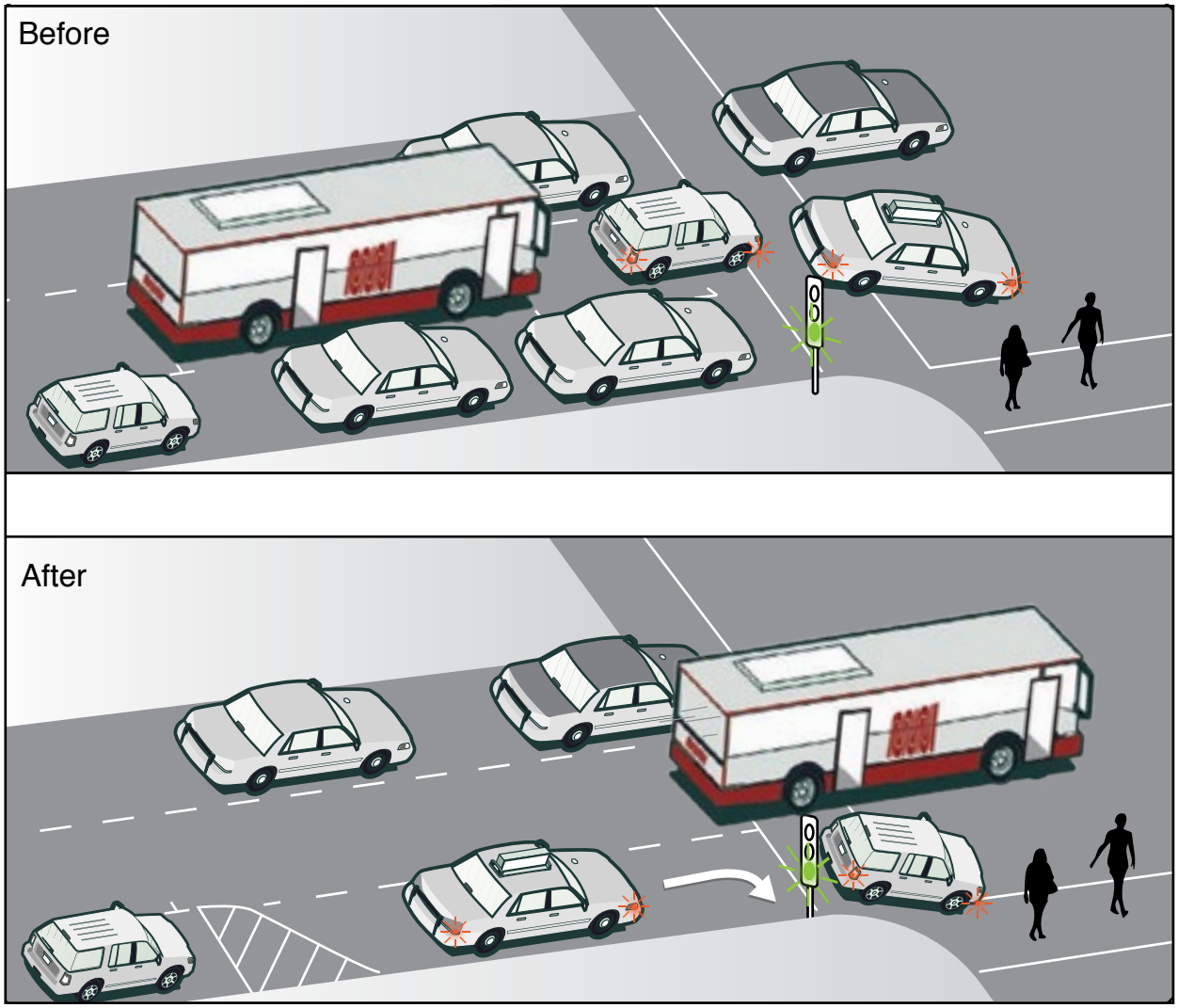
A transit-only lane is a travel lane that is dedicated for the exclusive use of transit vehicles. Transit-only lanes are typically identified with signs and pavement markings. Transit- only lanes can reduce transit travel times by allowing transit vehicles to bypass traffic congestion and avoid conflicts with other vehicles in mixed travel lanes. Non-transit vehicles are generally permitted to enter transit-only lanes to access curbside parking or to complete a turn, unless specifically prohibited. Emergency vehicles may use transit-only lanes at all times, and often taxis may also use these lanes. Transit-only lanes can be created by removing an existing travel lane or by removing a parking lane.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

8. Establish Transit Queue Jump/Bypass Lanes

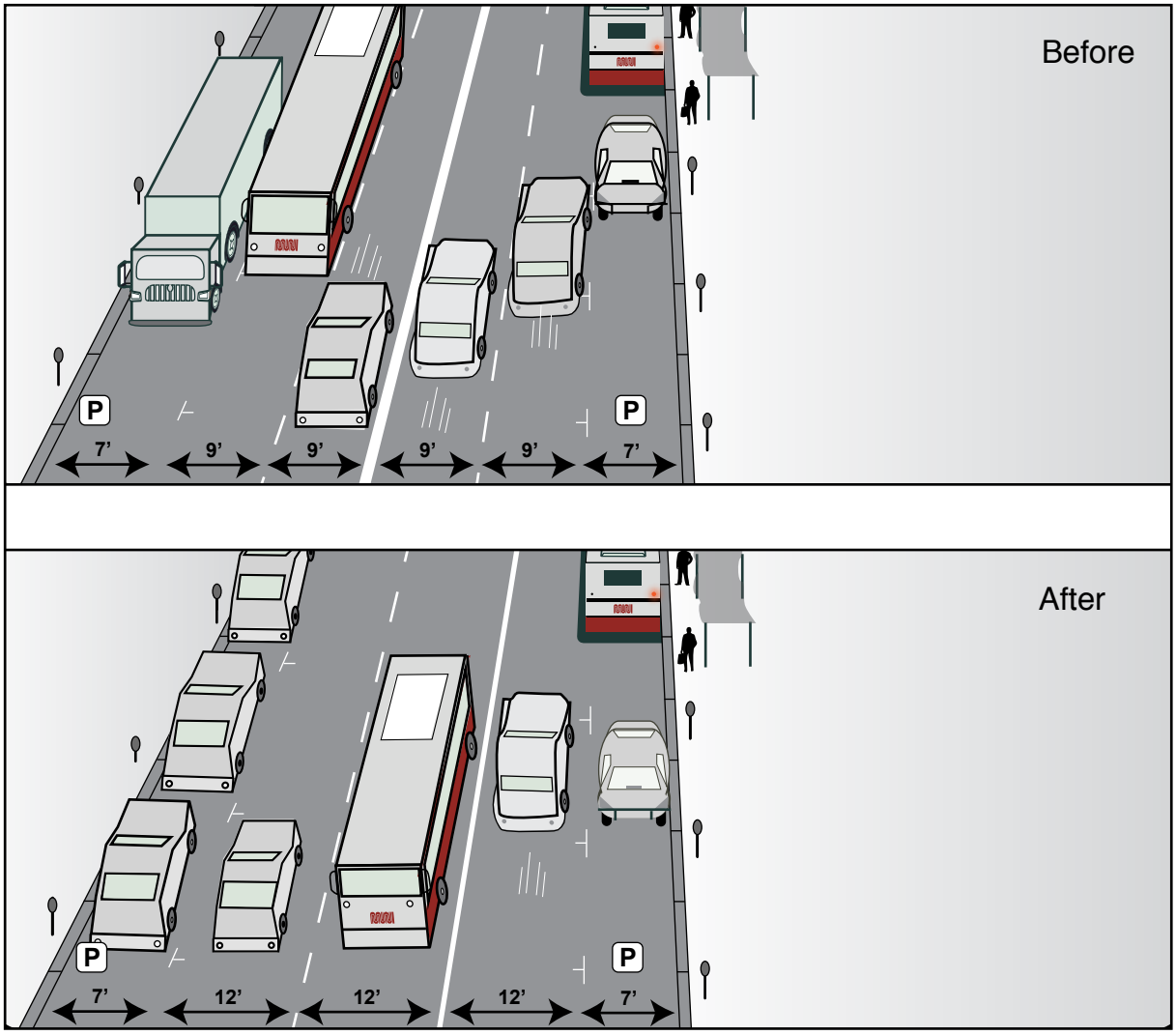
Transit queue jump/bypass lanes can reduce transit travel times by providing priority to transit vehicles at signalized intersections. A transit queue jump/bypass lane allows transit vehicles to bypass traffic stopped at a signalized intersection and move through the intersection ahead of general traffic by using an exclusive traffic signal phase for the transit vehicles. A transit queue jump/bypass lane may be created by restricting parking at an intersection approach or by allocating a mixed-flow lane to transit vehicles only near the intersection where more than one mixed-flow lane is available.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

9. Establish Dedicated Turn Lanes

Dedicated turn lanes can reduce transit travel times by providing a dedicated space for turning vehicles to queue at an intersection approach without blocking the through-movement of transit vehicles and other traffic. At some signalized intersections with a dedicated left-turn lane, the traffic signal may be modified to provide a protected signal phase for left-turning vehicles while opposing traffic is held with a red light. Dedicated turn lanes may require the removal of parking at intersection approaches.

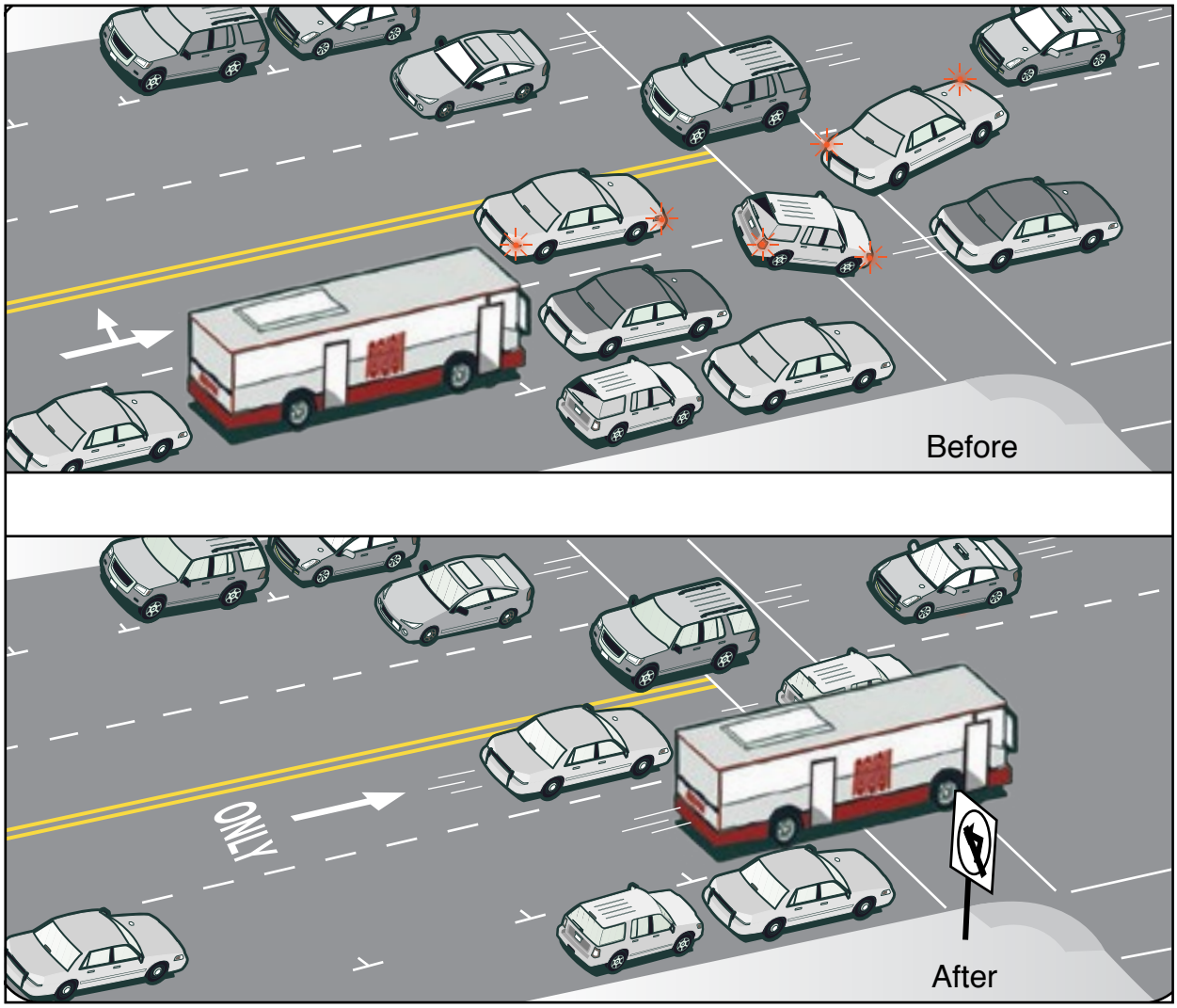


Note: The above conceptual figure is not to scale and is for illustrative purposes only.

10. Widen Travel Lanes through Parking Restrictions

Widening mixed-flow lanes can decrease transit travel times and improve safety and reliability by reducing friction with other vehicles and eliminating the need for buses and other large vehicles to straddle two travel lanes. On streets with two or more mixed-flow lanes in the same direction, removing one mixed-flow lane would allow for widening of the remaining lanes. Removing mixed-flow lanes to provide wider lanes can result in an overall decrease in vehicle capacity on a street. This may result in diversion of vehicular traffic to other streets, depending on the existing traffic volumes relative to the available roadway capacity.

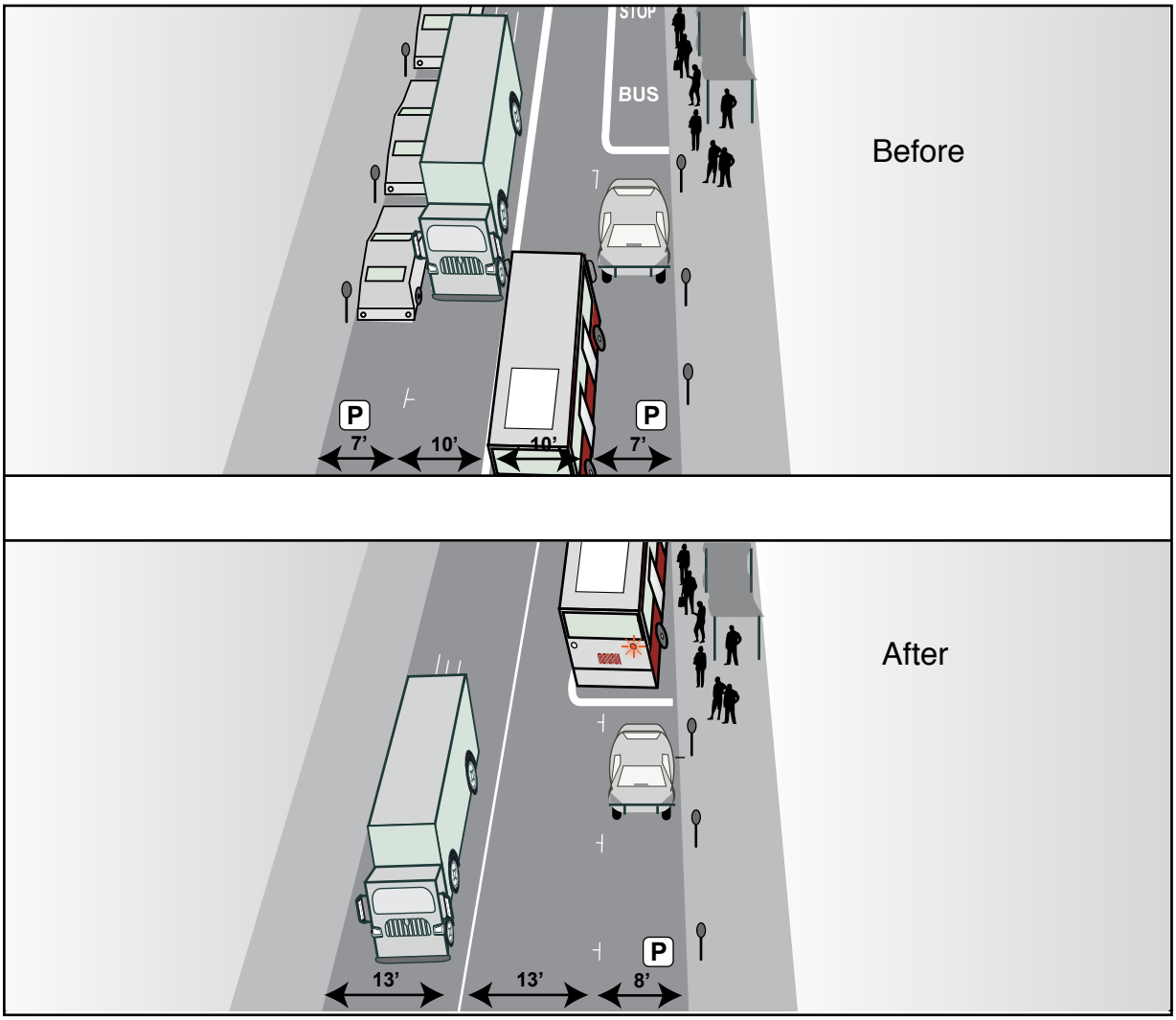
TTRP: Parking and Turn Restrictions



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

11. Implement Turn Restrictions

Turn restrictions can reduce transit travel times by preventing turning vehicles from blocking the through-movement of transit vehicles and other traffic. For example, left-turn restrictions would generally be applied on two-way streets where right-of-way is not available to provide dedicated left-turn lanes, or where left-turning vehicles are required to cross or enter a transit-only lane to complete a turn. Turn restrictions can be part-time or full-time. In locations where part-time turn restrictions are already in place, consistent hours would be considered at multiple intersections along a corridor to improve compliance and clarity.

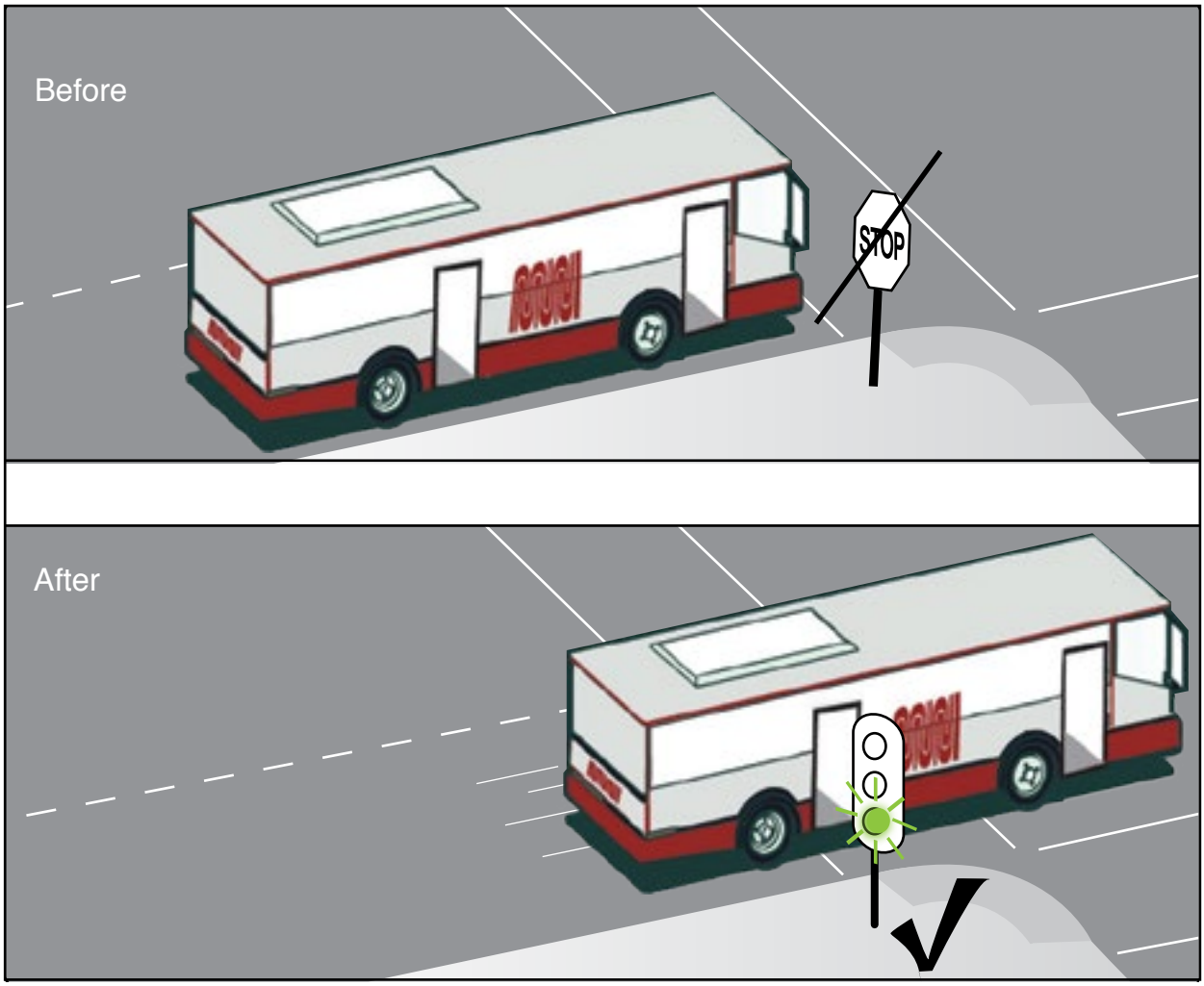


Note: The above conceptual figure is not to scale and is for illustrative purposes only.

12. Widen Travel Lanes through Parking Restrictions

At locations with narrow mixed-flow lanes, traffic lanes can be widened by restricting parking and reallocating street space. This can reduce transit travel times by eliminating the need for buses and other large vehicles to straddle two mixed-flow lanes, by reducing delays associated with parking maneuvers, and by providing additional space for through- moving transit vehicles. Parking restrictions could be implemented either during peak periods, such as 7 to 9 a.m. or 4 to 6 p.m., or full-time to facilitate bus travel on streets with narrow mixed-flow lanes.

TTRP: Traffic Signal & Stop Sign Changes

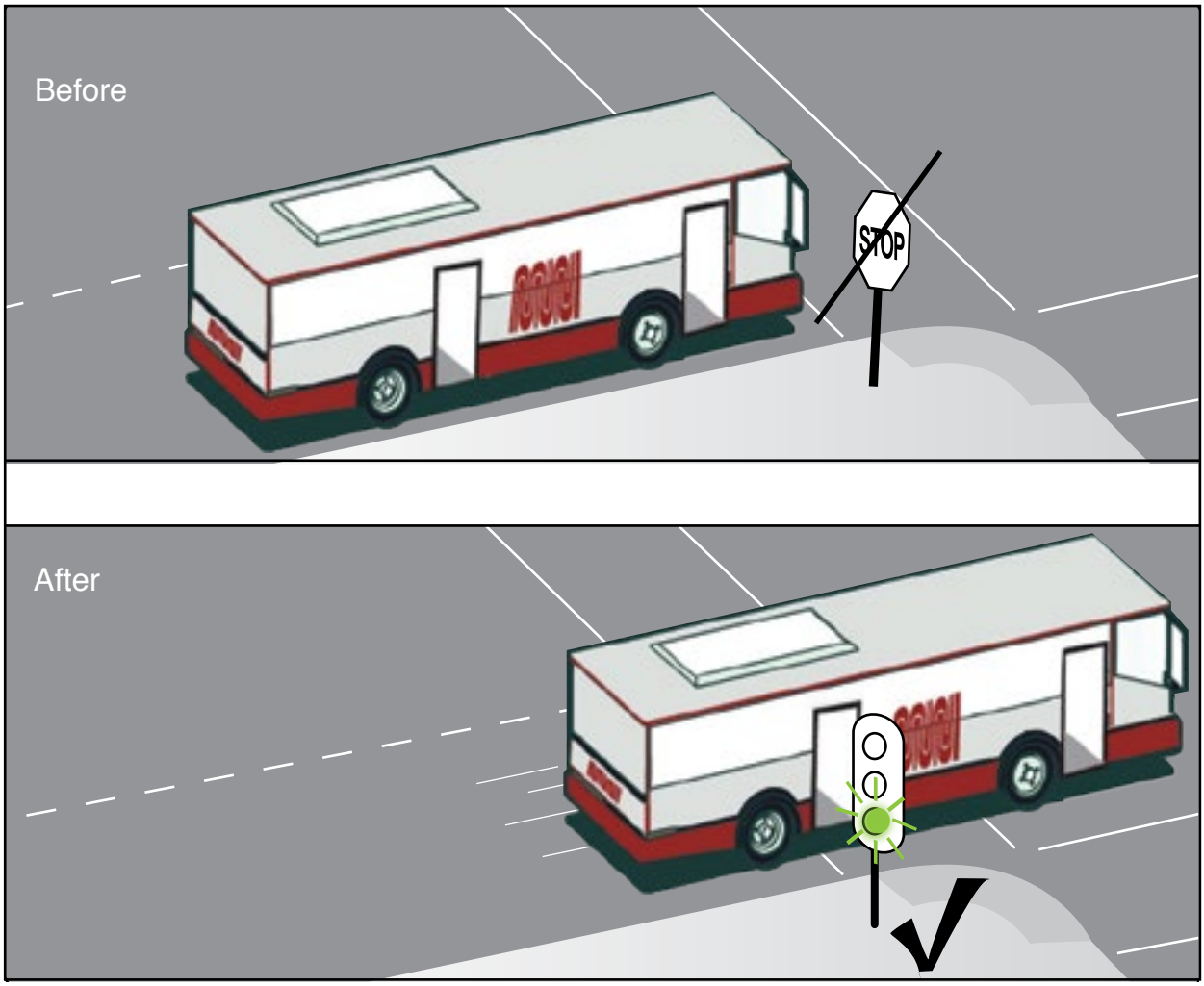


Note: The above conceptual figure is not to scale and is for illustrative purposes only.

13. Install Traffic Signals at Uncontrolled and Two-way Stop-controlled Intersections

At some intersections that are uncontrolled or have stop signs requiring only vehicles on the cross street without transit to stop, intersection safety and/or pedestrian access to transit stops may be improved with added right-of-way controls. At these intersections, particularly on Rapid Network corridors, installing a traffic signal could improve vehicular and pedestrian safety by clarifying the right-of- way for crossing the street while minimizing travel time delays for transit vehicles. New traffic signals would include pedestrian countdown signals and marked crosswalks, and could take advantage of planned transit signal priority improvements that reduce signal delay for approaching transit vehicles. Traffic signal poles are typically up to 30 feet in height. The installation of traffic signals at uncontrolled and two-way stop-controlled intersections may require that a curb ramp be rebuilt, or, in places where none exists, that a curb ramp be added.

TTRP: Traffic Signal & Stop Sign Changes

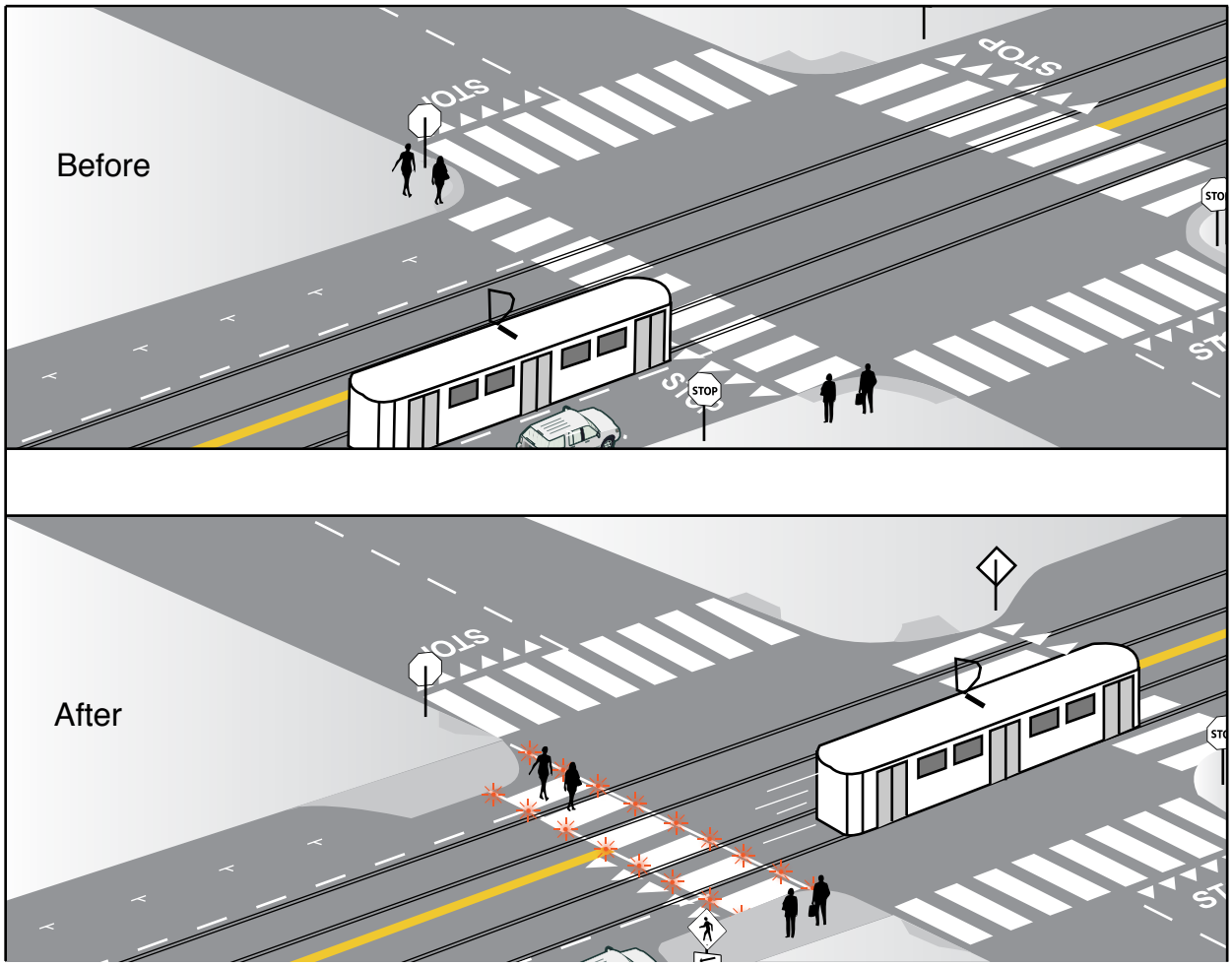


Note: The above conceptual figure is not to scale and is for illustrative purposes only.

14. Install Traffic Signals at All-way Stop-controlled Intersections

Installing traffic signals at all-way stop-controlled intersections can reduce transit travel times by allowing transit vehicles to take advantage of planned transit signal priority improvements that reduce signal delay for approaching transit vehicles. This treatment also reduces delays associated with long vehicle queues at busy intersections which are stop-controlled with stop signs. New traffic signals would include pedestrian countdown signals and marked crosswalks. The installation of traffic signals at all-way stop-controlled intersections may require that a curb ramp be rebuilt, or, in places where none exists, that a curb ramp be added. The above is an illustration of stop signs replaced by traffic signals. Installation of traffic signals and related traffic control utility boxes and signage is anticipated to require a maximum nine-foot bgs excavation depth (signal mast arm foundation).

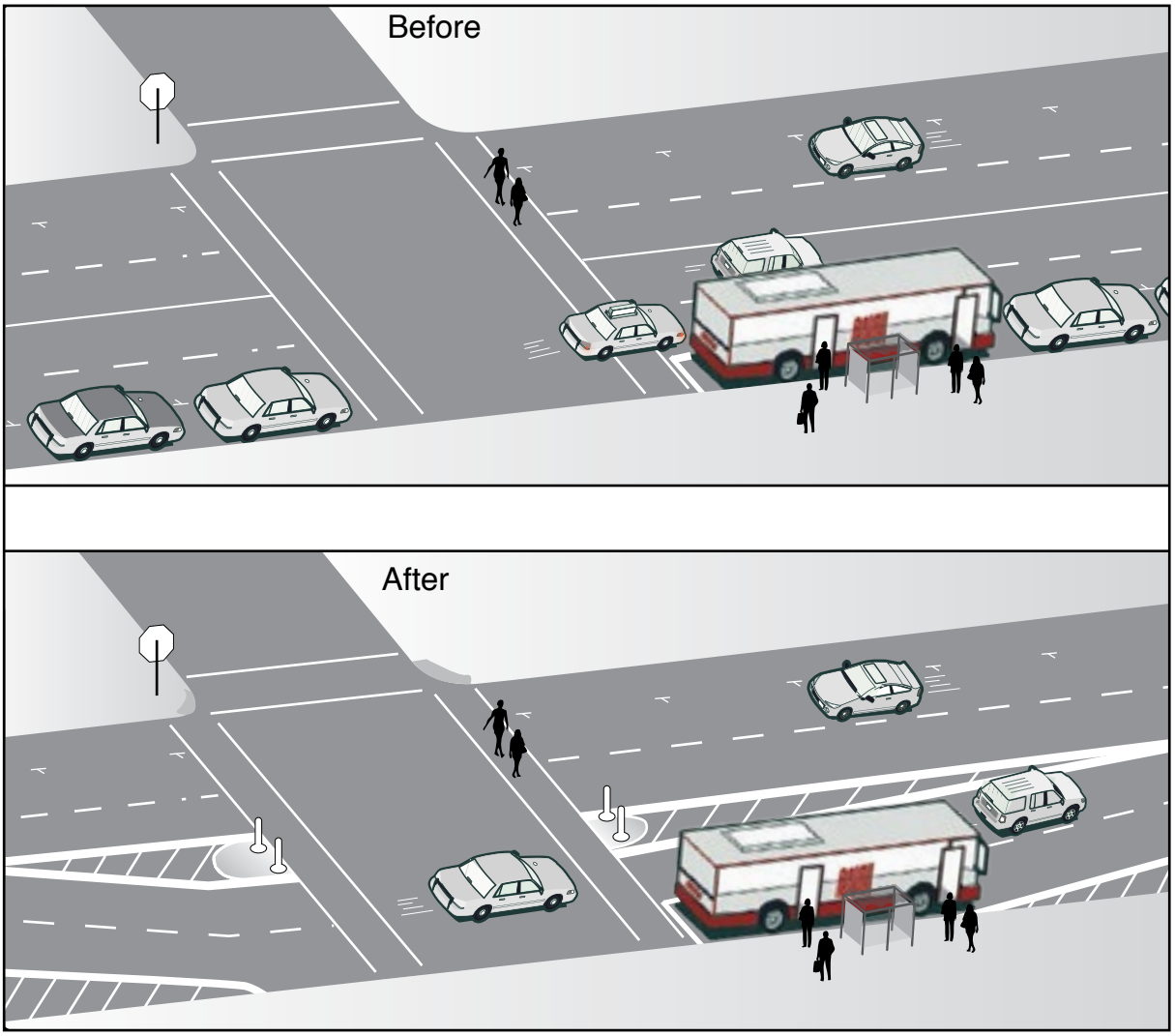
TTRP: Traffic Signal & Stop Sign Changes



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

15. Replace All-way Stop-controls with Traffic Calming Measures at Intersections

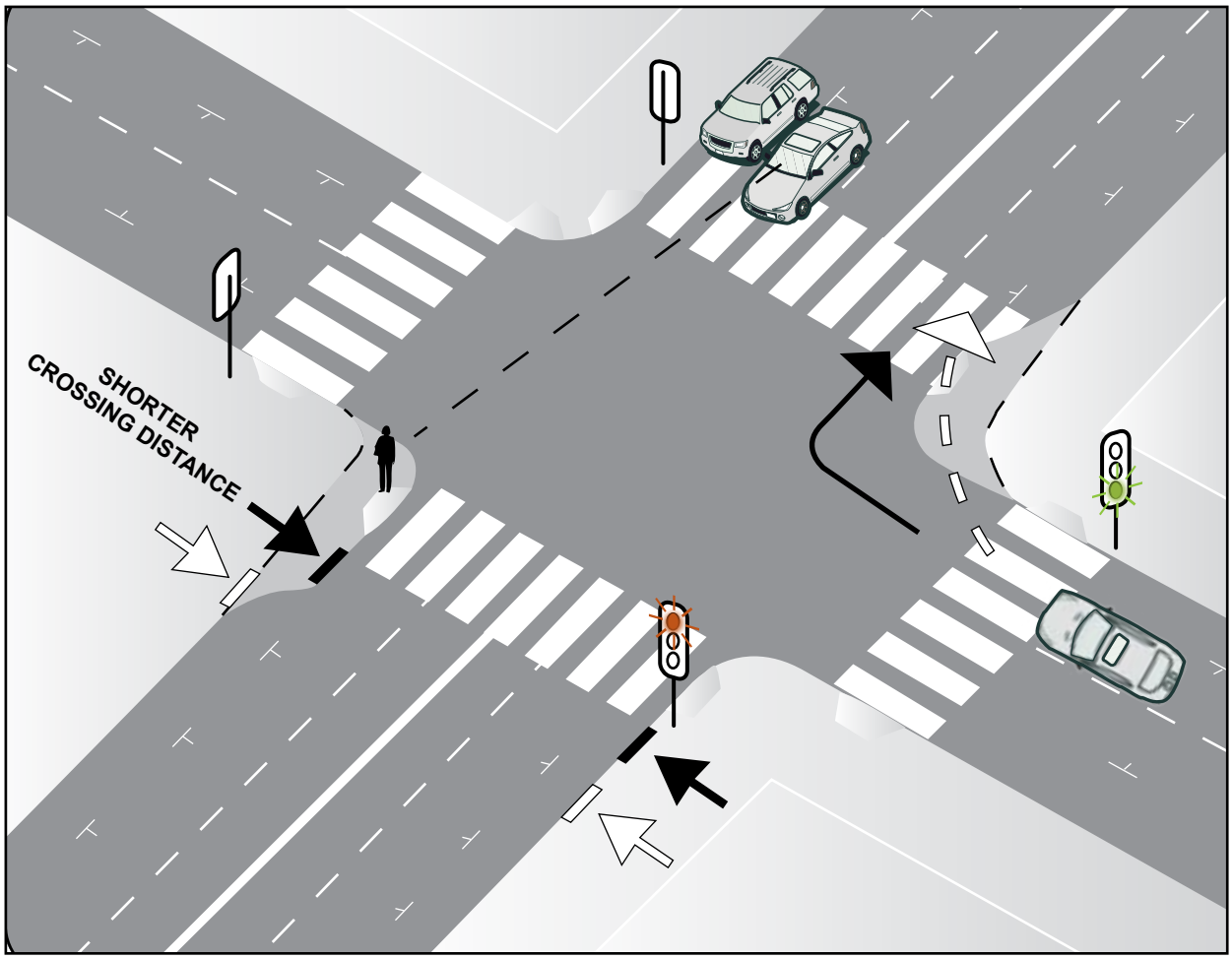
At some intersections with all-way stop signs, the stop signs on the street with transit can be removed to reduce transit travel time by allowing transit vehicles to proceed without coming to a complete stop. This treatment also reduces delays associated with long vehicle queues at busy intersections with stop signs. Stop signs would typically be retained on the street without transit. In conjunction with removing the stop signs, other traffic calming measures, which would generally involve improving crossing conditions for pedestrians, slowing traffic, and reducing-right-of way conflicts between pedestrians and other traffic, could be installed.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

16. Install Pedestrian Refuge Islands

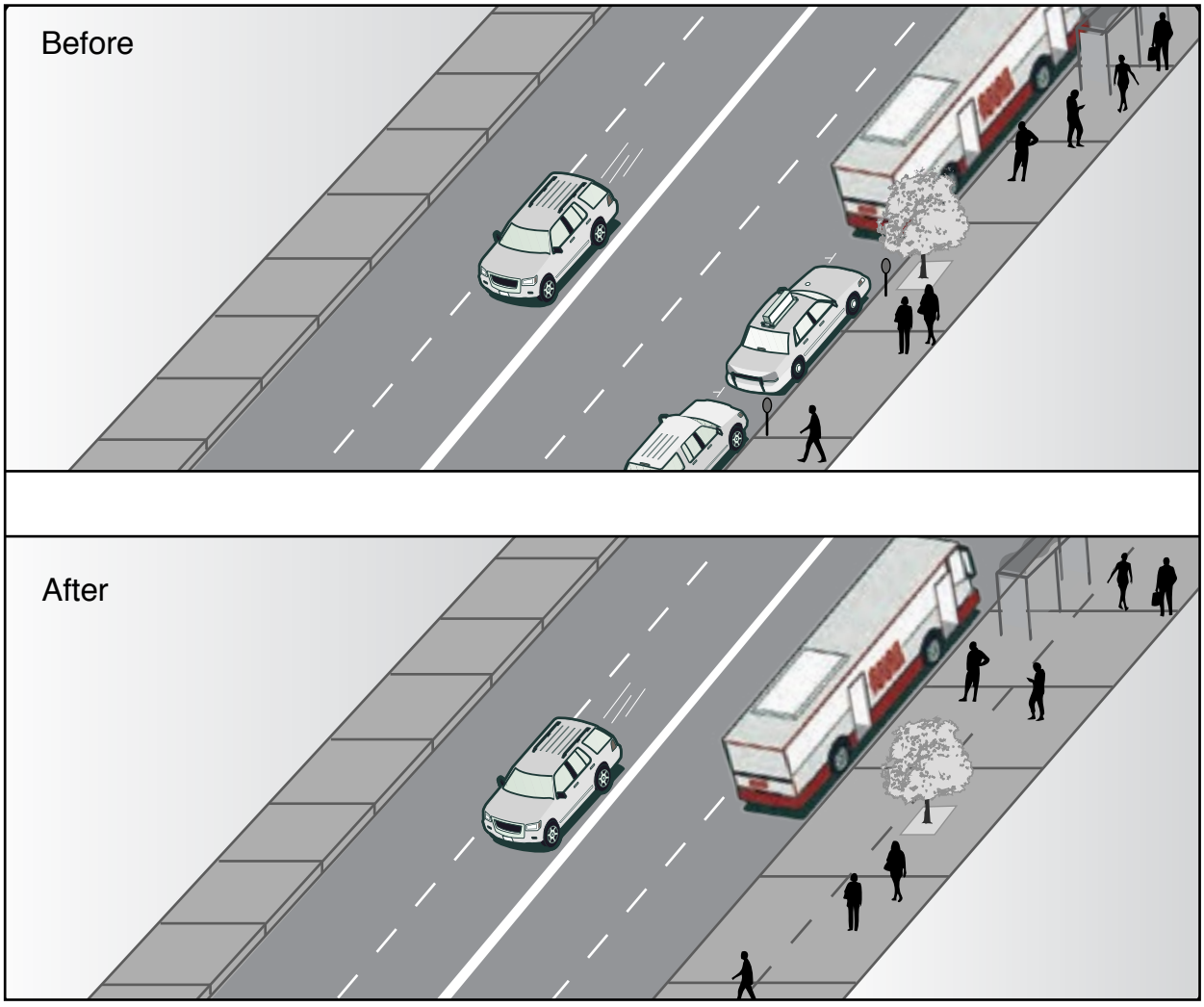
Pedestrian refuge islands are raised islands in the center of the crosswalk at an intersection that provide space for pedestrians to wait while crossing a street. Pedestrian refuge islands can reduce transit travel time by shifting mixed-flow lanes toward the curb and eliminating the need for buses to exit and re-enter the flow of traffic to access curbside transit stops. Pedestrian refuge islands can also improve pedestrian safety by increasing pedestrian visibility and minimizing pedestrian exposure to vehicular traffic.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

17. Install Pedestrian Bulbs

Pedestrian bulbs are sidewalk extensions at non-transit stop intersection corners that widen the sidewalk by a distance equal to or less than the width of the parking lane for the width of the crosswalk. Pedestrian bulbs at signalized intersections can reduce transit travel time by reducing the roadway crossing distance, which can provide flexibility in traffic signal timing and reduce the likelihood of transit vehicles arriving on a red signal indication. Pedestrian bulbs improve pedestrian safety by shortening the street crossing distance, improving pedestrian visibility, and reducing the speed of turning traffic.



Note: The above conceptual figure is not to scale and is for illustrative purposes only.

18. Widen Sidewalks

Sidewalk widening can improve pedestrian conditions by providing additional space for pedestrians, transit shelters, landscaping and other amenities. Sidewalk widening can also improve pedestrian safety by shortening the street crossing distance. Existing sidewalk widths and conditions vary throughout the City; therefore, the extent of sidewalk widening would also vary. If the widened sidewalk were proposed on a street with one lane plus parking in each direction, parking would need to be eliminated.

Proposals by Route

The following chapter provides detail on improvements recommended through the Transit Effectiveness Project. The implementation tools typology has been applied for each route. For details, please visit the "Implementation Tools" chapter.

Service Improvements

- NR — New Route
- RE — Route Elimination
- RA — Route Alignment
- HC — Headway Change
- VC — Vehicle Type Change
- EH — Expanded Hours

Service-Related Capital Improvements

- TTPI — Terminal & Transfer Point Improvements
- OWE — Overhead Wire Expansion
- SCI — Systemwide Capital Infrastructure

Travel Time Reduction Proposals (TTRP)

TS TRANSIT STOP CHANGES

1. Remove or Consolidate Transit Stops
2. Optimize Transit Stop Locations at Intersections
3. Install Transit Bulbs
4. Install Transit Boarding Islands
5. Optimize Transit Stop Lengths
6. Convert Flag Stops to Transit Zones

LM LANE MODIFICATIONS

7. Establish Transit-Only Lanes
8. Establish Transit Queue Jump/Bypass Lanes
9. Establish Dedicated Turn Lanes
10. Widen Travel Lanes through Lane Reductions

PR PARKING AND TURN RESTRICTIONS

11. Implement Turn Restrictions
12. Widen Travel Lanes through Parking Restrictions

TSC TRAFFIC SIGNAL & STOP SIGN CHANGES

13. Install Traffic Signals at Uncontrolled and Two-way Stop-controlled Intersections
14. Install Traffic Signals at All-way Stop-controlled Intersections
15. Replace All-way Stop-controls with Traffic Calming Measures at Intersections

PI PEDESTRIAN IMPROVEMENTS

16. Install Pedestrian Refuge Islands
17. Install Pedestrian Bulbs
18. Widen Sidewalks

Muni Route Index

Muni Route Index

Route	TEP Improvements	Page #
8BX Bayshore "B" Express	HC, TS, LM, PR, TSC, PI	102
9 / 9L San Bruno	HC, TS, LM, PR, TSC, PI	104
10 Sansome	RA, HC, EH, SCI	108
11 Downtown Connector	NR, RA	111
12 Folsom/Pacific	RE	114
14 Mission	VC, TS, LM, PR, TSC, PI	116
14L Mission Limited	RA, EH, HC, VC, TS, LM, PR, TSC, PI	121
14X Mission Express	HC, TS, LM, PR, TSC, PI	126
16X Noriega	RA	128/
17 Park Merced	RA, HC	130
18 46th Avenue	RA	133
19 Polk	RA	135
21 Hayes	HC	137
22 Fillmore	RA, HC, VC, OWE, TS, LM, PR, TSC, PI	139
23 Monterey	RA	147
24 Divisadero	HC	149
27 Bryant	RA	151

Muni Route Index

Muni Route Index

Muni Route Index

E Embarcadero

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

NR TTPI

E Embarcadero

Overview

- A new historic streetcar line would be establish to connect Fisherman's Wharf and the northeast waterfront to AT&T Park and the Caltrain Station.
- The line would start at the F Market & Wharves' northern terminus at Jones Street, then travel south along The Embarcadero to Market Street, and then follow the N/T Line alignment to King Street to the E Embarcadero terminus at the Caltrain Station at Fourth and Townsend streets.
- Capital improvement TTPI.3 proposes to develop a new independent terminal for the E Embarcadero at the north end of the route near Jones and Beach streets. The terminal would facilitate independent movements of E and F streetcars, which would improve reliability for both routes by allowing for independent terminal departures.
- Initially, beginning in the summer of 2015, the E Embarcadero will provide service on weekends only between 11am and 7pm with 15 minute headways. In the spring of 2016, full, everyday E Embarcadero service will be introduced.

TTPI.3 E Embarcadero Line Independent Terminal at Jones Street/Beach Street

This project would involve development of a new independent terminal stop for the E Embarcadero Line at the north end of the route near Jones and Beach streets. A separate stop would facilitate independent movements of E Embarcadero and F Market & Wharves streetcars at its northern terminus, which would improve reliability for both routes by allowing for independent terminal departures and preventing trains on one route from getting delayed behind trains from the other route. Development of the new terminal would require the installation of new bypass rails, track work turnouts, track switches, and overhead wires and poles, and possibly sidewalk modifications.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	N/A	15	N/A
PM	N/A	15	N/A

F Market & Wharves

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

F Market & Wharves

Overview

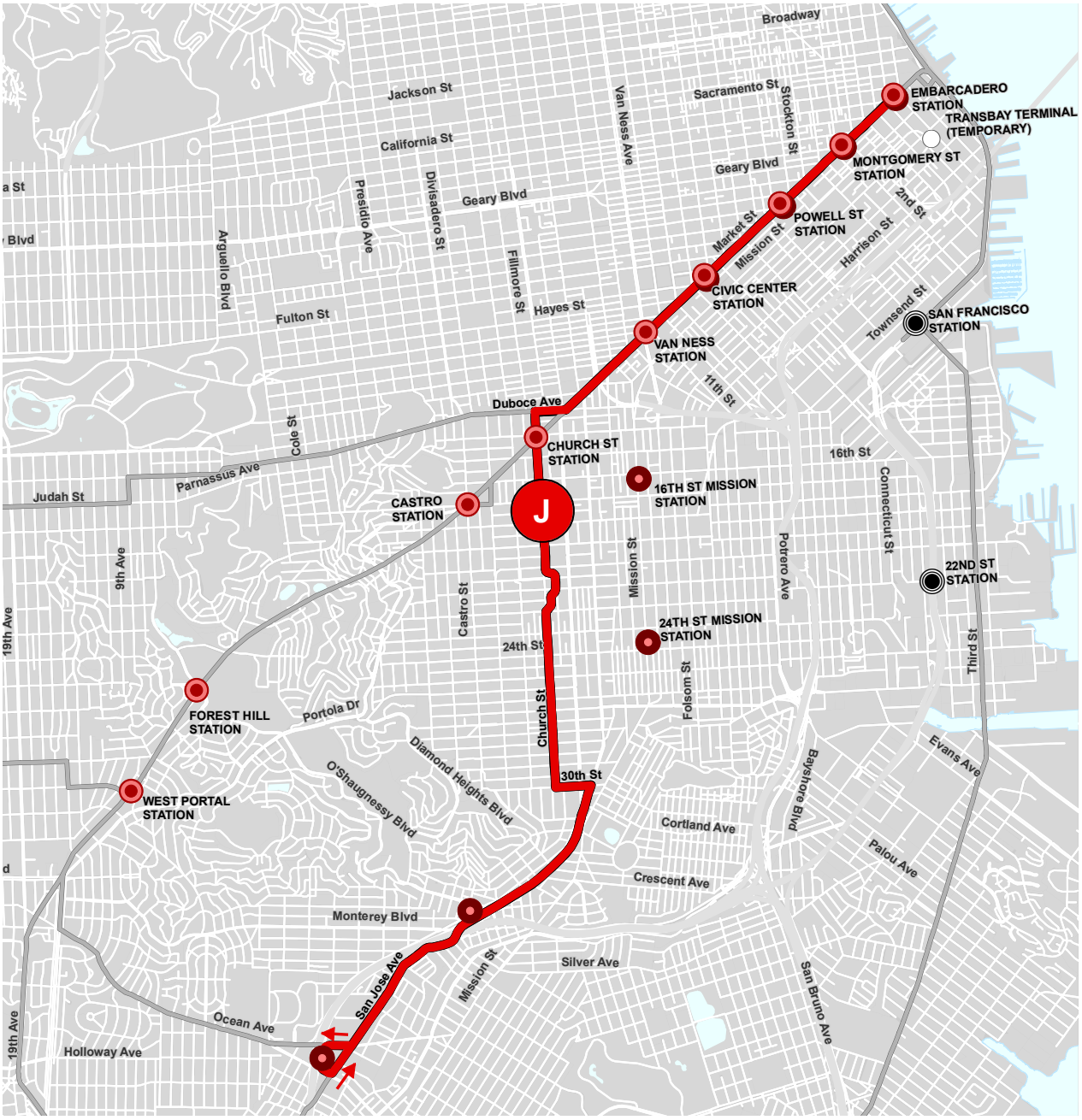
- No route changes proposed for this line.
- Frequencies would be reduced in the morning due to the additional capacity provided by the new E Embarcadero Line.
- Midday frequency would change from 5 to 6 minutes.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	6.5	7.5	−
PM	6	5	+

J Church



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

Overview

- The J Church line is one of the highest ridership Muni corridors and carries more than 14,000 daily customers on an average weekday.
- The Travel Time Reduction Proposal (TTRP_J) is proposed to improve transit travel time, improve reliability, and decrease delay caused as a result of long passenger loading and unloading times, traffic signal delay, traffic congestion, a high number of STOP signs along the route and areas of closely spaced transit stops.
- The TTRP_J project study area is the four mile stretch between Church and Duboce and the J Line's terminal at Balboa Park Station.
- The proposed changes are anticipated to reduce the travel time of the J Church within the study area by about 6.5 minutes total in both directions (12% reduction), resulting in an average operating speed of nine miles per hour and improving service reliability.
- Other changes such as transit signal priority improvements, operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

J Church Travel Time Reduction Proposal (TTRP_J)

The TTRP_J project is proposed to improve transit travel time and reliability along the corridor between Church and Duboce and the J Line's terminal at Balboa Park Station. Within the study area, the J Church operates at an average speed of eight miles per hour during peak periods. There are 19 transit stops in the inbound direction and 18 transit stops in the outbound direction. The average transit stop spacing between Duboce Avenue and Randall Street is 975 feet, with stops located about every two to four blocks. In the southern part of the line between Santa Rosa Avenue, and Balboa Park Station, the average stop spacing is 1,380 feet, or about every two to three blocks.

The main causes of delay to the J Church include long passenger loading and unloading times, traffic signal delay, traffic congestion, a high number of STOP signs along the route and areas of closely spaced transit stops. In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. The proposals include:

- Replacing all-way STOP-controlled intersections with traffic signals or traffic calming measures at four intersections. Traffic calming measures such as corner bulbs, speed humps, and sidewalk extensions provide improved pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists and reducing the speed of motorists turning from cross streets.
- Adding a transit-only lane on three blocks. In areas of high traffic congestion, transit-only lanes

can save significant travel time for the J Church by giving the train its own exclusive lane.

- Turn Restrictions at two intersections. Left-turn restrictions can reduce transit delay by ensuring that auto traffic does not block intersections while waiting to turn left.
- Adding pedestrian bulbs at one intersection. Pedestrian bulbs are sidewalk extensions at intersection corners that improve pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets.
- Optimizing transit stop locations at three intersections. Relocating transit stops from the near-side to the far-side of intersections at existing and proposed traffic signals would allow streetcars to take advantage of planned transit signal priority improvements. At all-way STOP-controlled intersections, transit stops would be relocated from the far-side of the intersection to the near-side, eliminating the need for streetcars to stop once for the STOP sign and again for customers to board the train.
- Create more consistent stop spacing. The J Church stops an average of once every two blocks for a majority of its route. However, at two locations, this distance is shortened to as little as once every block. This proposal moves towards at least a two-block spacing throughout the route. By stopping fewer times, the train would take less time to move through the corridor
- Adding transit bulbs at seven intersections. Transit bulbs are sidewalk extensions alongside transit stops that allow passengers to get on and off without having to walk between parked cars and cross a lane of traffic. They enhance the ability of streetcars to take advantage of all-door boarding and provide extra space for transit shelters and other customer amenities. Transit bulbs also improve pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets.
- Extending boarding islands at two intersections. Boarding islands are dedicated waiting spaces for customers located between travel lanes. Extending existing boarding islands would cover the full length of the train and allow for passengers to be picked up and dropped off without having to walk between parked cars or cross a lane of traffic when the train arrives.

J Church

Frequency

Service during peak periods (headway between vehicles, in minutes)

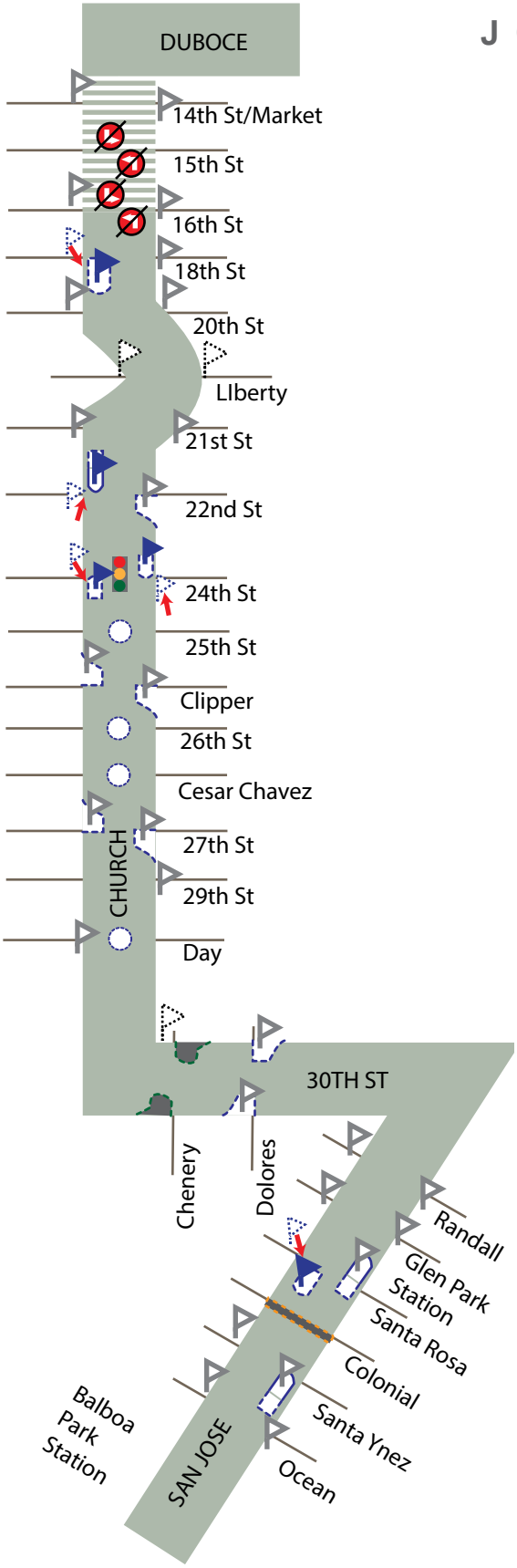
	Current	Proposed	Frequency
AM	9.5	8	+
PM	9	9	=

*Increasing light rail service is dependant upon vehicle availability. Fleet rehabilitation is underway and is scheduled for completion by the end of 2015.

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
J Church								$11,720,000
TEP Capital Seg. 1	CCSF-GOBond			$1,020,000	$8,810,000			$9,830,000
	Total			**$1,020,000**	**$8,810,000**			**$9,830,000**
TEP Supportive	No Funding Source						$1,890,000	$1,890,000
	Total						**$1,890,000**	**$1,890,000**

J Church Segment Proposal



SEGMENT PROPOSALS

- Existing Stop
- Stop Removal
- Stop Relocation
- New Transit Bulb
- Extend Existing Boarding Island
- Proposed Transit Only Lane
- Traffic Calming
- New Traffic Signal
- New Boarding Island
- No Left Turn Restrictions
- New Pedestrian Bulbs
- Crosswalk

KT Ingleside / Third Street

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

KT Ingleside / Third Street

Overview

- The KT Ingleside/Third Street line is one of the highest ridership Muni corridors.
- The programmatic KT Ingleside/Third St. Travel Time Reduction Proposal (TTRP_K) project is proposed to improve transit travel time, imrpove reliability, and decrease delay caused as a result of various factors such as long passenger loading and unloading times, traffic signal delay, traffic congestion, a high number of STOP signs along the route and areas of closely spaced transit stops.
- The TTRP_K proposal is a program-level project where specific treatments have not been identified at this time.
- The TTRP_K proposal study area stretches from the intersection of San Jose Avenue and Oneida Street (Balboa Park Station) to Sloat and Junipero Serra boulevards.

KT Ingleside/ Third St. Travel Time Reduction Proposal (TTRP_K)

The TTRP_K proposal is a program-level project where specific treatments have not yet been identified for the corridor. For this and other programmatic proposals, the TPS Toolkit elements would be applied along Junipero Serra Boulevard and Ocean Avenue, from the intersection of San Jose Avenue and Oneida Street (Balboa Park Station) to Sloat and Junipero Serra boulevards.

This Rapid Network corridor provides transit connections between the West Portal, St. Francis Wood, and Ingleside neighborhoods as well as the City College of San Francisco (CCSF) main campus and vicinity and Balboa Park Station. Inbound, the K Ingleside enters the Muni System underground at West Portal Station. From West Portal Station the K Ingleside becomes the T Third Street and continues to Embarcadero Station, providing connections from the above neighborhoods to Forest Hill, Midtown Terrace, the Castro/Eureka Valley/Corona Heights, Duboce Triangle, Church and Market streets vicinity, and destinations in Civic Center and Downtown before resurfacing after Embarcadero Station to provide transit service along the Embarcadero, through SoMa and Mission Bay, to Potrero Hill, Hunter's Point, Bay View and Visitacíon Valley neighborhoods.

KT Ingleside / Third Street

Frequency

Service during peak periods (headway between vehicles, in minutes)

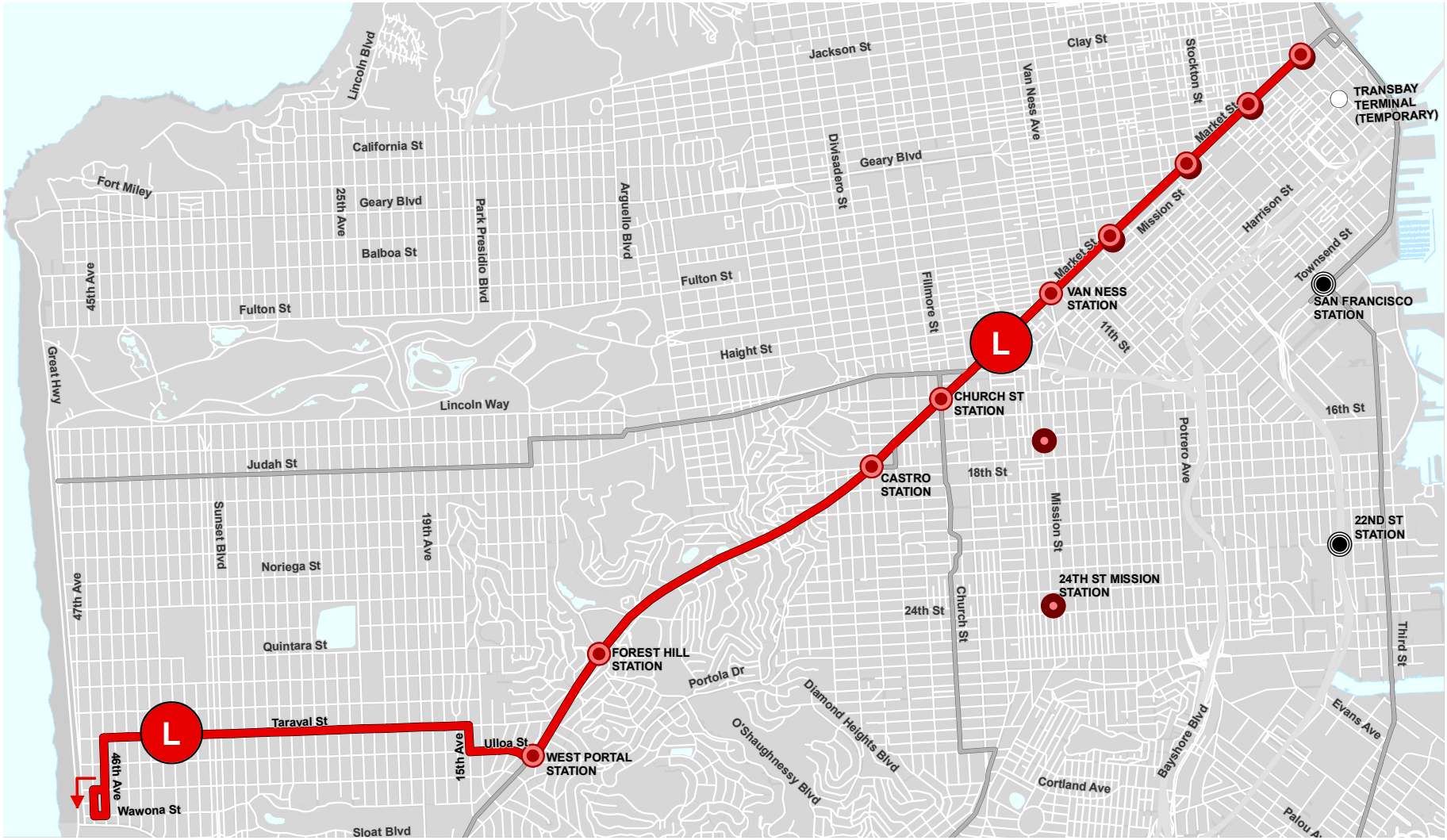
	Current	Proposed	Frequency
AM	9	8	+
PM	9	8	+

*Increasing light rail service is dependant upon vehicle availability. Fleet rehabilitation is underway and is scheduled for completion by the end of 2015.

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
K Ingleside								$7,130,000
TEP Capital Seg. 1	CCSF-GOBond					$4,720,000		$4,720,000
	Total					**$4,720,000**		**$4,720,000**
TEP Supportive	No Funding Source						$2,410,000	$2,410,000
	Total						**$2,410,000**	**$2,410,000**

L Taraval



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

L Taraval

Overview

- The L Taraval line is one of the highest ridership Muni corridors.
- The L Taraval Travel Time Reduction Proposal (TTRP_L) is proposed to improve transit travel time, imrpove reliability, and decrease delay caused as a result of long passenger loading and unloading times, traffic signal delay, traffic congestion, a high number of STOP signs along the route and areas of closely spaced transit stops.
- The TTRP_L project study area is
- The proposed changes are anticipated to reduce travel time of the L Taraval within the study area by about 6.5 minutes total in both directions (12% reduction), resulting in an average operating speed of nine miles per hour and improving service reliability.
- Other changes such as transit signal priority improvements, operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased. No service route changes are proposed

Frequency

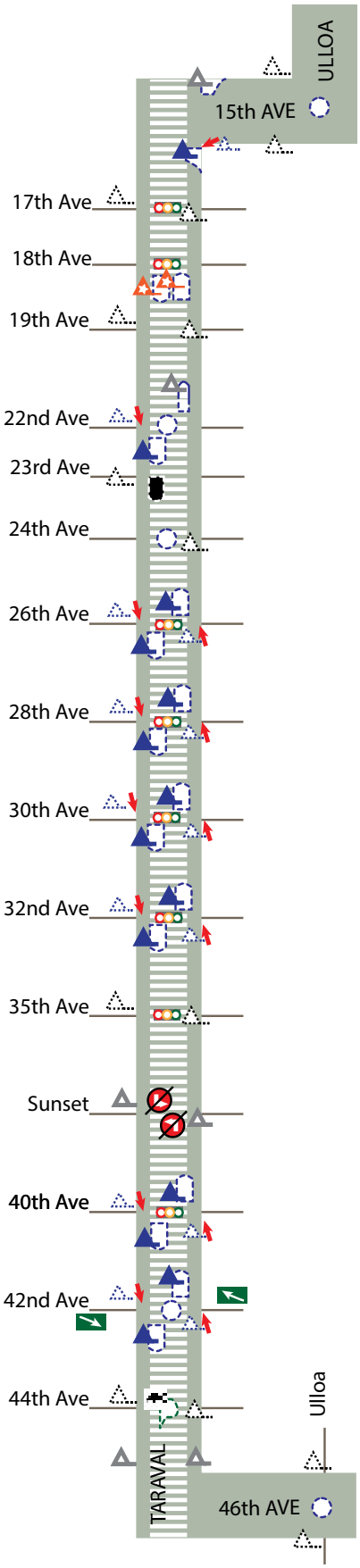
Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	8	7.5	+
PM	7.5	7.5	=

*Increasing light rail service is dependant upon vehicle availability. Fleet rehabilitation is underway and is scheduled for completion by the end of 2015.

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
L Taraval								$7,860,000
TEP Capital Seg. 1	CCSF-GOBond					$4,720,000		$4,720,000
	Total					**$4,720,000**		**$4,720,000**
TEP Supportive	No Funding Source						$3,140,000	$3,140,000
	Total						**$3,140,000**	**$3,140,000**

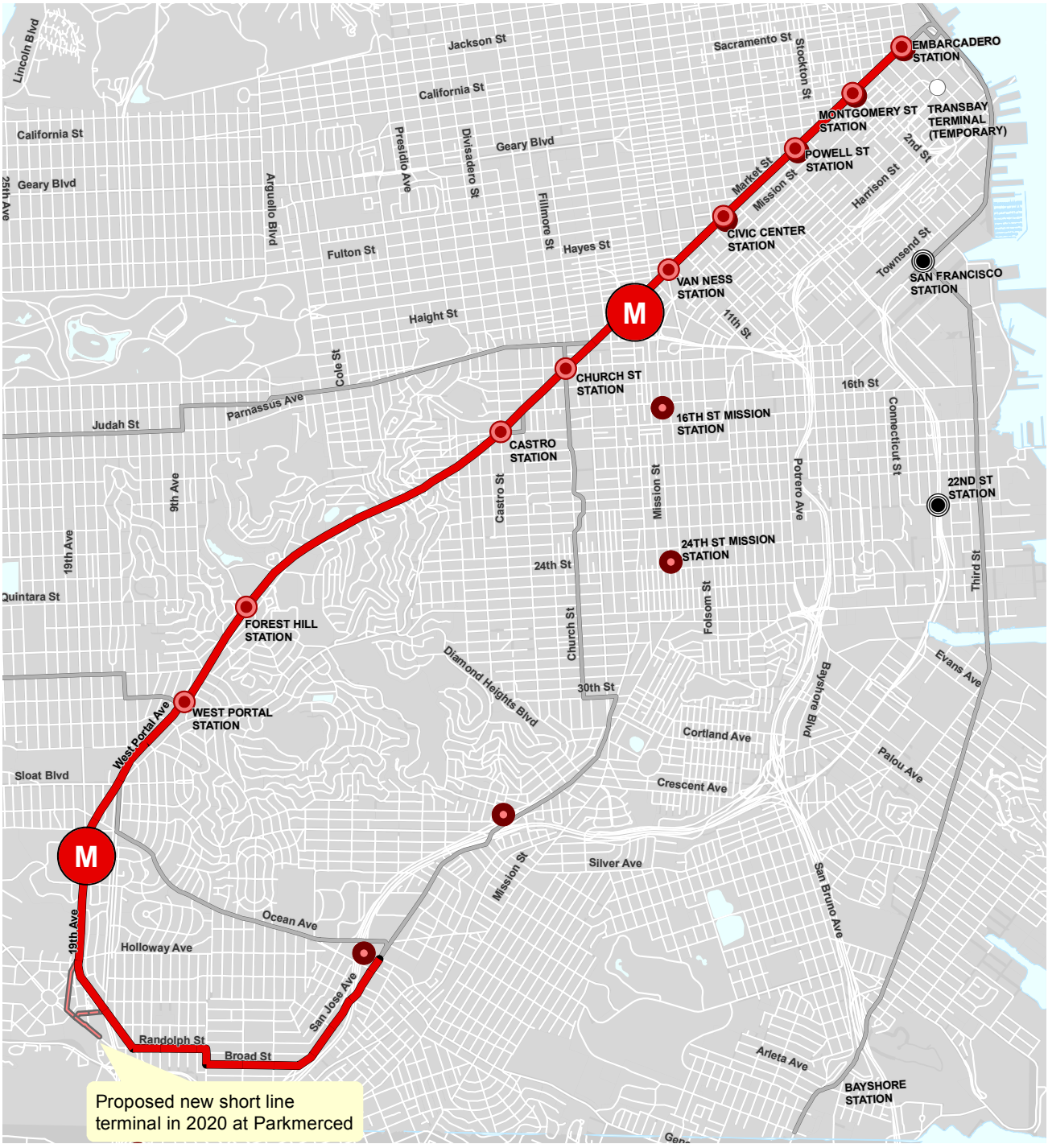


L Taraval Segment Proposal

SEGMENT PROPOSALS

- Existing Stop
- Stop Removal
- Stop Relocation
- New Transit Bulb
- New Pedesrian Refuge Island
- New Boarding Island
- Extend Boarding Island
- New Traffic Signal
- Remove Stop Signs and Replace with Traffic Calming Measure
- New Stop
- No Left-Turn Restriction
- Center Transit-Only Lanes (both directions)
- Remove Exist. Boarding Island
- Right-Turn Only Restrictions

M Ocean View



Legend

- Recommended Route
- Segment Proposed for Elimination
- Parkmerced Extension
- Recommended Bus & Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

M Ocean View

Overview

- No route changes proposed.
- New terminal at Parkmerced is planned and would be funded by the private developer with an estimated year 2020 completion. During peak periods, alternate trips would originate/terminate from/to the Balboa Park Station and this new terminal.
- TTRP is proposed for this corridor to reduce transit travel time.

M Ocean View Travel Time Reduction Proposal Overview

For this proposal, the TPS Toolkit elements would be applied along the dedicated right-of-way south of St. Francis Circle, 19th Avenue, Parkmerced local streets, Randolph Street, Orizaba Avenue, Broad Street and San Jose Avenue, from the intersection of 19th and Holloway avenues to Geneva and San Jose avenues near the Balboa Park Station. This corridor provides transit connections between West Portal Station and Balboa Park Station (Muni and BART), and includes transit service for the West Portal, St. Francis Wood, Stonestown/San Francisco State University, Ingleside and Parkmerced neighborhoods. The M Ocean View continues along West Portal Avenue to West Portal Station, where inbound it enters the Muni System underground to Embarcadero Station providing connections from the above neighborhoods to Forest Hill, Midtown Terrace, the Castro/Eureka Valley/Corona Heights, Duboce Triangle, Church and Market streets vicinity, and destinations in the Civic Center and Downtown.

Frequency

Service during peak periods (headway between vehicles, in minutes)

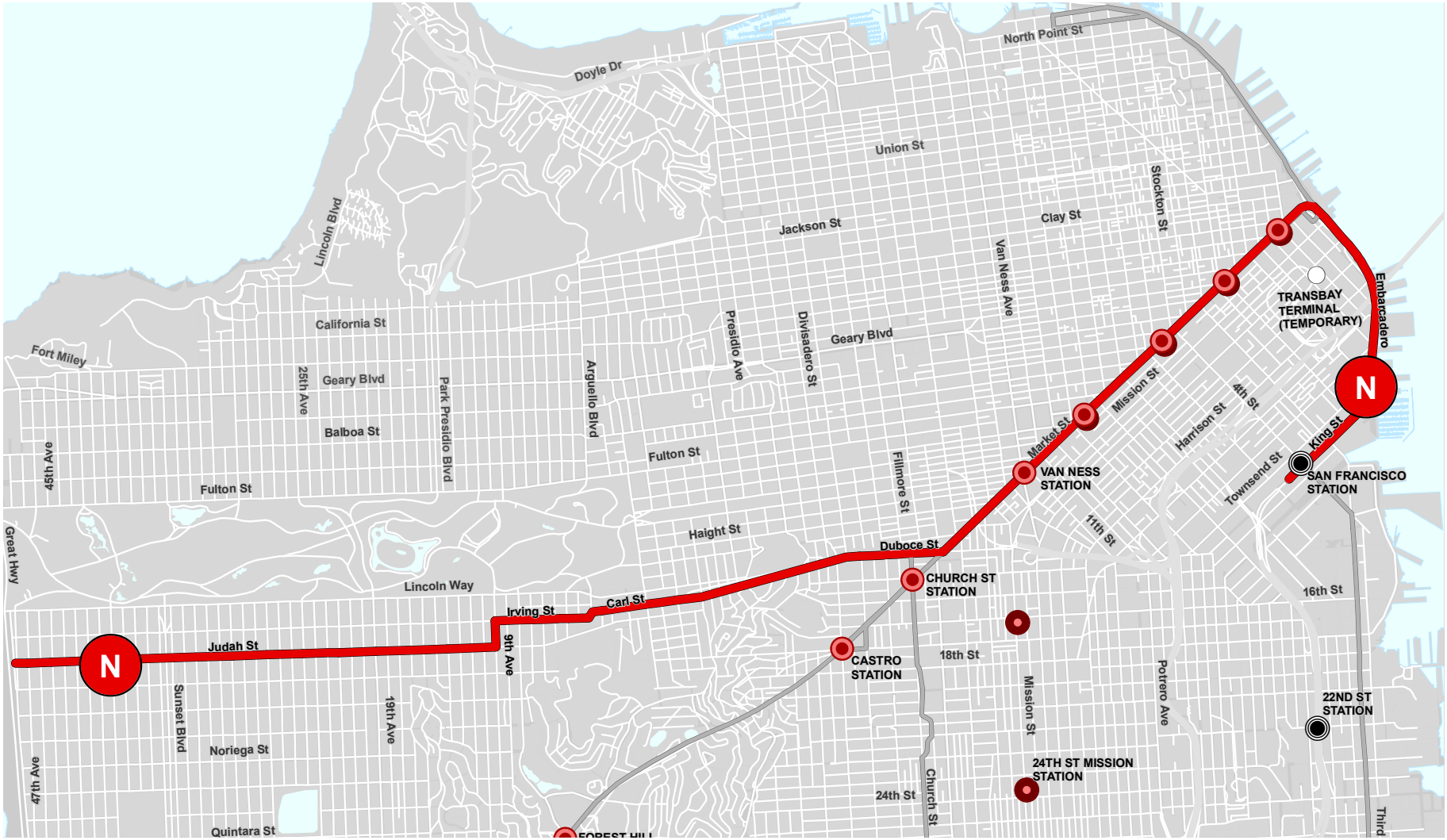
	Current	Proposed	Frequency
AM	9	8.5	+
PM	9	8.5	+

*Increasing light rail service is dependant upon vehicle availability. Fleet rehabilitation is underway and is scheduled for completion by the end of 2015.

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
M Ocean View								$9,920,000
TEP Capital Seg. 1	CCSF-GOBond					$3,500,000		$3,500,000
	Total					**$3,500,000**		**$3,500,000**
TEP Capital Seg. 2	CCSF-GOBond					$3,620,000		$3,620,000
	Total					**$3,620,000**		**$3,620,000**
TEP Supportive	No Funding Source						$2,800,000	$2,800,000
	Total						**$2,800,000**	**$2,800,000**

N Judah



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

Overview

- Muni's N Judah rail line has one of the highest riderships in the Muni Network and carries more than 40,000 daily customers on an average weekday.
- The N Judah Travel Time Reduction Proposal (TTRP_N) is proposed to improve transit travel time, imrpove reliability, and decrease delay caused as a result of long passenger loading and unloading times, traffic signal delay, traffic congestion, a high number of STOP signs along the route and areas of closely spaced transit stops.
- The TTRP_L project study area extends between Carl and Cole and Judah and Great Highway. Within the study area, the N Judah operates at an average speed of 8 miles per hour during peak periods. There are 21 transit stops in each direction. The average transit stop spacing between Carl and Cole and Judah and Great Highway is 850 feet, with stops located at every two to three intersections.
- The proposed changes are anticipated to reduce the travel time of the N Judah rail service by about 5 minutes in each direction (10 minutes total) within the study area (19% reduction), improving average operating speed to 9.5 miles per hour and improving service reliability. Other changes such as transit signal priority improvements, operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

The main causes of delay to the N Judah include long passenger boarding and alighting times, a high number of stop signs along the route and areas of closely spaced transit stops.

N Judah Travel Time Reduction Proposal

In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. These proposals include:

- Replacing all-way STOP-controlled intersections with traffic signals or traffic calming measures at eight intersections. Currently, the N Judah is delayed by having to come to a complete stop at multiple intersections with stop signs. These stop signs could be replaced with traffic signals equipped with transit signal priority. This would reduce delay at intersections because the signals could be programmed to hold green lights for approaching trains. Alternatively, traffic calming measures such as corner bulbs, raised crosswalks, and sidewalk extensions could be installed to provide improved pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists and reducing the speed of motorists turning from cross streets. Traffic calming measures would have a similar effect of reducing intersection delays for trains, by eliminating the need for the

train to come to a complete stop.

- Optimizing transit stop locations at four intersections. Relocating transit stops from the near-side to the far-side of intersections at existing traffic signals would allow streetcars to take advantage of planned transit signal priority improvements. At all-way STOP-controlled intersections, transit stops would be relocated from the far-side of the intersection to the near-side, eliminating the need for streetcars to stop once for the STOP sign and again for customers to board the train. One of the relocated transit stops at Sunset and Judah would require new boarding islands and extend into the intersections of 36th Avenue and 37th Avenue. The boarding island would block through traffic and drivers would only be allowed to turn right at these intersections.
- Increasing transit stop spacing from two to three blocks to three to four blocks. Currently the N Judah stops every two to three blocks within the study area. This proposal moves toward a three to four block spacing for most stops. By stopping fewer times, the train takes less time to move through the corridor.
- Adding transit bulbs at five intersections. Transit bulbs are sidewalk extensions alongside transit stops that allow passengers to get on and off without having to walk between parked cars and cross a lane of traffic. Transit bulbs enhance the ability of streetcars to take advantage of all-door boarding. Transit bulbs provide space for transit shelters and other customer amenities. Transit bulbs also improve pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets.
- Extending boarding islands at 13 intersections. Boarding islands are dedicated waiting spaces for customers located between travel lanes. Extending existing boarding islands would cover the full length of two-car trains and allow for passengers to be picked up and dropped off without having to walk between parked cars and cross a lane of traffic when the train arrives.

N Judah

Frequency

Service during peak periods (headway between vehicles, in minutes)

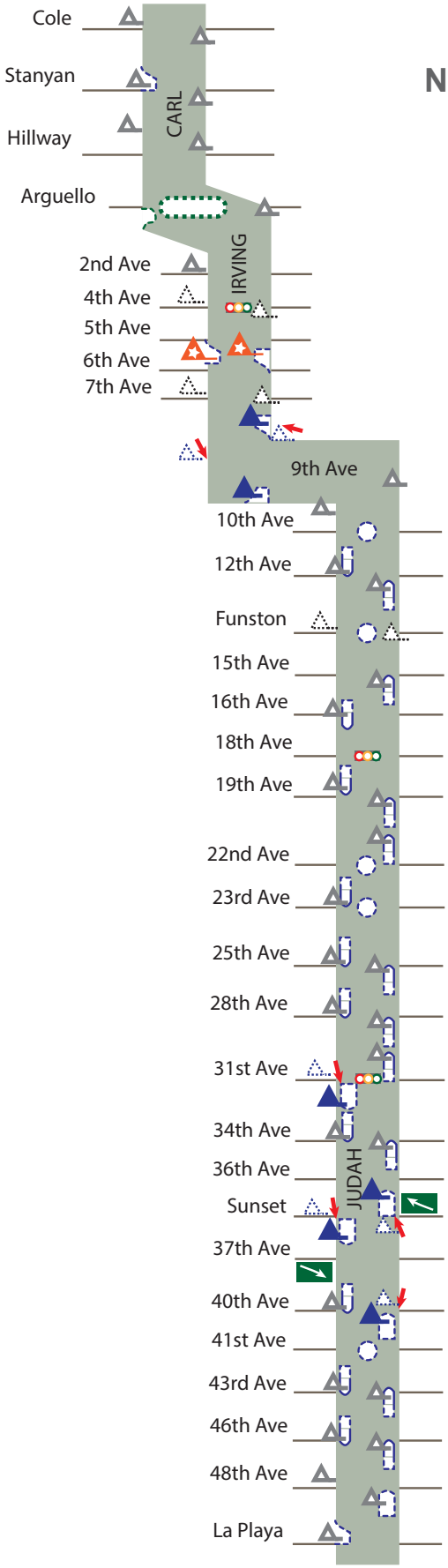
	Current	Proposed	Frequency
AM	7	5.5	+
PM	7	6	+

*Increasing light rail service is dependant upon vehicle availability. Fleet rehabilitation is underway and is scheduled for completion by the end of 2015.

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
N Judah								$22,653,027
TEP Capital Seg. 1	CCSF-GOBond			$13,110,000				$13,110,000
	SFCTA-PropK-EP1		$1,443,027					$1,443,027
	Total		**$1,443,027**	**$13,110,000**				**$14,553,027**
TEP Supportive	MTC-TPI(MC)	$5,383,860						$5,383,860
	SFCTA-PropK-EP16	$716,140						$716,140
	Total	**$6,100,000**						**$6,100,000**

N Judah

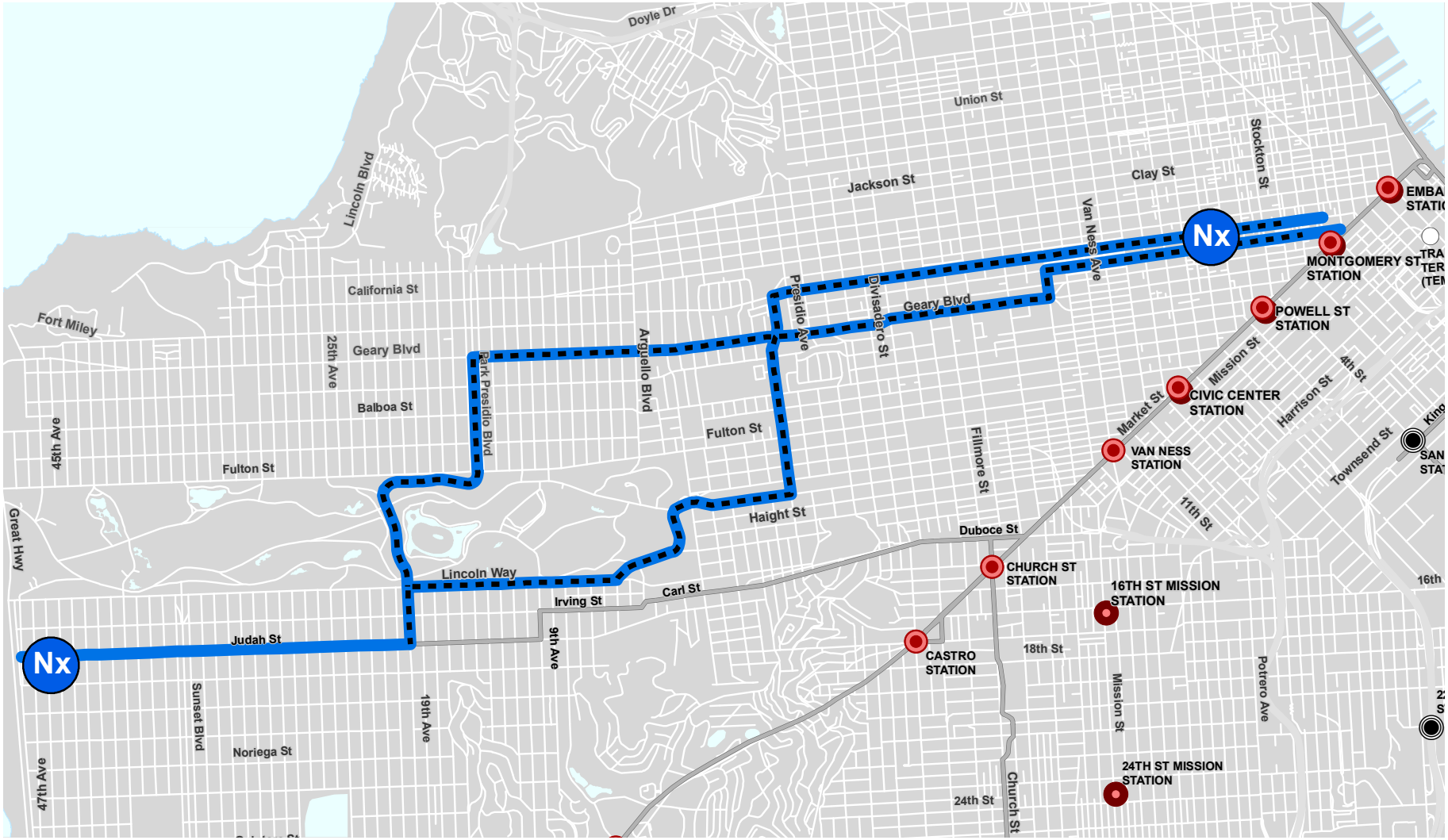


N Judah Segment Proposal

SEGMENT PROPOSALS

- Existing Stop
- Stop Removal
- Stop Relocation
- New Transit Bulb
- Extend Existing Boarding Island
- Proposed Transit Only Lane
- Traffic Calming
- New Traffic Signal
- New Boarding Island
- No Left Turn Restrictions
- New Pedestrian Bulbs
- Crosswalk

Nx Express



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

TS LM PR TSC PI

Nx Express

Overview

- No route changes proposed.
- TTRP for N Judah will improve travel time and reliability on this route.

1 California

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC OWE TS LM PR TSC PI

Travel Time Reduction Proposal

For this proposal, the TPS Toolkit elements would be applied along the 1 California route. The TPS Toolkit elements would be implemented along the following streets: Drumm, Sacramento, Steiner, and California streets, 32nd Avenue and Geary Boulevard (outbound), and along Geary Boulevard, 33rd Avenue, Clement Street, 32nd Avenue, California, Steiner, Sacramento, Gough and Clay streets (inbound). The corridor extends from the intersection of Geary Boulevard and 33rd Avenue to the intersection of Clay and Drumm streets, providing transit improvements to a major east-west route in the Rapid Network. This Rapid Network corridor provides transit connections between the northern portion of the Richmond District and neighborhoods to the east, including Pacific Heights, Nob Hill, Chinatown, the Financial District and the Embarcadero.

OWE.2 - 1 California Bypass Wires at Terminal Location

This project would install bypass wires to improve terminal operations where multiple trolley coach routes share a terminal. This project would provide trolley coach access to and egress from terminals and would improve route reliability by preventing trolley coaches from one route from getting stuck behind trolley coaches from another route. Currently, at terminals shared by multiple trolley coach routes, operators must exit their vehicle and pull trolley poles in order to pass a coach already in the terminal. Including an additional terminal location for the 41 Union/ 45 Union Stockton, a combined total of about 1,200 linear feet of overhead bypass wires and the installation of about 50 poles is proposed also at the 1 California terminal location at Presidio Avenue and Sacramento Street (Terminal for Routes 1 California and 2 Clement short-line).

This proposal would provide a common inbound stop for the 1 California and its short-line and would also accommodate the western 2 Clement short-line terminal, which would use trolley coaches. New poles, overhead wires, and duct banks, would be constructed. Four new curb ramps to meet accessibility standards are proposed for both the Laurel Street and Walnut Street intersections with Sacramento Street; in addition, four curb ramps are proposed on the north side of California Street at its intersection with Laurel and Walnut streets for a total of eight curb ramps. The installation of poles and underground wiring may require minor utility relocation, such as moving catch basins.

1 California

Frequency

Service during peak periods (headway between vehicles, in minutes)

West of Presidio Ave.

	Current	Proposed	Frequency
AM	7	7	=
PM	7	6	+

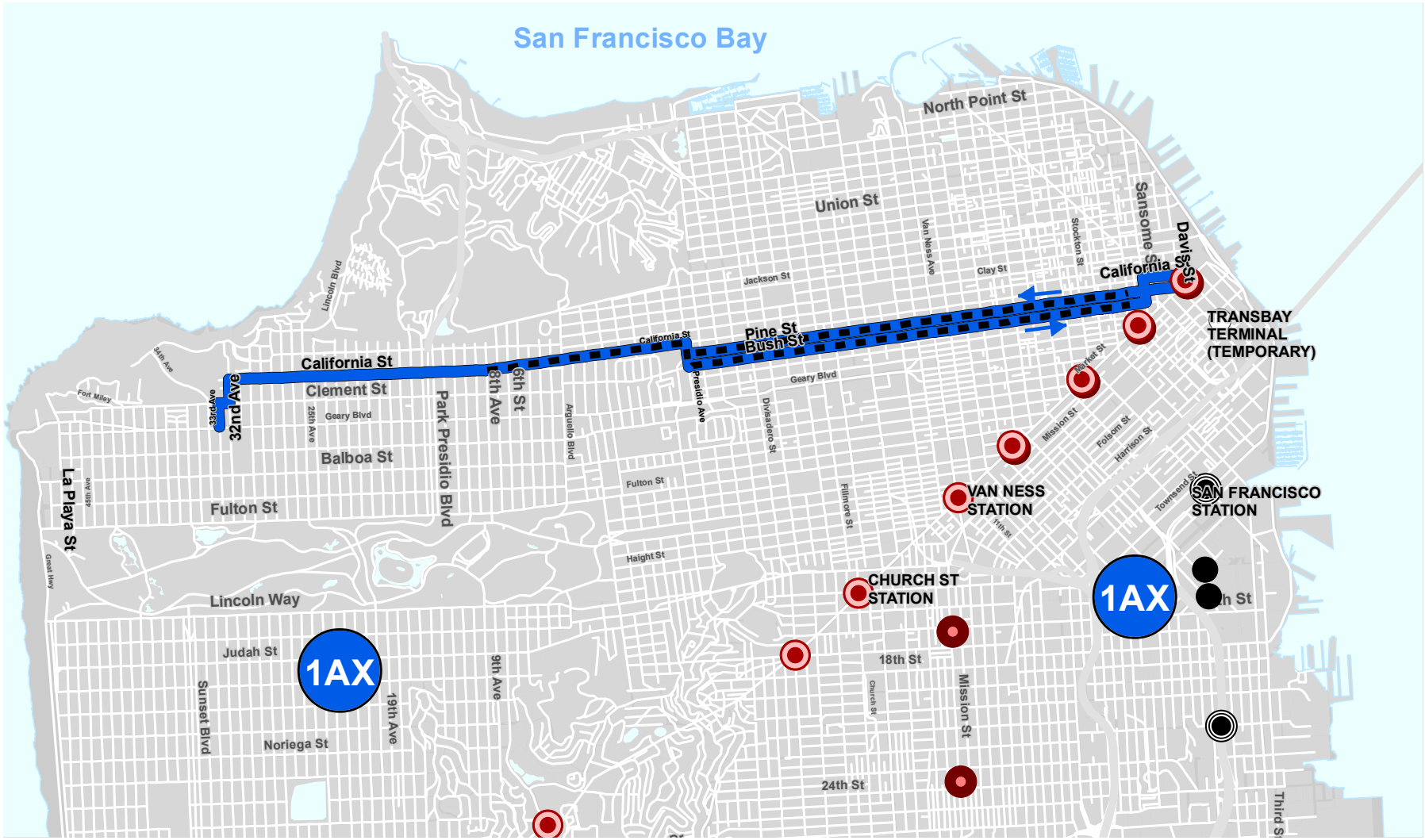
East of Presidio Ave.

	Current	Proposed	Frequency
AM	3.5	3.5	=
PM	3.5	3	+

Finance

Route / Fund Source	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
1 California							$14,810,000
TEP Capital — CCSF-GOBond			$1,020,000	$7,900,000			$8,920,000
TEP Capital — **Total**			**$1,020,000**	**$7,900,000**			**$8,920,000**
TEP Supportive — No Funding Source						$5,890,000	$5,890,000
TEP Supportive — **Total**						**$5,890,000**	**$5,890,000**

1AX California "A" Express



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- New Stop
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

TS LM PR TSC PI

1AX California “A” Express

Overview

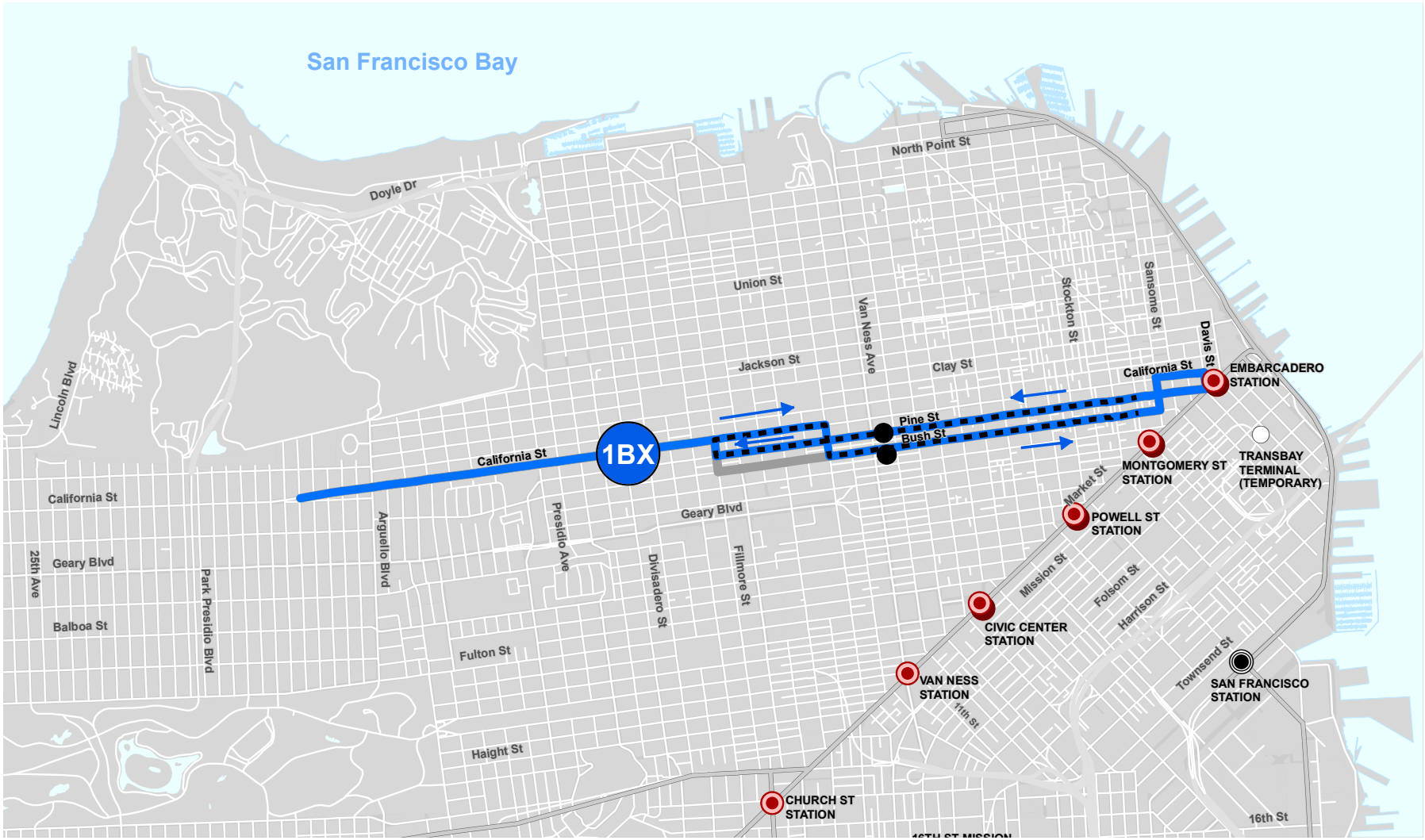
- No route changes proposed.
- New transit stop would be added on Pine Street (p.m.) and Bush Street (a.m.) at Van Ness Avenue to improve transit connections to the Civic Center and the northern waterfront.
- TTRP.1 is also proposed for this corridor to reduce transit travel time.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	10	=
PM	13	13	=

1BX California “B” Express



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC RA TS LM PR TSC PI

1BX California “B” Express

Overview

- No stops would be eliminated, but the route alignment would change. Where the inbound (eastbound) route currently turns south on Fillmore Street, the proposed route would continue on California Street and turn south on Gough Street to Bush Street. The route segment that extends south on Fillmore Street and east on Bush Street to Gough Street would be discontinued.
- New transit stop would be added on Pine Street (pm) and Bush Street (am) at Van Ness Avenue to improve transit connections to the Civic Center and the northern waterfront.
- TTRP.1 is also proposed for the California Street corridor to reduce transit travel time.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	7	7	=
PM	11	11	=

2 Clement

Legend

- Recommended Route
- Potential Route Variation
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC VC EH

2 Clement

Overview

- The recommended alternative for the 2 Clement Service proposes an alternative alignment that would use existing overhead wires for trolley coach service on the entire Sutter Street corridor. Instead of operating on Clement Street from Arguello Boulevard to Park Presidio Boulevard, the route would continue on California Street to Eighth Avenue, then south to Clement Street to Sixth Avenue. This service variant would include a terminal loop at Sansome Street in the Downtown area.
- Supplemental trolley coach service would be added between Downtown (Sansome/Market streets) and Presidio Avenue to improve current transit frequencies on Sutter and Post streets due to the reduced 3 Jackson service on this segment.
- A 2 Clement service variant would continue service to the current terminal on Clement Street and 14th Avenue.
- East of Fillmore Street during peak hours, the combined 2 Clement and 3 Jackson lines would operate with five minute headways. Between Fillmore Street and Presidio Avenue, the 2 Clement would operate with 7.5 minute headways.

Frequency

Service during peak periods (headway between vehicles, in minutes)

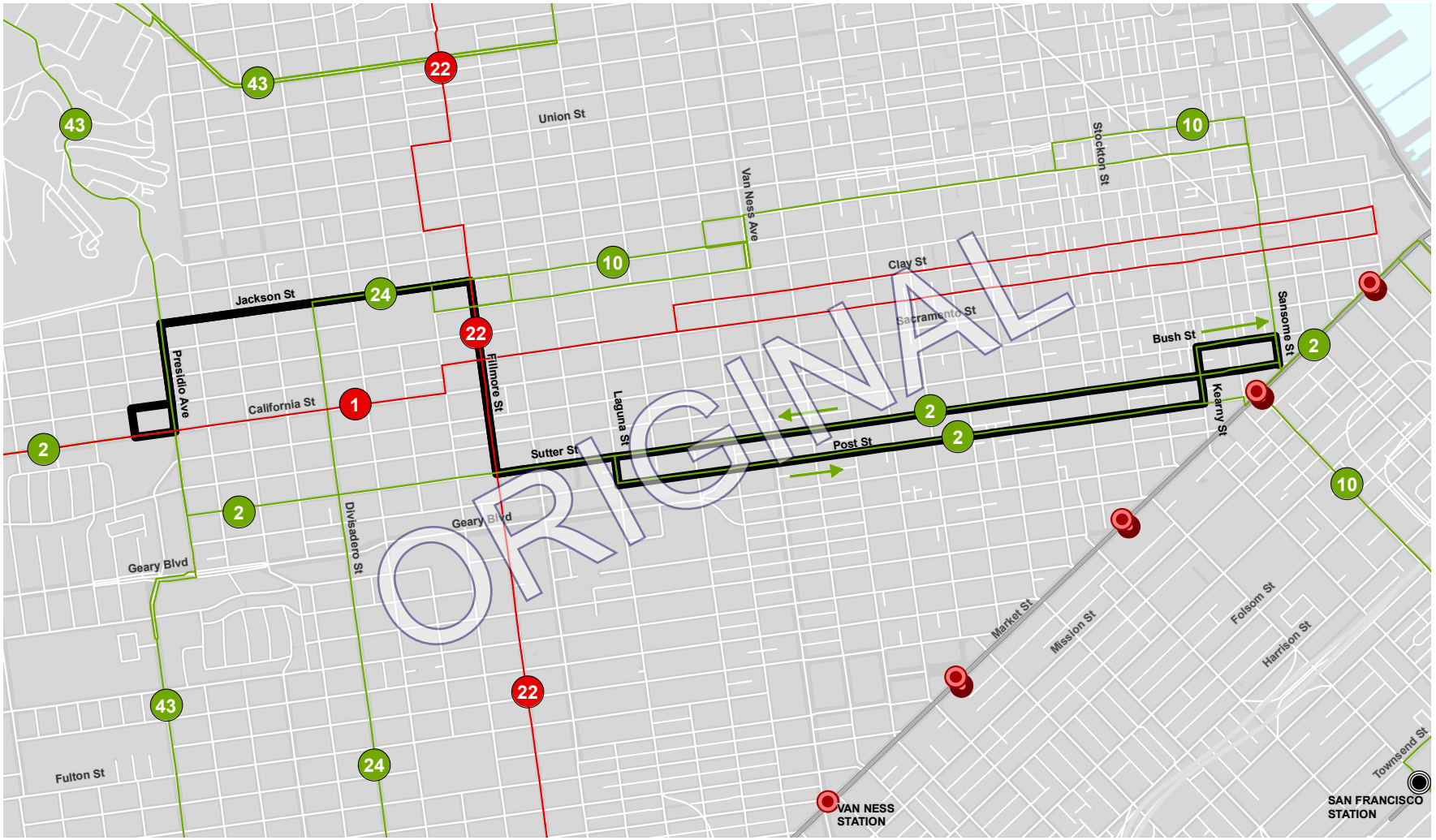
West of Presidio Ave.

	Current	Proposed	Frequency
AM	12	15	–
PM	12	15	–

East of Presidio Ave.

	Current	Proposed	Frequency
AM	12	7.5	+
PM	12	7.5	+

3 Jackson - Original Proposal (See Revised Proposal on Pg 81)



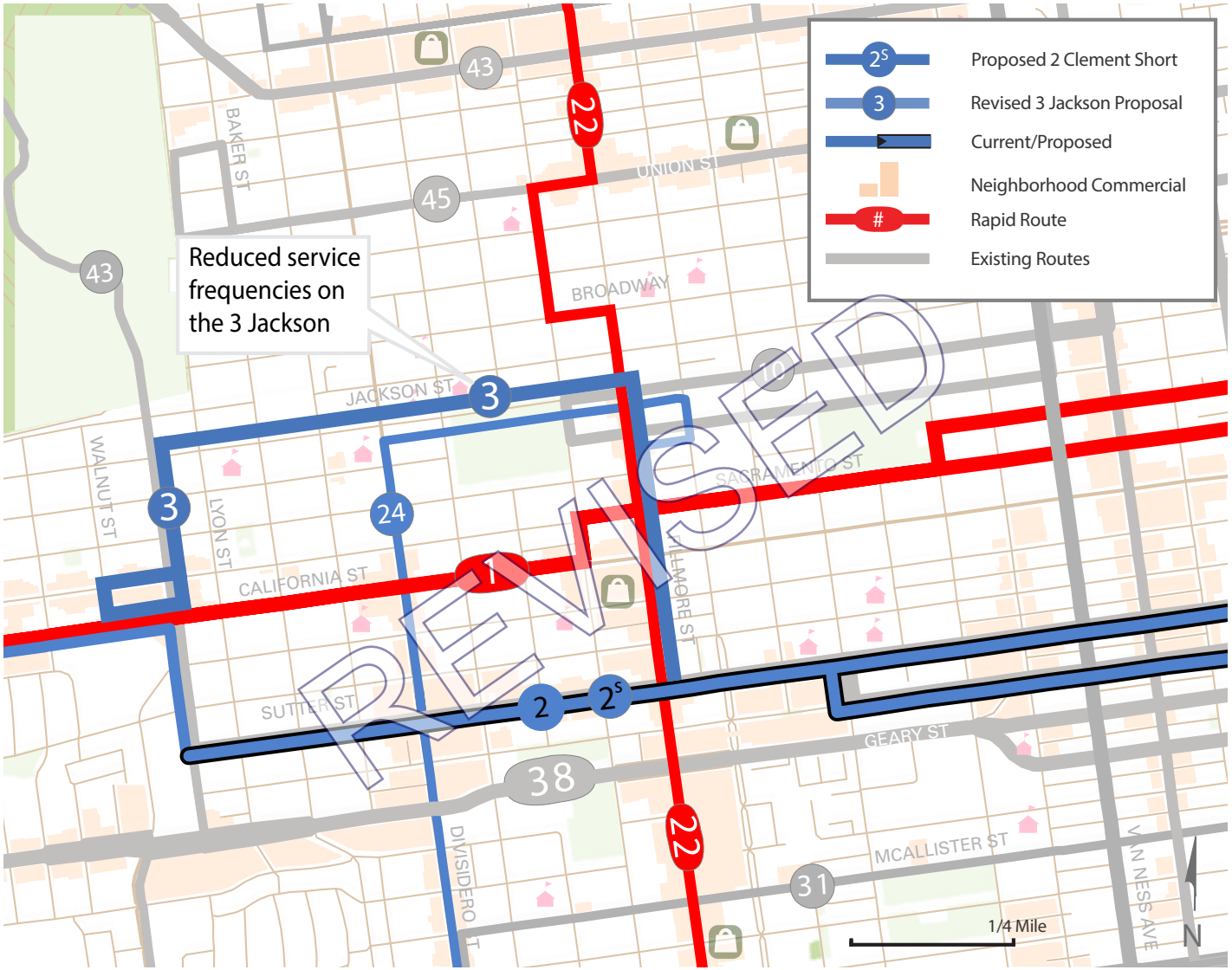
Legend

- Segment will be covered by another recommended route
- Recommended Bus & Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RE

3 Jackson - Revised Proposal



Proposed Changes

HC

Overview

- ~~Route would be discontinued.~~ REVISED: Route would be retained and its frequency would be reduced.
- ~~Other Muni routes would provide service on streets currently served by this route, except for Jackson Street between Divisadero Street and Presidio Avenue which would be eliminated due to low ridership.~~ REVISED: Transit headways on Sutter Street would be increased by adding supplemental trolley coach service on the 2 Clement between Downtown and Presidio Avenue.
- REVISED: Midday service frequency may be reduced from 20 minutes to 30 minutes.

Frequency

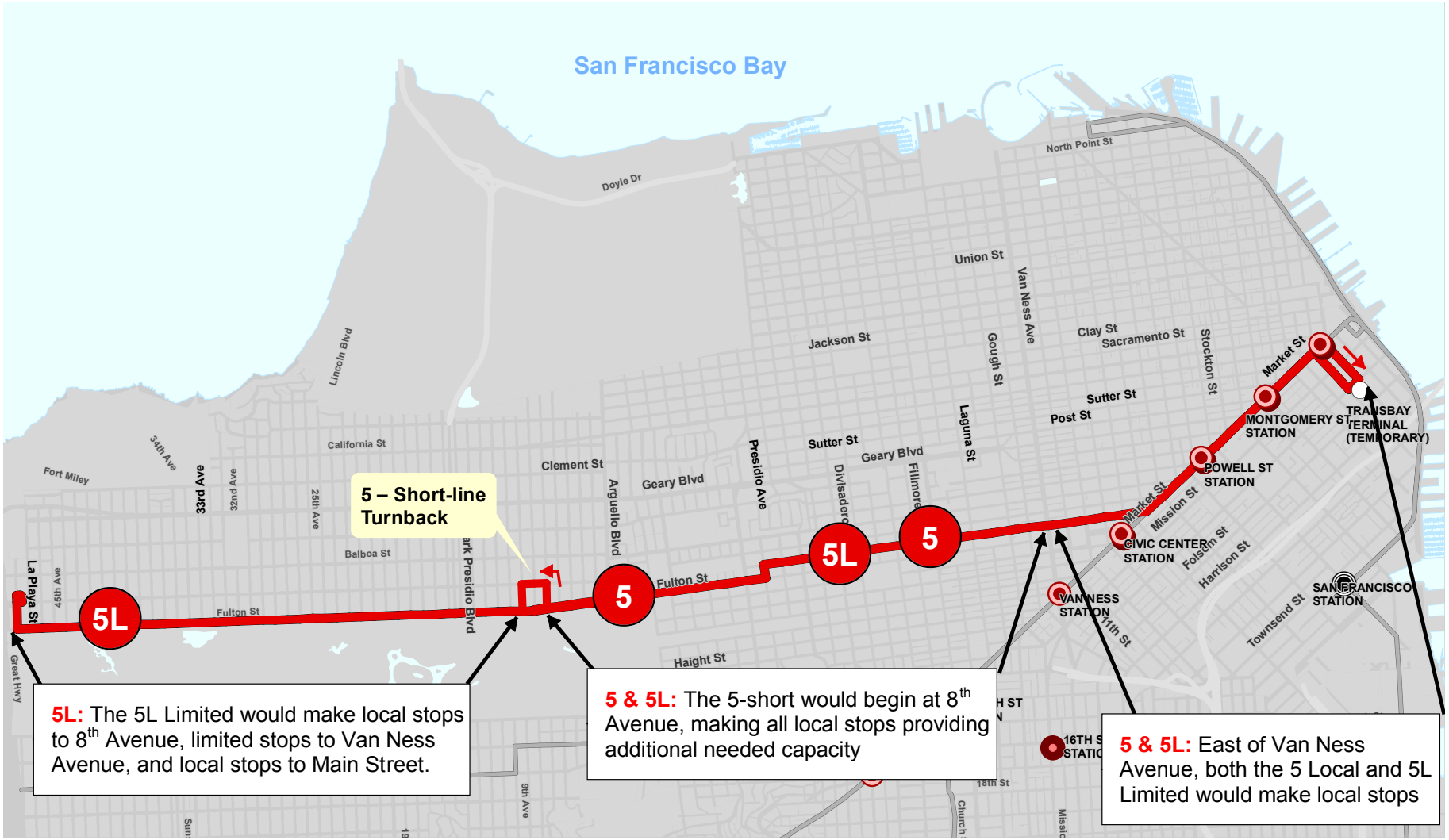
Service during peak periods (headway between vehicles, in minutes)
ORIGINAL PROPOSAL:

	Current	Proposed	Frequency
AM	12	N/A	N/A
PM	12	N/A	N/A

REVISED PROPOSAL:

	Current	Proposed	Frequency
AM	12	15	—
PM	12	15	—

5 Fulton / 5L Fulton Limited



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

NR RA HC VC OWE TS LM PR TSC PI

5 Fulton / 5L Fulton Limited

Overview

Muni's 5 Fulton bus route carries about 19,000 daily customers on an average weekday. The route's study corridor is 5.6 miles long and includes Fulton Street between La Playa and Central Avenue, Central Avenue between Fulton and McAllister streets, and McAllister Street between Central Avenue and Market Street. Within the study corridor, the 5 Fulton serves over 13,000 customers on an average weekday.

Within the study area, the 5 Fulton operates at an average speed of 9.7 miles per hour during peak periods. Sources of delay include closely spaced bus stops, traffic congestion and frequent STOP signs along the route in the Western Addition.

- New Limited Service route would make local stops west of Eighth Avenue, limited stops between Eighth Avenue and Market Street, and resume local stops on Market Street to the Transbay Terminal.
- 5L Fulton Limited would be supplemented by 5 Fulton short-line with local service from Eighth Avenue to Downtown. Working together, the 5/5L would serve all local stops from Ocean Beach to Downtown; passengers who want to travel from a local stop west of •Eighth Avenue to a local stop between Eighth Avenue and Market Street would need to transfer from the 5L Fulton Limited to the 5 Fulton Short-line route.
- Midday frequency would change from 4.5 to 5 minutes.
- In order to maintain Route 5/5L as an electric trolley coach service, bypass wires would be installed to allow limited-stop trolley coaches to pass local trolley coaches between Eighth Avenue and Market Street (OWE.4 The 5 Limited/Local Bypass Wire project).
- TTRP.5 is also proposed for this corridor to reduce transit travel time.
- The 5 Fulton Service Variant would operate the 5 Fulton short-line with motor coach service prior to the installation of bypass wires.

5 Fulton Travel Time Reduction Proposal

- Increasing bus stop spacing from 1.5 blocks to two blocks east of Arguello Boulevard and from two blocks to three blocks in the Richmond District. Currently, the 5 Fulton stops about every 1.5 blocks between Market Street and Arguello Boulevard and about every two blocks in the Richmond District. This proposal moves toward a two-block spacing between Market Street and Arguello Boulevard where blocks are longer and toward a three-block spacing in the Richmond District where blocks are shorter. By stopping fewer times, the bus would take less time to move through the corridor.

- Optimizing bus stop locations at 12 intersections. Relocating bus stops from the near-side to the far-side of intersections would allow buses to take advantage of planned transit signal priority improvements that could allow traffic signals to be programmed to hold green lights for approaching buses. Where the 5 Fulton turns at the STOP-controlled intersection of Central Avenue and McAllister Street, this proposal would relocate the bus stops to the near-side of the intersection, eliminating the need for buses to stop once for the STOP sign and again to pick-up and drop-off customers.
- Adding transit bulbs at 16 intersections. Transit bulbs are sidewalk extensions alongside bus stops that allow buses to pick-up and drop-off customers and reduce delay by preventing the bus from having to pull out of the travel lane into a bus stop and then wait for a gap to merge back into traffic. Transit bulbs enhance the ability of buses to take advantage of all-door boarding and provide space for transit shelters and other customer amenities.
- Replacing all-way STOP-controlled intersections with traffic signals or traffic calming measures at nine intersections. Currently, the 5 Fulton is delayed by having to stop at multiple intersections with STOP signs. Some STOP signs could be replaced with traffic signals that could be programmed to hold green lights for approaching buses. At some intersections along McAllister Street, traffic calming measures could replace STOP signs and eliminate the need for buses to come to a complete stop while maintaining pedestrian safety. Potential traffic calming measures include traffic circles or sidewalk extensions.
- Adding right-turn pockets at 4 intersections. Right-turn pockets would reduce Muni delays associated with buses waiting behind right-turning motorists by providing a dedicated space for turning vehicles to queue.
- Implementing a road diet on Fulton Street between Stanyan Street and Central Avenue. Within this six block segment of Fulton Street, the travel lanes are too narrow to allow large vehicles such as buses to travel alongside other vehicles moving in the same direction. By removing one travel lane in each direction and widening the remaining travel lanes, delays would potentially be reduced.
- Adding peak-period parking restriction along east side of Central Avenue between Fulton and McAllister streets. Parking and loading along this block of Central Avenue delay Muni vehicles and make it difficult for buses traveling in opposite directions to pass each other. Restricting parking on the east side of Central Avenue during peak periods would provide more space for buses to maneuver and would reduce Muni delays.
- Adding pedestrian bulbs or islands at 3 intersections. Two treatments are being considered to shorten crossing distances and improve pedestrian safety. Pedestrian bulbs are sidewalk extensions at intersection corners that improve pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets. Pedestrian islands provide a raised refuge area in the middle of the street for crossing pedestrians.

OWE.4 – Bypass Wires - 5 Fulton Limited/5 Fulton Local

Overhead wire expansion (OWE) would support rerouting of bus routes serviced by electric trolley coaches, and would facilitate shared terminal facilities among terminals that service multiple trolley coach routes. Construction of new overhead wires often requires the installation of new pole foundations and/or underground duct work. Poles to support overhead wires would vary in height from 26 to 30 feet and would be approximately eight to 13 inches in diameter at the base, and four to nine inches in diameter at the top of the poles. The pole foundations are typically three feet in diameter and 12 feet deep. These poles are typically installed every 90 to 100 feet along a street segment. Another part of the infrastructure for overhead wire service is the electrical distribution system that provides power to the trolleys. Electrical wires in conduits are placed in groups, called duct banks, underground within the center and along the sides of streets in order to transport electricity from the source (electrical transformer) to the wires in the poles which then power the overhead trolley wires. At some locations, the construction of new curb ramps, transit bulbs and pedestrian refuge islands may also be required. It is anticipated that no parking would be removed as a result of these overhead wire projects.

The 5 Fulton Limited/Local Bypass Wires (OWE.4) project would enable the 5 Fulton and 5L Fulton Limited service to operate with trolley coaches on one set of wires in each direction along the 5 Fulton corridor between Sixth Avenue and Market Street on Fulton, Central and McAllister streets. The proposed project would install up to six overhead bypass wires at strategic points in each direction, between Sixth Avenue and Fulton Street and Market and McAllister streets so that both the 5L Fulton Limited and 5 Fulton local service could operate concurrently. This would also enable 5L Fulton Limited trolley coaches to pass the 5 Fulton local coaches. Having a local and limited network on Fulton and McAllister streets would improve travel times and transit reliability.

The proposed project would involve the installation of approximately 50 poles and additional overhead wiring. Overhead wiring would be installed on the north and south side of Fulton Street at the Shrader Street/Parker Avenue (offset) intersection and at the Clayton Street intersection. On McAllister Street, wiring and poles would be installed on the north and south side of McAllister Street at its intersection with Baker, Pierce, Gough and Laguna streets. Curb ramps to meet accessibility standards would be installed at each corner of the McAllister and Baker streets and McAllister and Pierce streets intersections, for a total of eight curb ramps. The installation of poles and underground wiring may require minor utility relocation, such as moving catch basins.

5 Fulton / 5L Fulton Limited

Summary

Together, the proposed changes are anticipated to reduce the travel time of the 5 Fulton by about six minutes in each direction (12 minutes total) within the study area (18 percent reduction), improving the average operating speed to 11.7 miles per hour and improving service reliability. Transit signal priority improvements are anticipated to save an additional 1.5 minutes in each direction. Other changes such as operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

Frequency

Service during peak periods (headway between vehicles, in minutes)

West of Eighth Ave.

	Current	Proposed	Frequency
AM	6	6	=
PM	9	7.5	+

East of Eighth Ave.

	Current	Proposed	Frequency
AM	4	3	+
PM	4.5	3.5	+

Finance

Route / Fund Source	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
5 Fulton							$20,330,000
TEP Capital Seg. 1 — CCSF-GOBond			$1,260,000				$1,260,000
Total			**$1,260,000**				**$1,260,000**
TEP Capital Seg. 2 — CCSF-GOBond			$10,710,000				$10,710,000
TEP Capital Seg. 2 — SFCTA-PropK-EP1		$1,220,000					$1,220,000
Total		**$1,220,000**	**$10,710,000**				**$11,930,000**
TEP Capital Seg. 3 — CCSF-GOBond			$1,520,000				$1,520,000
TEP Capital Seg. 3 — CCSF-Prop B		$1,600,000					$1,600,000
TEP Capital Seg. 3 — SFCTA-PropK-EP1	$520,000						$520,000
Total	**$520,000**	**$1,600,000**	**$1,520,000**				**$3,640,000**
TEP Supportive — MTC-TPI(MC)				$3,500,000			$3,500,000
Total				**$3,500,000**			**$3,500,000**

5 Fulton / 5L Fulton Limited

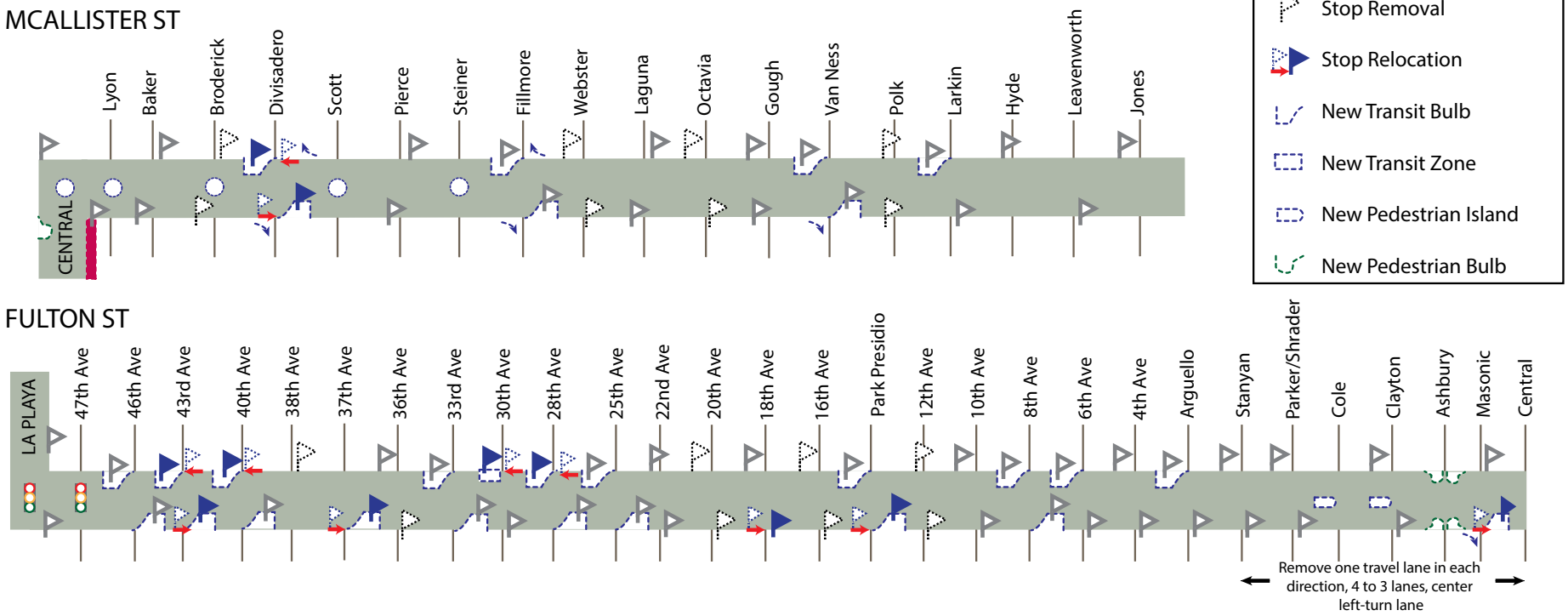
Expanded Alternative Shown Below.

5 Fulton TTRP Segment Proposal

Moderate Alternative:

This alternative would include the installation of pedestrian bulbs on Fulton Street at Clayton and Cole streets, instead of the pedestrian refuge islands proposed in the Expanded Alternative. The pedestrian bulbs on Fulton Street at Ashbury are also included in the Moderate Alternative.

This alternative would also include replacing the stop signs with trac signals on McAllister Street at Steiner, Scott, Broderick, Laguna, Pierce, and Lyon streets, instead of the traffic circles proposed in the Expanded Alternative. Additionally, the removal of one travel lane on Fulton Street between Stanyan and Central and a six-foot wide pedestrian bulb on the southwest corner of McAllister/Central are not proposed in the Moderate Alternative. The Moderate Alternative does not propose any trac calming/stop sign replacement at McAllister/Central, and the stops at that intersection would be optimized from farside to nearside. In addition to the trac signals proposed at McAllister/Laguna and McAllister/Pierce, the stops at these two intersection would be optimized from nearside to farside.



6 Parnassus- Original Proposal (See Revised Proposal on Pg 91)

Legend

- Recommended Route
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA OWE

TS LM PR TSC PI

6 Parnassus - Revised Proposal

Proposed Changes

HC RA

6 Parnassus

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	12	—
PM	10	12	—

6 Parnassus

Overview

- ~~New alignment would follow Stanyan Street, instead of Masonic Avenue, between Haight Street and Parnassus Avenue to provide increased service on the busiest portion of Haight Street. Low ridership route segment in Ashbury Heights would be discontinued. Combined with service provided by the 71L Haight-Noriega Limited, the 6 Parnassus would provide local and limited-stop service along the full length of Haight Street.~~
- ~~Streets eliminated from the 6 Parnassus route would include Masonic Avenue, Frederick and Clayton streets, and Parnassus Avenue between Clayton and Stanyan streets. The 32 Roosevelt and 33 Stanyan routes would continue to offer service along these segments. Reroute on Haight Street between Masonic Avenue and Stanyan Street would require new overhead wire on Stanyan Street between Haight Street and Parnassus Avenue.~~
- In the future, the 6 Parnassus route would be extended to West Portal Station. Overhead wires would be extended to West Portal Station from current terminal at 14th Avenue and Quintara Street.
- TTRP.71 is also proposed for this corridor to reduce transit travel time.
- REVISED: 6 Parnassus will remain in current alignment but at a lower frequency.

OWE.6 – New Overhead Wiring - 6 Parnassus Extension to West Portal

This project would provide a direct connection to Muni Metro light rail service at the West Portal Station for customers on the west side of Twin Peaks and in the western portions of the Haight and Cole Valley neighborhoods. The 6 Parnassus currently terminates at 14th Avenue and Quintara Street. Construction of two-way overhead wiring would extend the 6 Parnassus from the existing terminal to the West Portal Station via 14th Avenue and Taraval Street, looping into the station along one-way overhead wiring on nearby streets. Construction of overhead wiring and overhead infrastructure (e.g., pole foundations and duct banks) would be required. A terminal near the West Portal Station would also have to be established.

8X Bayshore Express

- Original Proposal (See Revised Proposal on Pg 95)

Legend

- Recommended Route
- Rail Network
- Segment Proposed for Eliminiation
- Express Segments (No stops)
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

TS LM PR TSC PI

8X Bayshore Express

- Revised Proposal

Proposed Changes

HC

8X Bayshore Express

Overview

Muni's 8X Bayshore Express bus route carries more than 23,000 daily customers on an average weekday. Over 12,000 of these customers board at stops located within the proposed travel time reduction project study area, located along 5 miles between San Bruno and Silver and Geneva, Ocean and Phelan. Within the study area, the 8X Bayshore Express operates at an average speed of 7.7 miles per hour during peak periods. There are 36 transit stops in each direction. The average transit stop spacing between San Bruno and Silver and Geneva, Ocean and Phelan is 735 feet, with stops located at every two intersections.

The main causes of delay to the 8X Bayshore Express include long passenger boarding and alighting times, general traffic congestion in certain locations, a high number of stop signs along the route and areas of closely spaced transit stops.

- ~~Segment north of Broadway would be eliminated (replaced by the 11 Downtown Connector).~~ REVISED: Segment north of Broadway would be served by every other trip, as well as by the new 11 Downtown Connector. ~~Proposed eliminated segments north of Pacific Avenue would be Bay and North Point streets between Powell and Kearny streets, Kearny Street between Bay and North Point streets, Powell Street between Columbus Avenue and North Point Street, Columbus Avenue between Powell Street and Pacific Avenue, and Stockton Street between Green Street and Broadway.~~ REVISED: Route 11 Downtown Connector would provide supplemental service on Powell Street and Columbus Avenue. E and F Line service would also be available nearby on Jefferson and Beach streets.
- Midday frequency would change from 9 to 7.5 minutes.
- ~~During non-peak periods, the 8X would layover on Kearny Street between Pacific Avenue and Broadway.~~ REVISED: During non-peak periods, half of the 8X trips would layover on Kearny Street between Pacific Avenue and Broadway and the other half would terminate at the current terminal on Kearny Street. In addition to the existing transit zone, a reduction of five parking spaces would be required (parking is currently prohibited from 3 to 6 p.m. as part of the Kearny Street tow-away zone.) The parking restriction hours would need to be extended to all day.
- In the p.m. peak, the 8AX and 8BX would have separate terminals as they do today. ~~The 8AX would stop on Kearny Street, nearside of the intersection with Columbus Avenue, and the 8BX would use the 8X midday terminal on Kearny Street between Pacific Avenue and Broadway. the 8AX would not layover Downtown in the a.m. peak (similar to existing conditions).~~
- TTRP.8X is also proposed for this corridor to reduce transit travel time.
- Currently, there is a temporary reroute in the southbound direction along Mason and Fifth streets to accommodate the Central Subway Project construction. The reroute is expected to be in place for several years.

8X Bayshore Express Travel Time Reduction Proposal

In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. These proposals include:

- Replacing all-way STOP-controlled intersections with traffic signals or traffic calming measures at five intersections. Currently, the 8X Bayshore Express is delayed by having to come to a complete stop at multiple intersections with stop signs. These stop signs could be replaced with traffic signals equipped with transit signal priority. This would reduce delay at intersections because the signals could be programmed to hold green lights for approaching buses. Alternatively, traffic calming measures such as corner bulbs, raised crosswalks, and sidewalk extensions could be installed to provide improved pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists and reducing the speed of motorists turning from cross streets. Traffic calming measures would have a similar effect of reducing intersection delays for buses, by eliminating the need for the bus to come to a complete stop.
- Optimizing transit stop locations at 7 intersections. Relocating transit stops from the near-side to the far-side of intersections at existing traffic signals would allow buses to take advantage of planned transit signal priority improvements. At all-way STOP-controlled intersections, transit stops would be relocated from the far-side of the intersection to the near-side, eliminating the need for buses to stop once for the STOP sign and again for customers to board the bus.
- Establishing one mile of transit-only lanes. Transit-only lanes provide exclusive right-of-way for buses to travel unimpeded by general traffic congestion. These lanes would be established on Geneva Avenue between Santos and Moscow/South Hill and also on westbound Geneva Avenue between Delano and San Jose and between the Interstate 280 freeway ramps.
- Increasing bus stop spacing on average from two blocks to 2.5 blocks. Currently, the 8X Bayshore Express stops at every two blocks between San Bruno and Silver and Geneva, Ocean and Phelan. This proposal moves toward a slightly wider average 2.5 block spacing for most stops. Some stops would be expanded by every three blocks. By stopping fewer times, the bus would take less time to move through the corridor.
- Adding turn pockets at up to six intersections. Turn pockets would reduce Muni delays associated with buses waiting behind left- or right-turning motorists by providing a dedicated space for turning vehicles to queue.
- Adding transit bulbs at 11 intersections. Transit bulbs are sidewalk extensions alongside transit stops that allow passengers to get on and off without having to walk between parked cars and

cross a lane of traffic. Transit bulbs enhance the ability of buses to take advantage of all-door boarding. Transit bulbs provide space for transit shelters and other customer amenities. Transit bulbs also improve pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets.

- Extending transit stops at seven intersections. Extending existing transit stops would accommodate multiple transit vehicles and would improve the ability of transit vehicles to maneuver in and out of stops.

Summary

Together, the proposed changes are anticipated to reduce the travel time of the 8X Bayshore Express bus route by about 7 minutes in each direction (14 minutes total) within the study area (18% reduction), improving the average operating speed to 9.4 miles per hour and improving service reliability. Transit signal priority improvements are anticipated to save an additional 1.5 minutes in each direction. Other changes such as operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the route and allow for service to be cost effectively increased.

Frequency

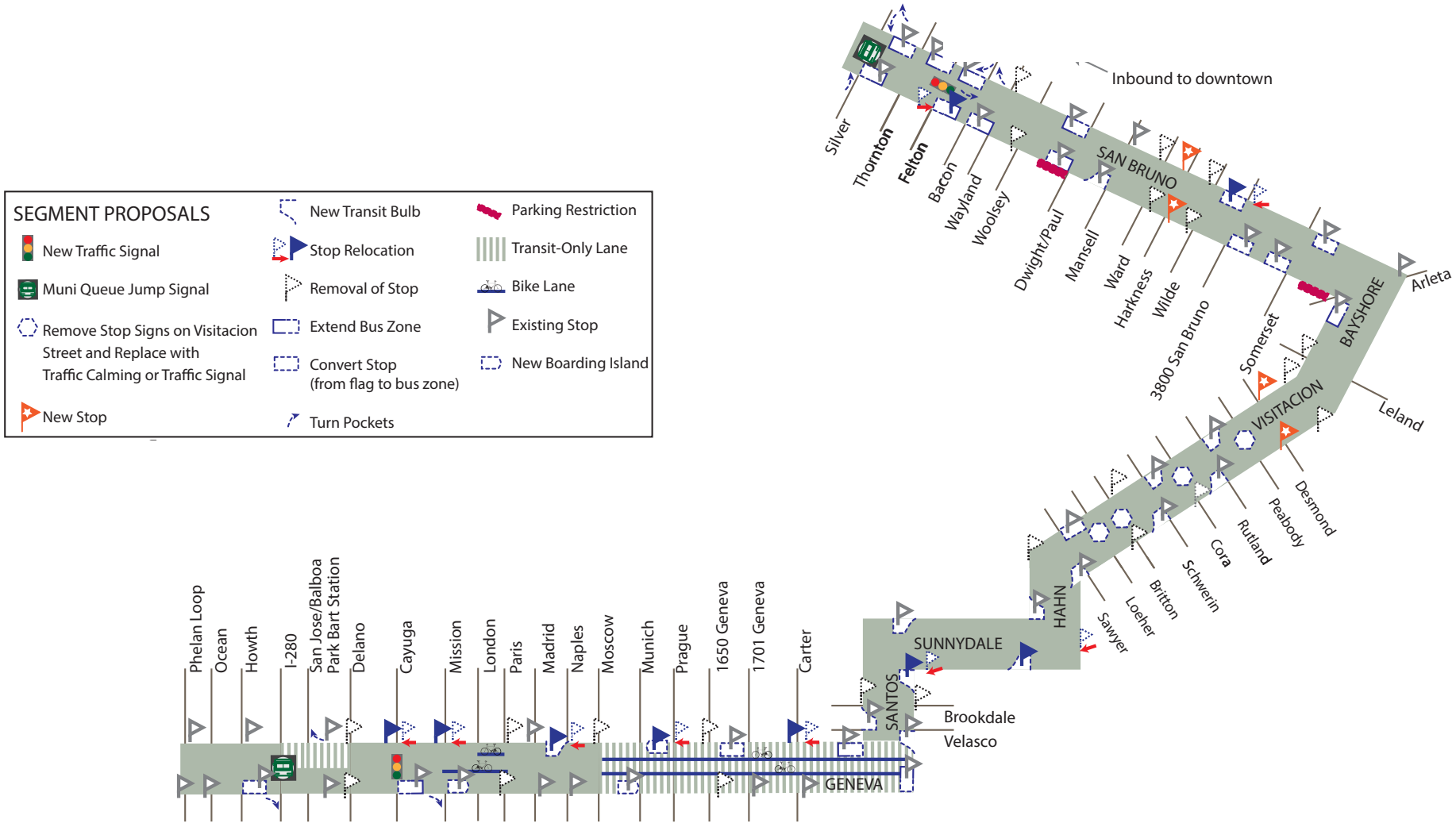
Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	7.5	6	+
PM	7.5	7	+

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
8X Bayshore								$16,727,600
TEP Capital	CCSF-GOBond			$6,120,000				$6,120,000
	SFCTA-PropK-EP1		$1,020,000					$1,020,000
	Total		**$1,020,000**	**$6,120,000**				**$7,140,000**
TEP Supportive	Caltrans-Prop1B(LL)	$5,285,600						$5,285,600
	FTA-BusLiv	$4,302,000						$4,302,000
	Total	**$9,587,600**						**$9,587,600**

8X Bayshore ExpressSegment Proposal



8AX Bayshore "A" Express

Legend

- Recommended Route
- Express Segment (No stops)
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

8AX Bayshore “A” Express

Overview

- No route changes proposed.
- See 8X Bayshore Express for terminal details.
- TTRP.8X is also proposed for this corridor to reduce transit travel time.
- Currently, there is a temporary reroute in the southbound direction along Mason and Fifth streets to accommodate the Central Subway Project construction. The reroute is expected to be in place for several years.

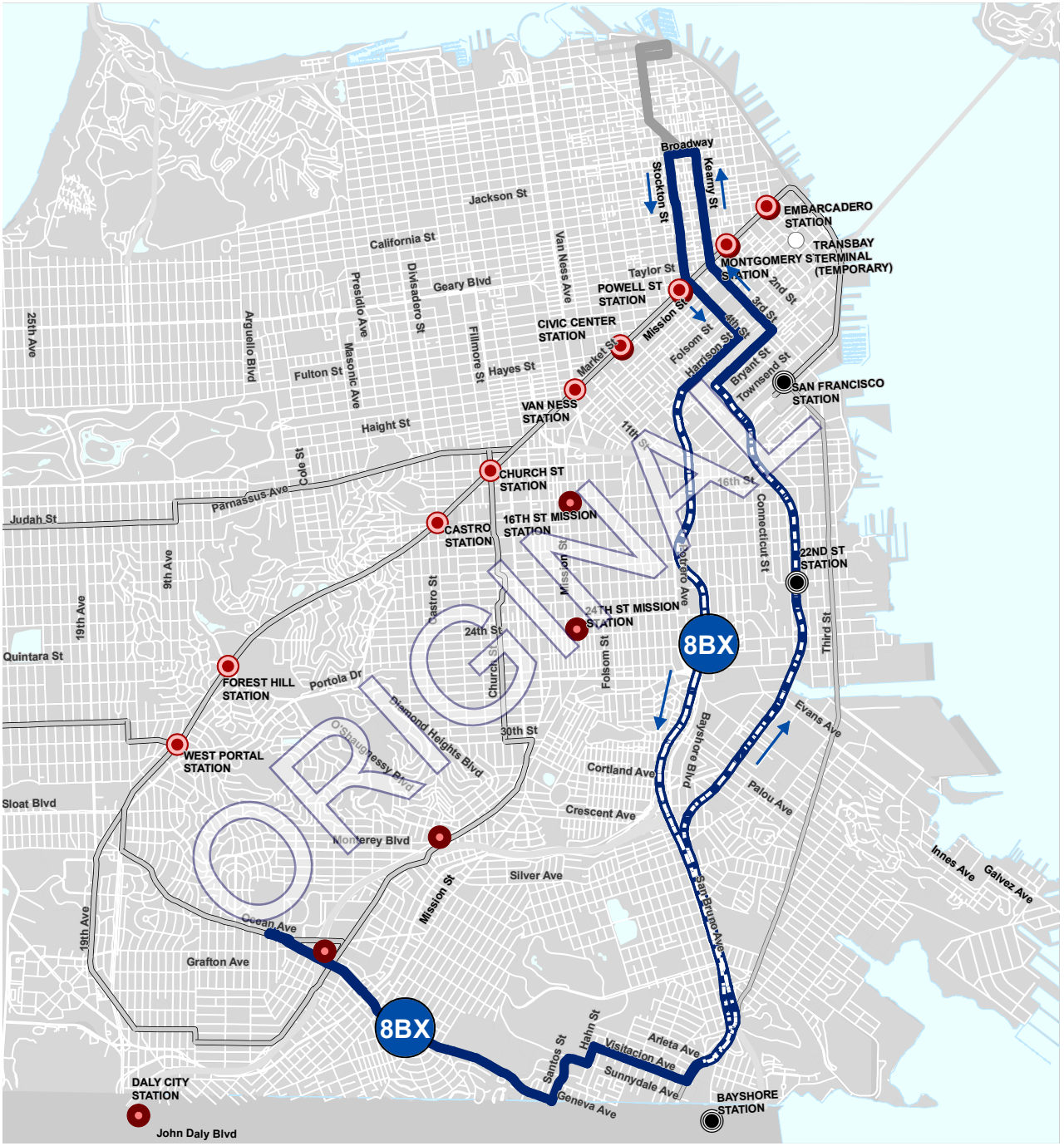
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	7.5	6	+
PM	7.5	7	+

8BX Bayshore "B" Express

- Original Proposal (See Revised 8x Proposal on Pg 93)



Legend

- Recommended Route
- Non-stop Segment
- Segment Proposed for Elimination
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

8BX Bayshore “B” Express

Overview

- Route 11 Downtown Connector would provide supplemental service on Powell Street and Columbus Avenue. E Embarcadero and F Market & Wharves Lines service would be available nearby on Jefferson and Beach streets.
- See 8X Bayshore Express for terminal details.
- TTRP.8X is also proposed for this corridor to reduce transit travel time.
- Currently, there is a temporary reroute in the southbound direction along Mason and Fifth streets to accommodate the Central Subway Project construction. The reroute is expected to be in place for several years.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	8	6	+
PM	7.5	7	+

9 / 9L San Bruno

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

Overview

- No route changes proposed.
- TTRP.9 is also proposed for this corridor to reduce transit travel time.

9 San Bruno Travel Time Reduction Proposal

For this proposal, the TPS Toolkit elements would be applied along two segments of the 9 San Bruno/9L San Bruno Limited routes. The TPS Toolkit elements would be implemented along the following streets in two segments: Segment 1: 11th and Division streets, Potrero Avenue, Bayshore Boulevard, Silver and San Bruno avenues. This part of the corridor extends from the intersection of Market and 11th streets to the intersection of San Bruno and Silver avenues. Segment 2: Bayshore Boulevard, Sunnydale Avenue, Schwerin Street, Geneva Avenue, Santos Street and Sunnydale Avenue. This part of the corridor extends from the intersection of Visitacíon Avenue and Bayshore Boulevard to the existing terminus at 2070 Sunnydale Avenue, adjacent to the Gleneagles Golf Course in McLaren Park. This is a major north-south route in the Rapid Network and provides transit connections between the Civic Center and Downtown and neighborhoods to the southeast, including SoMa, the Mission, Showplace Square, Potrero Hill, Bernal Heights, Portola, Silver Terrace, Bay View, and Visitacion Valley.

TTPI.4 San Francisco General Hospital Transfer Point

This project would design and implement a new transfer hub in the vicinity of San Francisco General Hospital on Potrero Avenue between 23rd and 24th streets. The proposed transfer point improvements would facilitate transfers between Routes 9 San Bruno Local/9L San Bruno Limited, 10 Sansome, 19 Polk, 48 Quintara-24th Street and the proposed new 58 24th Street. Improvements may include rerouting bus service on several lines to a shared transit stop, parking removal to accommodate longer transit zones, and the construction of transit bulbs.

9 / 9L San Bruno

Frequency

Service during peak periods (headway between vehicles, in minutes)

9 San Bruno

	Current	Proposed	Frequency
AM	12	10	+
PM	12	10	+

9L San Bruno Limited

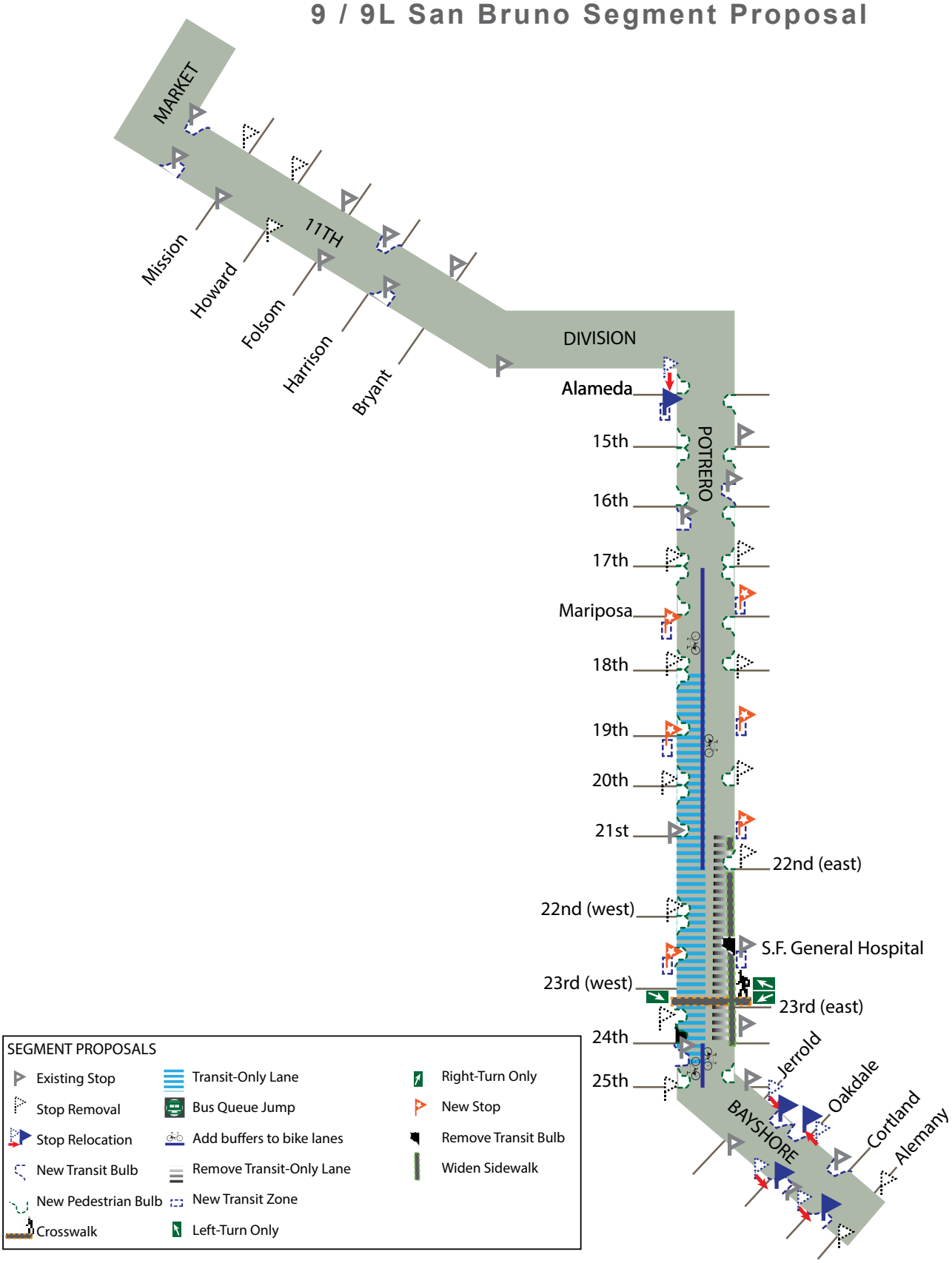
	Current	Proposed	Frequency
AM	12	10	+
PM	12	10	+

Finance

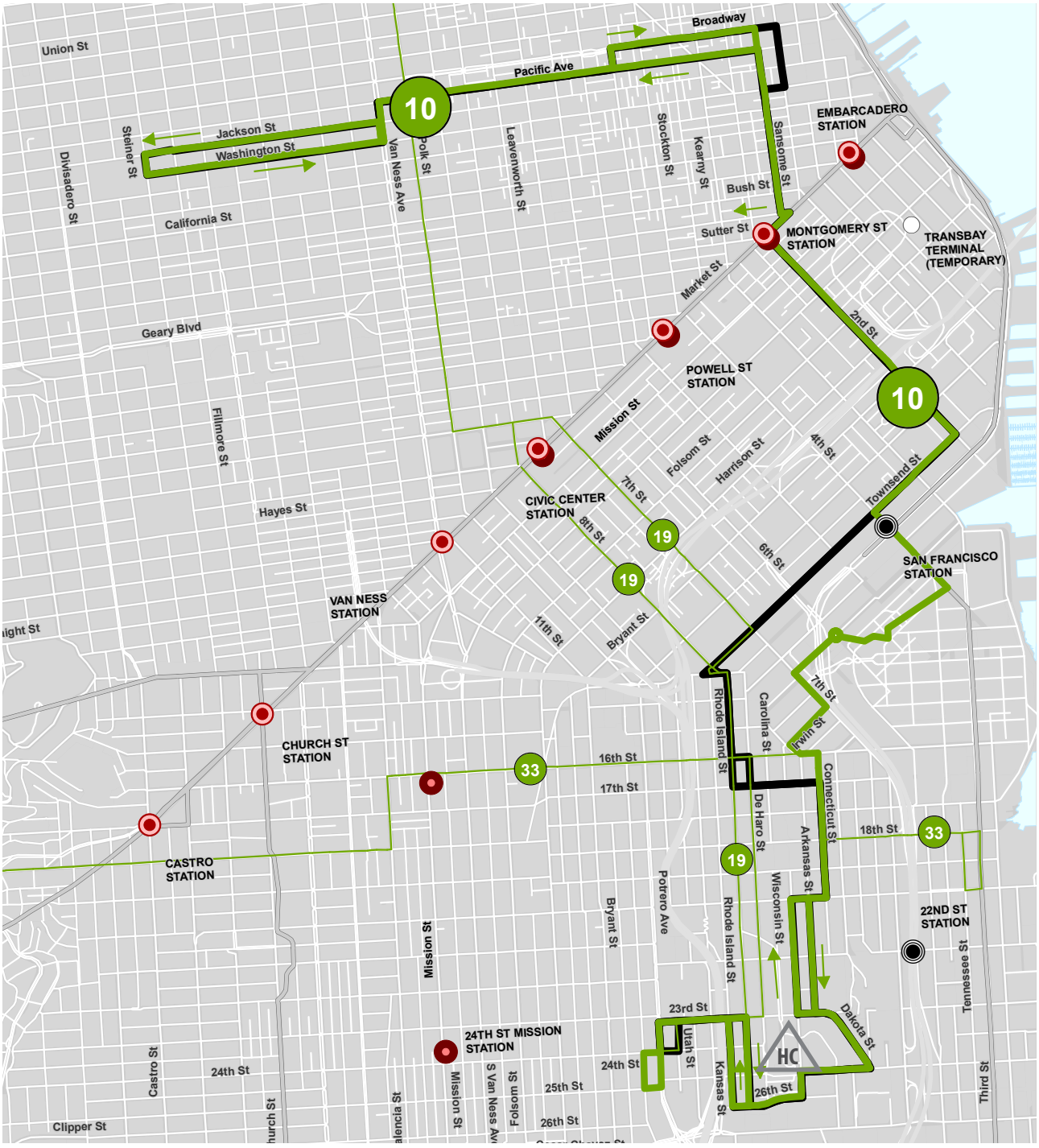
Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
9 San Bruno								$13,150,000
TEP Capital Seg. 1	CCSF-GOBond				$2,800,000			$2,800,000
	Total				**$2,800,000**			**$2,800,000**
TEP Capital Seg. 2	CCSF-GOBond			$5,738,000				$5,738,000
	SFCTA-PropAA		$562,000					$562,000
	Total		**$562,000**	**$5,738,000**				**$6,300,000**
TEP Supportive	MTC-TPI(MC)				$4,050,000			$4,050,000
	Total				**$4,050,000**			**$4,050,000**

9 / 9L San Bruno

9 / 9L San Bruno Segment Proposal



10 Townsend



Legend

- Recommended Route
- Potential Route Variation
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC EH SCI

10 Townsend

Overview

- 10 Townsend would be renamed the 10 Sansome, since service would be rerouted off of Townsend Street.
- Service would continue to operate between Jackson and Steiner streets and 24th Street and Potrero Avenue via Potrero Hill, but would be rerouted at Fourth Street south of the Caltrain Station through the Mission Bay neighborhood. From Fourth Street, the route would extend through Mission Bay to new proposed street segments on Seventh Street between Mission Bay Boulevard and Irwin Street, on Irwin Street between Seventh and 16th streets, on 16th Street between Irwin and Connecticut streets, and on Connecticut Street between 16th and 17th streets. The southern terminal loop would be modified by extending service on Potrero Avenue, right on Cesar Chavez Street, right on Hampshire Street, and right on 24th Street.
- The northern terminal would continue to be located on Jackson Street between Fillmore and Steiner streets. On the weekends and evenings, all trips would continue to terminate at Van Ness Avenue, but would use a slightly different route. From Jackson Street the route would continue right on Franklin Street and right on Pacific Avenue. The one block segment on Van Ness Avenue between Jackson Street and Pacific Avenue may be eliminated to reduce conflicts with the proposed Van Ness BRT Project. This will be addressed as part of the Van Ness BRT study.
- Proposed eliminated segments would be on Townsend Street between Fourth and Eighth streets, Rhode Island Street between Eighth and 17th streets, and 17th Street between Rhode Island and Connecticut streets. The segment on Townsend Street between Fourth and Eighth streets would be served by the rerouted 47 Van Ness route and the 83X Mid Market Express between Fourth and Eighth streets during limited hours
- Midday frequency would change from 20 to 12 minutes.
- Southern terminal would be located on Hampshire Street adjacent to James Rolph Jr. Playground and would require a reduction of up to nine parking spaces on Hampshire between 26th and Cesar Chavez streets.

Sansome Street Contraflow Lane Extension (SCI.2)

This project would extend the existing southbound "transit-commercial" contraflow lane three blocks to the north on Sansome Street from Washington Street to Broadway. Under existing conditions, Sansome Street is a one-way northbound street north of Washington Street with transit-commercial contraflow lane south of Washington Street to Market Street. The inbound (southbound) Routes 10 Townsend and 12 Folsom currently follow Broadway, make a right on Battery Street and then, right onto Washington Street to access Sansome Street south of Washington Street.

The contraflow lane extension would require roadway restriping, signage and modification of three existing traffic signals from Broadway to Washington Street. Existing traffic signals at the Sansome/

Washington streets, Sansome/Jackson streets, and Pacific/Sansome streets intersections would be modified in order to control traffic in the southbound direction. Curb ramps would also be installed at each of the four corners at these intersections.

Proposed signal modifications at each of the three intersections would include the installation of two traffic signal mast-arm poles (excavation dimensions of approximately nine feet in depth and three feet in diameter) and six standard traffic signal poles (excavation depth of approximately three feet and one foot in diameter). Excavation for traffic signal infrastructure, including foundations for mast arms signal poles and conduits, would be required to implement this project. It is anticipated that up to 17 of the 27 parking spaces along the west side of Sansome Street would be converted to commercial loading zones as a result of this project. The other 10 parking spaces are existing commercial loading zones.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	20	6 (east of Van Ness Avenue)	+
PM	20	6 (east of Van Ness Avenue)	+

Finance

See ‘Finance’ section for additional detail.

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
10 Sansome								$1,260,000
TEP Capital	CCSF-GOBond			$1,080,000				$1,080,000
	SFCTA-PropK-EP1		$180,000					$180,000
	Total		**$180,000**	**$1,080,000**				**$1,260,000**

11 Downtown Connector

- Original Proposal (See Revised Proposal on Pg 112)

Legend

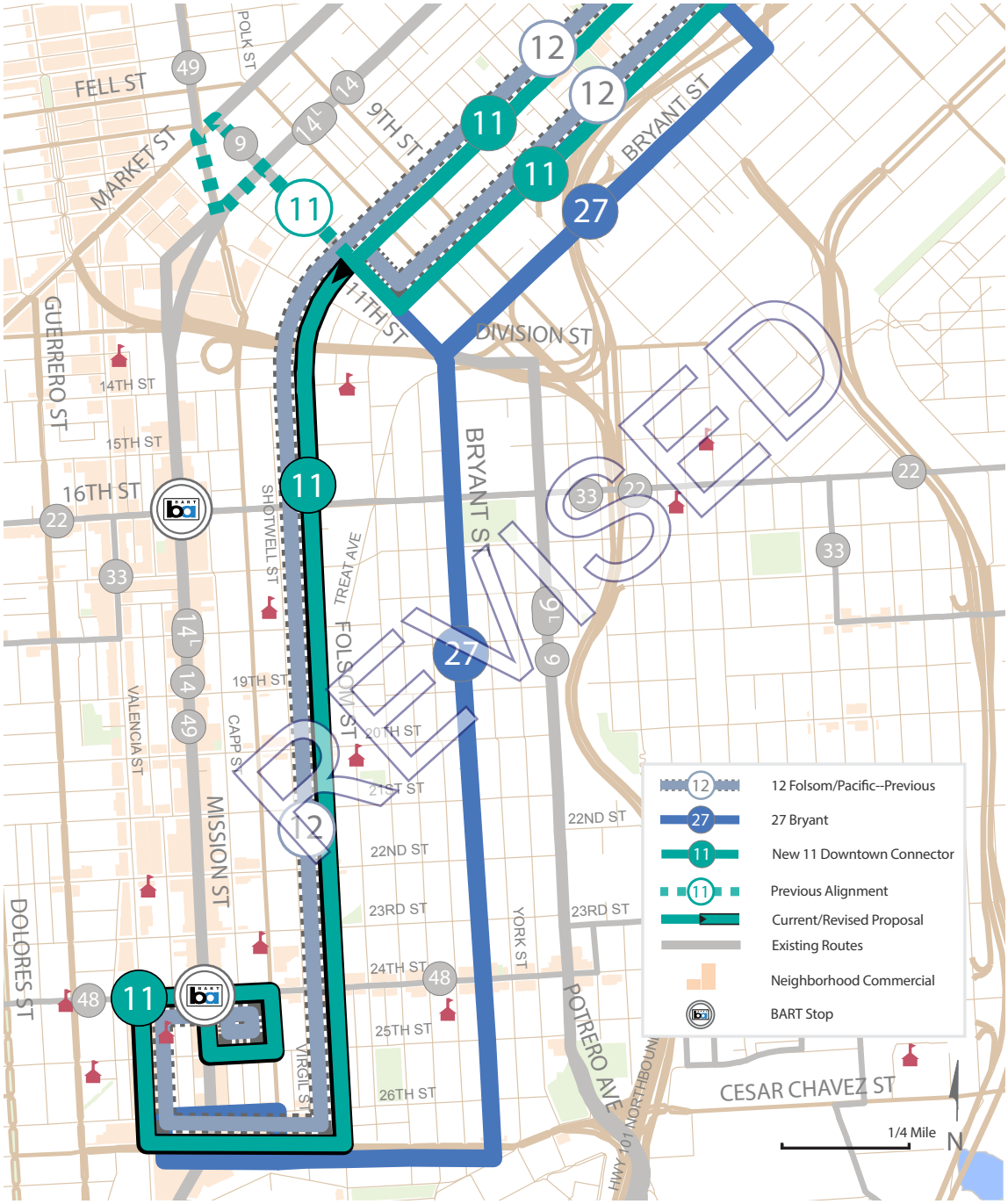
- Recommended Route
- Potential Route Variation
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

NR

11 Downtown Connector

- Revised Proposal for South of 11th Street



Proposed Changes

NR RA

11 Downtown Connector

Overview

- ~~New 11 Downtown Connector would provide SoMa with two connections to Market Street, at the Van Ness and Montgomery Stations, and would provide North Beach with a direct connection to the Financial District and Montgomery Station.~~ REVISED: New 11 Downtown Connector would provide SoMa with connections to Market Street, at the Montgomery Station, and would provide North Beach with a direct connection to the Financial District, Montgomery Station, and the Mission District.
- ~~Southbound, the new route would run on Van Ness Avenue, Bay, Polk, North Point, and Powell streets, on Columbus Avenue, on Montgomery, Clay, Sansome, Market, Second, Harrison, 11th, and Mission streets, to a southern terminal on South Van Ness Avenue.~~ REVISED: Southbound, the new route would run on Van Ness Avenue, Bay, Polk, North Point, and Powell streets, on Columbus Avenue, on Montgomery, Clay, Sansome, Market, Second, Harrison, 11th, Folsom, Cesar Chavez, Valencia, and 24th streets, South Van Ness Avenue, and Mission Street, to a southern terminal on 24th Street. ~~Northbound (IB), the new route would run on South Van Ness Avenue, Market, 11th, Folsom, Second, Market, Sutter, Sansome, and Washington streets, on Columbus Avenue, Powell and North Point and Bay streets to the northern terminal on Van Ness Avenue.~~ REVISED: Northbound (IB), the new route would run on 24th, Valencia, Cesar Chavez, Folsom, Second, Market, Sutter, Sansome, and Washington streets, on Columbus Avenue, Powell and North Point and Bay streets to the northern terminal on Van Ness Avenue.
- Proposed route in SoMa would operate on an east/west couplet on Folsom and Harrison streets.
- ~~The southern terminal would be located at the southeast corner of South Van Ness Avenue and Market Street. The 140-foot transit zone would require a reduction of up to eight parking spaces.~~ REVISED: The southern terminal would be located at the current 12 terminal on 24th Street.
- The northern terminal will be located on Van Ness Avenue between Bay and North Point streets requiring a 130-foot transit zone and the removal of up to six parking spaces.
- The 11 Downtown Connector Service Variant would evaluate two-way operation on Folsom Street consistent with the proposal in the Western SoMa Community Plan.

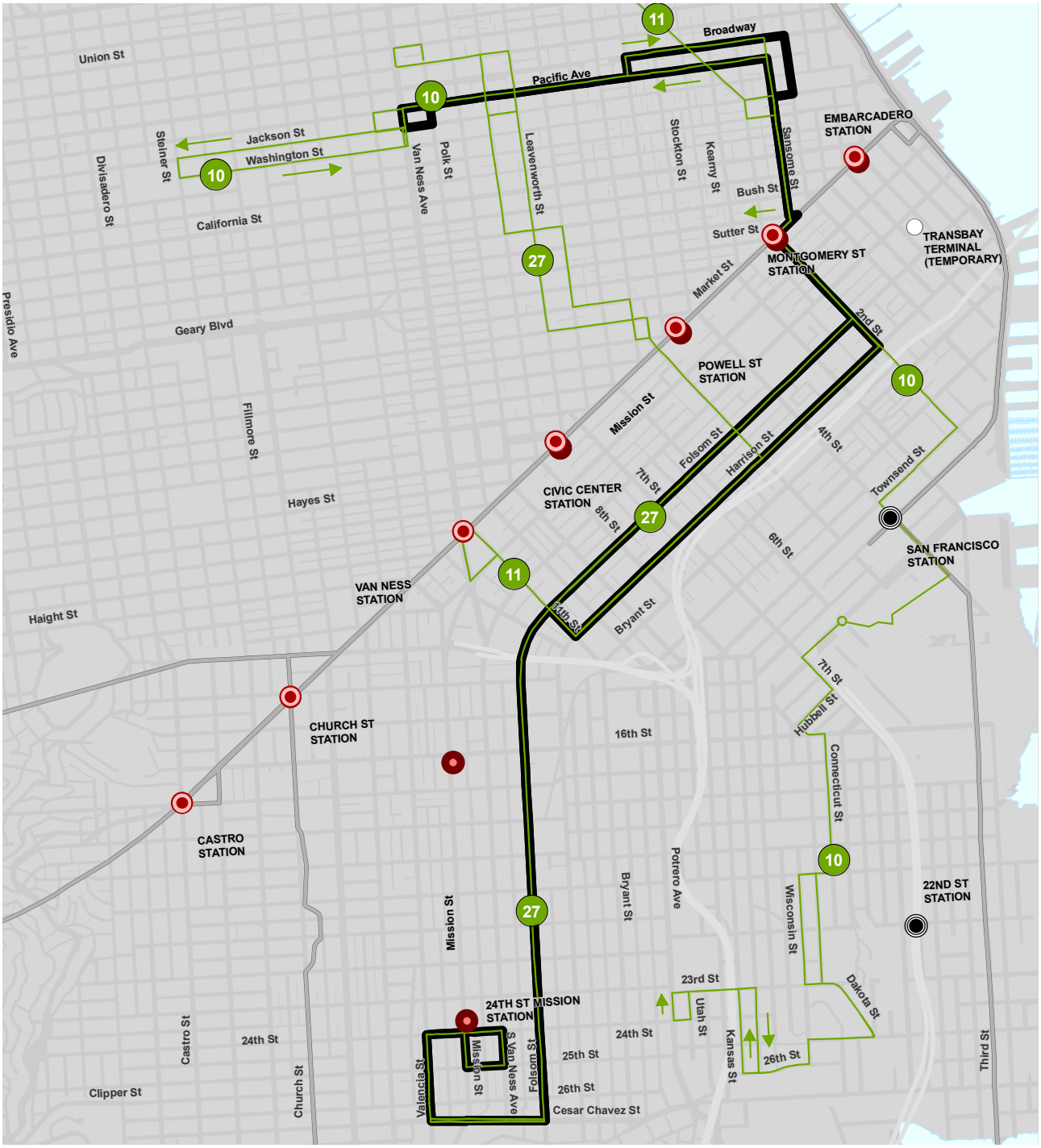
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	N/A	15	N/A
PM	N/A	15	N/A

Revised: March 2014

12 Folsom/Pacific



Legend

- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RE

Overview

- Route would be discontinued.
- Service on Folsom Street from Second Street to 24th Street Mission BART Station would be provided by the11 Downtown Connector.
- Service along Pacific Avenue, Sansome and Second streets would be provided by the 10 Sansome. The 11 Downtown Connector would also provide SoMa service on Folsom and Harrison streets, and Downtown service across Market Street on Sansome and Second streets.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	20	N/A	N/A
PM	20	N/A	N/A

14 Mission

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

VC TS LM PR TSC PI

14 Mission

Overview

The 14 Mission local service is complimented by the 14L and the 14X routes which carry more than 46,000 total customers on an average weekday. The 49 Van Ness-Mission carries more than 24,600 customers per average weekday, approximately half of which are boarding on Mission Street. The project study area is the approximately seven and a half mile stretch of Mission Street between Steuart Street near the Ferry Building and San Jose Avenue in Daly City.

Within the study area, the 14 Mission operates at an average speed of six miles per hour. There are 50 transit stops in the inbound direction and 52 transit stops in the outbound direction. The average transit stop spacing along the route is 791 feet, with stops located about every one or two blocks. The 14L limited stops are spaced approximately 1880 feet apart, and allow customers to travel through the corridor while stopping less frequently.

The main causes of delay to the 14 Mission include long passenger boarding and alighting times, friction between parking and loading vehicles, double-parked vehicles, getting stuck behind right-turning cars, narrow lanes, and areas of closely spaced transit stops.

- No route changes proposed.
- Proposed conversion from trolley to motor coach.
- TTRP.14 is also proposed for this corridor to reduce transit travel time.
- TTPI.1 also proposes a new pedestrian bulb at the northwest corner of Ocean Avenue and Mission Street (see Route 29).

Travel Time Reduction Proposal

In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. The proposals include:

- Reconfiguring roadway:
  - **Segment 2 Moderate Variant 1**: Create wider travel lanes through peak-hour tow-away and create transit-only lanes in both directions (Duboce to Cesar Chavez). In the Inner Mission district, peak-hour tow-away lanes can reduce delay by providing wider lanes for buses to travel through the corridor and removing the friction between buses and parked cars and loading vehicles. This proposal is similar to the existing peak-hour tow-away restrictions and transit-only lanes on Mission Street in the Downtown area.

- **Segment 2 Moderate Variant 2**: Create transit-only lanes through parking removal (Duboce to Cesar Chavez). In the Inner Mission district, removing parking on one side of the street can reduce delay by providing wider lanes for buses to travel. With wider lanes, transit-only lanes can be created in both directions to save significant travel time for the 14 Mission by giving the bus its own exclusive lane.
- **Segment 2 Expanded Variant**: Create transit-only lanes through lane reduction (Duboce to Cesar Chavez). In the Inner Mission District, reducing the northbound direction from two to one general traffic lanes can reduce delay by providing wider lanes for buses to travel. With wider lanes, a southbound transit-only lane can be created to save significant travel time for the 14 Mission by giving the bus its own exclusive lane.
- **Segment 3 Moderate Variant**: Create peak-hour tow-away lanes to reduce parking friction (Cesar Chavez to Randall and Silver to Geneva). South of Cesar Chavez, peak-hour tow-away lanes can reduce delay by providing wider lanes for buses to travel through the corridor and removing the friction between buses and parked cars and loading vehicles. This proposal is similar to the existing peak-hour tow-away restrictions and transit-only lanes on Mission Street in the Downtown area
- **Segment 3 Expanded Variant**: Create transit-only lanes through lane conversion (Cesar Chavez to Randall and Silver to Geneva). South of Cesar Chavez Street, Mission Street is six feet wider than in the northern portion of the corridor. Transit-only lanes can be created by converting a general traffic lane to transit-only in order to save significant travel time for the 14 Mission by giving the bus its own exclusive lane.

- Create right-turn pockets at key intersections. Right-turn pockets can reduce delay by giving turning vehicles their own lane to wait for pedestrians to cross before completing right turns, allowing buses to pass through the intersection without missing the green light. This proposal is not compatible with Segment 2 Moderate Variant 2.
- Convert side-running transit-only lanes to center-running transit-only lanes between 1st and 6th streets. In areas of high traffic congestion, center-running transit-only lanes can save significant travel time for the 14 Mission by giving the bus its own exclusive lane in the center of the road. This would allow the bus to avoid the delay caused by right-turning vehicles, cars trying to park and wide delivery trucks. This proposal is compatible with the Transit Center District Plan.
- Adding transit boarding islands at six intersections. Transit boarding islands would be installed at six intersections where center-running transit-only lanes are proposed in order to allow the buses in the center lanes to serve bus stops without having to return to the curbside lanes.
- Creating signalized transit queue jumps at two locations. Signalized queue jumps allow a transit vehicle to proceed through an intersection during its own green-light phase, ahead of

the lines of auto traffic waiting at a red light.

- Increasing bus stop spacing from one to two blocks. Currently, the 14 Mission stops at almost every block in many portions of the Mission corridor. This proposal moves towards at least a two-block spacing. By stopping fewer times, the bus would take less time to move through the corridor.
- Optimizing transit stop locations at six intersections. Relocating bus stops from the near-side to the far-side of intersections would allow buses to take advantage of planned transit signal priority improvements.
- Adding transit bulbs at seven intersections. Transit bulbs are sidewalk extensions alongside bus stops that allow buses to pick-up and drop-off customers without having to pull out of the travel lane into a bus stop and then wait for a gap to merge back into traffic. Transit bulbs enhance the ability of buses to take advantage of planned all-door boarding and provide space for transit shelters and other customer amenities.
- Extending existing transit stops at two locations. Some Limited transit stops on Mission Street are currently sized for one articulated 60' bus. Often times due to the high frequency of transit service in this corridor, two or more buses will arrive at a stop at the same time, delaying the second vehicle as it waits to service the stop. With a longer transit stop, up to two articulated 60' buses would be able to serve the stop at the same time, reducing delays.
- Replacing all-way STOP-controlled intersections with traffic signals at two intersections. Installing traffic signals at locations would allow buses to take advantage of planned transit signal priority improvements.
- Turn Restrictions at 14 intersections. Extending the hours of existing left-turn restrictions can reduce traffic delay by ensuring that auto traffic does not block intersections while waiting to turn left. A right-turn-only lane on Mission and 1st streets would allow the northbound transit-only lane to continue to the future Transbay Terminal area.

Summary

Together, the proposed changes are anticipated to reduce the travel time of the 14 Mission by about 8-10 minutes in each direction (16-20 minutes total) within the study area (12-14 percent reduction), improving the average operating speed to 7-8 miles per hour and improving service reliability. Transit signal priority improvements are anticipated to save an additional four minutes in each direction. Other changes such as operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

Frequency

Service during peak periods (headway between vehicles, in minutes)

North of Lowell Street

	Current	Proposed	Frequency
AM	7.5	7.5	=
PM	7.5	7.5	=

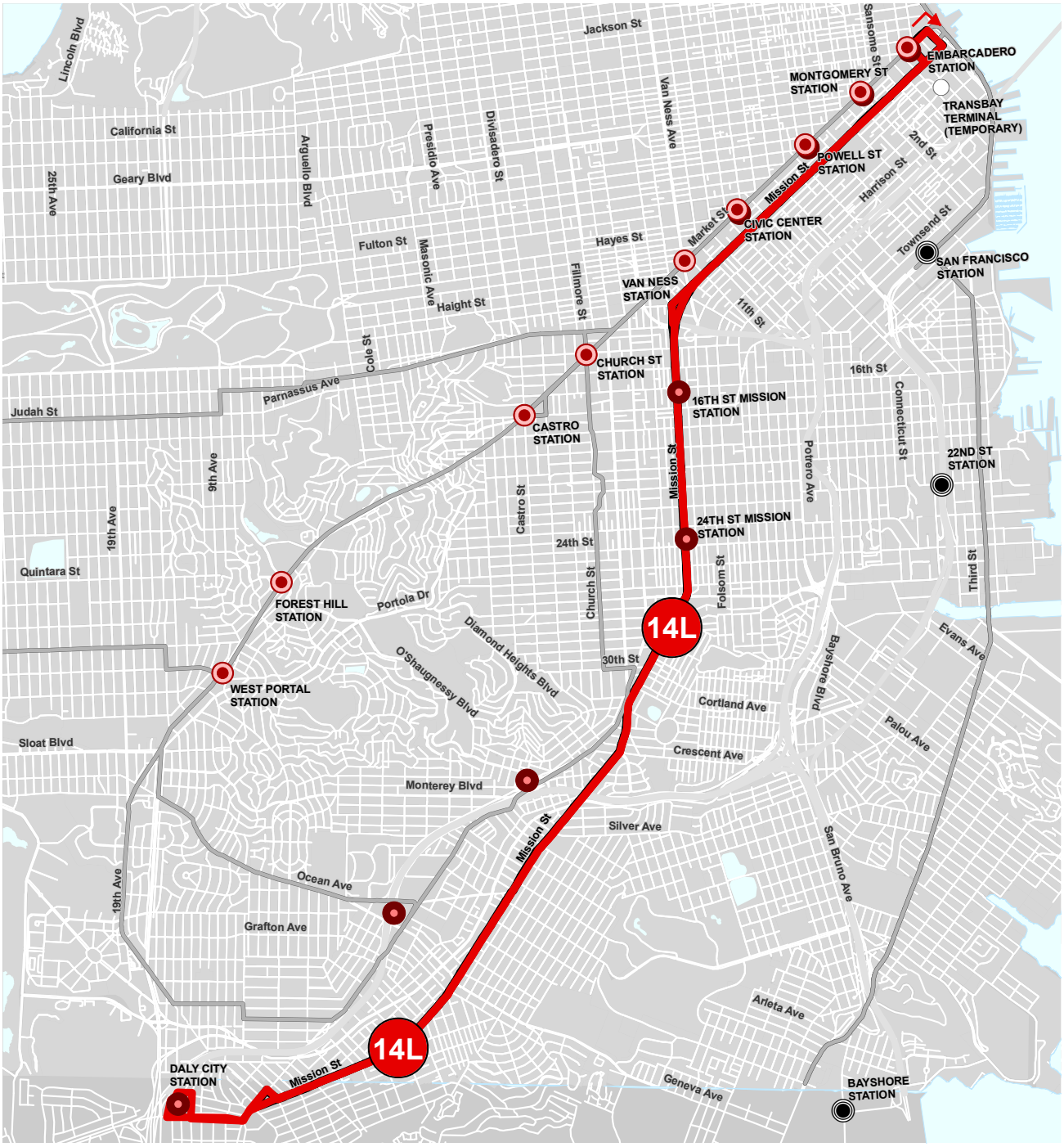
South of Lowell Street

	Current	Proposed	Frequency
AM	15	15	=
PM	15	15	=

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
14 Mission								$33,988,875
TEP Capital Seg. 1	CCSF-GOBond			$1,850,000	$16,238,875			$18,088,875
	Total			**$1,850,000**	**$16,238,875**			**$18,088,875**
TEP Capital Seg. 2	MTC-TPI(MC)		$240,000	$1,440,000				$1,680,000
	Total		**$240,000**	**$1,440,000**				**$1,680,000**
TEP Capital Seg. 3	CCSF-GOBond			$3,240,000				$3,240,000
	MTC-TPI(MC)		$540,000					$540,000
	Total		**$540,000**	**$3,240,000**				**$3,780,000**
TEP Supportive	Caltrans-Prop1B(LL)	$5,056,891						$5,056,891
	MTC-TPI(MC)	$5,383,109						$5,383,109
	Total	**$10,440,000**						**$10,440,000**

14L Mission Limited



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC VC

TS LM PR TSC PI

14L Mission Limited

Overview

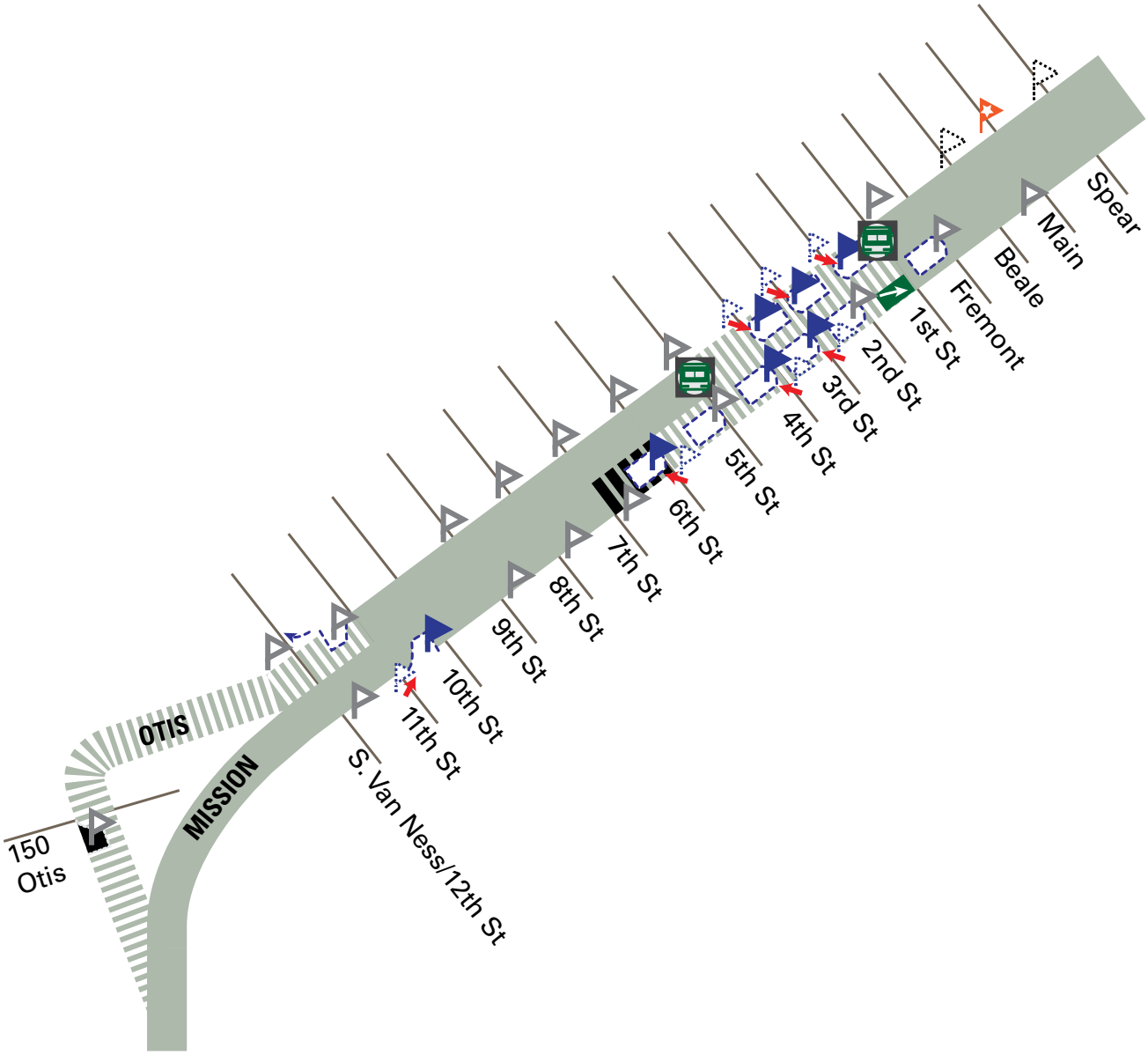
- No route changes proposed.
- Route would operate as a trolley coach service, replacing current motor coach service, along with the 49L Van Ness-Mission Limited. The 14 Mission Local would be converted to motor coach to allow limited-stop services to pass local services.
- TTRP.14 is also proposed for this corridor to reduce transit travel time.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	9	7.5	+
PM	9	7.5	+

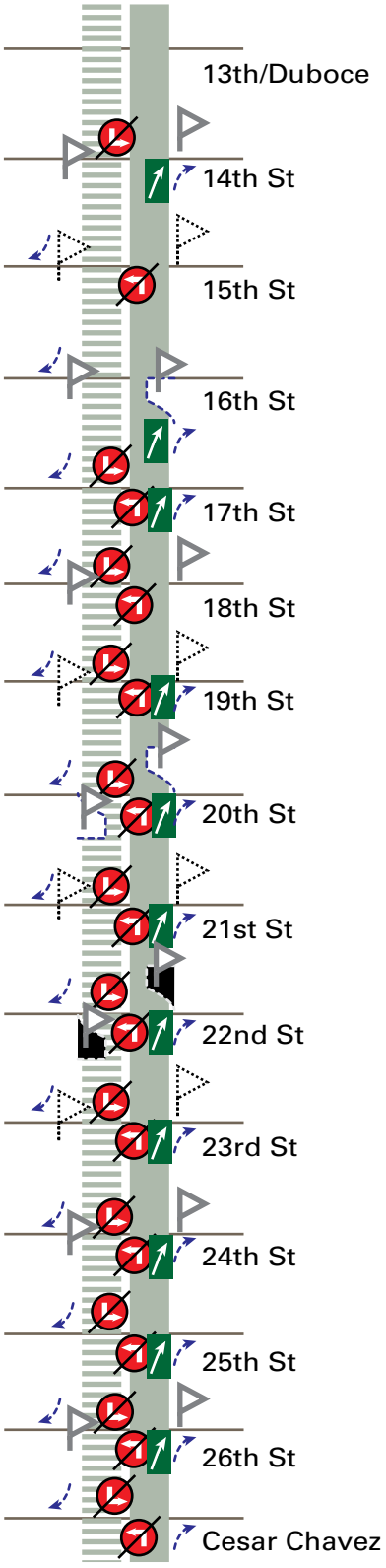
14 / 14L Mission Segment Proposal - Soma



SEGMENT PROPOSALS

- New Traffic Signal
- Muni Queue Jump Signal
- Remove Stop Signs on Visitacion Street and Replace with Traffic Calming or Traffic Signal
- New Stop
- New Transit Bulb
- Stop Relocation
- Removal of Stop
- Extend Bus Zone
- Convert Stop (from flag to bus zone)
- Turn Pockets
- Parking Restriction
- Transit-Only Lane
- Bike Lane
- Existing Stop
- New Boarding Island

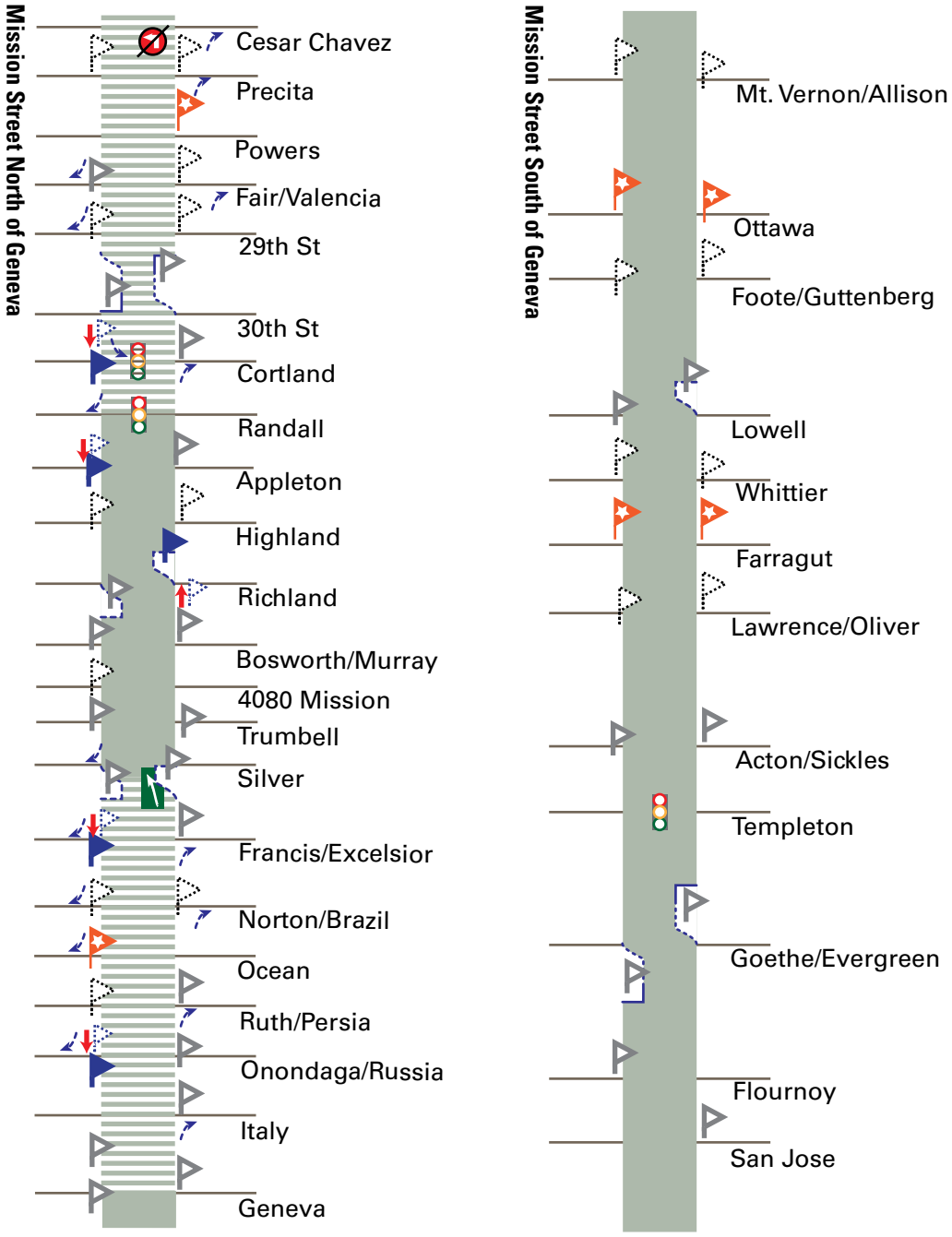
14 / 14L Mission Segment Proposal - Inner Mission



SEGMENT PROPOSALS

- New Traffic Signal
- Muni Queue Jump Signal
- Remove Stop Signs on Visitacion Street and Replace with Traffic Calming or Traffic Signal
- New Stop
- New Transit Bulb
- Stop Relocation
- Removal of Stop
- Extend Bus Zone
- Convert Stop (from flag to bus zone)
- Turn Pockets
- Parking Restriction
- Transit-Only Lane
- Bike Lane
- Existing Stop
- New Boarding Island

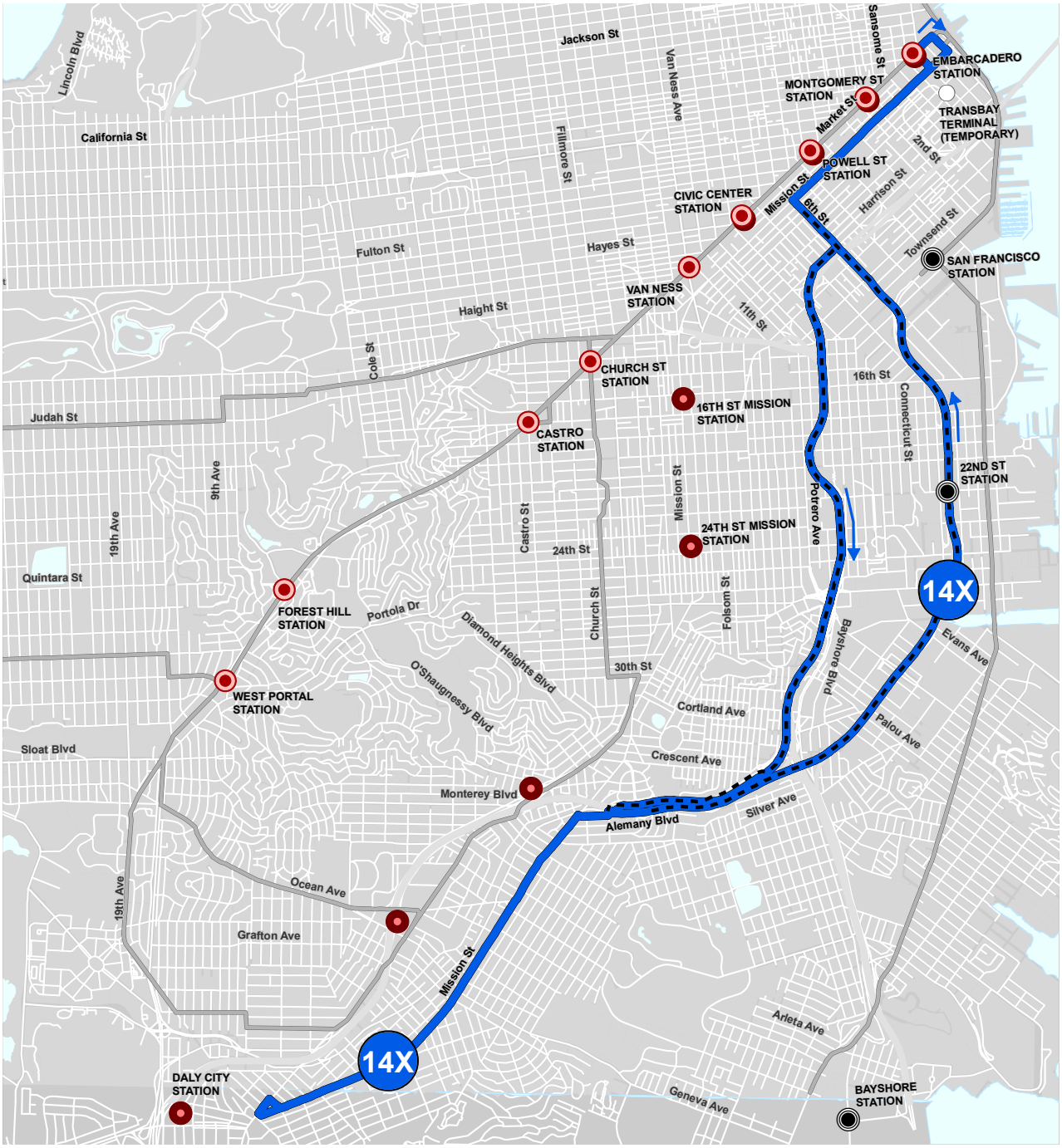
14 / 14L Mission Segment Proposal - South of Cesar Chavez



SEGMENT PROPOSALS

- New Traffic Signal
- Muni Queue Jump Signal
- Remove Stop Signs on Visitacion Street and Replace with Traffic Calming or Traffic Signal
- New Stop
- New Transit Bulb
- Stop Relocation
- Removal of Stop
- Extend Bus Zone
- Convert Stop (from flag to bus zone)
- Turn Pockets
- Parking Restriction
- Transit-Only Lane
- Bike Lane
- Existing Stop
- New Boarding Island

14X Mission Express



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC TS LM PR TSC PI

RA VC EH

14X Mission Express

Overview

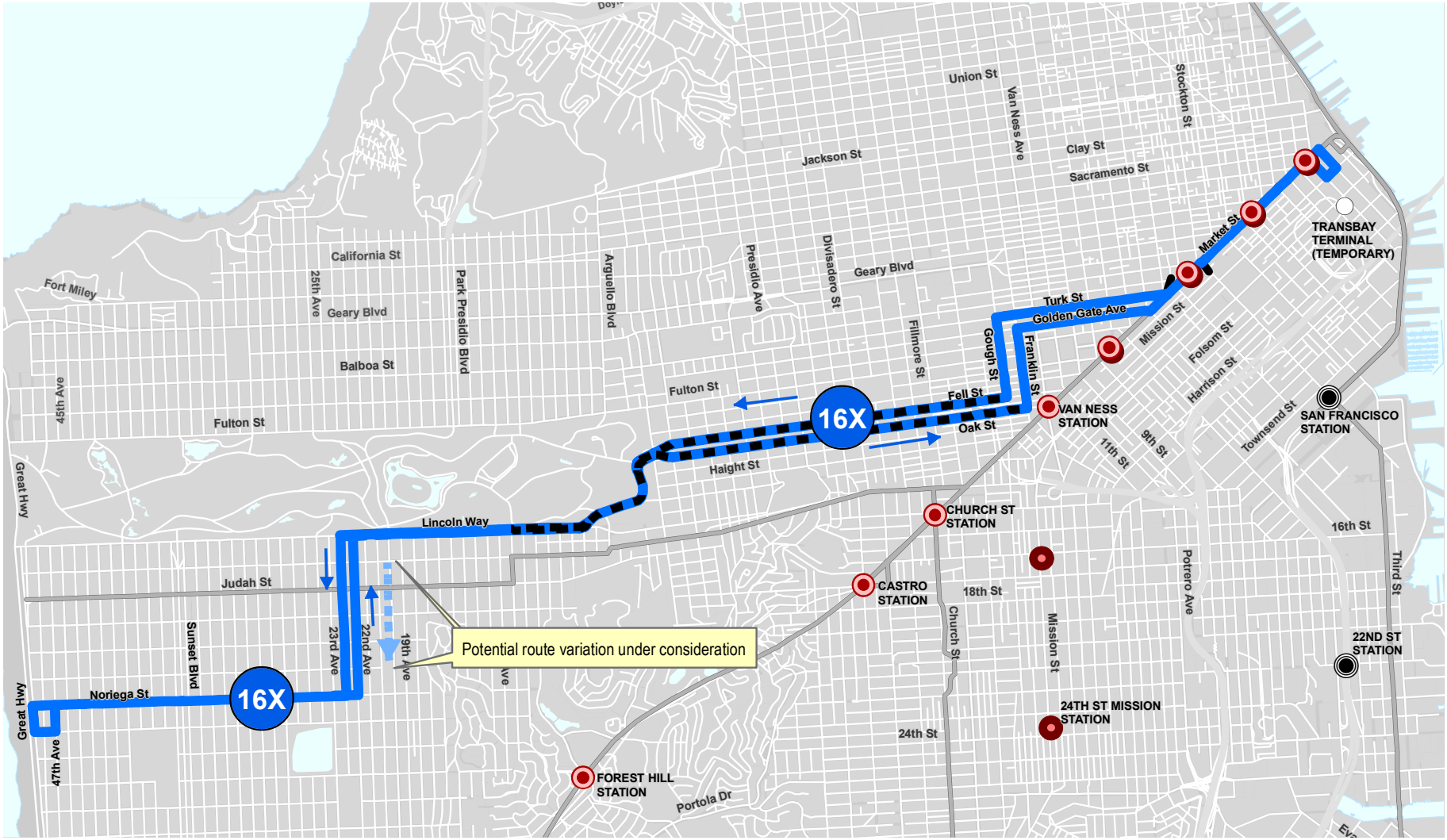
- No route changes proposed.
- TTRP.14 is also proposed for this corridor to reduce transit travel time

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	8	7.5	+
PM	10	7.5	+

16X Noriega



Legend

- Recommended Route
- Express Segment (No stops)
- Potential Route Variation
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

16X Noriega

Overview

- Route would be extended to Market and Spear streets in the Financial District (currently terminates at Fourth Street).
- Extension would run in the a.m. inbound from Golden Gate Avenue to Market and Spear streets, and in the p.m. outbound from Mission, Main and Market streets to Turk Street.
- To create a 100-foot-long terminal layover space during the peak period, a peak tow-away zone from 4 to 6 p.m. would be adopted on the south side of Mission Street between Steuart and Spear streets. This would require a reduction of up to five parking spaces during the peak period.
- Under existing conditions, the outbound route operates on 23rd Avenue between Lincoln Way and Noriega Street, and inbound on 22nd Avenue. The proposed 16X Service Variant would operate two-way inbound/outbound service on 22nd Avenue to provide better connections to the N Judah.

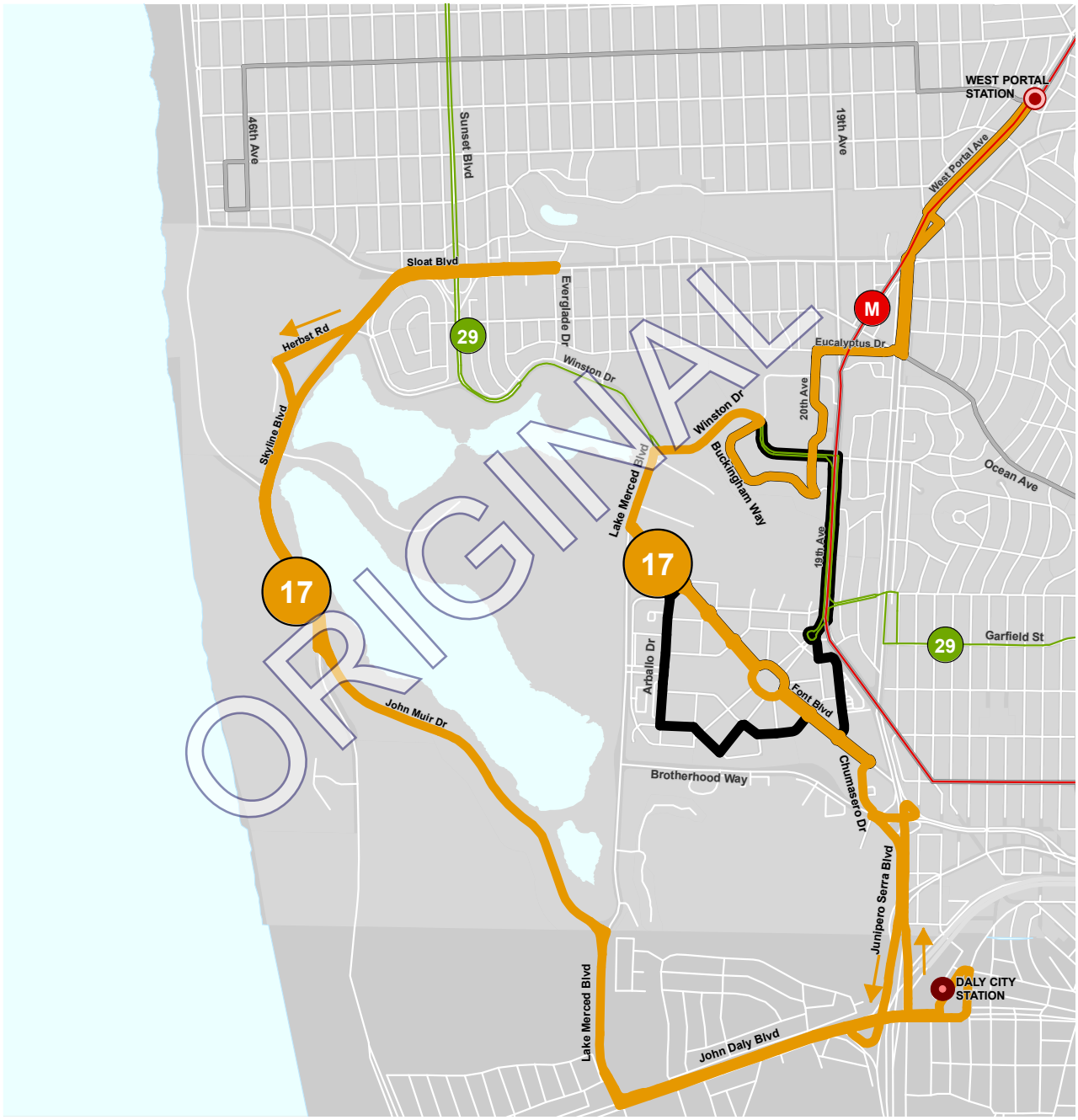
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	9	9	=
PM	9	9	=

17 Park Merced

- Original Proposal (See Revised Proposal on Pg 131)



Legend

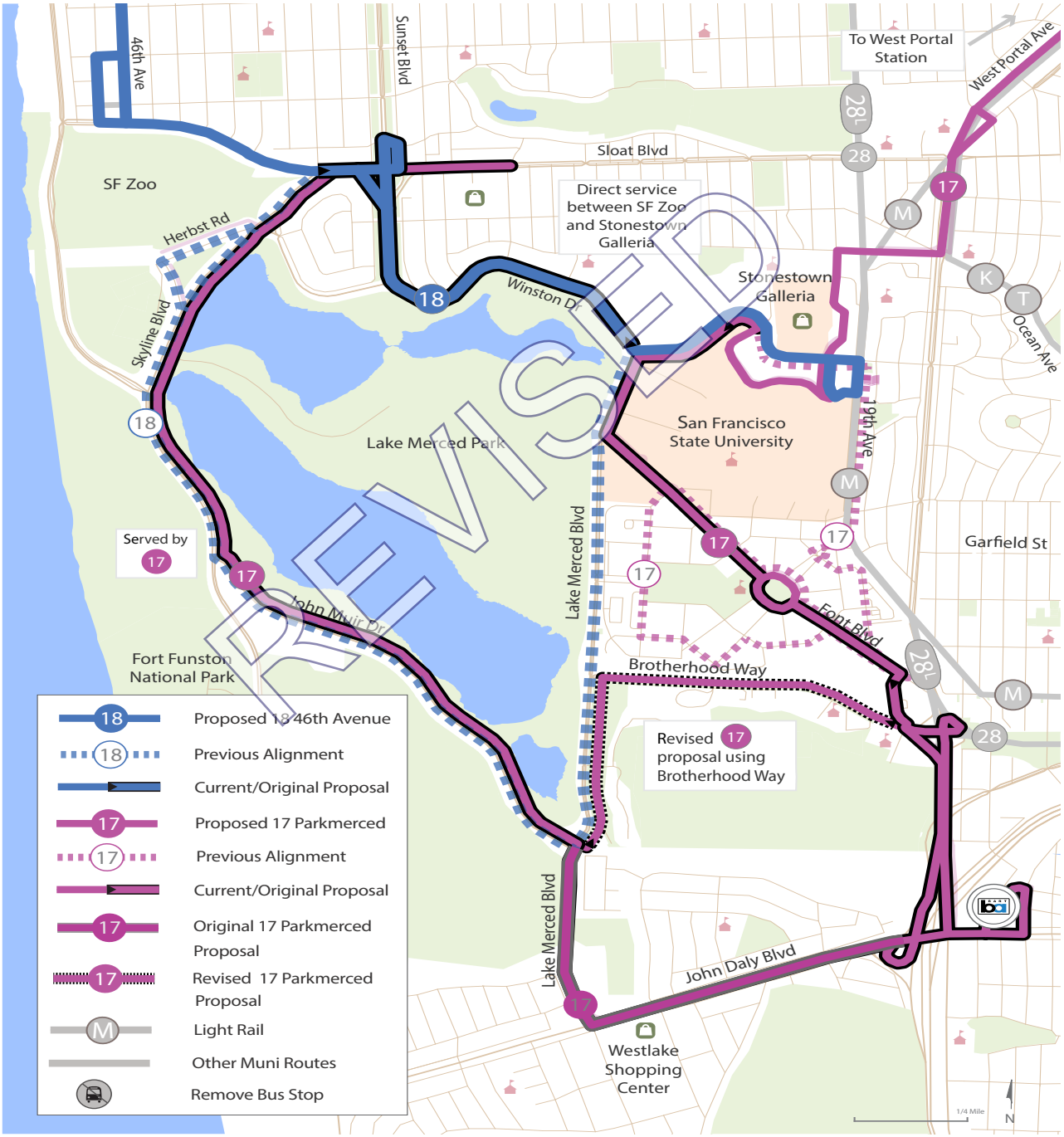
- Recommended Route
- Segment will be covered by another recommended route
- Segment Proposed for Elimination
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

17 Park Merced

- Revised Proposal



Proposed Changes

RA HC

17 Park Merced

Overview

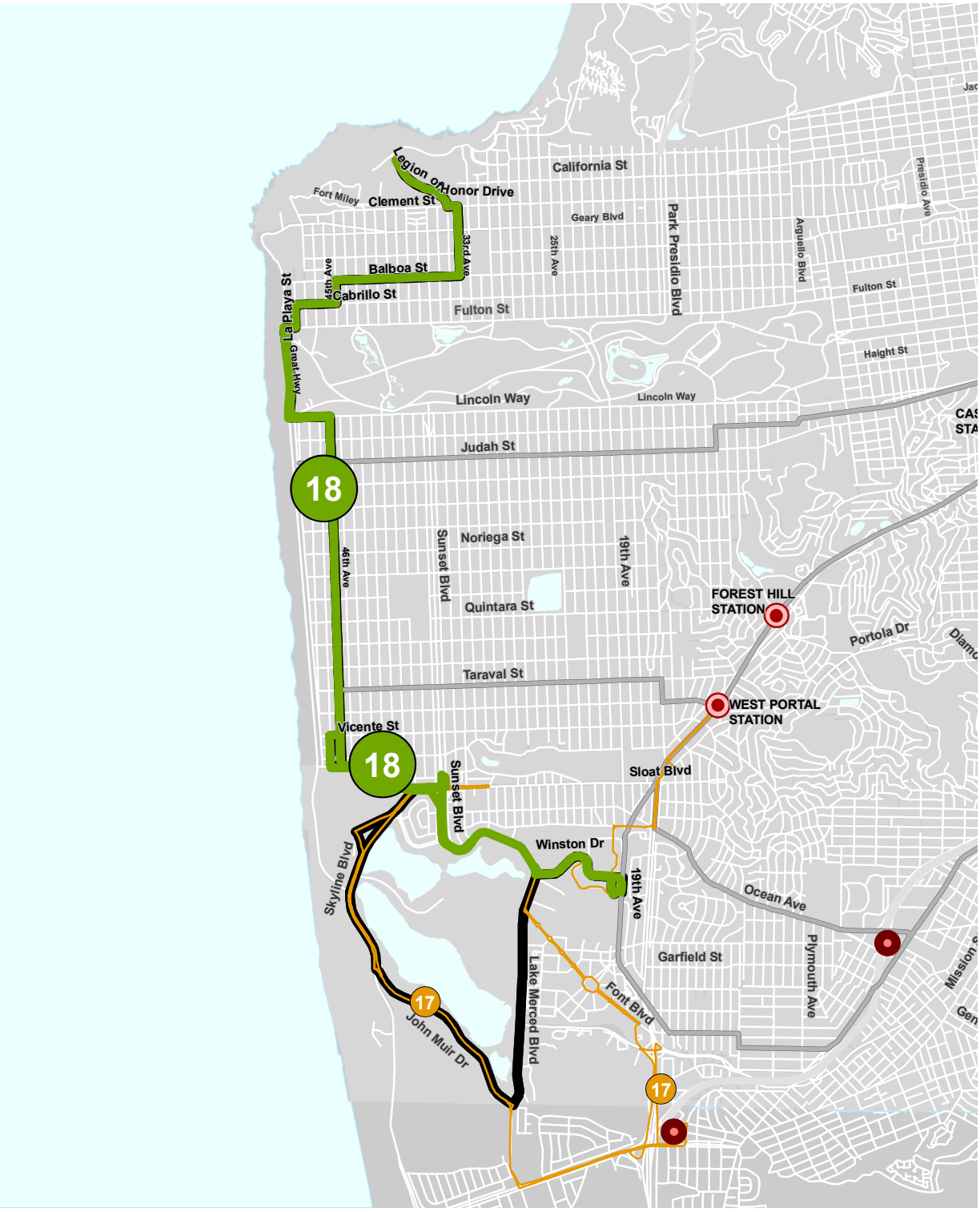
- Would replace existing Route 18 46th Avenue segment around Lake Merced via John Muir Drive and Skyline Boulevard. ~~The Daly City portion of the route would make limited stops at key destinations.~~
- One-way loop on Arballo, Garces, and Gonzalez drives in Parkmerced would be replaced by two-way service on Font Boulevard to simplify route.
- ~~New street segments would be from Font Boulevard and Arballo Drive via Font Boulevard, Chumasero Drive, Junipero Serra Boulevard, John Daly Boulevard, Daly City BART, John Daly Boulevard, Lake Merced Boulevard, John Muir Drive, and Skyline Boulevard, Herbst Road (toward West Portal only), and Skyline and Sloat boulevards to Everglade Drive.~~ REVISED: New street segments would be from Font Boulevard and Arballo Drive via Font Boulevard, Chumasero Drive, Junipero Serra Boulevard, Daly City BART, Brotherhood Way, Lake Merced Boulevard, John Muir Drive, and Skyline Boulevard, Herbst Road (toward West Portal only), and Skyline and Sloat boulevards to Everglade Drive.
- Midday frequency change from 30 to 20 minutes.
- The bus would terminate near Lakeshore Plaza on the south side of Sloat Boulevard at Havenside Drive and would require removing up to four parking spaces. At the other end of the route, the route would terminate at its current West Portal Station location.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	30	20	+
PM	30	15	+

18 46th Avenue



Legend

- Recommended Route
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

18 46th Avenue

Overview

- Proposed alignment would operate on a more direct route between the San Francisco Zoo and Stonestown Galleria shopping center via Sloat, Sunset, and Lake Merced boulevards and Winston Drive. Service along Skyline Boulevard, John Muir Drive and Lake Merced Boulevard between Font Boulevard and Winston Drive would be replaced by the revised 17 Parkmerced route.
- Service along Lake Merced Boulevard between John Muir Drive and Font Boulevard would be discontinued.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	20	20	=
PM	20	20	=

19 Polk - ON HOLD

Legend

- Recommended Route
- Potential Route Variation
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

19 Polk - ON HOLD

Overview

- Proposed route would continue to operate between Van Ness Avenue/North Point Street but service to the south would be cut back to San Francisco General Hospital at 23rd Street and Potrero Avenue. The route segment south of 24th Street would be replaced with the rerouted 48 Quintara. With this change, passengers would be required to transfer to reach the Civic Center, but would have a more direct connection to Potrero Avenue, the Mission (including 24th Street BART Station), Noe Valley and the Sunset District.
- Route would be modified in Civic Center area to simplify route structure and reduce travel times in both directions. The line would run from Seventh and McAllister streets to Polk Street, and from Polk, McAllister, to Hyde Street. With these changes, the 19 Polk would no longer run on Market Street (between Seventh and Ninth streets), Larkin, Eddy or Hyde (between Eddy and McAllister) streets, or on Geary Boulevard (between Larkin and Polk streets).
- Southbound routing to San Francisco General Hospital would be from Rhode Island Street, right on to 23rd Street, left on Utah Street, right on 24th Street, right on Potrero Avenue, and right on 23rd Street.
- New terminal would be located at the existing 10 Townsend terminal on 24th Street at Potrero Avenue.

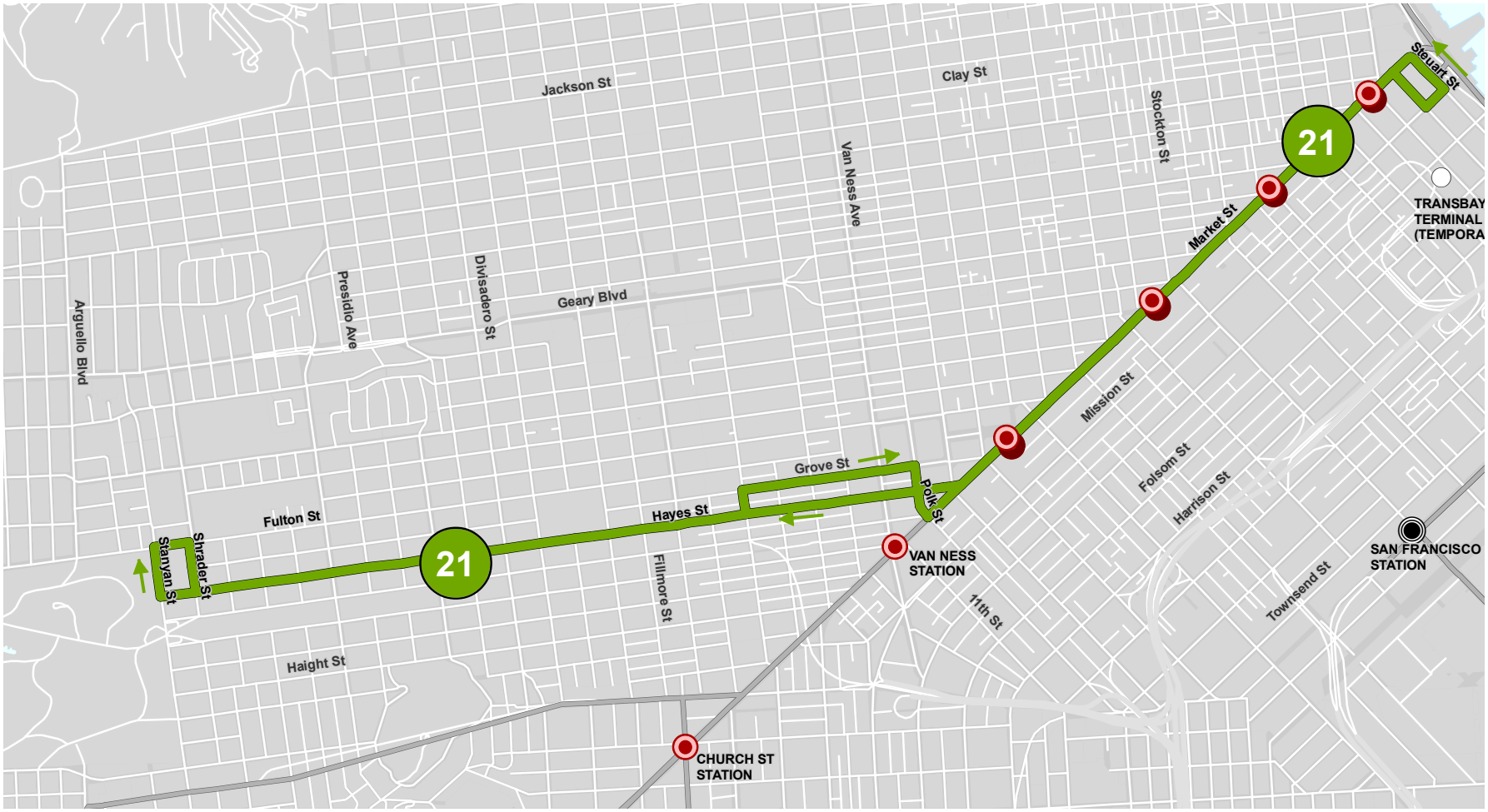
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	15	15	=
PM	15	15	=

* Proposal On Hold Pending Additional Community Outreach

21 Hayes



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

21 Hayes

Overview

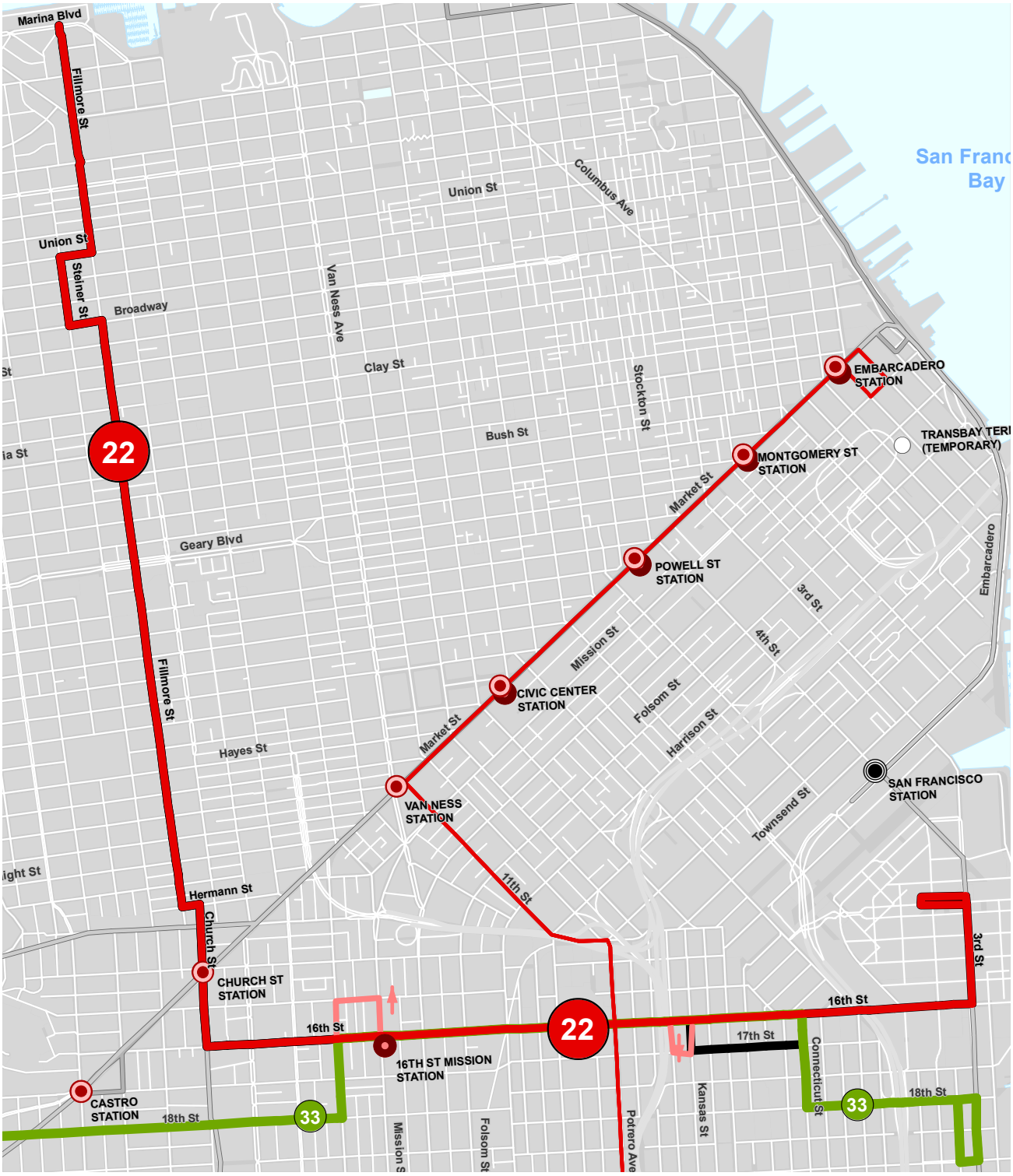
- No route changes proposed.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	9	8	+
PM	10	9	+

22 Fillmore



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC VC OWE TS LM PR TSC PI

Overview

- Would be rerouted to continue along 16th Street to Third Street, creating new connections to Mission Bay from the Mission District.
- The proposed route change would add transit to 16th Street between Kansas and Third streets, Mission Bay Boulevard between Fourth and Third streets, Fourth Street between Gene Friend Way and Mission Bay Boulevard, and along Gene Friend Way.
- Segment along Connecticut and 18th streets would be replaced by rerouted 33 Stanyan. Service on Kansas and 17th streets would be eliminated, although Kansas Street would continue to be used for short turns and other operational adjustments.
- TTRP.22_1 and TTRP.22_2 are proposed for this corridor to reduce transit travel time.
- Midday Frequency Change from 10 to 7.5 minutes.
- New terminal loop would run from Third Street, Mission Bay Boulevard North, Fourth Street, Mission Bay Boulevard South, and Third Street, as presented in the Mission Bay EIR.
- Proposed variants would evaluate motor coach service between Mission Bay and the 16th Street BART Station for initial service phase prior to new overhead wire construction (see OWE.5 for the 22 Fillmore).
    - 22 Fillmore Service Variant 1 would include new motor coach service to the Mission Bay terminus from the 16th Street BART Station and a reroute of the 33 Stanyan along the current 22 Fillmore route. The Mission Bay motor coach service would include a western terminal loop that would make a right on Mission Street, left on 15th Street, left on Valencia Street and back onto 16th Street to Mission Street. The eastern terminus would utilize the proposed 22 Fillmore terminal loop in Mission Bay. The 22 Fillmore trolley coach service would conduct a terminal loop by turning right on Kansas Street, right on 17th Street, right on Vermont Street and left on 16th Street. There is existing overhead wiring at this location.
    - 22 Fillmore Service Variant 2 would have a similar motor coach service between 16th Street BART Station and Mission Bay. However, instead of rerouting the 33 Stanyan to 18th Street, that segment would be covered by sending every other 22 Fillmore trolley coach to the current terminal at Third and 20th streets and terminating the rest at the existing loop on Kansas, 17th and Vermont streets.

22 Fillmore Corridor Overview

Muni's 22 Fillmore bus route carries over 18,000 daily customers on an average weekday. The route's study corridor is 2.2 miles long and includes 16th Street between 3rd and Church streets.

Within the study corridor, the 22 Fillmore serves over 8,000 customers on an average weekday. Within the study area, the 22 Fillmore operates at an average speed of 7 miles per hour during peak periods. Sources of delay include closely spaced bus stops and traffic congestion.

22 Fillmore - 16th Street Travel Time Reduction Proposal Overview

In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. The proposals include:

- Moving the route off of 17th and 18th streets and onto 16th Street between Kansas Street and 3rd Street. To connect to the growing Mission Bay neighborhood and to provide continuous transit service along 16th Street, the 22 Fillmore is proposed to be rerouted onto 16th Street from Kansas to 3rd streets. A revised 33 Stanyan would replace the 22 Fillmore on Connecticut and 18th streets.
- Create center running transit-only lanes through lane conversion (3rd Street to Bryant Street). Currently, the 22 Fillmore travels in general traffic lanes and is subject to delays due to traffic congestion. With the expected growth in the Mission Bay neighborhood, traffic congestion along 16th Street is anticipated to worsen, causing further delays to the bus route. To address these delays, center running transit-only lanes are proposed between 3rd and Bryant streets. A transit-only left-turn signal at 3rd Street is proposed as part of the transit-only lanes. Transit-only lanes can save significant travel time for the 22 Fillmore by giving the bus its own exclusive lane. To make room for the transit-only lanes, the existing bike lane on 16th Street would be moved to 17th Street between Kansas and Mississippi streets.
- Reconfigure 16th Street from Bryant Street to Church Street (Design Options 1-2):
    - Design Option 1: Create peak-period curbside transit-only lanes through lane conversion and parking removal. West of Bryant Street, 16th Street is 10 feet narrower than in the eastern portion of the corridor with travel lanes too narrow for buses to travel in without straddling both lanes. Peak-period curbside transit-only lanes can be created by removing parking on both sides of the street during the morning and afternoon weekday peak periods and converting the wider curbside lane into a transit-only lane. The transit-only lanes can save significant travel time for the 22 Fillmore by giving the bus its own exclusive lane during the peak travel periods.
    - Design Option 2: Create right lane transit-only lane in the westbound direction through lane conversion. A full-time westbound right lane transit-only lane can be created and parking preserved by reconfiguring 16th Street to one eastbound lane, one westbound lane, and

one westbound transit-only lane. The transit-only lane can save significant travel time for the 22 Fillmore by giving the bus its own exclusive lane.

- Increasing bus stop spacing from an average of one to two blocks to an average of two to four blocks. Currently, the 22 Fillmore stops at every major block in the Mission area and at about every two blocks east of Potrero Avenue. This proposal moves towards a two block spacing west of Bryant Street and a four block spacing to the east where the blocks are smaller. By stopping fewer times, the bus would take less time to move through the corridor.
- Adding median transit boarding islands at six stops in each direction. Between 3rd Street and Bryant Street, median transit boarding islands are proposed to complement the center running transit-only lanes. Under this proposal, the bus would run in center running transit-only lanes and would pick up and drop off passengers at the proposed boarding island. In conjunction with the transit-only lanes, the islands, which would be 8.5 feet wide and 100 feet long, would reduce delays associated with the bus pulling into and out of traffic.
- Restricting left turns at most locations (7th Street to Dolores Street). Left turns from 16th Street would be restricted at all times at all intersections from 7th Street to Dolores Street with the exception of both directions at 7th Street, eastbound at Vermont Street, and eastbound at Potrero Avenue. Restricting left turns would improve travel times for both transit and through traffic by eliminating delays associated left turning vehicles waiting for gaps in oncoming traffic.
- Adding new traffic signals at four locations. Due to the anticipated growth in traffic along 16th Street from the Mission Bay developments, traffic signals at Missouri, Connecticut, Wisconsin, and San Bruno streets are proposed.
- Improving the pedestrian environment. Corner sidewalk bulbs are proposed throughout the corridor to reduce the street crossing distance. In addition, as a potential second phase of the project, the sidewalk on both sides of 16th Street between 7th Street and Potrero is proposed to be widened from 10 feet to 18 feet. This would require removing parking on both sides of the street. Some parking and loading areas would be maintained through cut-ins in the sidewalk.

Summary

Together, the proposed changes are anticipated to reduce the travel time of the 22 Fillmore by about 5 minutes in each direction (10 minutes total) within the study area (25 percent reduction), improving the average operating speed to XX miles per hour and improving service reliability. Transit signal priority improvements are anticipated to save an additional minute total. Other changes such as operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

22_2 Fillmore Travel Time Reduction Proposal

For this proposal, the TPS Toolkit elements would be applied along a segment of the 22 Fillmore route. The TPS Toolkit elements would be implemented along the following streets: Church, Hermann, Fillmore, Broadway, Steiner, and Union streets. This part of the 22 Fillmore corridor extends from the intersection of 16th and Church streets to the intersection of Bay and Fillmore streets. This is a major north-south route in the Rapid Network, and provides crosstown transit connections between the following neighborhoods: Duboce Triangle, the Lower Haight and Western Addition, the Fillmore, Japantown, Pacific Heights, Cow Hollow and the Marina neighborhoods.

OWE.5-22 Fillmore Extension to Mission Bay

Overhead wire expansion (OWE) would support rerouting of bus routes serviced by electric trolley coaches, and would facilitate shared terminal facilities among terminals that service multiple trolley coach routes. Construction of new overhead wires often requires the installation of new pole foundations and/or underground duct work. Poles to support overhead wires would vary in height from 26 to 30 feet and would be approximately eight to 13 inches in diameter at the base, and four to nine inches in diameter at the top of the poles. The pole foundations are typically three feet in diameter and 12 feet deep. These poles are typically installed every 90 to 100 feet along a street segment. Another part of the infrastructure for overhead wire service is the electrical distribution system that provides power to the trolleys. Electrical wires in conduits are placed in groups, called duct banks, underground within the center and along the sides of streets in order to transport electricity from the source (electrical transformer) to the wires in the poles which then power the overhead trolley wires. At some locations, the construction of new curb ramps, transit bulbs and pedestrian refuge islands may also be required. It is anticipated that no parking would be removed as a result of these overhead wire projects.

The 22 Fillmore Extension to Mission Bay (OWE.5) would involve the construction of new overhead wires on 16th and Third streets and parts of the University of California, San Francisco Mission Bay (UCSF) campus to allow the 22 Fillmore to continue east along 16th Street to Third Street, and north on Third Street to a new terminal in Mission Bay. The new overhead wire project would provide a direct transit connection between development at Mission Bay and the 16th Street BART Station, the Mission District, and Fillmore Street. This overhead wire extension project was evaluated in the Final Mission Bay Subsequent Environmental Impact Report (SEIR) in 1998 and is provided here for informational and cumulative context. The SEIR addressed changes proposed for 16th Street between its intersection with Terry A. Francois Boulevard and the intersection with Mississippi and Seventh streets. This project would facilitate an important east-west transit connection for the rapidly developing Mission Bay neighborhood.

The portion of the project on 16th Street between Kansas and Connecticut streets would be constructed as part of an overhead wire replacement project (including the block of Connecticut Street between 16th and 17th streets that will be used by the 33 Stanyan to provide service on the portion of Potrero Hill that will no longer be served by the 22 Fillmore). Infrastructure, including the poles and underground conduits for the electrical wiring, within the Mission Bay terminal loop has been constructed by developers of adjacent parcels along the route. The overhead and underground electrical wiring would be installed by the SFMTA and has already received separate environmental clearance as part of the Mission Bay project SEIR described above.

The proposed project would involve the installation of about 4,300 linear feet of overhead wiring and the construction of about 85 support poles on 16th Street between Arkansas and Third streets, and a total of 26 curb ramps along 16th Street at the following intersections:

- Rhode Island/16th streets (northern and southern corners) – four curb ramps
- Carolina /16th streets (northern and southern corners) – four curb ramps
- Wisconsin/16th streets (northern and southern corners) – four curb ramps
- Arkansas/16th streets (southeast and southwest corners) – two curb ramps
- Hubbell/16th streets (northeast and northwest corners) – two curb ramps
- Daggett/16th streets – two curb ramps
- Missouri/16th streets (southeast and southwest corners) – two ramps
- Owens/16th streets (northern and southern corners) – four curb ramps
- Fourth/16th streets (northeast and northwest corners) – two curb ramps

22 Fillmore

Frequency

Service during peak periods (headway between vehicles, in minutes)

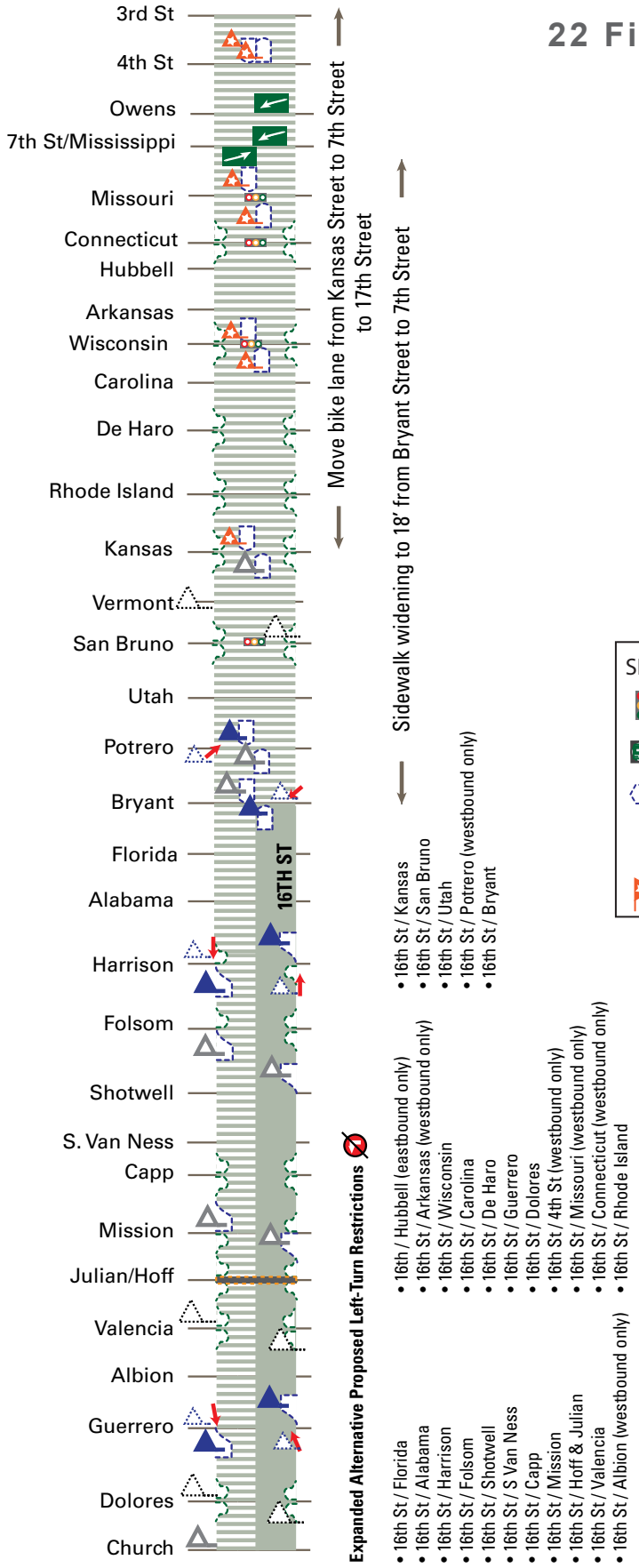
	Current	Proposed	Frequency
AM	9	6	+
PM	8	8	=

Finance

See 'Finance' section for additional detail.

Route / Fund Source	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
22 Fillmore							$105,595,000
TEP Capital Seg. 1 – CCSF-GOBond					$84,689,000		$84,689,000
TEP Capital Seg. 1 – IPIC		$845,000	$3,250,000		$2,920,000	$2,795,000	$9,810,000
TEP Capital Seg. 1 – SFCTA-PropK-EP10					$1,116,000		$1,116,000
TEP Capital Seg. 1 – **Total**		**$845,000**	**$3,250,000**		**$88,725,000**	**$2,795,000**	**$95,615,000**
TEP Capital Seg. 2 – CCSF-GOBond			$1,020,000	$5,600,000			$6,620,000
TEP Capital Seg. 2 – **Total**			**$1,020,000**	**$5,600,000**			**$6,620,000**
TEP Supportive – No Funding Source						$3,360,000	$3,360,000
TEP Supportive – **Total**						**$3,360,000**	**$3,360,000**

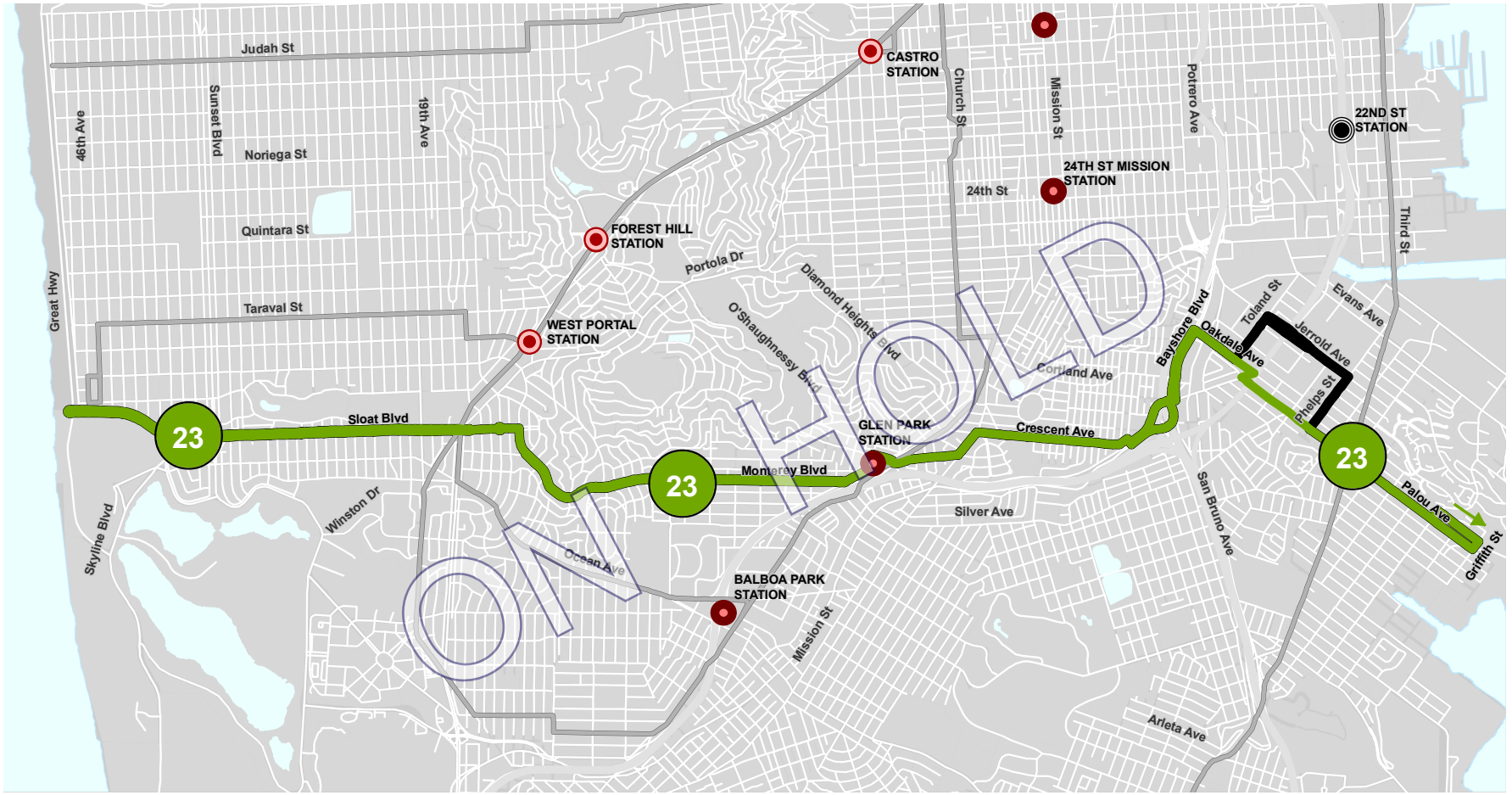
22 Fillmore Segment Proposal



SEGMENT PROPOSALS

- New Traffic Signal
- Muni Queue Jump Signal
- Remove Stop Signs on Visitacion Street and Replace with Traffic Calming or Traffic Signal
- New Stop
- New Transit Bulb
- Stop Relocation
- Removal of Stop
- Extend Bus Zone
- Convert Stop (from flag to bus zone)
- Turn Pockets
- Parking Restriction
- Transit-Only Lane
- Bike Lane
- Existing Stop
- New Boarding Island

23 Monterey - ON HOLD



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

23 Monterey - ON HOLD

Overview

- Segment on Toland Street, Jerrold Avenue and Phelps Street proposed to be eliminated to provide a more direct path of travel. Route would operate on Oakdale Avenue, Industrial Way and Palou Avenue. Transit would be added to Palou Avenue between Barneveld Avenue and Industrial Way, and Barneveld Street between Oakdale and Palou avenues.

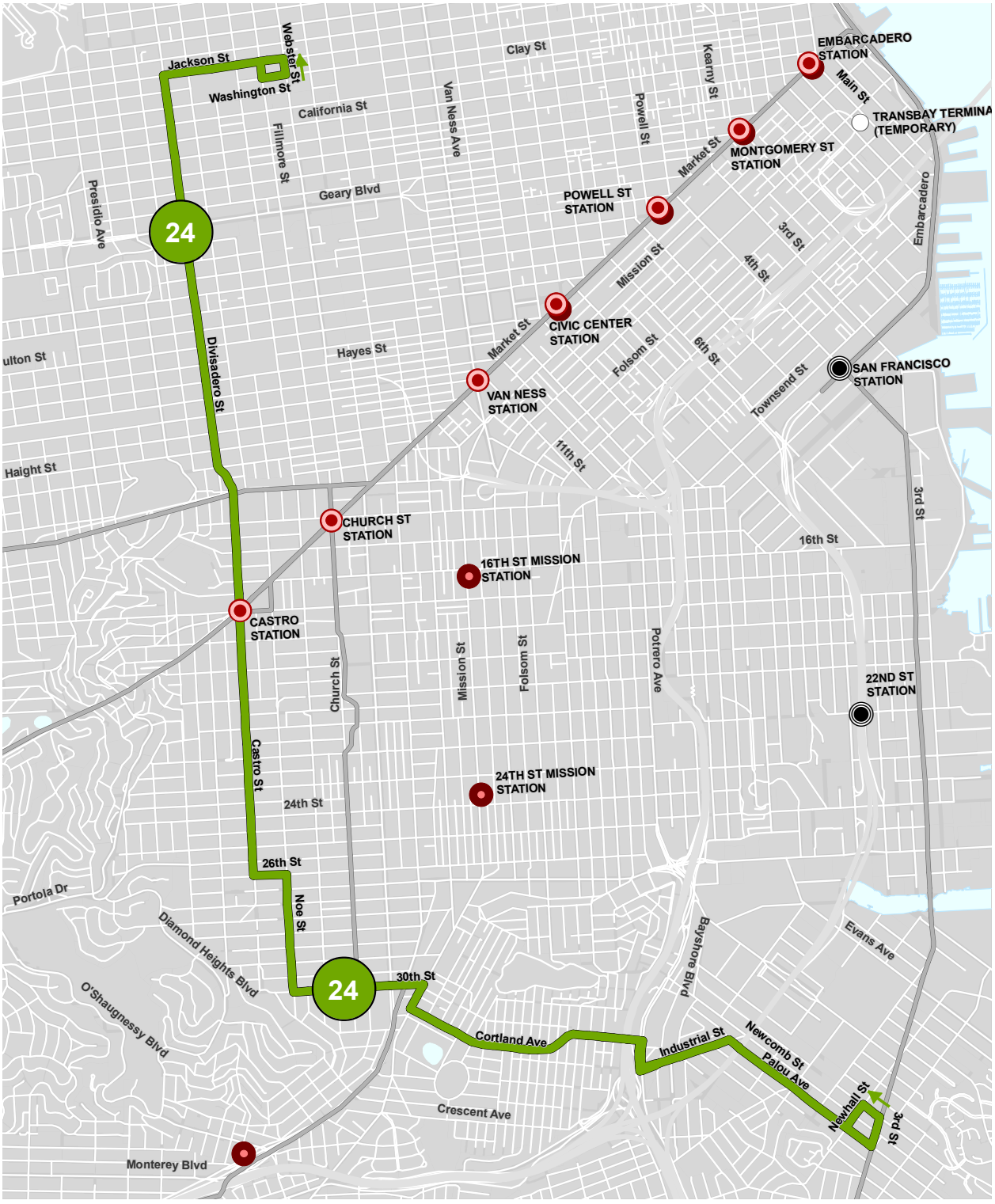
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	20	20	=
PM	20	20	=

* Proposal On Hold Pending Additional Community Outreach

24 Divisadero



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

24 Divisadero

Overview

- No route changes proposed.

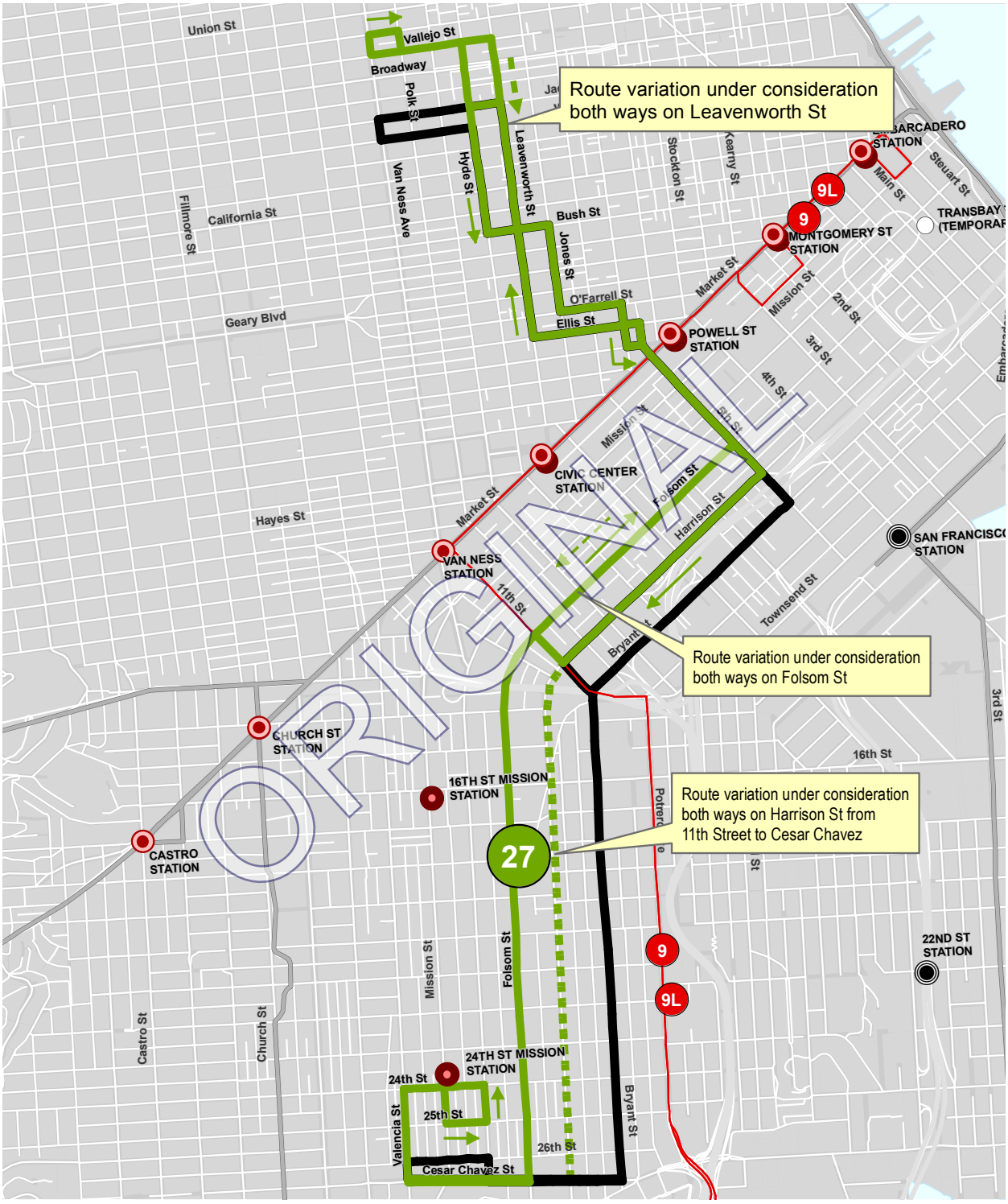
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	9	+
PM	10	9	+

27 Bryant

- Original Proposal (See Revised Proposal on Pg 152)



Legend

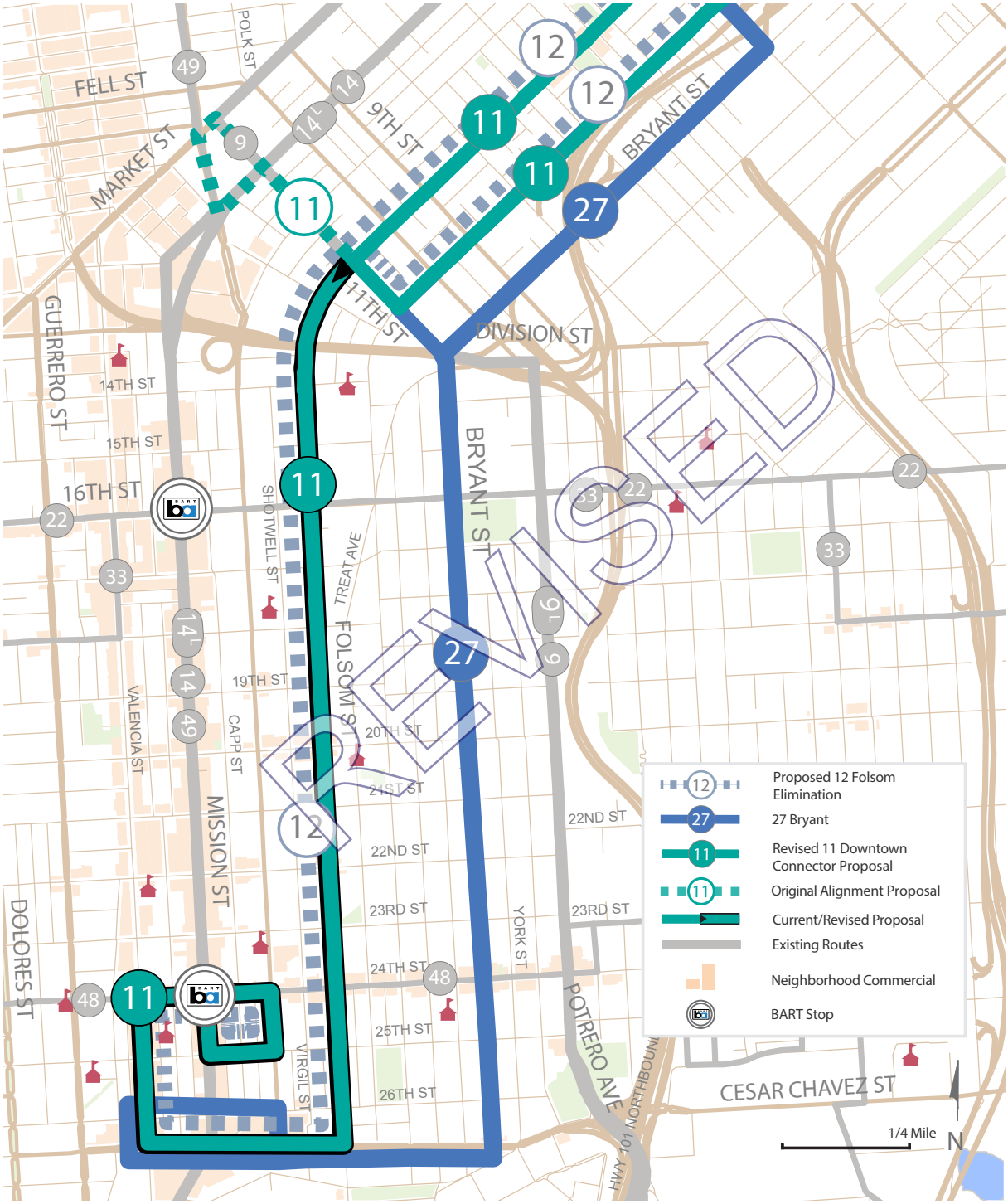
- Recommended Route
- Potential Route Variation
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

27 Bryant

- Revised Proposal for South of 11th Street



Proposed Changes

RA

27 Bryant

Overview

- ~~Would be renamed the 27 Folsom since the route would no longer operate on Bryant Street.~~ REVISED: 27 Bryant service will be retained in current alignment. No changes.
- ~~Service would be extended north on Leavenworth Street and west on Vallejo Street to Van Ness Avenue, and would be moved from Bryant Street to Folsom Street to replace 12 Folsom service on Folsom Street from Fifth to Cesar Chavez streets, including the terminal loop to the 24th Street BART Station.~~
- ~~Existing passengers on Bryant Street could use 9 San Bruno/9L San Bruno Limited rapid service on Potrero Avenue or local service on Folsom Street.~~
- ~~The 27 Bryant Service Variant 1 would evaluate two-way service on Leavenworth and Ellis streets, and two-way service on Folsom Street, as proposed in the Tenderloin Community Plan and the Western SoMa Community Plan, respectively.~~
- ~~27 Folsom Service Variant 2 would evaluate transit service on Harrison Street in the Inner Mission from 11th to Cesar Chavez streets.~~
- ~~New terminal loop would follow Vallejo Street, Van Ness Avenue, Green and Polk streets. The terminal would be located on Vallejo Street at Van Ness Avenue and would be 100 feet long, requiring a reduction of up to five parking spaces.~~

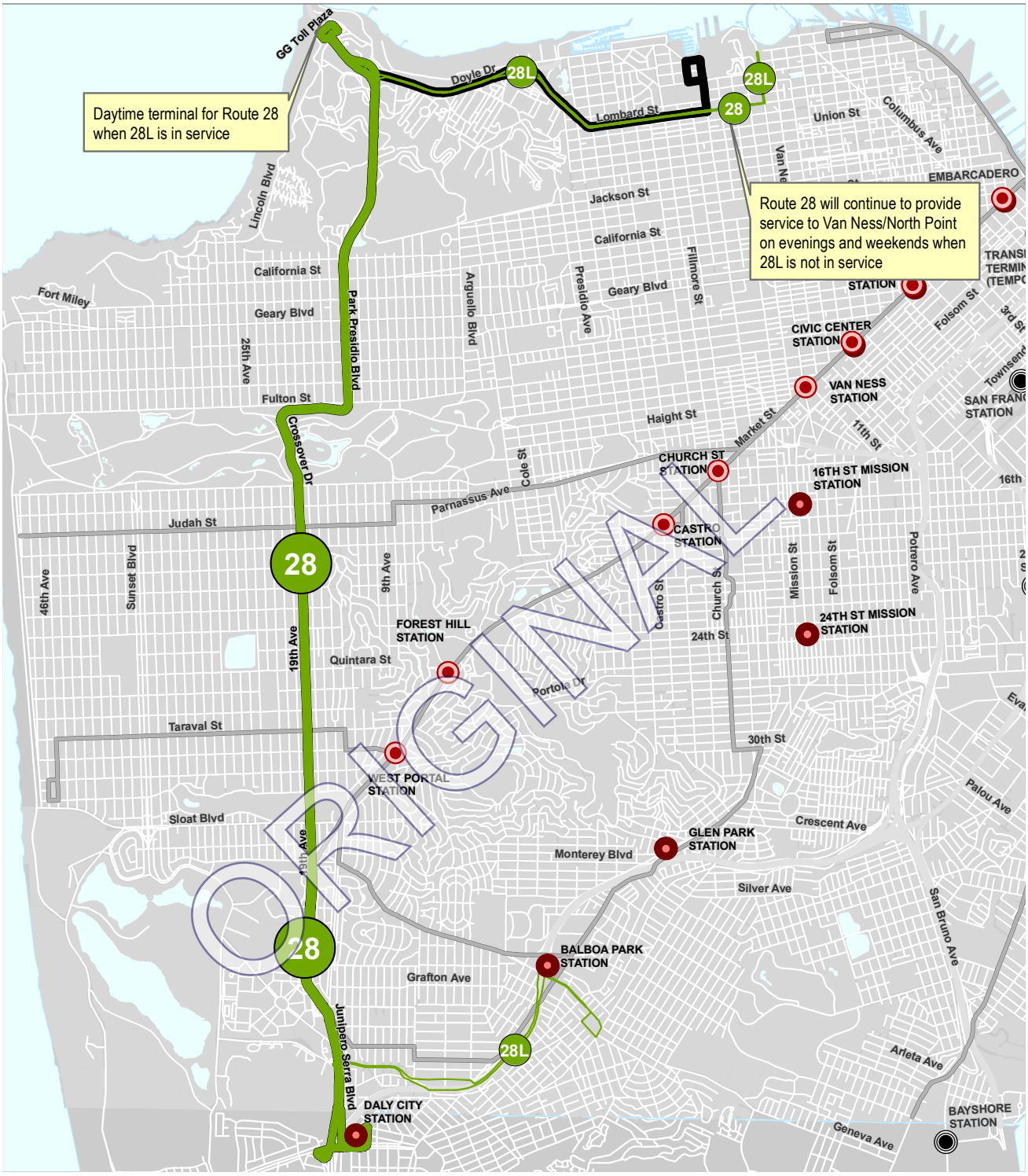
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	15	15	=
PM	15	15	=

28 19th Avenue

- Original Proposal (See Revised Proposal on Pg 155)



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

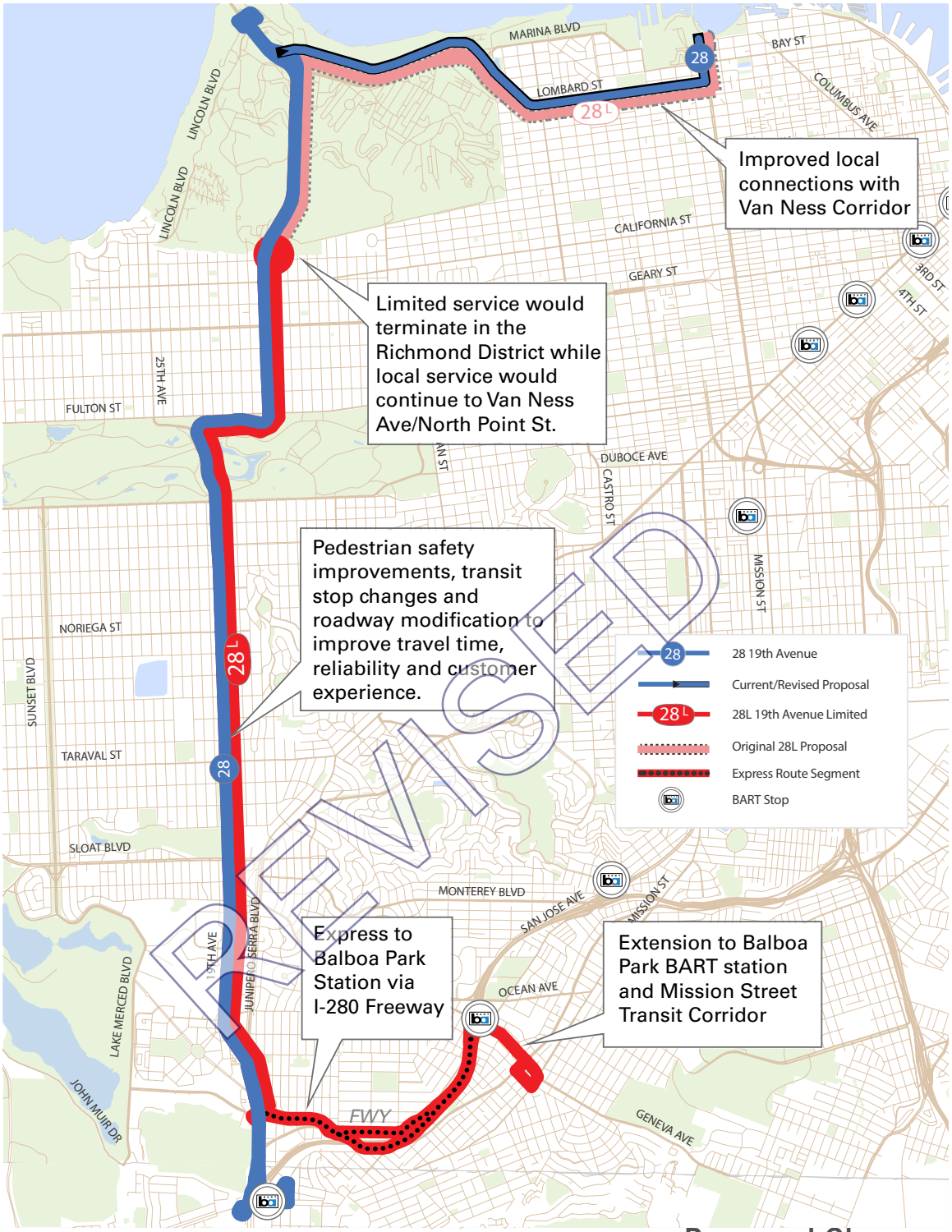
Proposed Changes

RA HC TTPI TS LM PR TSC PI

PROPOSALS BY ROUTE

28 19th Avenue

- Revised Proposal



Proposed Changes

RA HC TTPI TS LM PR TSC PI

28 19th Avenue

Overview

- ~~Proposed alignment would terminate at Golden Gate Bridge (Toll Plaza Area) during daytime ours. Service to Van Ness Avenue and North Point Street via the Marina District would be provided by the 28L 19th Avenue Limited and service to Fort Mason would be provided by Route 43 Masonic.~~ REVISED: 28 19th Avenue service to the Marina District via the Golden Gate Bridge would be retained.
- REVISED: The 28 19th Avenue would continue eastward on Lombard Street and serve a new northern terminal at Van Ness Avenue and North Point Street. Service to Fort Mason would be provided by Route 43 Masonic.
- ~~When 28L 19th Avenue Limited is not in service, the 28 19th Avenue would provide evening service to Van Ness Avenue/North Point Street via Lombard Street.~~
- Midday frequency change from 10 to 9 minutes.
- ~~To accommodate a new terminal at the northern segment of the route, the existing red curb in the eastern parking lot of the Toll plaza, adjacent to the new Pavilion building, would be designated as a bus terminal (the precise location would be selected in consultation with Golden Gate Bridge, Highway and Transportation District and Golden Gate National Recreation Area).~~
- TTRP.28_1 is proposed to reduce transit travel time on this corridor.

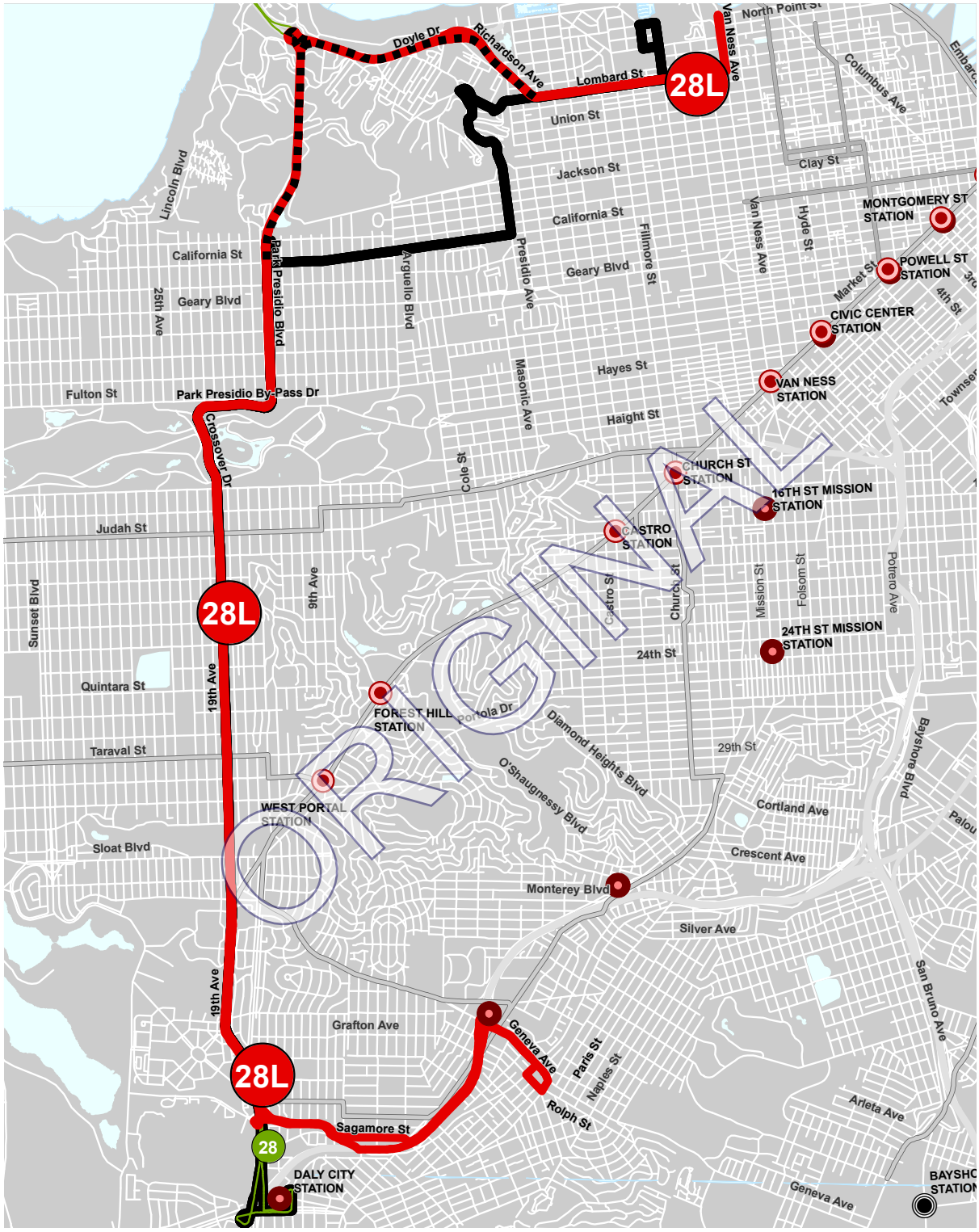
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	9	+
PM	10	9	+

28L 19th Avenue Limited

- Original Proposal (See Revised Proposal on Pg 158)



Legend

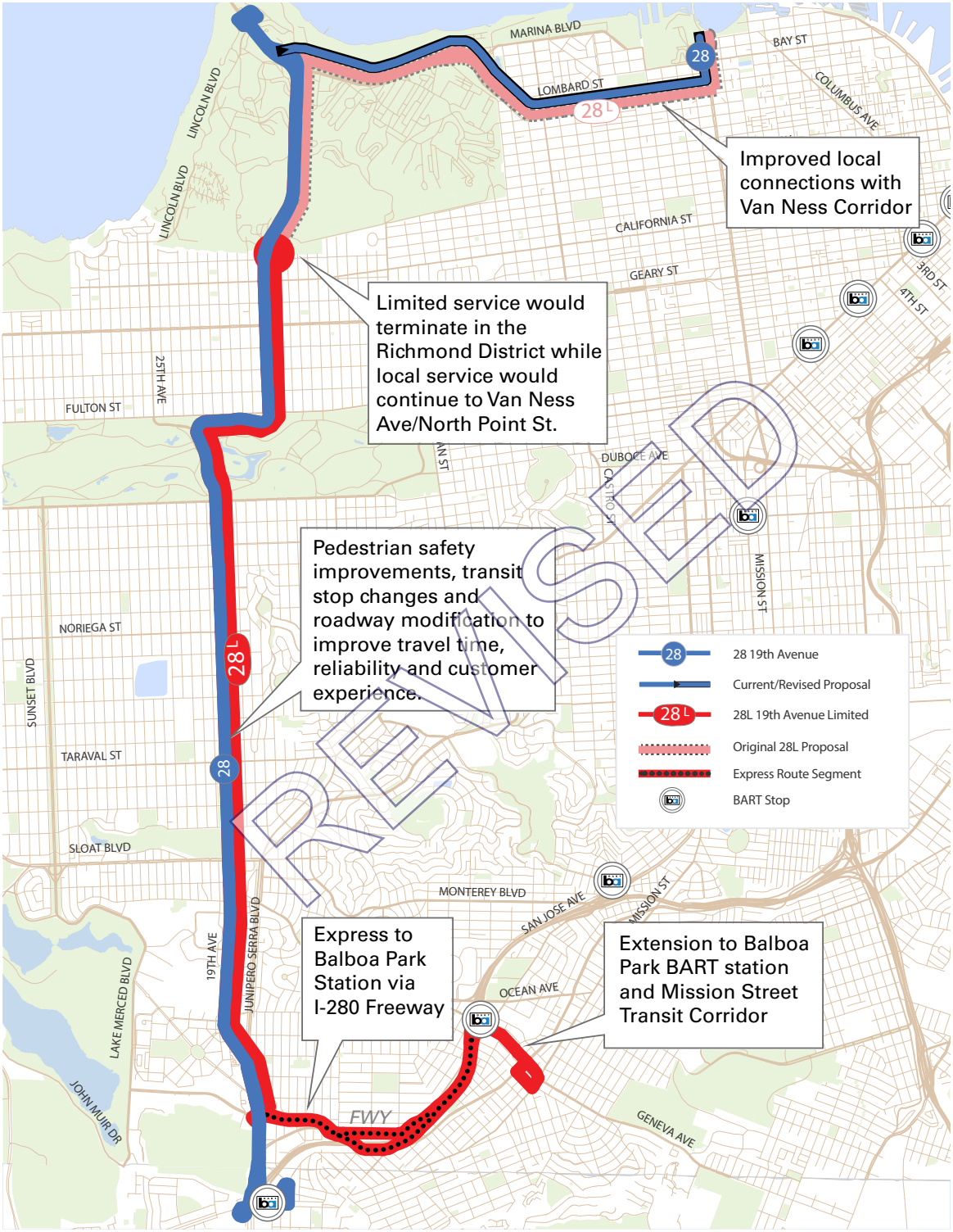
- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC TTPI TS LM PR TSC PI

28L 19th Avenue Limited

- Revised Proposal



Proposed Changes

RA HC TTPI TS LM PR TSC PI EH

28L 19th Avenue Limited

Overview

- ~~Proposed alignment would provide all-day rapid, very limited-stop cross-town service, increasing access to San Francisco State University and CCSF from Van Ness Avenue/North Point streets and would provide better connections between the Marina, Richmond, Sunset, and Excelsior neighborhoods.~~ REVISED: Proposed alignment would provide all-day rapid, very limited-stop cross-town service, increasing access to San Francisco State University and CCSF from Park Presidio/California Street and would provide better connections between the Richmond, Sunset, and Excelsior neighborhoods. ~~Route would be extended to Van Ness Avenue/North Point Street from Lombard Street and to Mission Street/Geneva Avenue via I-280.~~ REVISED: Route would be extended to Mission Street/Geneva Avenue via I-280. (Note: Golden Gate Bridge Toll Plaza would not be served by this route.)
- REVISED: The 28L 19th Avenue Limited would serve a new northern terminal near California Street and Park Presidio, and would no longer serve the Marina District. A new terminal location is tentatively planned for Funston Street between California and Lake streets.
- ~~New streets on northern segment are Lombard Street, between Laguna Street and Van Ness Avenue, and on sections of Alemany Boulevard, between Sagamore Street and San Jose Avenue; I-280 between Ocean and Sickles avenues exit, Brotherhood Way, between Junipero Serra Boulevard and Sagamore Street, on Niagara Avenue between Alemany Boulevard between Niagara and Geneva avenues (to accommodate the terminal loop).~~ REVISED: New streets are on sections of Alemany Boulevard, between Sagamore Street and San Jose Avenue; I-280 between Ocean and Sickles avenues exit, Brotherhood Way, between Junipero Serra Boulevard and Sagamore Street, on Niagara Avenue between Alemany Boulevard between Niagara and Geneva avenues (to accommodate the terminal loop).
- Midday service would operate every 9 minutes.
- Limited-stop service would operate seven days a week from 6 a.m. to 8 p.m. with wider stop spacing than current 28L 19th Avenue Limited (currently limited-stop service operates weekdays only approximately 7 - 9 a.m. and 2 - 4 p.m.).
- TTRP.28_1 and TTRP.28_2 are proposed to reduce transit travel time on this corridor.
- The southern terminal would be located on Geneva Avenue midblock between Mission Street and Alemany Boulevard. The terminal loop would be right onto Mission Street, right onto Niagara Avenue, and right onto Alemany Boulevard. This would require a reduction of up to five parking spaces.
- ~~Northern terminal will require a 160 foot extension of the current 30 Stockton short line service terminal located on North Point Street between Van Ness Avenue and Polk Street.~~

28L 19th Avenue Limited

Frequency

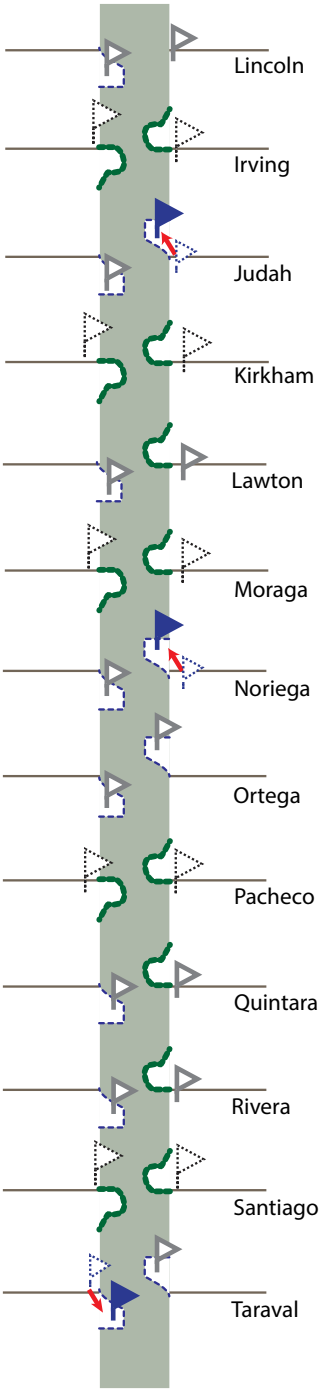
Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	9	+
PM	N/A	9	+

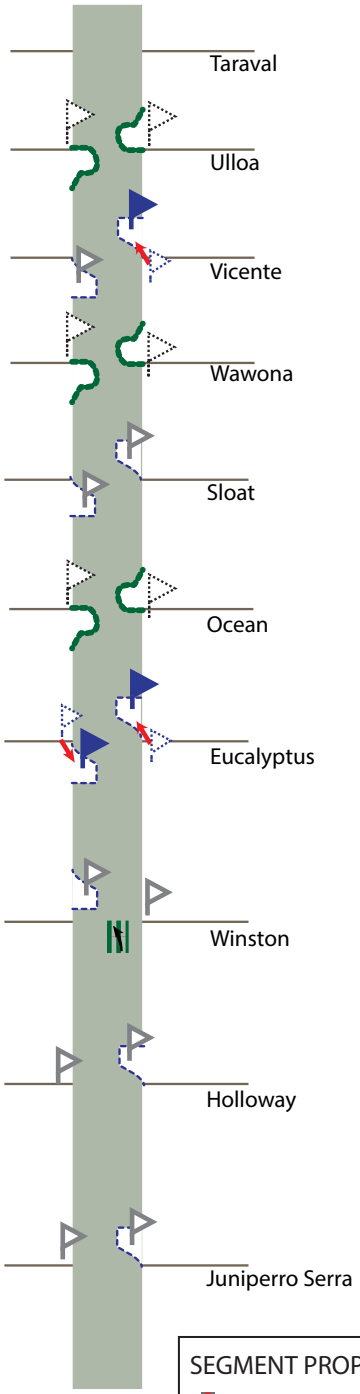
28 19th Avenue & 28L 19th Avenue Limited

28 19th Avenue Segment Proposal

19th Ave, North of Taraval



19th Ave, South of Taraval



SEGMENT PROPOSALS

- New Traffic Signal
- Muni Queue Jump Signal
- Remove Stop Signs on Visitacion Street and Replace with Traffic Calming or Traffic Signal
- New Stop
- New Transit Bulb
- Stop Relocation
- Removal of Stop
- Extend Bus Zone
- Convert Stop (from flag to bus zone)
- Turn Pockets
- Parking Restriction
- Transit-Only Lane
- Bike Lane
- Existing Stop
- New Boarding Island

28 19th Avenue Corridor Overview

Muni's 28 19th Avenue and 28L 19th Avenue Limited bus routes together carry about 17,500 daily customers on an average weekday. The route's study corridor is 3.4 miles of 19th Avenue between Lincoln Way and Junipero Serra Boulevard. The M Ocean View Line also travels through a portion of the study area.

Within the study corridor, 28 19th Avenue and 28L 19th Avenue Limited together serve over 8,500 customers on an average weekday and the M Ocean View Line serves an additional 5,400 customers at the stops located along 19th Avenue at Holloway Avenue and Winston Drive.

Within the study area during the p.m. peak period, the 28 19th Avenue local service operates at an average speed of 9.2 miles per hour and the 28 19th Avenue Limited operates at an average speed of 11.5 miles per hour. The main sources of delay are closely spaced bus stops and traffic congestion.

28 19th Avenue Travel Time Reduction Proposal Overview

In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. The proposals include:

- Increasing bus stop spacing from one block to two blocks. Currently, the 28 19th Avenue local service stops at every block between Lincoln Way and Eucalyptus Drive. This proposal moves toward a two-block spacing for most stops. By stopping fewer times, the bus would take less time to move through the corridor.
- Reducing number of limited service stops. Currently, the 28L 19th Avenue Limited has seven stops in each direction within the study area. This proposal would provide stops at major transfer points and destinations, including Judah Street, Taraval Street, Winston Drive and Holloway Avenue.
- Optimizing bus stop locations at five intersections. Relocating bus stops from the near-side to the far-side of intersections allows buses to take advantage of planned transit signal priority improvements that will allow traffic signals to be programmed to hold green lights for approaching buses.
- Adding transit bulbs at 14 intersections. Transit bulbs are sidewalk extensions alongside bus stops that allow buses to pick-up and drop-off customers without having to pull out of the travel lane into a bus stop and then wait for a gap to merge back into traffic. Transit bulbs enhance the ability of buses to take advantage of planned all-door boarding. Transit bulbs provide space for transit shelters and other customer amenities. Transit bulbs also improve pedestrian

safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets.

- Adding pedestrian bulbs at 11 intersections. Pedestrian bulbs are sidewalk extensions at intersection corners that improve pedestrian safety by reducing the roadway crossing distance, making pedestrians waiting to cross the street more visible to approaching motorists, and reducing the speed of motorists turning from cross streets. Reducing pedestrian crossing distances can provide flexibility in traffic signal timing that can reduce Muni delays.
- Shortening one left-turn lane on northbound 19th Avenue at Winston Drive. Shortening the left-turn lane that is currently shared with inbound M Ocean View trains would reduce delays for trains which currently must wait for the left turn queue to dissipate before proceeding through the intersection. By shortening the left-turn lane that is shared with the M Ocean View, the space for non-transit vehicles to queue in front of trains would be reduced, thereby allowing both the non-transit vehicles and trains to clear the intersection in one left-turn signal phase.

Summary

Together, the proposed changes are anticipated to reduce the travel time of the 28 19th Avenue local service by more than 5 minutes in each direction (11 minutes total) within the study area (25 percent reduction), improving the average operating speed to 12.2 miles per hour and improving service reliability. The proposed changes are anticipated to reduce the travel time of the 28L 19th Avenue Limited by 1.5 minutes in each direction (3 minutes total) within the study area (nine percent reduction), improving the average operating speed to 12.7 miles per hour. Transit signal priority improvements are anticipated to save an additional 40 seconds in each direction for the 28 19th Avenue local service and 1.5 minutes each direction for the 28L 19th Avenue Limited. Other changes such as operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

San Francisco's Pedestrian Safety Task Force, created through Executive Directive 10-03: Pedestrian Safety In San Francisco, identified several high injury density corridors that encompass less than seven percent of City streets but account for over half of serious and fatal pedestrian injuries, including 19th Avenue. The transit bulbs and pedestrian bulbs recommended as part of this travel time reduction proposal can improve pedestrian safety and could be further enhanced with additional pedestrian safety treatments.

28_2 19th Avenue Travel Time Reduction Proposal

For this proposal, the TPS Toolkit elements would be applied along a segment of the 28L 19th Avenue Limited route (portion of U.S. 101). The TPS Toolkit elements would be implemented along the following streets: Van Ness Avenue, Lombard Street and Richardson Avenue. This part of the 28 19th Avenue Limited corridor extends from the intersection of Beach Street and Van Ness Avenue to the intersection of Lyon Street and Richardson Avenue (US 101 N). This would improve an east-west portion of the Rapid Network connecting the future Van Ness BRT with the 28L 19th Avenue Limited, which provides transit connections through the Marina and the Presidio to the Richmond and Sunset Districts.

TTPI.2 Lyon/ Richardson Transfer Point

This project would install a bus stop/transfer point at Lyon Street and Richardson Avenue to facilitate connections between the Rapid Network 28L 19th Avenue Limited and regional transit service provided by Golden Gate Transit. The new transfer point would replace the 28L 19th Avenue Limited transfer point currently located at the Golden Gate Bridge toll plaza, which would no longer be served by the 28L with implementation of the TEP. The 28 19th Avenue (local service) customers would continue to transfer at the Golden Gate Bridge toll plaza. Potential improvements may include changes to pedestrian access and the construction of a transit bulb.

Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
28 19th Avenue								$12,760,000
TEP Capital Seg. 1	CCSF-GOBond			$1,900,000				$1,900,000
	SFCTA-PropK-EP1		$1,020,000					$1,020,000
	Total		**$1,020,000**	**$1,900,000**				**$2,920,000**
TEP Capital Seg. 2	CCSF-GOBond					$7,200,000		$7,200,000
	Total					**$7,200,000**		**$7,200,000**
TEP Supportive	MTC-TPI(MC)				$2,640,000			$2,640,000
	Total	**$10,440,000**						**$10,440,000**

29 Sunset

Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC TTPI

Overview

- Would provide a more direct route on Ocean Avenue to Balboa Park Station (instead of current route on Mission Street and Geneva Avenue).
- Route would extend from Persia Avenue to Ocean Avenue to Plymouth Avenue. New street segment on Persia Avenue between Mission Street and Ocean Avenue in association with TTPI.1 Persia Triangle Improvements.
- Service would be eliminated on Mission Street between Persia and Geneva avenues and on Geneva Avenue between Mission Street and Ocean Avenue.
- Two-way service on Gilman Avenue would simplify route to/from Candlestick Park; service on Fitzgerald Street would be discontinued.

TTPI.1 – Persia Triangle Improvements

The Persia Triangle Improvements (TTPI.1) would change the pedestrian and transit circulation along the intersections of Mission Street and Ocean Avenue, Mission Street and Persia Avenue, and Ocean and Persia avenues, which form the "Persia Triangle." The proposed project would include improvements to complement the realignment of the 29 Sunset route to travel along Ocean Avenue between Mission Street and the Balboa Park Station. Currently, the inbound 29 Sunset route turns left onto southbound Mission Street from Persia Avenue, turns right onto westbound Geneva Avenue from Mission Street, and proceeds along Geneva Avenue to the Balboa Park Station. The revised inbound (northbound) route would continue on Persia Avenue across Mission Street and turn left onto Ocean Avenue to proceed to the Balboa Park Station. The new segment of the 29 Sunset route would operate in both the inbound and outbound directions. The existing 29 Sunset route along Persia Avenue (east of Mission) would remain unchanged.

A new transit stop would be added on the east side of Persia Avenue between Mission Street and Ocean Avenue. There are two possible locations under consideration for this new stop on Persia Avenue; one would be nearside at the intersection with Ocean Avenue, and the other would be farside at the intersection with Mission Street. This transit stop would include the construction of a transit bulb. As part of the project, curb radii modifications at the T-intersection of Persia and Ocean avenues would also be completed by installing a pedestrian bulb at the southwest corner of the intersection to improve the turning radius for outbound buses traveling from Ocean Avenue to Persia Avenue. The new transit stops with transit bulbs would be approximately 60 feet in length by six feet in width and the pedestrian bulb approximately 20 feet in length by six feet in width.

In addition, two new transit zones with transit bulbs (approximately 60 feet in length by six feet in

width) would be constructed along Ocean Avenue at the intersection with Persia Avenue for the 49L Van Ness-Mission Limited route. One would be located on the north side of Ocean Avenue midblock between Persia Avenue and Mission Street. The other stop would be located on the nearside of the intersection of Ocean Avenue with Persia Avenue for the inbound 49L Van Ness-Mission Limited route. A pedestrian bulb approximately 20 feet in length by six feet in width would be added on the northwest corner of the intersection of Ocean Avenue and Mission Street and a new transit stop with a transit bulb would be added on the southwest corner of this intersection to serve the 14 Mission and 14L Mission Limited routes. Up to five existing parking spaces would need to be removed to construct the improvements for the Persia Triangle Improvements project.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	9	8	+
PM	10	10	=

30 Stockton

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC VC TS LM PR TSC PI

30 Stockton

Overview

- No route changes proposed.
- Subject to equipment availability, all service on Stockton Street would be provided by 60-foot articulated buses to reduce crowding and improve reliability.
- Currently, there is a temporary reroute in the southbound direction along Mason and Fifth streets to accommodate the Central Subway Project construction. The reroute is expected to be in place for several years.
- TTRP.30 is also proposed to reduce transit travel time along this corridor.

30 Columbus & Stockton Corridor Overview

Muni's 30 Stockton bus route carries about 28,000 daily customers on an average weekday. The route's study corridor is 2.2 miles long and includes Van Ness Avenue, North Point Street, Columbus Avenue, Stockton Street, Sutter Street, and Kearny Street. Portions of the 45 Union-Stockton and 8X/AX/BX Bayshore Expresses also travel through the study area and would benefit from the proposed improvements.

Within the study corridor, the 30 Stockton serves over 17,600 customers. Combined with the 45 Union-Stockton and the 8X/AX/BX Bayshore Expresses, within the study corridor the routes serve over 27,500 customers during an average weekday.

Within the study area, the 30 Stockton operates at an average speed of 5.6 miles per hour during peak periods. The main sources of delay are closely spaced bus stops, narrow traffic lanes in Chinatown, and traffic congestion.

30 Columbus & Stockton Travel Time Reduction Proposal Overview

In order to reduce transit travel times and improve reliability, the SFMTA proposes a toolkit of measures within the study area. The proposals include:

- Increasing bus stop spacing from one block to two blocks. Currently, the 30 Stockton stops at almost every block on Columbus Avenue and on North Point Street. This proposal moves towards at least a two-block spacing throughout the route. By stopping fewer times, the bus would take less time to move through the corridor.
- Optimizing bus stop locations at four locations. Relocating bus stops from the near-side to the far-side of intersections would allow buses to take advantage of planned transit signal priority improvements.
- Adding transit bulbs at 11 locations. Transit bulbs are sidewalk extensions alongside bus stops that allow buses to pick-up and drop-off customers without having to pull out of the travel lane

into a bus stop and then wait for a gap to merge back into traffic. Transit bulbs enhance the ability of buses to take advantage of planned all-door boarding and provide space for transit shelters and other customer amenities.

- Extending existing transit bulbs at four locations. Transit bulbs in the southbound direction on Stockton Street are currently sized for one articulated 60' bus. Often times due to the high frequency of transit service in this direction, two or more buses will arrive at a stop at the same time, delaying the second vehicle as it waits to service the stop. With a longer transit bulb, up to two articulated 60' buses would be able to serve the stop at the same time, reducing delays.
- Adding transit-only lanes at three locations. In areas of high traffic congestion, transit-only lanes can save significant travel time for the 30 Stockton by giving the bus its own exclusive lane.
- Widening travel lanes on Stockton Street between Broadway and Columbus Avenue. Within this two block segment of Chinatown, the travel lanes on Stockton Street are too narrow to allow large vehicles such as buses or delivery trucks to pass one another in opposite directions without one of the vehicles coming to a complete stop. For example, when a 30 Stockton bus is headed northbound within this segment, it generally has to drive over the double yellow line due to the narrow lane widths. If a large vehicle such as a bus or delivery truck is headed in the opposite direction, one vehicle must stop to let the other pass by. This condition has made Stockton Street between Broadway and Columbus Avenue the slowest segment of the route. By widening the travel lanes through parking removal on the east side of the street, delays to transit would potentially be reduced.

Summary

Together, the proposed changes are anticipated to reduce the travel time of the 30 Stockton by about 3.5 minutes in each direction (seven minutes total) within the study area (15 percent reduction), improving the average operating speed to 6.6 miles per hour and improving service reliability. Transit signal priority improvements are anticipated to save an additional two minutes in each direction. Other changes such as operational improvements and network enhancements would further improve travel times along the corridor and add valuable customer amenities such as NextBus displays. The travel time savings would also reduce operating costs on the line and allow for service to be cost effectively increased.

30_2 Chestnut Street Travel Time Reduction Proposal

For this proposal, the TPS Toolkit elements would be applied along a segment of the 30 Stockton route. The TPS Toolkit elements would be implemented along Chestnut, Broderick, Divisadero and Jefferson streets, from the intersection of Van Ness Avenue and Chestnut Street to the intersection of Jefferson and Broderick streets. This would improve an east-west portion of the Rapid Network connecting the future Van Ness BRT with the 30 Stockton to provide transit connections between the Marina, Russian Hill, Civic Center, the North Waterfront, North Beach, Chinatown, Union Square, the Financial District, SoMa and the Caltrain Station.

Frequency

Service during peak periods (headway between vehicles, in minutes)

East of Van Ness Ave.

	Current	Proposed	Frequency
AM	4	4	=
PM	4	4	=

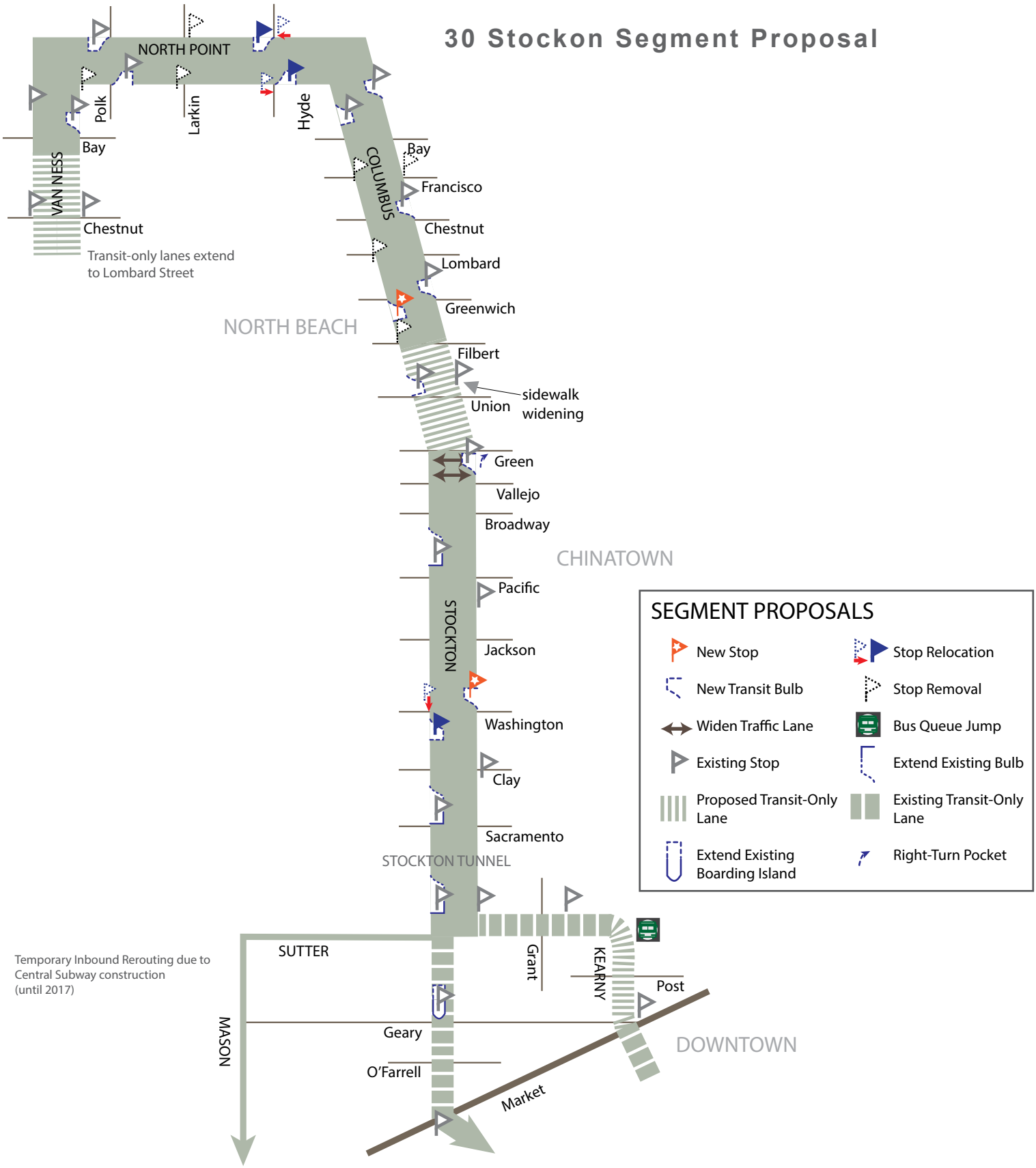
West of Van Ness Ave.

	Current	Proposed	Frequency
AM	8	7	+
PM	12	12	=

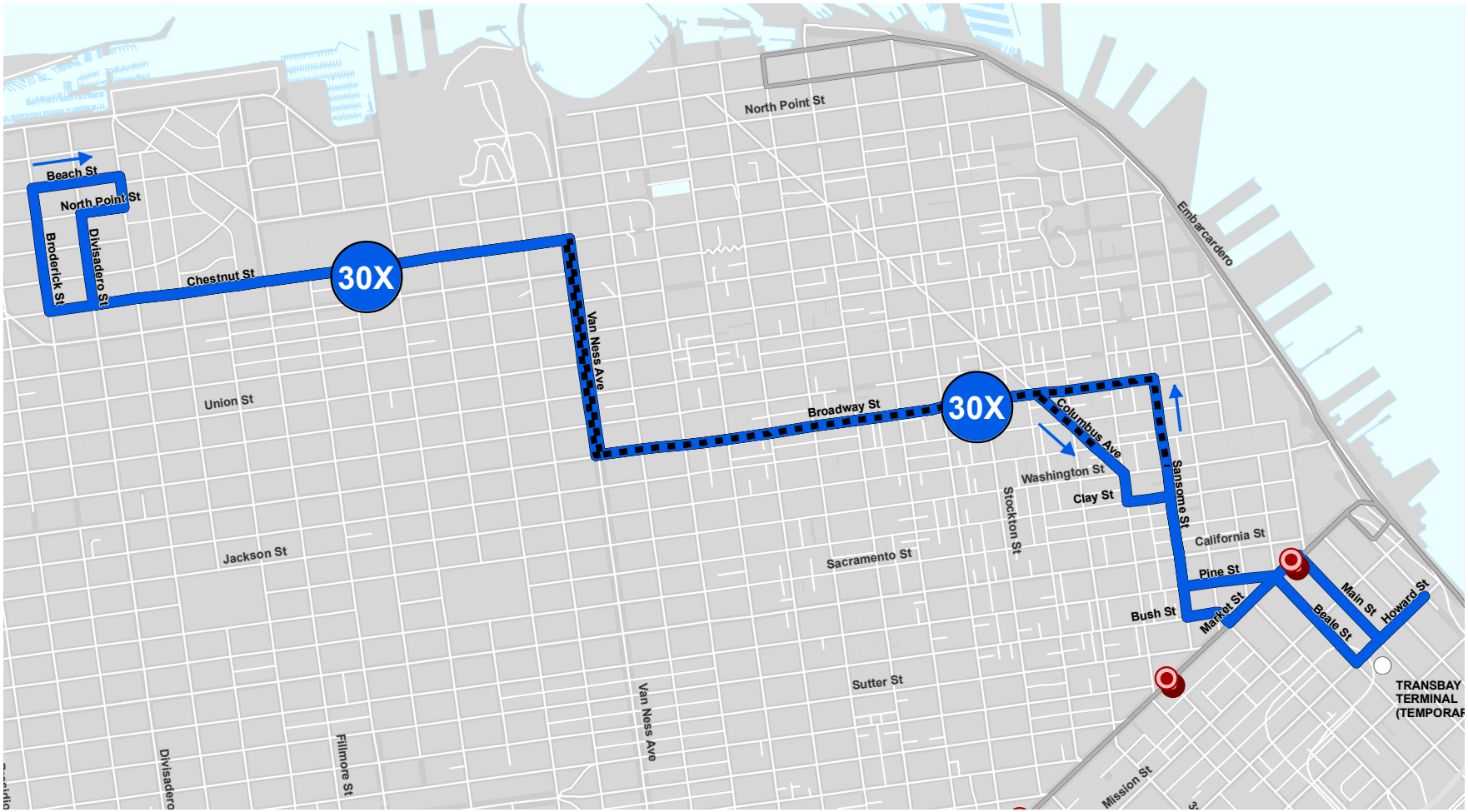
Finance

Route / Fund Source		FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
30 Stockton								$32,880,000
TEP Capital Seg. 1	CCSF-GOBond					$22,100,000		$22,100,000
	SFCTA-PropAA					$1,020,000		$1,020,000
	Total					**$23,120,000**		**$23,120,000**
TEP Capital Seg. 2	CCSF-GOBond				$3,360,000			$3,360,000
	SFCTA-PropK-EP1			$560,000				$560,000
	Total			**$560,000**	**$3,360,000**			**$3,920,000**
TEP Supportive	No Funding Source				$2,375,373		$3,131,627	$5,507,000
	SFCTA-PropK-EP16				$333,000			$333,000
	Total				**$2,708,373**		**$3,131,627**	**$5,840,000**

30 Stockton


30 Stockon Segment Proposal
NORTH POINT
Polk
Larkin
Hyde
Bay
VAN NESS
Chestnut
Transit-only lanes extend to Lombard Street
COLUMBUS
Bay
Francisco
Chestnut
Lombard
Greenwich
NORTH BEACH
Filbert
Union
sidewalk widening
Green
Vallejo
Broadway
CHINATOWN
Pacific
STOCKTON
Jackson
Washington
Clay
Sacramento
STOCKTON TUNNEL
SUTTER
Grant
KEARNY
Post
MASON
Geary
O'Farrell
Market
DOWNTOWN
Temporary Inbound Rerouting due to Central Subway construction (until 2017)
SEGMENT PROPOSALS
New Stop
Stop Relocation
New Transit Bulb
Stop Removal
Widen Traffic Lane
Bus Queue Jump
Existing Stop
Extend Existing Bulb
Proposed Transit-Only Lane
Existing Transit-Only Lane
Extend Existing Boarding Island
Right-Turn Pocket

30X Marina Express



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

30X Marina Express

Overview

- No route changes proposed
- In the a.m. peak period, the 30X Marina Express would use 60-foot articulated motor coaches instead of standard 40-foot motor coaches.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	4.5	4	+
PM	7.5	7	+

31 Balboa

Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

31 Balboa

Overview

- No route changes proposed.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	12	12	=
PM	14	12	+

31AX Balboa Express

Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

31BX Balboa Express

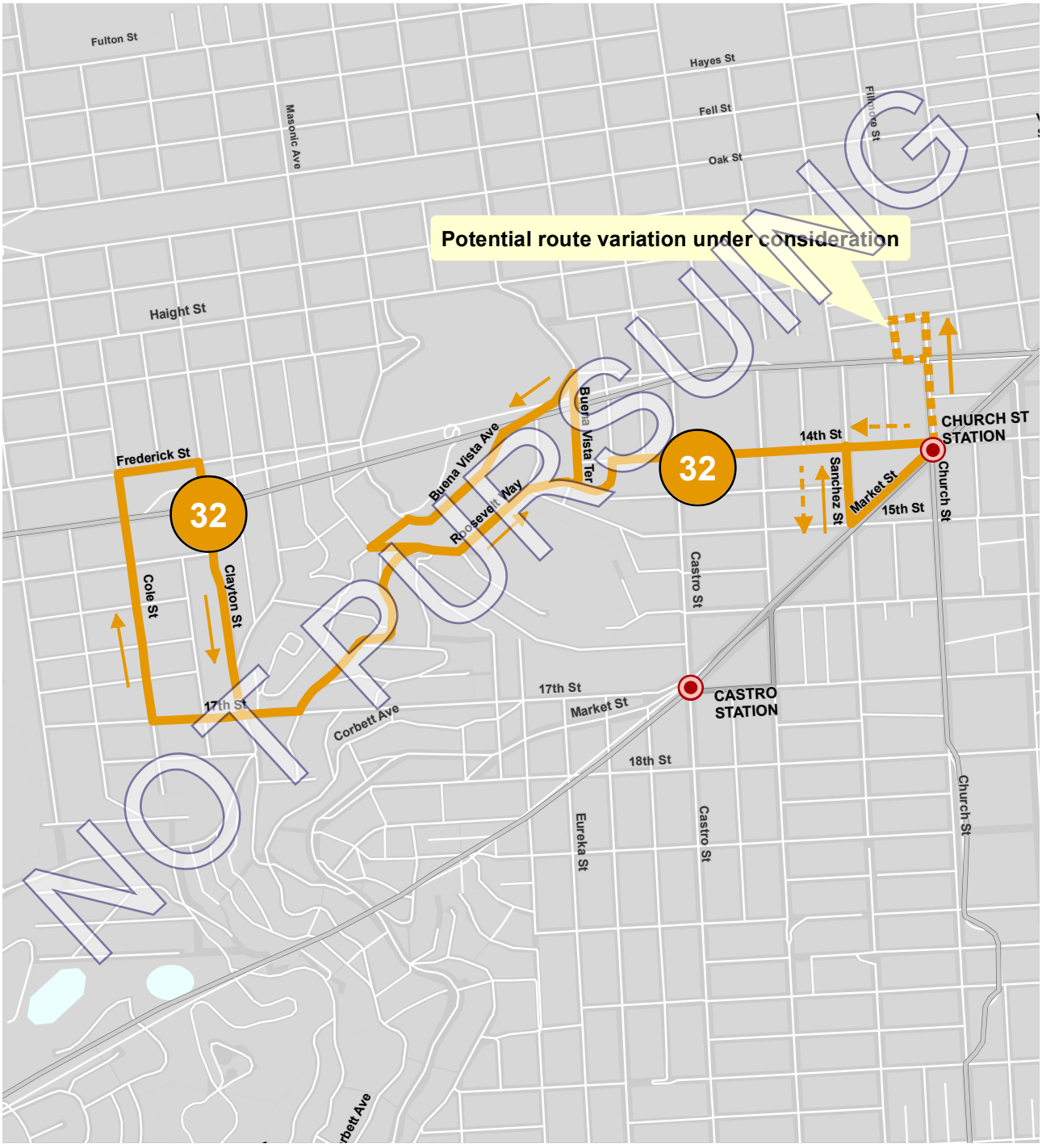
Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

32 Roosevelt - NOT PURSUING



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Segment Proposed for Elimination
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

NR

32 Roosevelt - NOT PURSUING

Overview

- Proposed route would replace Roosevelt Way segment of Route 37 Corbett but would not extend north of Cole/Frederick streets.
- Route would travel from Church and Market streets via Church Street left on Hermann Street, left on Fillmore Street, left on Duboce Avenue, right on Church Street, right on 14th Street, followed by Roosevelt Way, Buena Vista Terrace, Buena Vista East, Upper Terrace, Masonic Avenue, Roosevelt Way, then on 17th, Cole, Frederick, Clayton, and 17th streets, on Roosevelt Way onto to 14th Street and then, left onto Church Street. This would require modifying the existing no left turn restriction at Fillmore Street and Duboce Avenue to no left turns except Muni.
- Terminal would be on Church Street between Market and Reservoir streets. This would require a reduction of up to five parking spaces (when combined with the 37 Corbett terminal in the same location).
- 32 Roosevelt Service Variant would include an alternative alignment along Church Street, Hermann Street, Fillmore Street and Duboce Avenue.
- Recommended for van service, but the timeline for van procurement is uncertain.

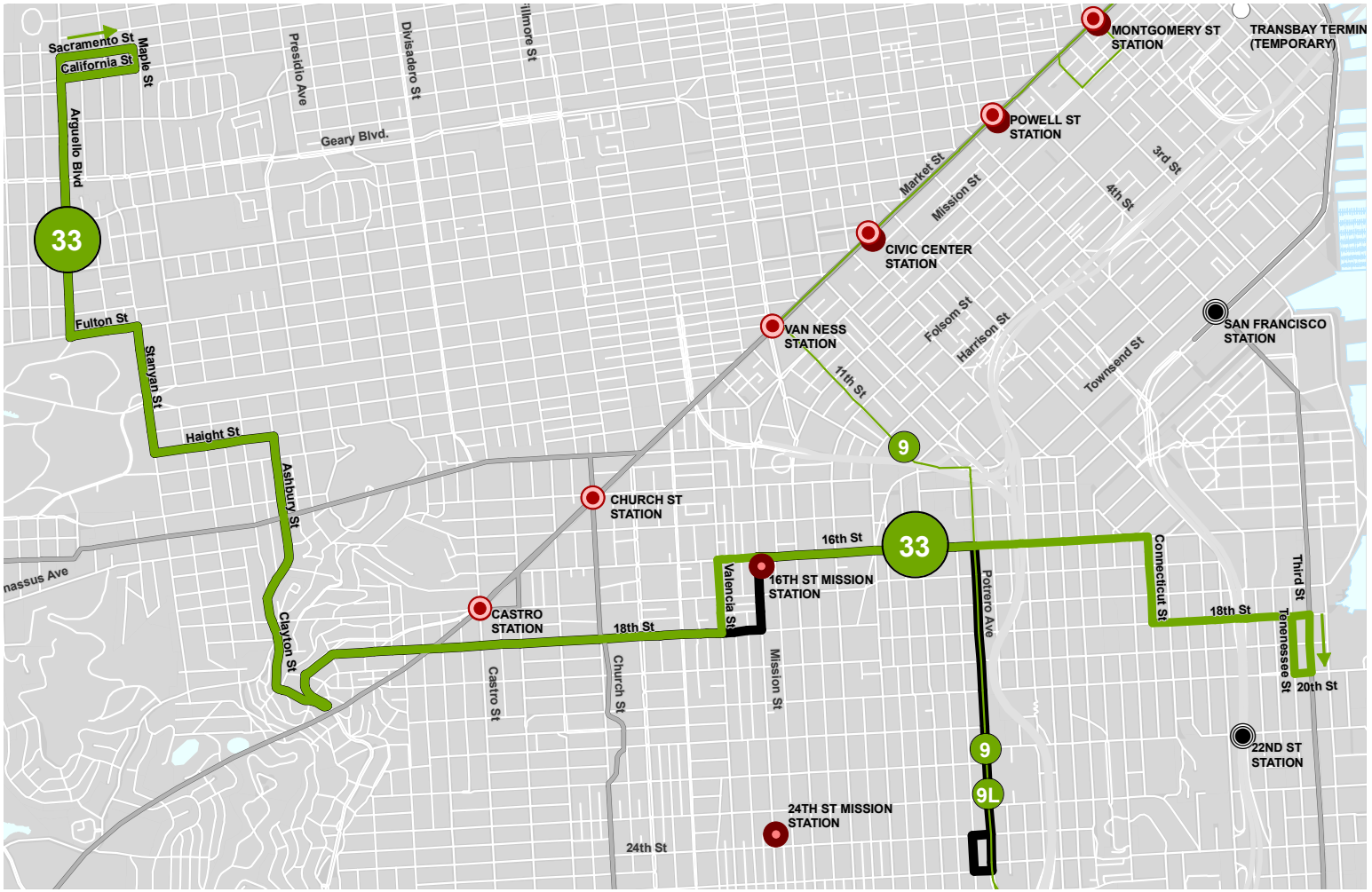
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	N/A	20	N/A
PM	N/A	20	N/A

*Proposal is On Hold Pending Additional Community Outreach

33 Stanyan



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

33 Stanyan

Overview

- Would operate on current route on 18th Street west of Valencia Street and 16th Street between Valencia Street and Potrero Avenue.
- Would cross Potrero and continue east on 16th Street to Connecticut Street, south to 18th Street, to Third Street, 20th and Tennessee streets to cover Potrero Hill segment of 22 Fillmore that would be eliminated.
- Service would be rerouted onto Valencia Street between 16th and 18th streets (new street segment) to alleviate transit congestion on Mission Street and provide better connections with 22 Fillmore as described in Service-related Capital Improvement project OWE.1.
- Potrero Avenue passengers would use Route 9 San Bruno/9L San Bruno Limited.
- Frequency would increase on 33 Stanyan in order to mitigate loss of 22 Fillmore service in Dogpatch.

Frequency

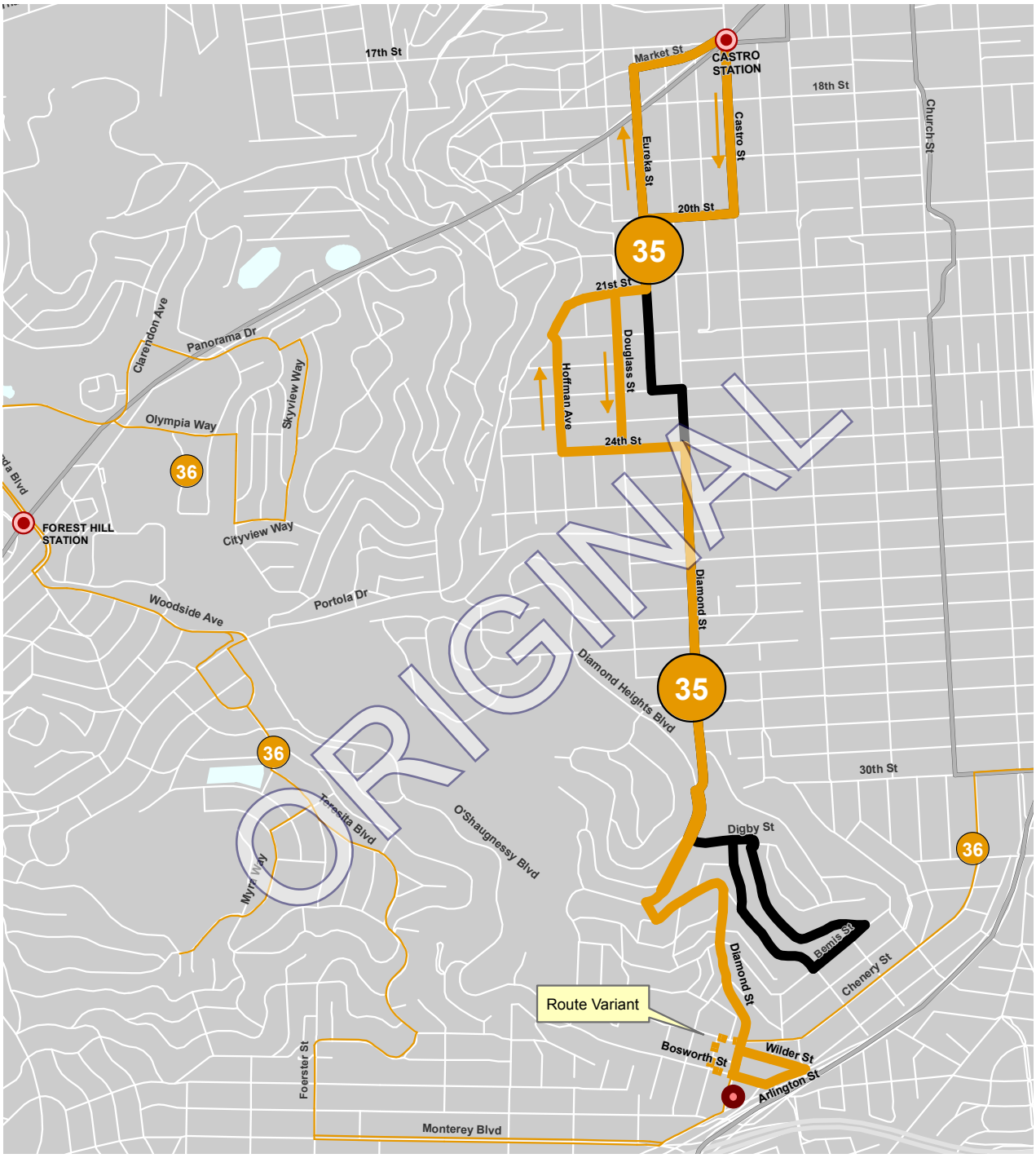
Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	15	12	+
PM	15	12	+

- Mid-day frequency would increase to 12 minutes.

35 Eureka

- Original Proposal (See Revised Proposal on Pg 184



Legend

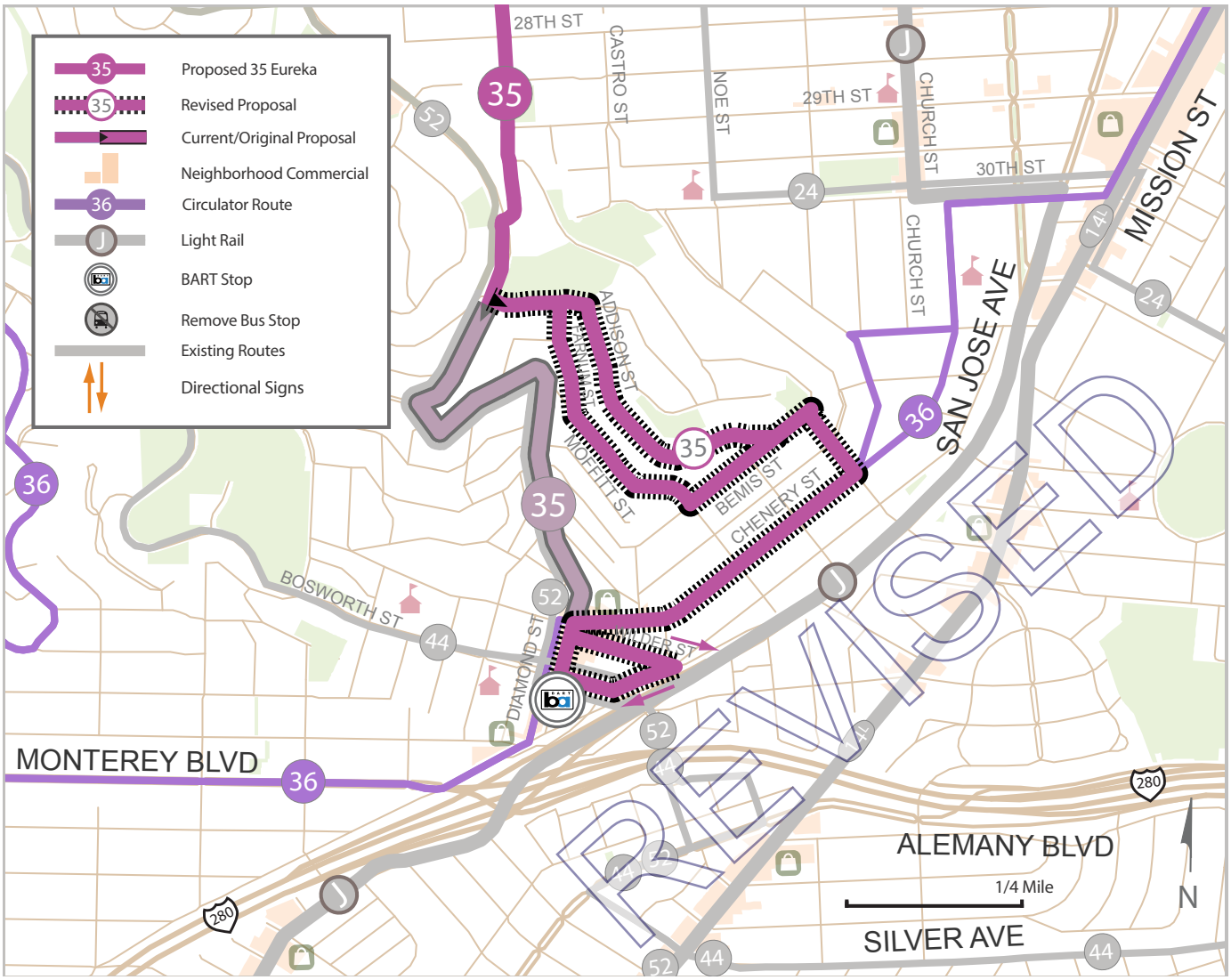
- Recommended Route
- Segment will be covered by another recommended route
- Segment Proposed for Elimination
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC VC

35 Eureka

- Revised Proposal



Proposed Changes

HC RA

35 Eureka

Overview

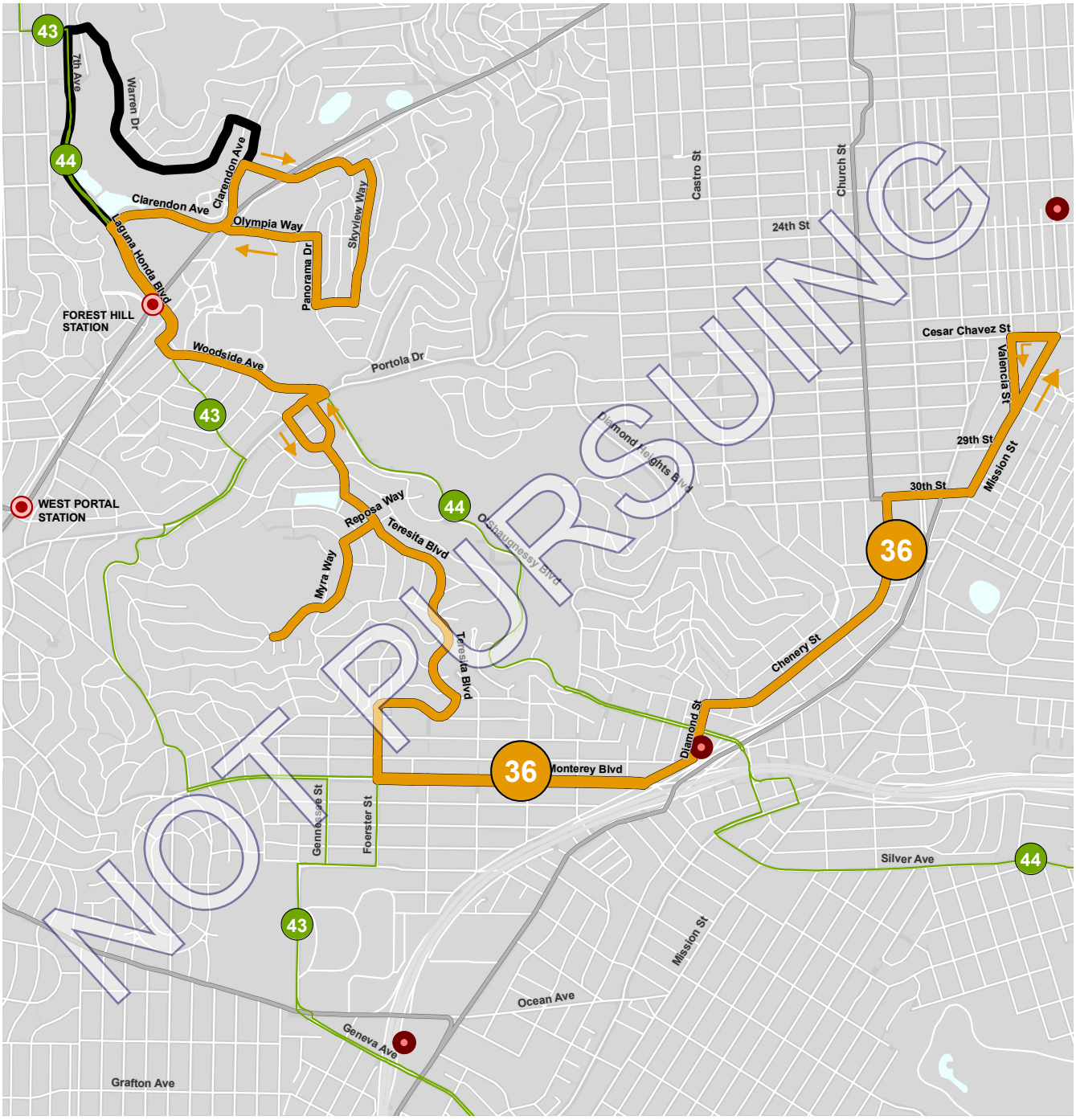
- Recommended for van service, but the timeline for van procurement is uncertain.
- ~~The 35-Eureka will extend along a more direct path to Glen Park BART Station via Diamond, Wilder, Arlington, and Bosworth Streets. Route will serve a new southern terminal location in the vicinity of Glen Park BART Station.~~ REVISED: The 35-Eureka will maintain service on Addison, Moffitt, Bemis, and Digby Streets, and will connect to Glen Park BART Station by extending east on Bemis Street, south on Miguel Street, and west on Chenery Street to Diamond Street.
- ~~Eliminated street segments include Addison, Moffitt, Bemis, and Digby Streets.~~
- Midday frequency would change from 30 to 20 minutes.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	30	20	+
PM	20	20	=

36 Teresita - NOT PURSUING



Legend

- Recommended Route
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC VC

36 Teresita - NOT PURSUING

Overview

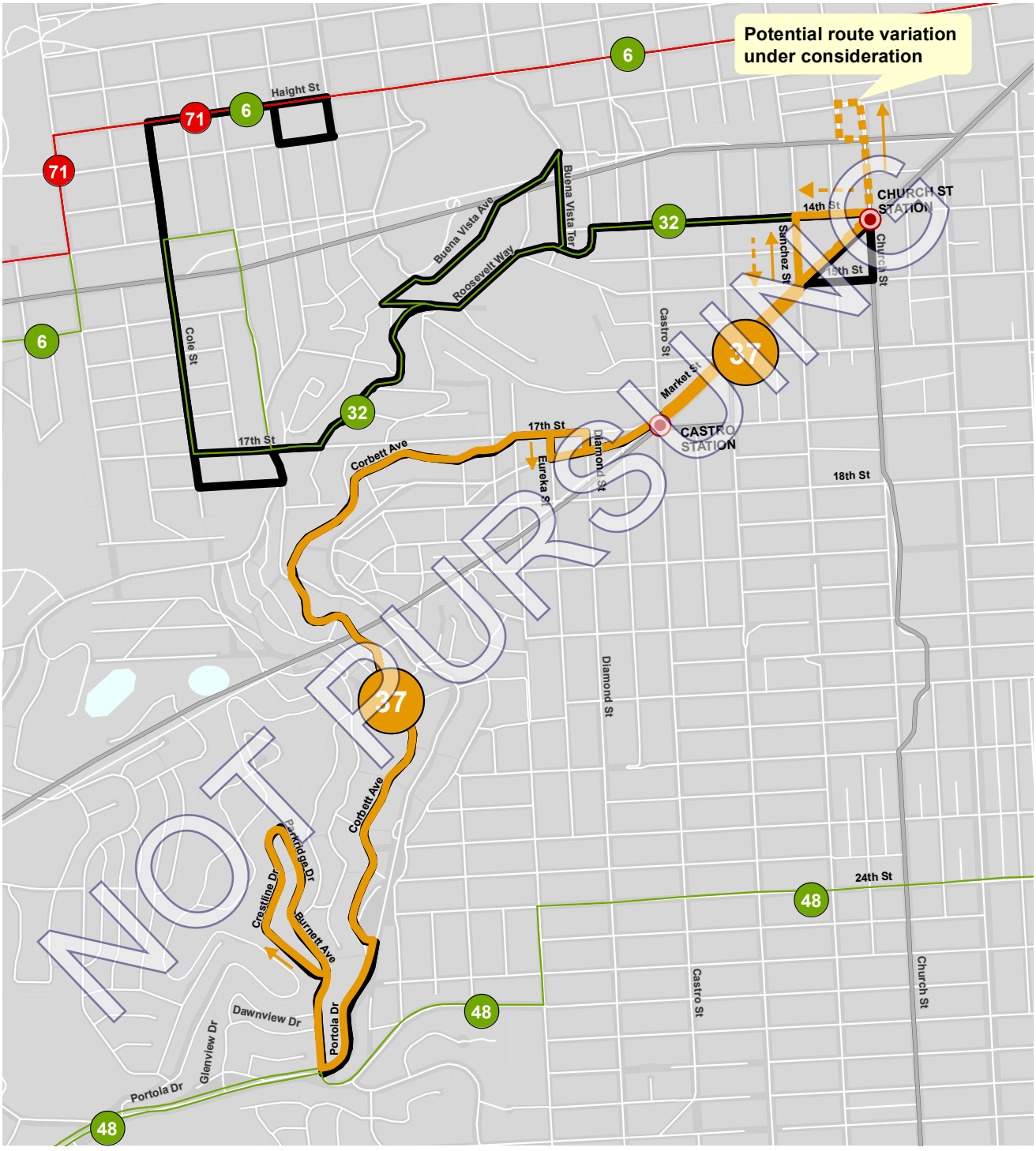
- Recommended for van service, but the timeline for van procurement is uncertain.
- Service to Forest Knolls (via Warren Drive) would be eliminated to make remaining service less circuitous; service to Midtown Terrace would be unchanged.
- Eliminated streets include Clarendon Avenue between Panorama and Oak Park drives, Oak Park and Warren drives, Lawton and Seventh avenues to Clarendon Avenue.
- Midday frequency would change from 30 to 20 minutes.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	30	30	=
PM	30	30	=

37 Corbett - NOT PURSUING



Legend

- Recommended Route
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC VC

37 Corbett - NOT PURSUING

Overview

- The Roosevelt Way branch of the 37 Corbett would be replaced by the new 32 Roosevelt route.
- Streets in the Roosevelt Way branch proposed to be served by the 32 Roosevelt would be: Market, Sanchez, and 14th streets, Roosevelt Way, Buena Vista Terrace, Buena Vista East, Upper Terrace, Masonic Avenue, Roosevelt Way, 17th, Cole, Frederick, Clayton, and 17th streets, Roosevelt Way, and 14th.
- Streets no longer served by either 37 Corbett or 32 Roosevelt are Clayton Street between 17th and Carmel streets, Carmel Street between Clayton and Cole streets, Cole Street between Carmel and 17th streets, Cole Street between Frederick and Haight streets, and Haight Street, Masonic Avenue, Waller and Ashbury streets.
- The new terminal loop would operate from Market Street, left on Church Street, left on Hermann Street, left on Fillmore Street, left on Duboce Avenue, and right on Church Street. The terminal would be on Church Street between Market and Reservoir streets. This would require a reduction of up to five parking spaces (when combined with the 32 Roosevelt terminal in the same location).
- 37 Corbett Service Variant would include an alternative alignment along Church Street, Hermann Street, Fillmore Street and Duboce Avenue.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	15	15	=
PM	20	15	+

*Proposal is On Hold Pending Additional Community Outreach.
** Route proposal will not be pursued however frequency increase during PM peak period is planned

38 Geary

Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

38 Geary

Overview

- No route changes proposed.
- Midday frequency would change from 16 to 15 minutes west of 33rd Avenue.
- Would coordinate with Geary BRT study currently underway.

Frequency

Service during peak periods (headway between vehicles, in minutes)

West of 33rd Avenue

	Current	Proposed	Frequency
AM	12	12	=
PM	13	12	+

East of 33rd Avenue

	Current	Proposed	Frequency
AM	6.5	6	+
PM	6.5	6	+

38L Geary Limited

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC EH

38L Geary Limited

Overview

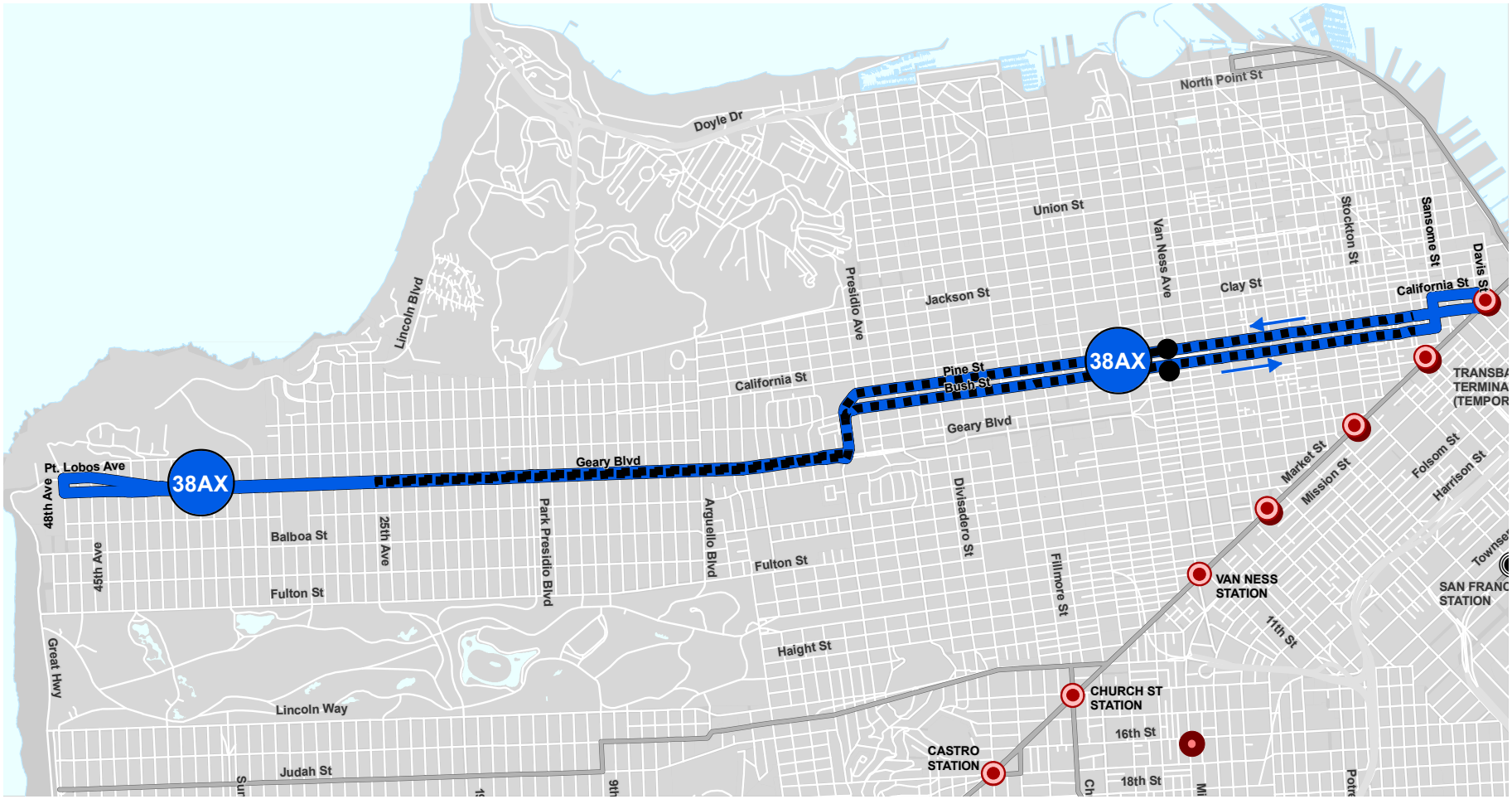
- No route changes proposed (Proposed Geary BRT is subject to its own environmental review).
- Midday frequency change from 6 to 5 minutes.
- Limited-stop service would be expanded to include Sundays.
- Would coordinate with Geary BRT Study currently underway.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	5.5	5	+
PM	5.5	5	+

38AX Geary Express



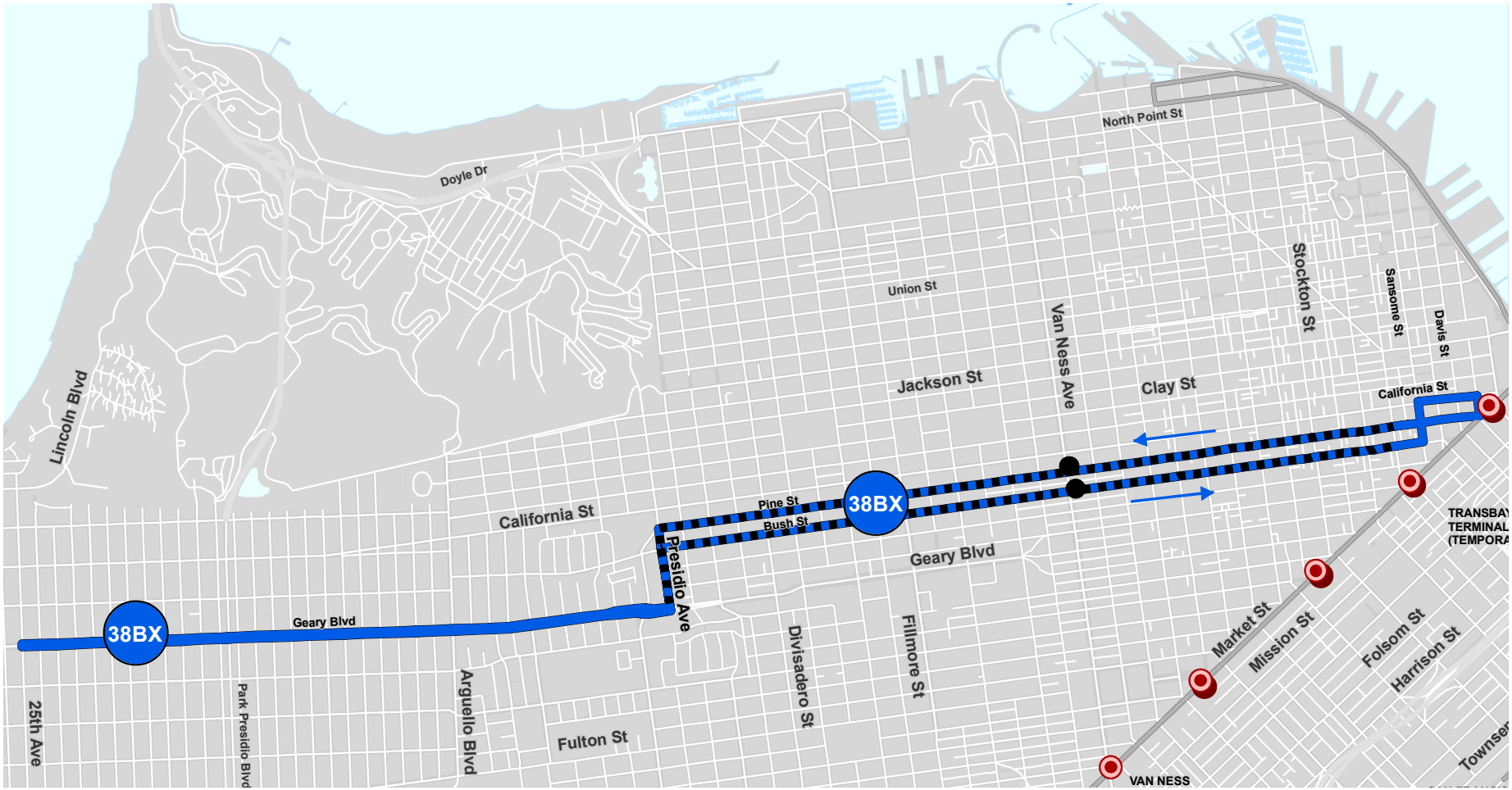
Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

38BX Geary Express



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

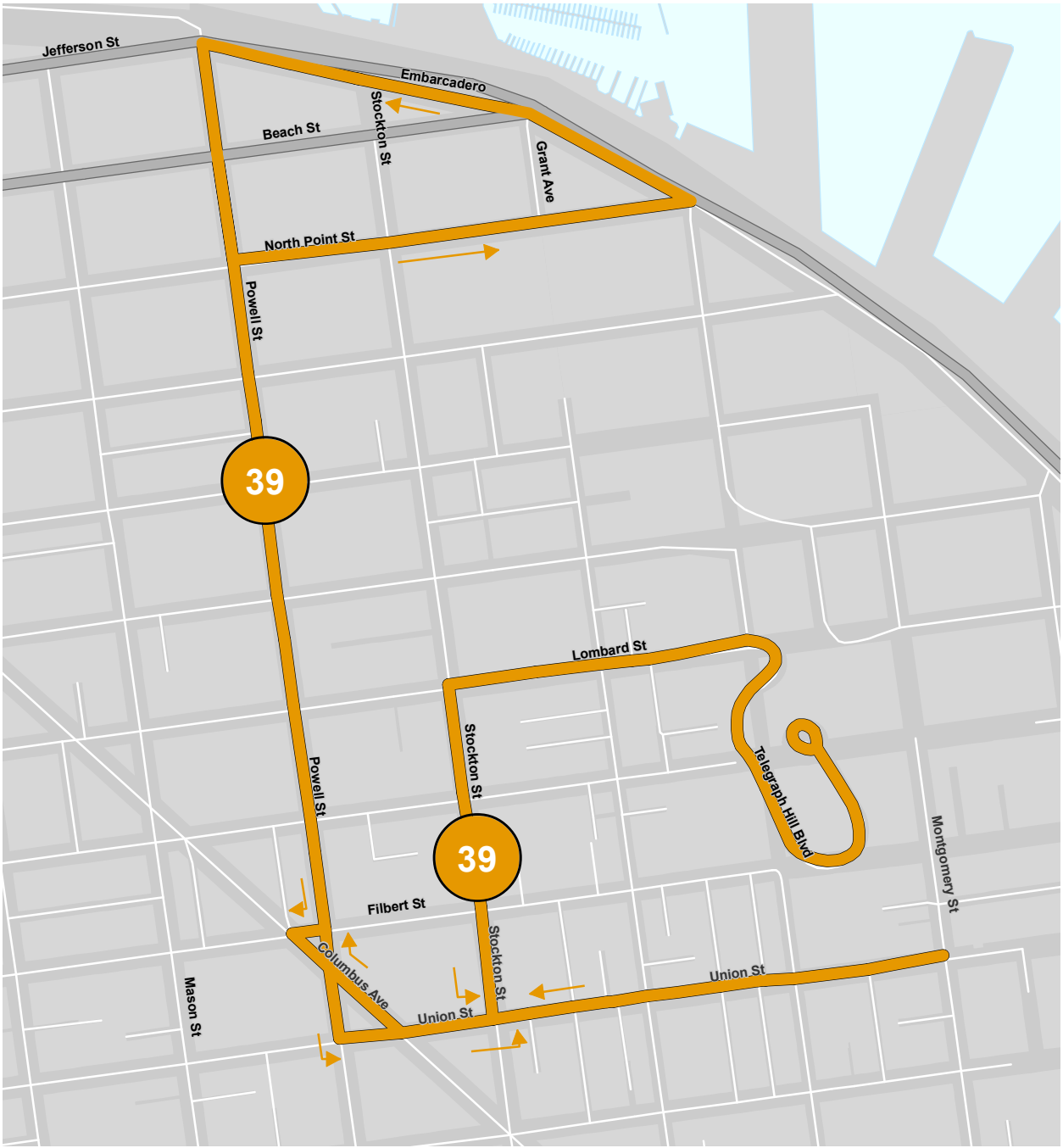
HC

38BX Geary Express

Overview

- No route changes proposed.

39 Coit



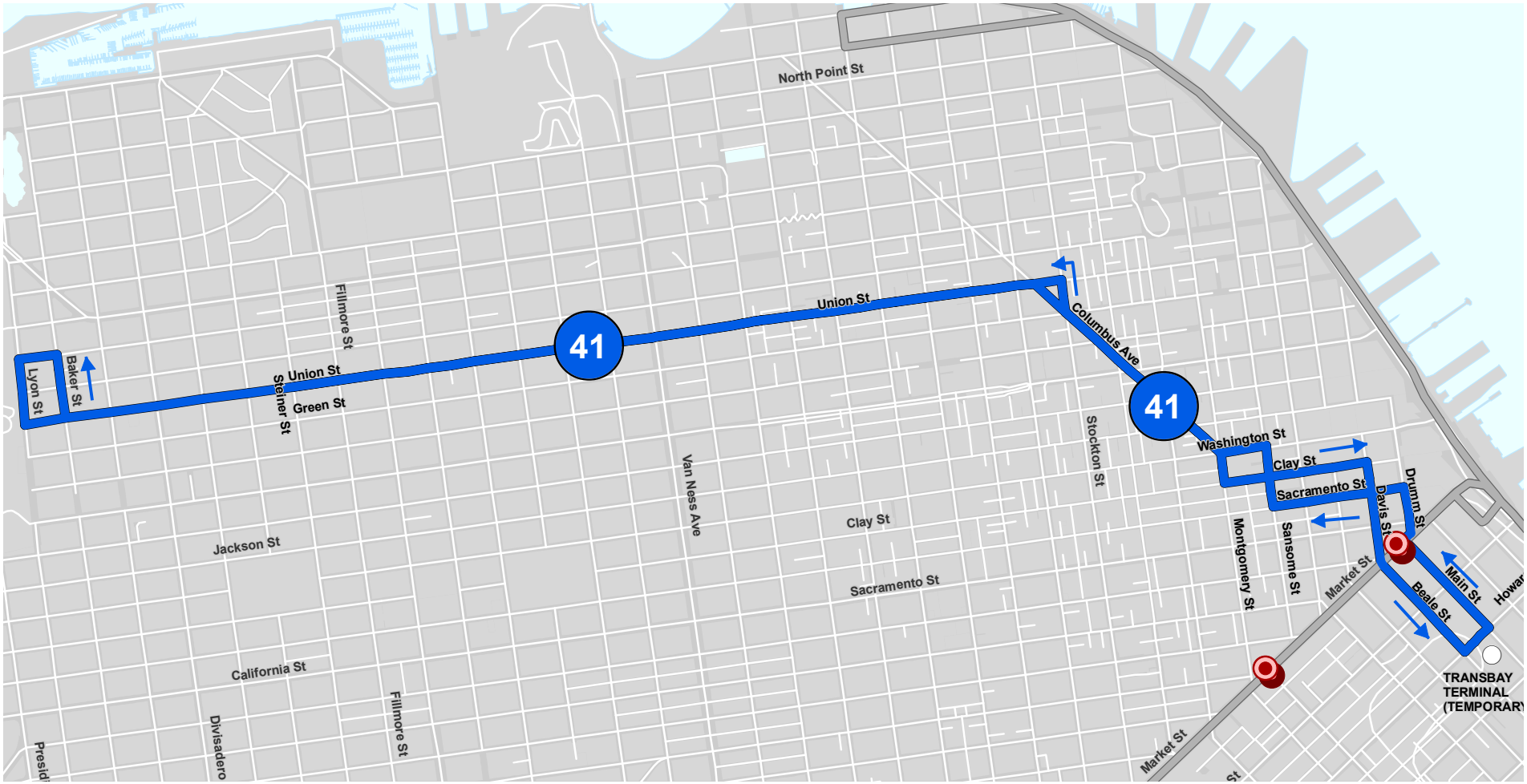
Legend

- Recommended Route
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network

Proposed Changes

None

41 Union



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC OWE

OWE.2 41 Union Bypass Wires at Terminal Location

This project would install bypass wires to improve terminal operations where multiple trolley coach routes share a terminal. This project would provide trolley coach access to and egress from terminals and would improve route reliability by preventing trolley coaches from one route from getting stuck behind trolley coaches from another route. Currently, at terminals shared by multiple trolley coach routes, operators must exit their vehicle and pull trolley poles in order to pass a coach already in the terminal. Including an additional terminal location for the 41 Union/ 45 Union Stockton, a combined total of about 1,200 linear feet of overhead bypass wires and the installation of about 50 poles is proposed also at the 1 California terminal location at Presidio Avenue and Sacramento Street (Terminal for Routes 1 California and 2 Clement short-line).

Lyon and Union streets (Terminal for Routes 41Union and 45 Union-Stockton). Installation of overhead bypass wires would involve the installation of additional pole foundations within sidewalks along the north and south sides of Greenwich Street between Lyon and Baker streets, and along the west and east side of a portion of Lyon Street between Greenwich and Filbert streets.
No underground electrical wiring, or duct work, would be required. Construction of three new curb ramps to provide disabled access would be required at the intersection of Lyon and Greenwich streets. As curb ramps are typically installed at the same location as an existing sidewalk, it is not anticipated that any utilities, such as catch basins, would need to be relocated. An existing operator restroom facility is located at the northwest corner of Lyon and Greenwich streets which would remain.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	8	7	+
PM	8	7	+

43 Masonic - Original Proposal (See Revised Proposal on Pg 202)

Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

43 Masonic - Revised Proposal

Proposed Changes

RA HC

43 Masonic

Overview

- Proposed alignment would extend from Chestnut/Fillmore streets to Fort Mason (Marina Boulevard/Laguna Street), replacing the existing Route 28 19th Avenue/28L 19th Avenue Limited terminal.
- ~~Service in the Presidio would be modified to connect to the Presidio Transit Center; then exit the Presidio in the Marina District at Richardson Avenue instead of Lombard Street. Modified route would use Presidio Avenue, Lincoln Boulevard, Graham Street (Presidio Transit Center), Halleck Street, Gorgas and Richardson avenues, to Lombard Street.~~ REVISED: Service in the Presidio would be extended to the Presidio Transit Central via Lincoln Boulevard, Graham Street, Halleck Street, and service would be retained to Lombard and Lyon streets.
- The 43 Masonic would no longer serve Letterman Drive and Lombard Street between Presidio and Richardson avenues.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	8	+
PM	12	10	+

44 O'Shaughnessy

Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

44 O'Shaughnessy

Overview

- No route changes proposed.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	7.5	+
PM	9	8	+

45 Union-Stockton

Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

47 Van Ness - Original Proposal (See Revised Proposal on Pg 208)

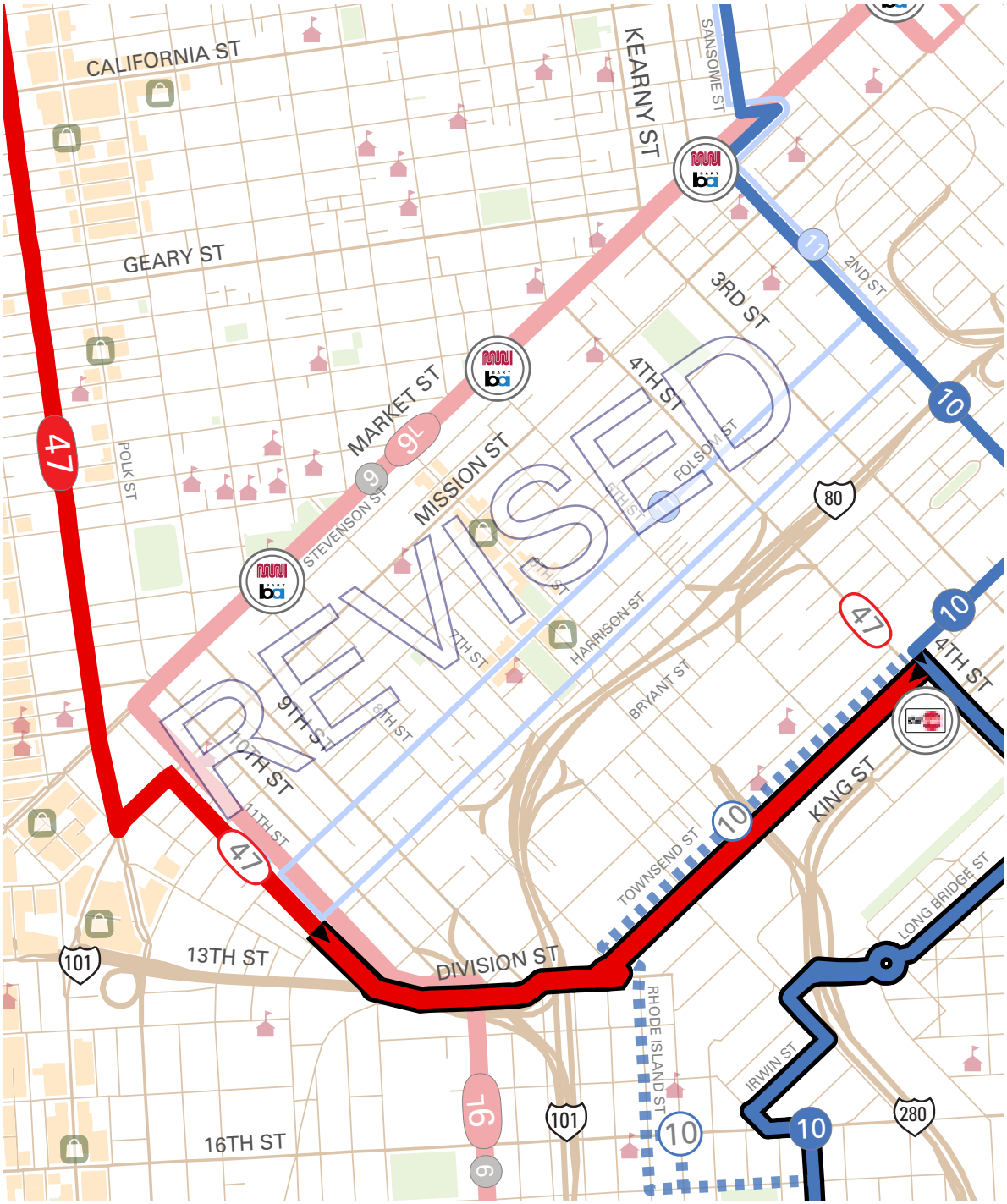
Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

47 Van Ness - Revised Proposal



Proposed Changes

RA HC

47 Van Ness

Overview

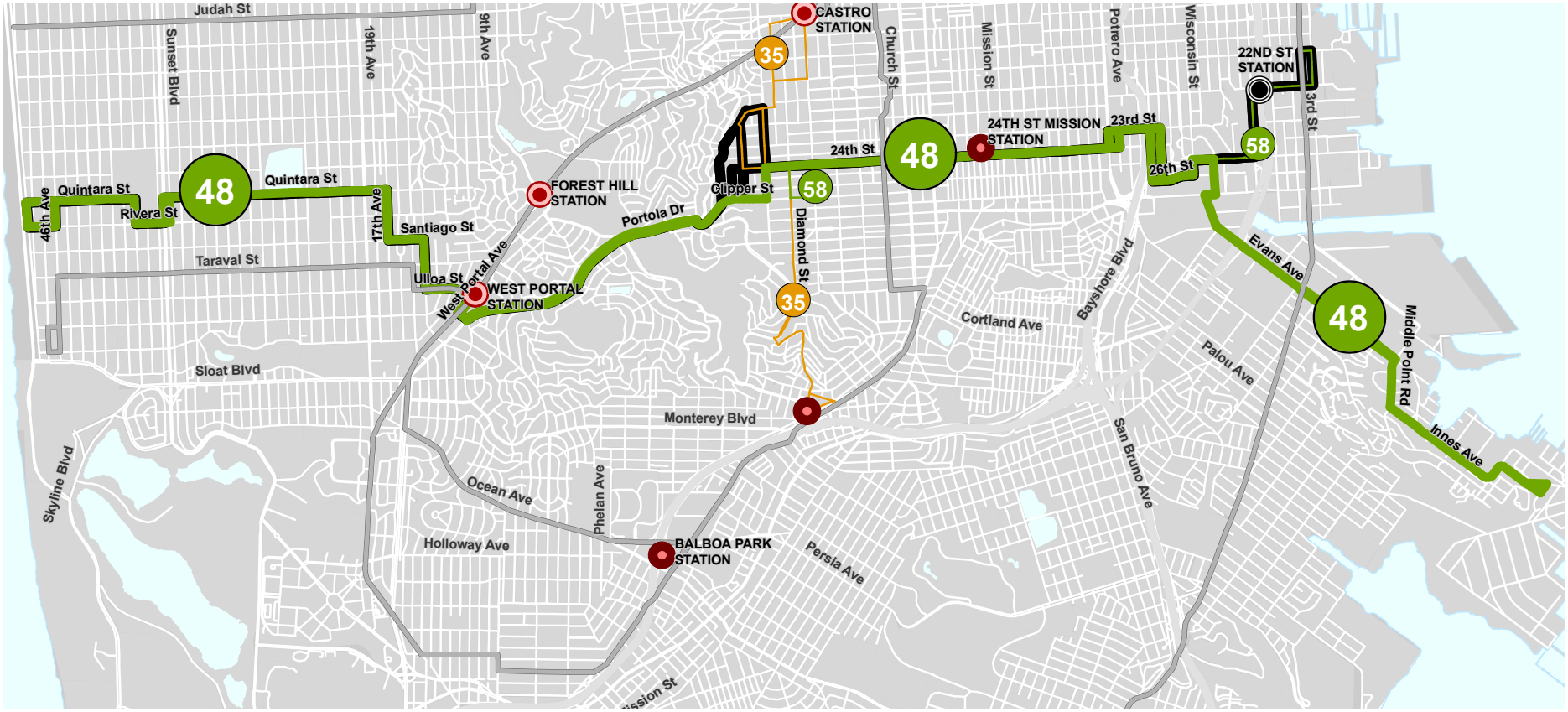
- Route would terminate at Van Ness Avenue and North Point Street and would share a terminal with the 49L Van Ness-Mission Limited. A common terminal for both routes serving Van Ness Avenue would improve reliability by allowing line management from a single point; North Point segment would be covered by new Route 11 Downtown Connector.
- Northern street segments that would be eliminated include portions of North Point, Stockton, Beach, and Powell streets.
- Route would operate along South Van Ness Avenue, Division and Townsend streets, instead of Bryant and Harrison streets to provide faster connection to Caltrain and better connections to the commercial and residential centers along ~~13~~11th and Division streets. ~~New transit streets on the southern segment are South Van Ness Avenue between Mission and 13th streets; 13th Street between South Van Ness Avenue and Bryant Street; and Division Street between Brannan and Townsend streets.~~ REVISED: New transit service along Division Street between 11th and Townsend Streets.
- Southern street segments that would be eliminated are Mission, 11th Street, Harrison, Bryant, Fifth, and Fourth streets.
- Proposed route change would coordinate with proposed Van Ness BRT project.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	7.5	+
PM	10	7.5	+

48 Quintara-24th Street



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

48 Quintara-24th Street

Overview

- Service would operate all day from 48th Avenue to the Hunters Point Naval Shipyard; new Route 58 24th Street would provide complementary service between Grandview Avenue and the 22nd Street Caltrain Station.
- Would provide more direct routing from Portola Drive to 24th Street via Clipper and Douglass streets; new transit streets would be Clipper Street between Grandview Terrace and Douglass Street, and Douglass Street between Clipper and 24th streets; drop-off only on-demand service on the Hoffman Loop, Grandview Terrace, and Fountain Street would be discontinued; service on Douglass Street and Hoffman Avenue would be replaced by the modified Route 35 Eureka.
- ON HOLD: At 25th and Connecticut streets, this route would no longer follow the existing Route 48 Quintara alignment and would change to follow the existing 19 Polk route to Hunters Point via Evans and Innes avenues.
- ON HOLD: New connection from the Mission District, Noe Valley and the Sunset to Third Street and Hunters Point would be provided, covering a portion of existing Route 19 Polk on Evans and Innes avenues and Galvez Street.
- The part-time terminal on the Lower Great Highway nearside at Rivera Street would become an all-day terminal. No additional parking reduction would be required. ON HOLD: The southeastern end of the route would use the existing 19 Polk terminal at the former Navy Yard Gate.

Frequency

Service during peak periods (headway between vehicles, in minutes)

WEST OF DIAMOND STREET AND EAST OF CONNECTICUT STREET:

	Current	Proposed	Frequency
AM	11	15	—
PM	12	15	—

ON 24TH STREET BETWEEN CONECTICUT AND DIAMOND STREETS:
(Combined Frequency with New 58 24th Street Line)

	Current	Proposed	Frequency
AM	12	7.5	+
PM	12	7.5	+

*Proposal to reroute east of Connecticut Street is on hold pending additional community outreach.

49L Van Ness-Mission Limited

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

VC TS LM PR TSC PI

49L Van Ness-Mission Limited

Overview

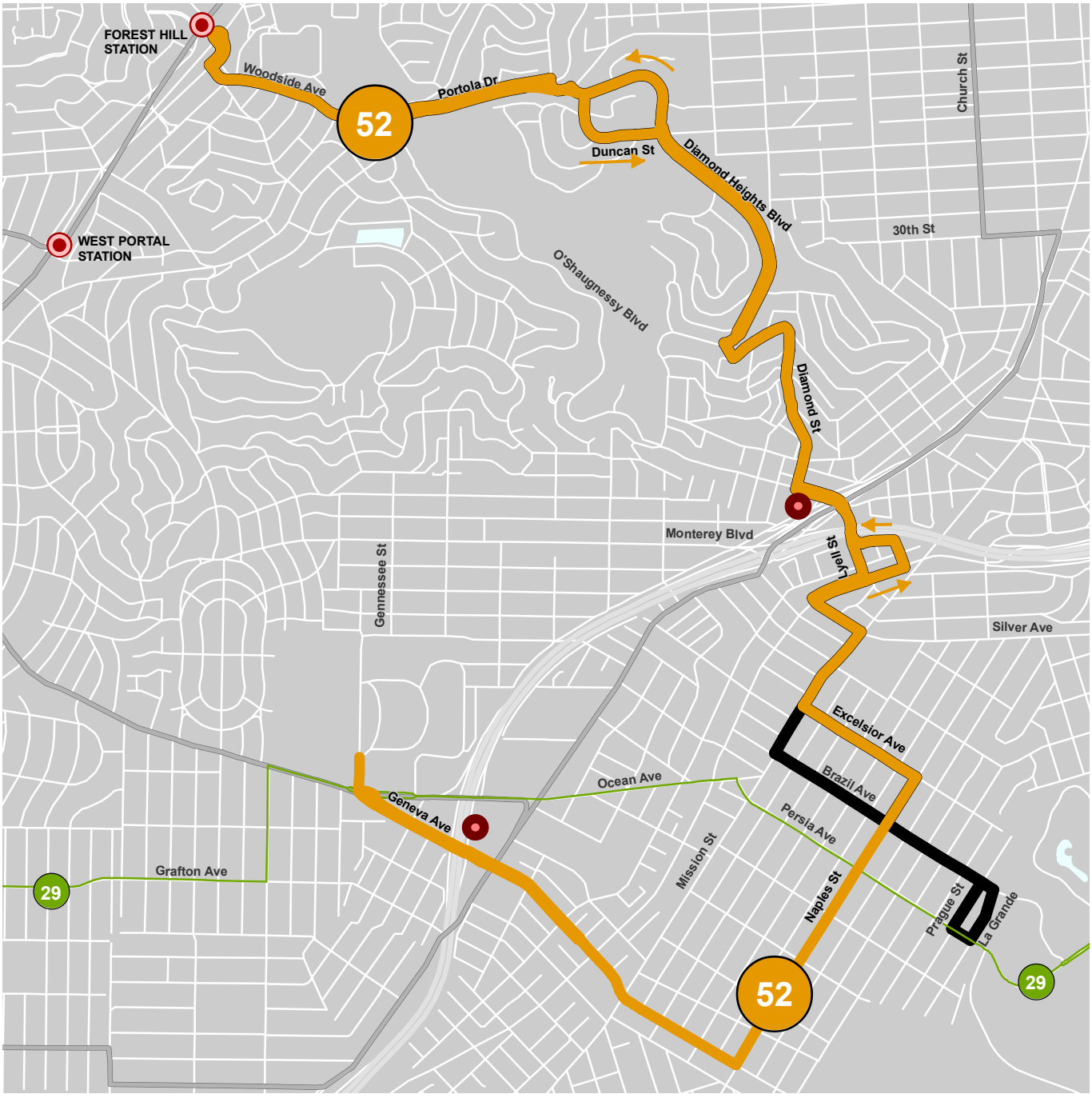
- No route changes proposed.
- To provide shorter travel times, proposed service would make local stops (as proposed in the Van Ness BRT project) on Van Ness Avenue and on Ocean Avenue and make limited stops on Mission Street.
- The 49L Van Ness-Mission Limited would follow the current 49 Van Ness-Mission route.
- The TTPI.1, Persia Triangle Improvements, would construct two new transit zones with transit bulbs along Ocean Avenue for the 49L Van Ness-Mission Limited.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	N/A	7.5	N/A
PM	N/A	7.5	N/A

52 Excelsior



Legend

- Recommended Route
- Segment Proposed for Elimination
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

52 Excelsior

Overview

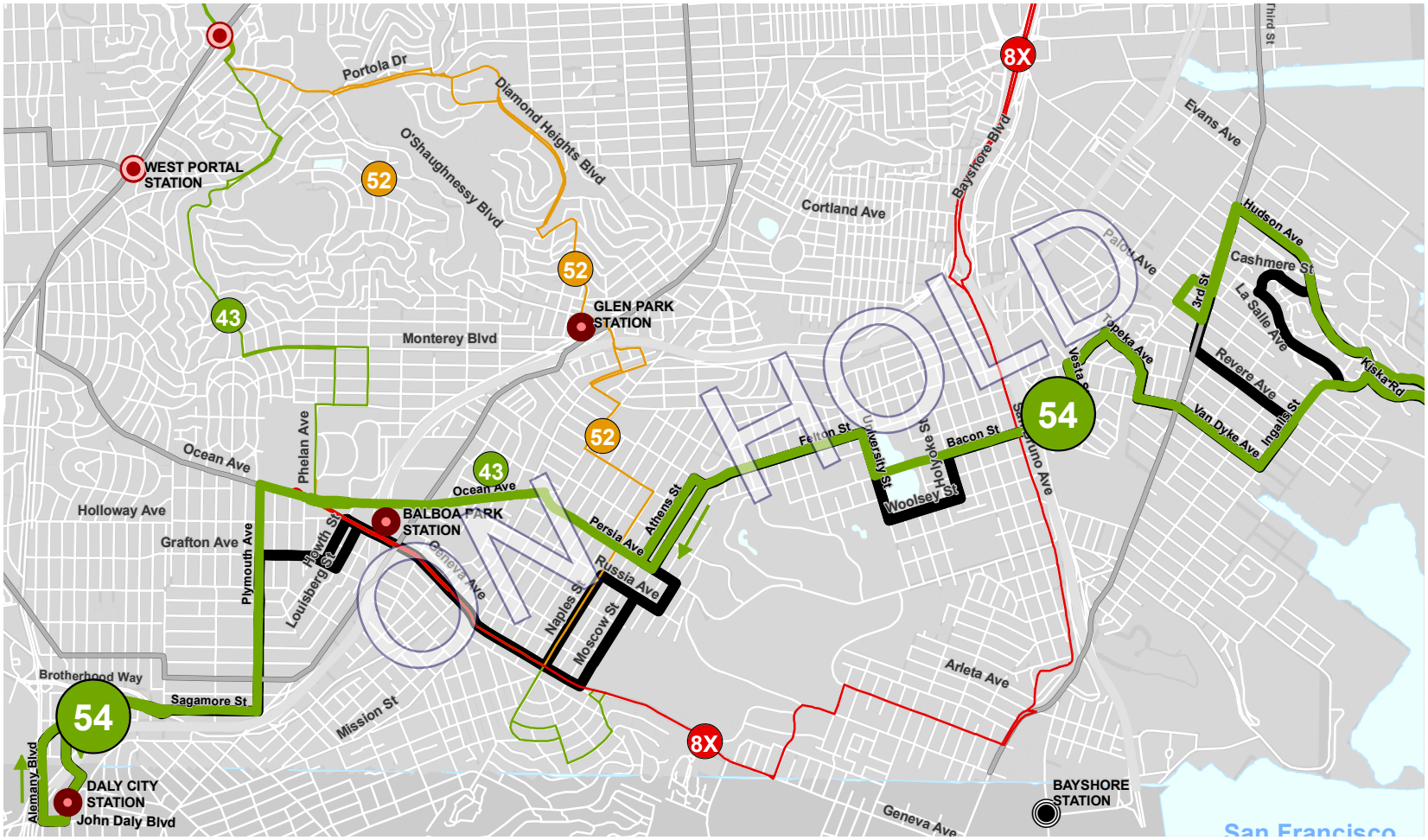
- Route would be extended from the Excelsior District to Balboa Park Station and CCSF via Naples Street and Geneva Avenue to include segments currently covered by the 54 Felton that would be eliminated.
- Would provide the Excelsior with two connections to BART.
- Two-way service would be provided on Excelsior Avenue and Naples Street; service would be discontinued on Brazil Avenue, Prague Street, and La Grande Avenue.
- Transit would be added to Naples Street between Brazil and Russia avenues.
- Midday frequency change from 30 to 20 minutes.
- A new terminal would be located on the western side of Phelan Avenue between Cloud Circle Street and Ocean Avenue in front of the CCSF bookstore; a 100-foot-long terminal would be created that would result in a reduction of up to five parking spaces and moving the existing motorcycle parking north approximately 100 feet.

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	20	20	=
PM	20	20	=

54 Felton - ON HOLD



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Segment Proposed for Elimination
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC

54 Felton - ON HOLD

Overview

- Route would be modified in several segments to make service quicker, more direct and less circuitous for passengers.
- Two-way service on Hunters Point hilltop would begin at Third Street and Palou Avenue, run two-way on Hudson Avenue, North Ridge Road, Jerrold Avenue, Kirkwood Street, Kiska Road, Ingalls Street, Van Dyke Avenue, and then continue through Silver Terrace.
- More direct routing on Bacon Street through the reservoir would eliminate the segment on Holyoke and Woolsey streets, and University Street between Bacon and Woolsey streets.
- Routing via Persia, Ocean, and Plymouth avenues would streamline service and improve access to/from CCSF and Balboa Park Station; some eliminated segments between Geneva Avenue and the Balboa Park Station would be picked up by the revised 52 Excelsior.
- The inbound route would travel from BART access road (Daly City BART Station), right on John Daly Boulevard, right on Junipero Serra Boulevard, right on Alemany Boulevard, right on Sagamore Street, left on Plymouth Avenue, right on Ocean Avenue (Balboa Park Station), right on Persia Avenue, left on Athens Street, right on Avalon Avenue, left on Felton Street, right on University Street, left on Bacon Street, left on Phelps Street, left on Vesta Street, right on Thornton Avenue, right on Bridgeview Drive, right on Topeka Avenue, right on Thornton Avenue, left on Reddy Street, straight on Williams Avenue, straight onto Van Dyke Avenue, left on Ingalls Street, right on Kiska Road, straight on Kirkwood Avenue, left on Earl Street, left on Jerrold Avenue, and straight onto Northridge Road, Hudson Avenue, Third Street and Palou Avenue.
- The outbound route would travel from Third Street and Palou Avenue via Palou Avenue, Newhall Street, Third Street, Hudson Avenue, Northridge Road, Jerrold Avenue, Earl Street, Kirkwood Avenue, Kiska Road, Ingalls Street, Van Dyke Avenue, Williams Avenue, Reddy Street, Thornton Avenue,
- Topeka Avenue, Bridgeview Drive, Thornton Avenue, Vesta Street, Phelps Street, Bacon Street, University Street, Felton Street, Moscow Street, Persia and Ocean avenues (Balboa Park Station), Plymouth Avenue, Sagamore Street, Alemany Boulevard, St. Charles Avenue, and BART Access Road (Daly City BART).
- The bus would share the existing 24 Divisadero terminal on Third Street between Palou Avenue and Oakdale Street.

54 Felton - ON HOLD

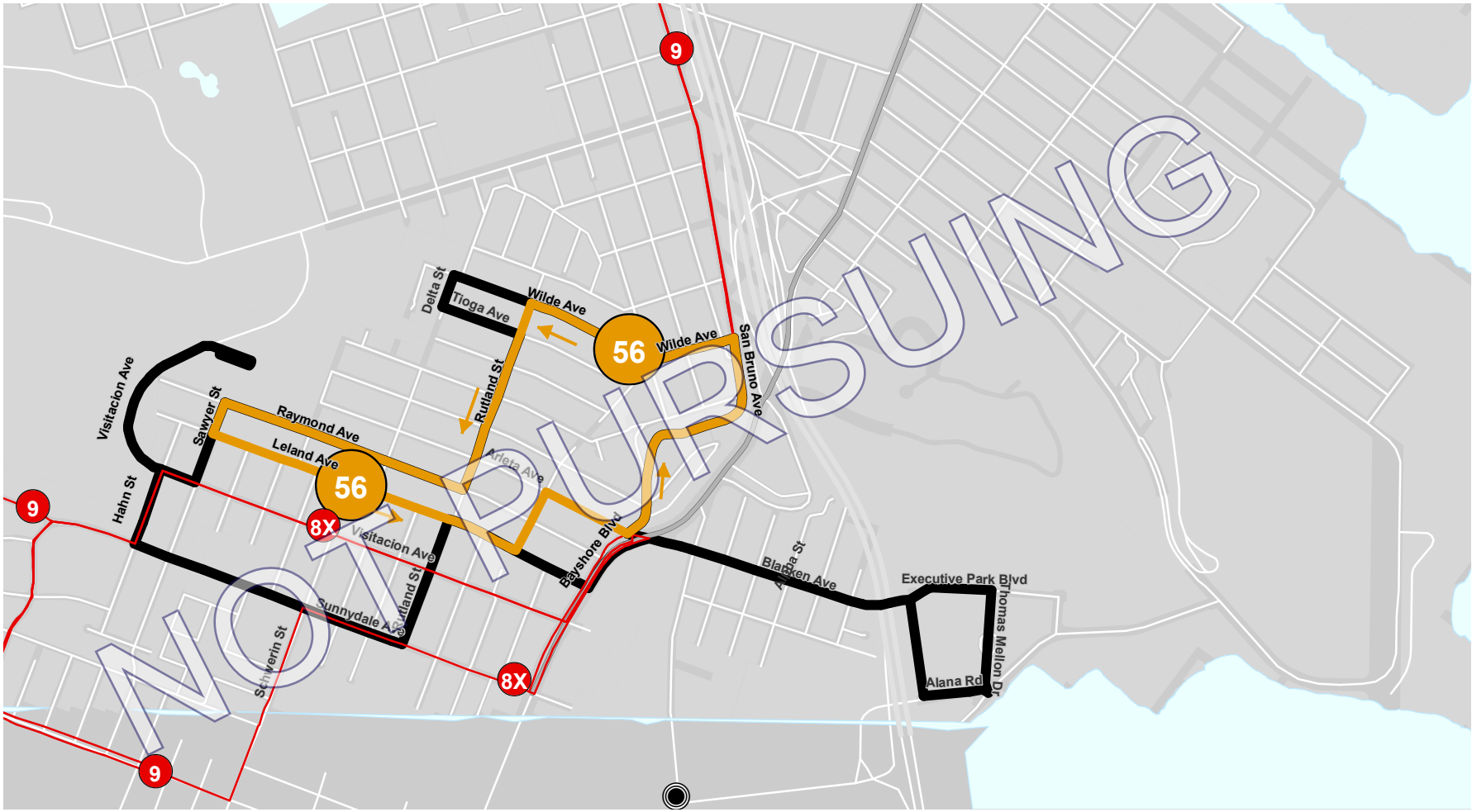
Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	20	15	+
PM	20	15	+

*Route change proposal on hold pending additional community outreach. Frequency increased is planned.

56 Rutland - NOT PURSUING



Legend

- Recommended Route
- Segment will be covered by another recommended route
- Segment Proposed for Elimination
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC VC

56 Rutland

Overview

- ~~Route would be shortened and the service frequency increased.~~ REVISED: No change to the current alignment.
- ~~Proposed one-way loop route: from terminal at Arleta Avenue and Bayshore Boulevard, left on San Bruno Avenue, left on Wilde Avenue, left on Rutland Street, right on Raymond Avenue, left on Sawyer Street, left on Leland Avenue, left on Alpha Street, right on Arleta Avenue to terminal at Arleta Avenue and Bayshore Boulevard.~~
- ~~Route would follow Leland Avenue, rather than Sunnydale Avenue, between Sawyer and Alpha streets.~~
- ~~Segments on Sawyer Street between Leland and Visitacíon avenues, Hahn Street, Rutland Street between Sunnydale and Leland avenues, and Sunnydale Avenue between Schwerin and Hahn streets would be discontinued. The 8X Bayshore Express and 9 San Bruno would cover segments of Route 56 Rutland on Sunnydale Avenue between Rutland and Schwerin streets, and on Hahn Street between Visitacíon and Sunnydale avenues.~~
- ~~Transit would be added to Leland Avenue between Sawyer and Rutland streets and Rutland Street between Tioga and Wilde avenues, Alpha Street between Leland and Arleta avenues and Arleta Avenue between Alpha Street and Bayshore Boulevard.~~
- ~~Route segments to/from Executive Park and along Visitacíon Avenue would be discontinued on Wilde between Delta and Rutland streets, Delta between Wilde and Tioga avenues, and Tioga between Delta and Rutland streets.~~
- ~~Midday frequency would change from 30 to 20 minutes.~~
- ~~New terminal would be located at the nearside corner of Arleta Avenue at Bayshore Boulevard. This would require a reduction of up to five parking spaces.~~
- ~~Recommended for van service, but the timeline for van procurement is uncertain.~~
- REVISED: Service frequency would remain as it is today.

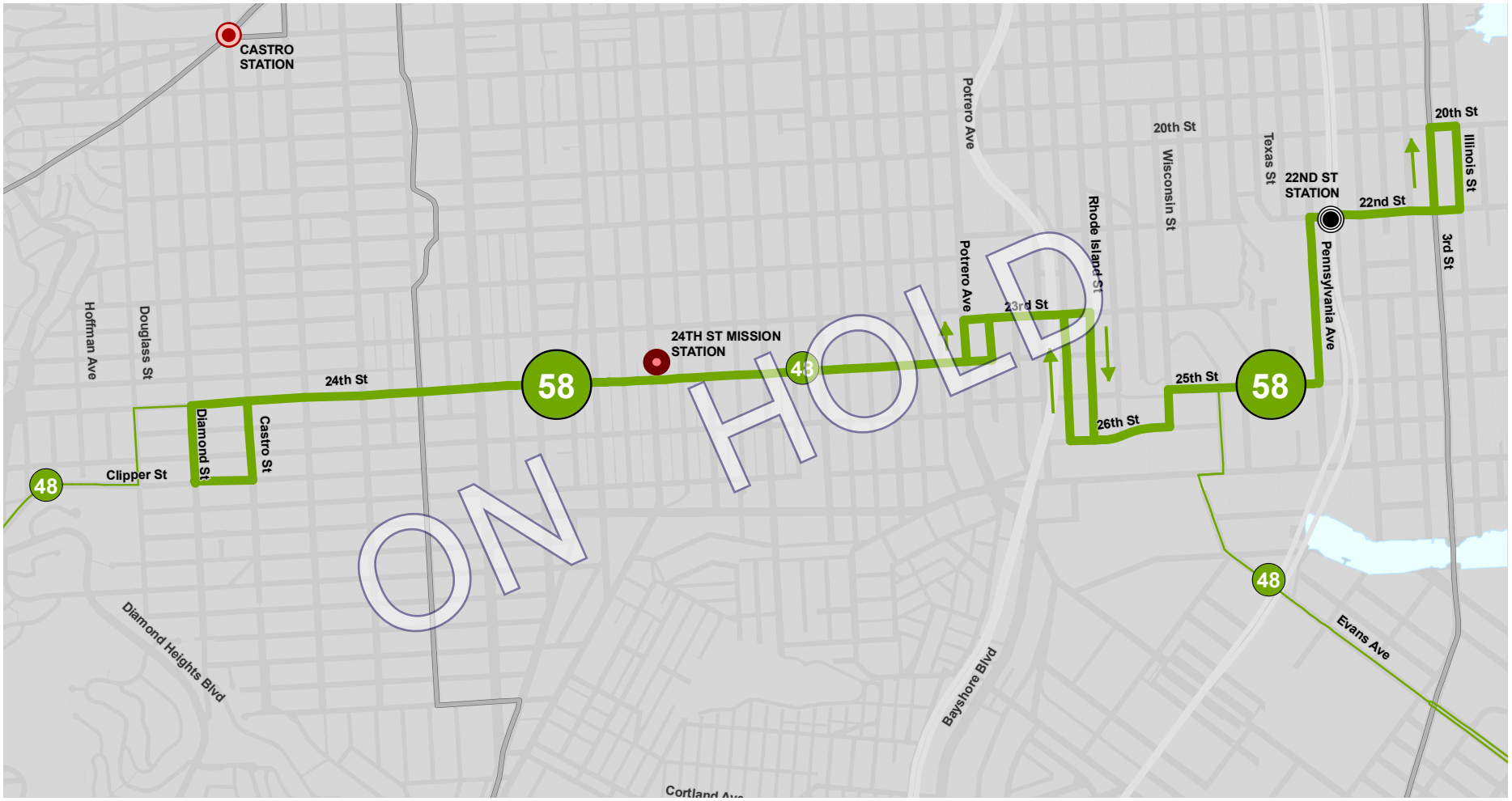
56 Rutland

Frequency

Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	30	30	=
PM	30	30	=

58 24th Street ON HOLD- Original Proposal (See Revised Proposal on Pg 224)



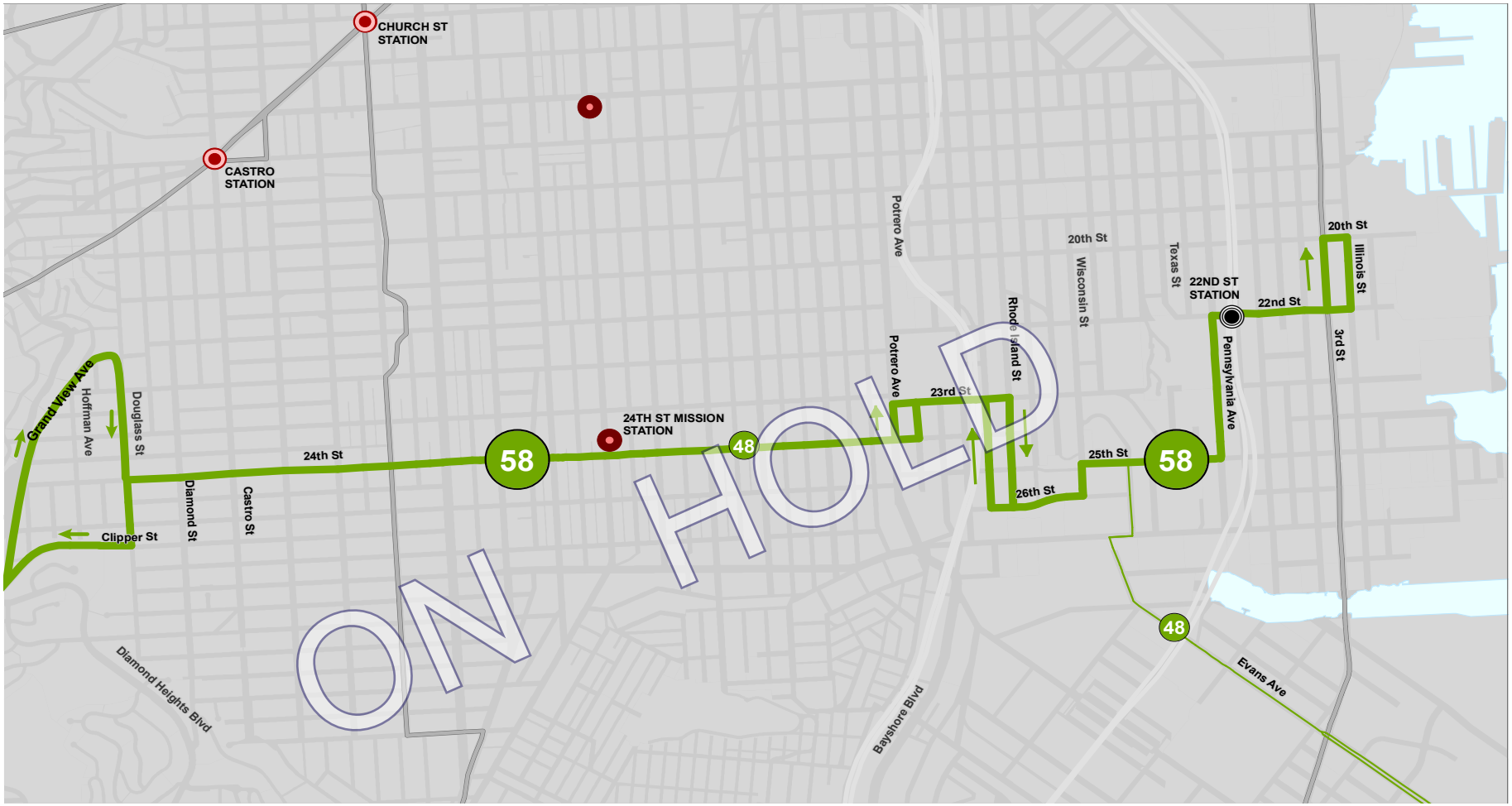
Legend

- Recommended Route
- Segment will be covered by another recommended route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

58 24th Street ON HOLD- Revised Proposal



Proposed Changes

RA

58 24th Street - ON HOLD

Overview

- Route would operate between Grandview Avenue and Third Street to increase service frequency on 24th Street and to provide connection between the 24th Street BART Station and 22nd Street Caltrain Station (previously provided by Route 48 Quintara).
- Eastern portion of new route would replace existing Route 48 Quintara service in Potrero Hill.
- ~~Buses would turn around on the northern portion of the route using 24th, Diamond, Clipper, and Castro streets to 24th Street; Clipper Street between Castro and Diamond streets is not currently used for buses.~~ REVISED: Buses would serve Douglass and Clipper streets, Grandview Avenue, and 21st Street.
- ~~Terminal would be located on Castro Street nearside of the intersection with 25th Street; the existing transit zone would be extended, which would require a reduction of up to five parking spaces.~~ REVISED: Terminal location to be determined. However, Douglass at 24th Street is under consideration.

Frequency

Service during peak periods (headway between vehicles, in minutes)

EAST OF CONNECTICUT STREET:

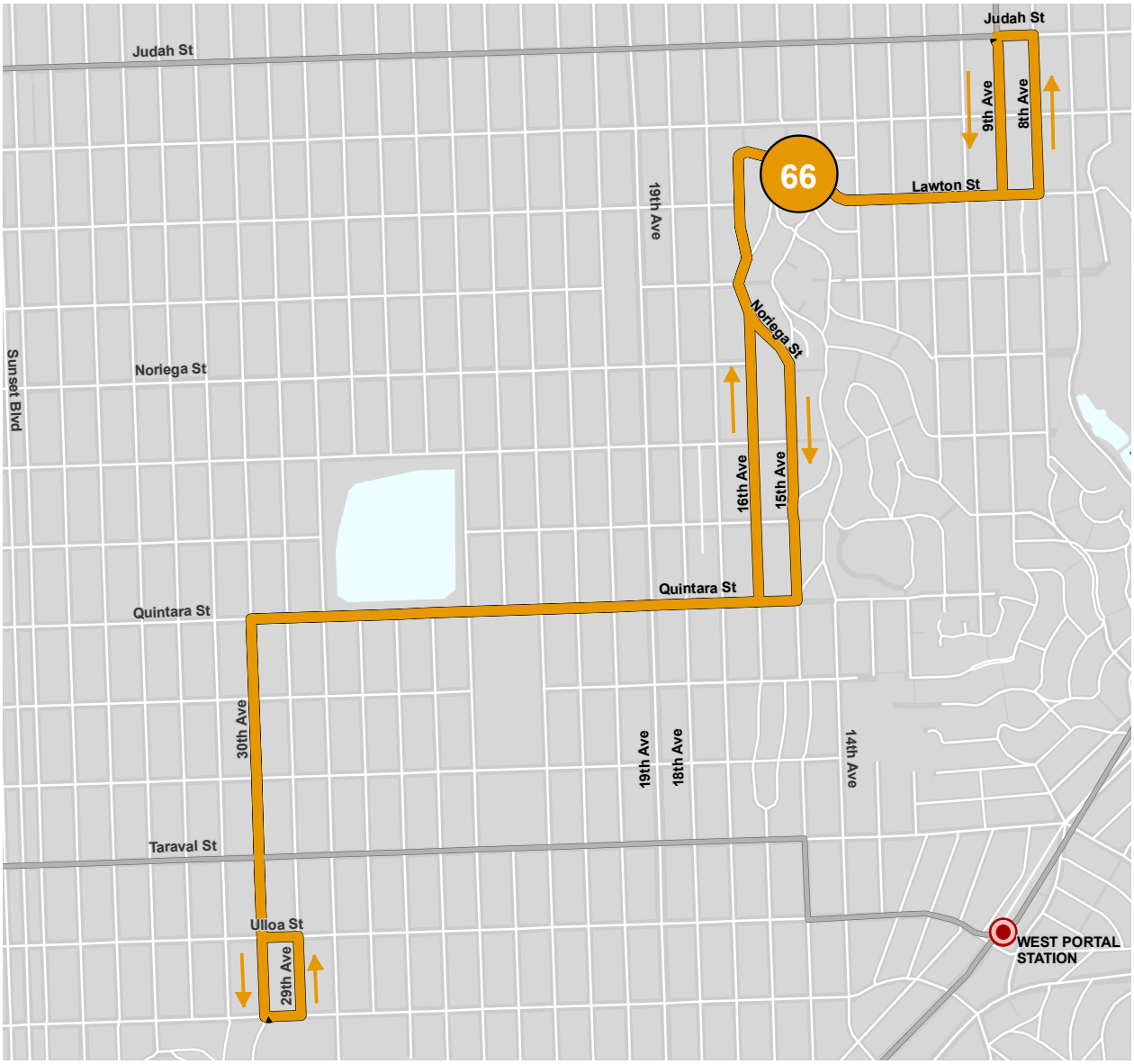
	Current	Proposed	Frequency
AM	11	15	−
PM	12	15	−

ON 24TH STREET BETWEEN CONECTICUT AND DIAMOND STREETS:
(Combined Frequency with 48 Quintara-24th Street Line)

	Current	Proposed	Frequency
AM	12	7.5	+
PM	12	7.5	+

*Proposal to reroute east on Connecticut Street is on hold pending additional community outreach.

66 Quintara



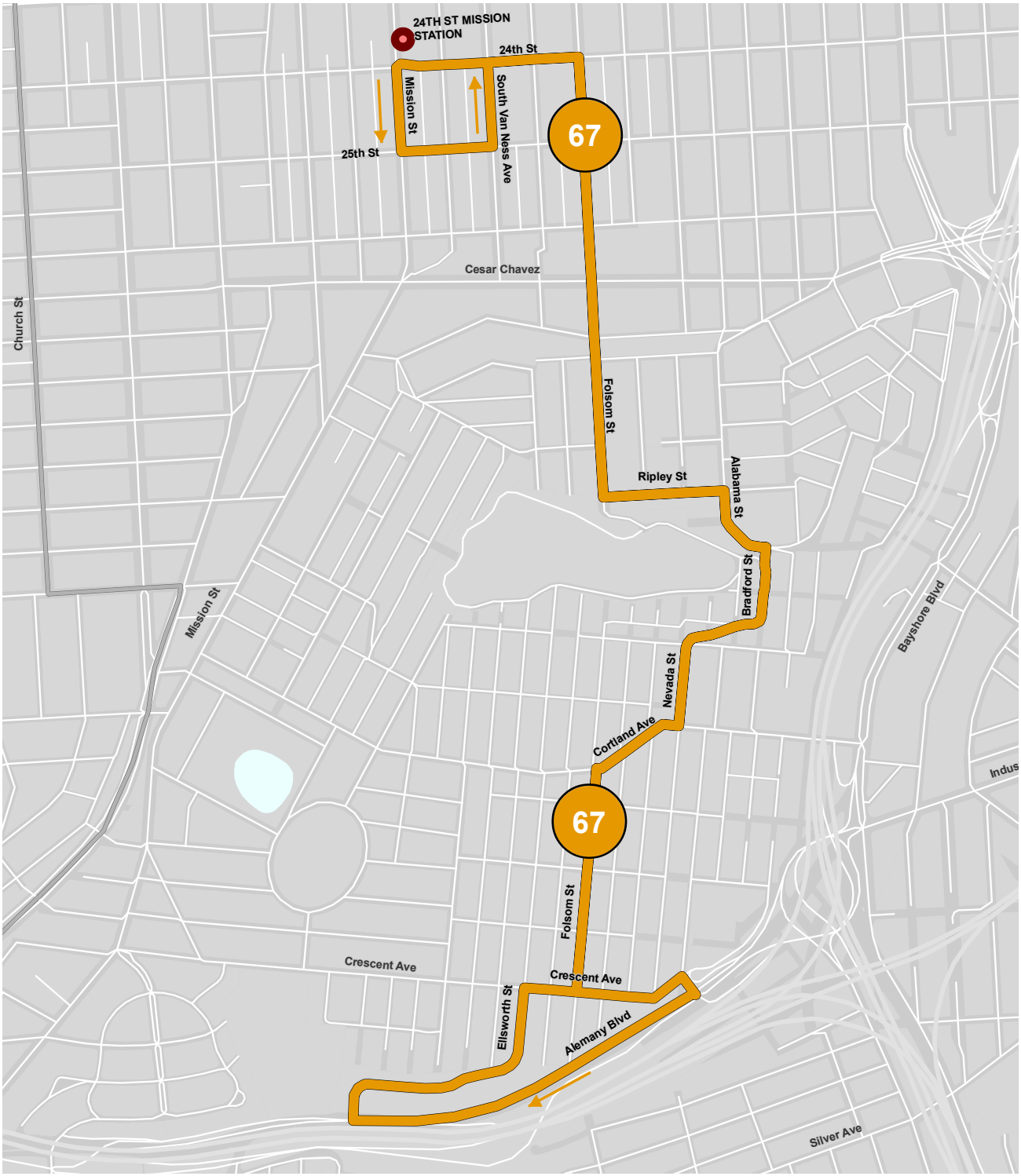
Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

67 Bernal Heights



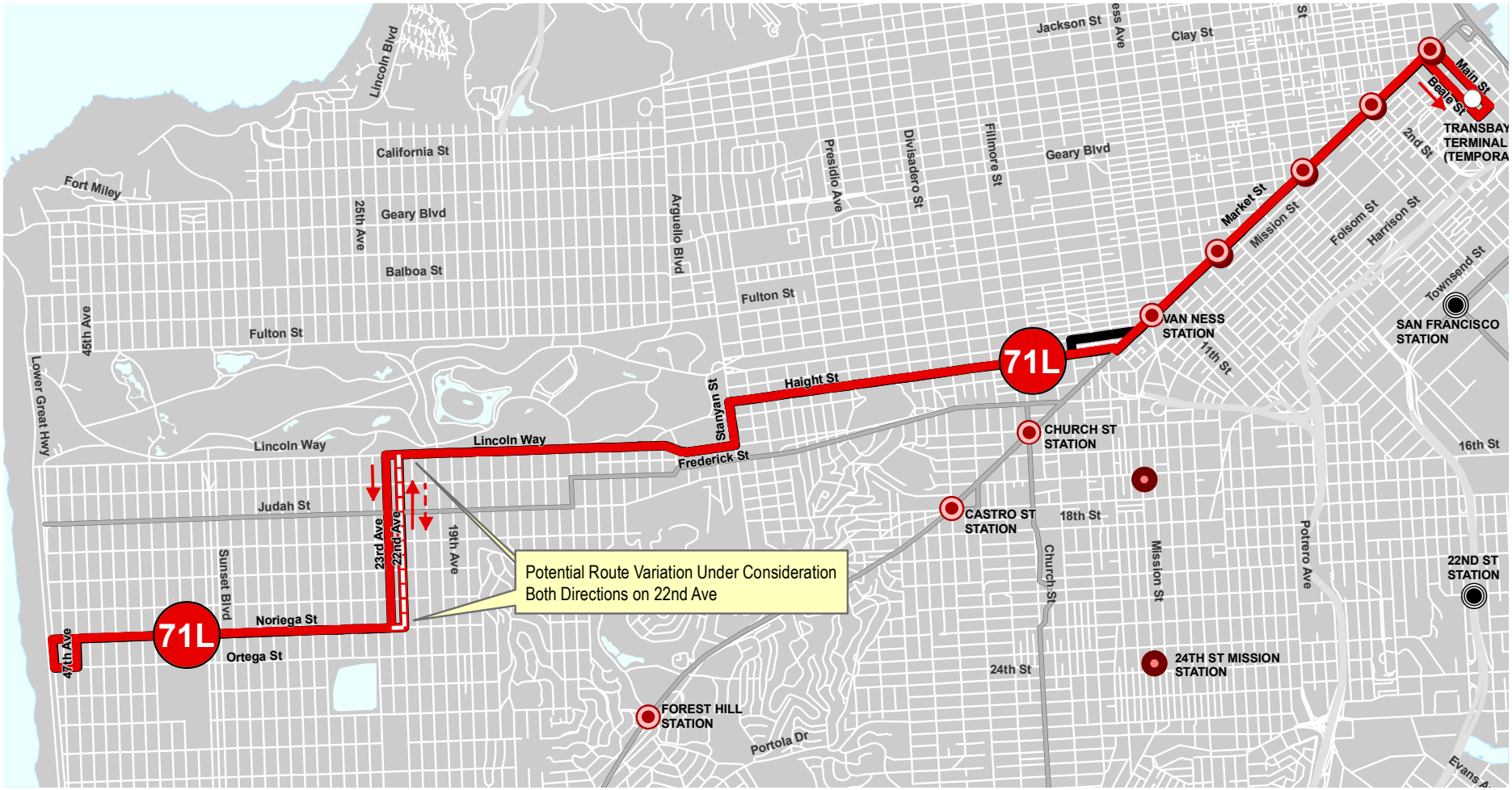
Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

71/71L Haight-Noriega



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA HC OWE TS LM PR TSC PI EH

Overview

- No route changes proposed.
- Existing 71L Haight-Noriega Limited, which operates only in the peak period and peak direction, would replace the 71 Haight Noriega and provide all day limited-stop service on Haight Street in both directions.
- Route would make local stops west of Stanyan Street and on Market Street; route would make limited stops between Stanyan and Market streets.
- Route includes inbound/outbound service on 22nd/23rd Avenue couplet. 71L Haight-Noriega Limited Service Variant would evaluate two-way, inbound/outbound service on 22nd Avenue to improve connections to the N Judah.
- Midday frequency would change from 12 to 10 minutes.
- TTRP.71 is proposed to reduce transit travel time on this corridor.

OWE.3 – New Overhead Wiring - 71L Haight on Stanyan St.

New Overhead Wiring – 71L Haight on Stanyan Street (OWE.3) project would build new two-way overhead wiring on Stanyan Street between Haight Street and Parnassus Avenue to enable the 6 Parnassus to operate on Haight Street west of Masonic Avenue, and then connect to the existing 6 Parnassus route at Stanyan Street and Parnassus Avenue. The project would require new overhead wires on Stanyan Street between Haight Street and Parnassus Avenue (there are existing wires on Haight Street between Masonic Avenue and Stanyan Street). The new overhead wiring would allow the 6 Parnassus to operate on Haight Street between Masonic Avenue and Stanyan Street, and on Stanyan Street and would provide increased transit service on the busiest portion of the corridor. Collectively, the 6 Parnassus and 71L Haight-Noriega Limited would provide local and limited-stop service along the full length of Haight Street.

Approximately 2,000 linear feet of new wiring and 50 new poles would be installed. Poles, eight to 13 inches in diameter, would be placed approximately every 90 feet. A total of 12 curb ramps could be constructed along Stanyan Street at its intersections with Beulah, Frederick, and Carl streets and Parnassus Avenue.

TTRP. 71 - 71L Haight Travel Time Reduction Proposal

For this proposal, the TPS Toolkit elements would be applied along a segment of the 71L Haight-Noriega Limited and 6 Parnassus routes. The TPS Toolkit elements would be implemented along the following streets: Ortega Street, 47th Avenue, Noriega Street, 22nd Avenue, Lincoln Way,

71/71L Haight-Noriega

Frederick, Stanyan, and Haight streets (inbound), and along Haight, Stanyan, and Frederick streets, Lincoln Way, 23rd Avenue, Noriega Street, the Great Highway and Ortega Street (outbound). This corridor extends from the intersection of Ortega Street and 48th Avenue to the intersection of Market and Gough streets. This would improve an east-west portion of the Rapid Network connecting the Outer and Inner Sunset Districts with Cole Valley, the Haight Ashbury, the Lower Haight, Hayes Valley, Civic Center and Downtown and providing a future connection to the Van Ness BRT and Better Market Street Project improvements.

Frequency

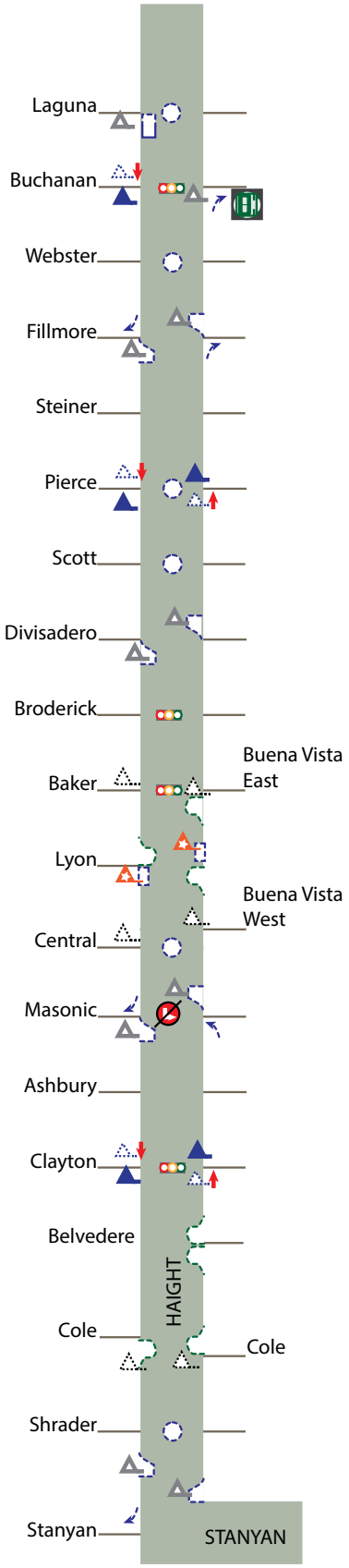
Service during peak periods (headway between vehicles, in minutes)

	Current	Proposed	Frequency
AM	10	7	+
PM	10	7	+

Finance

Route / Fund Source	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	Total
71 Haight-Noriega							$19,166,000
TEP Capital Seg. 1 – CCSF-GOBond			$7,966,000				$7,966,000
TEP Capital Seg. 1 – SFCTA-PropK-EP1		$920,000					$920,000
TEP Capital Seg. 1 – **Total**		**$920,000**	**$7,966,000**				**$8,886,000**
TEP Capital Seg. 2 – CCSF-GOBond			$920,000	$7,600,000			$8,520,000
TEP Capital Seg. 2 – **Total**			**$920,000**	**$7,600,000**			**$8,520,000**
TEP Supportive – MTC-TPI(MC)				$635,000			$635,000
TEP Supportive – SFCTA-PropAA				$1,125,000			$1,125,000
TEP Supportive – **Total**				**$1,760,000**			**$1,760,000**

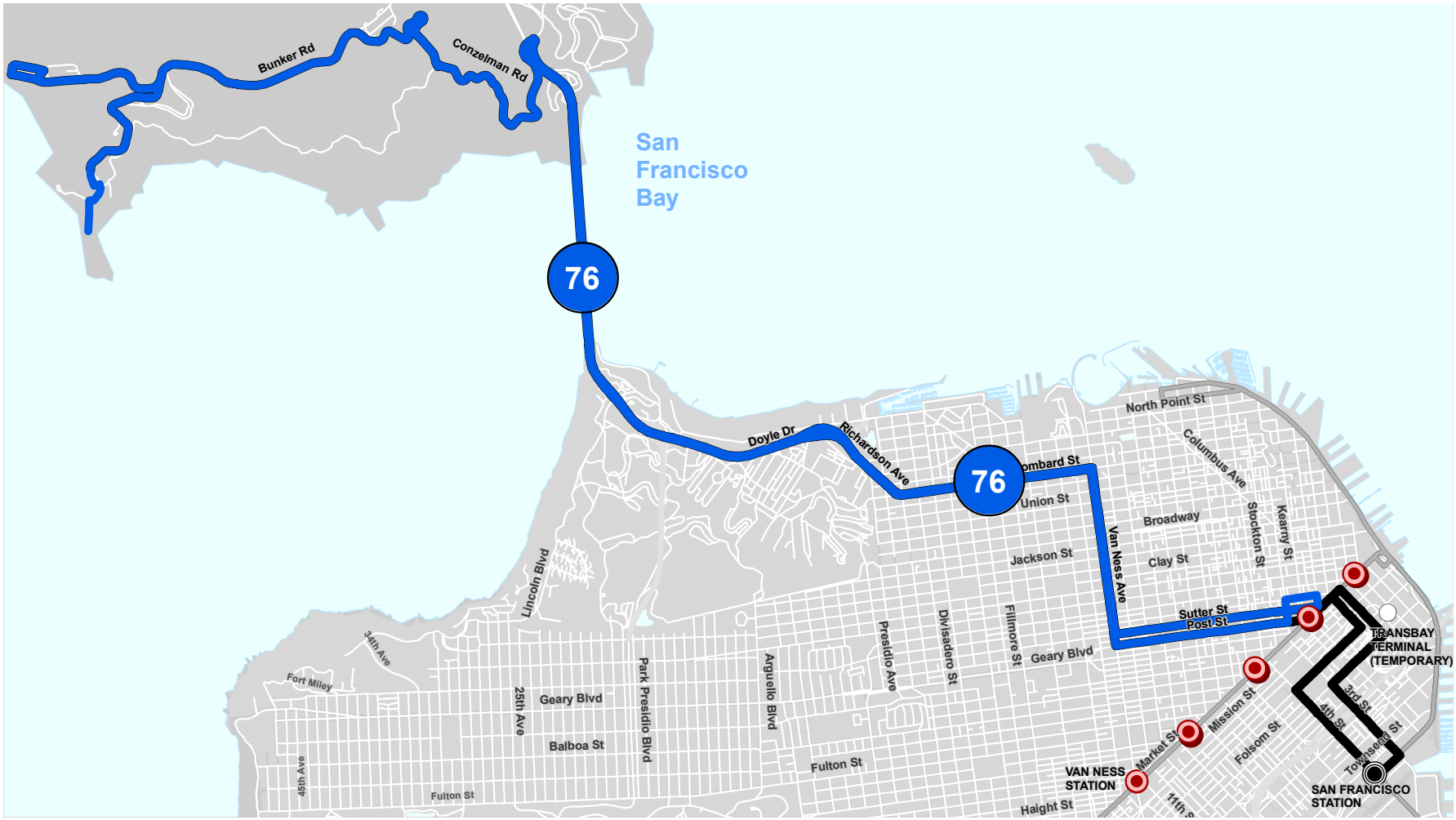
71/71L Haight-Noriega Segment Proposal



SEGMENT PROPOSALS

- Existing Stop
- Stop Removal
- Stop Relocation
- New Transit Bulb
- New Pedestrian Bulb
- Extend Bus Zone
- New Stop
- New Traffic Signal
- Remove Stop Signs on Haight Street and Replace with Traffic Calming Measure
- Turn Pocket
- Bus Queue Jump
- No Left-Turn Restriction

76X Marin Headlands



Legend

- Recommended Route
- Express Segment (No stops)
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

76X Marin Headlands

Overview

- Route segment south of Market Street to Caltrain Station would be discontinued.
- Northern segment of the outbound route would be extended to serve the Point Bonita lighthouse via Field Road and Battery Alexander; however, the terminal loop would remain at the existing terminal location at Fort Cronkhite.
- New southern terminal would be located in the vicinity of Montgomery Station. The terminal would be located at the existing NX Judah Express terminal, at the northwest corner of the intersection of Sutter and Sansome streets. This terminal would be at an existing farside stop and would not require the removal of any additional parking.
- Route is proposed to run on Saturdays, Sundays and holidays (currently Sundays and holidays only)

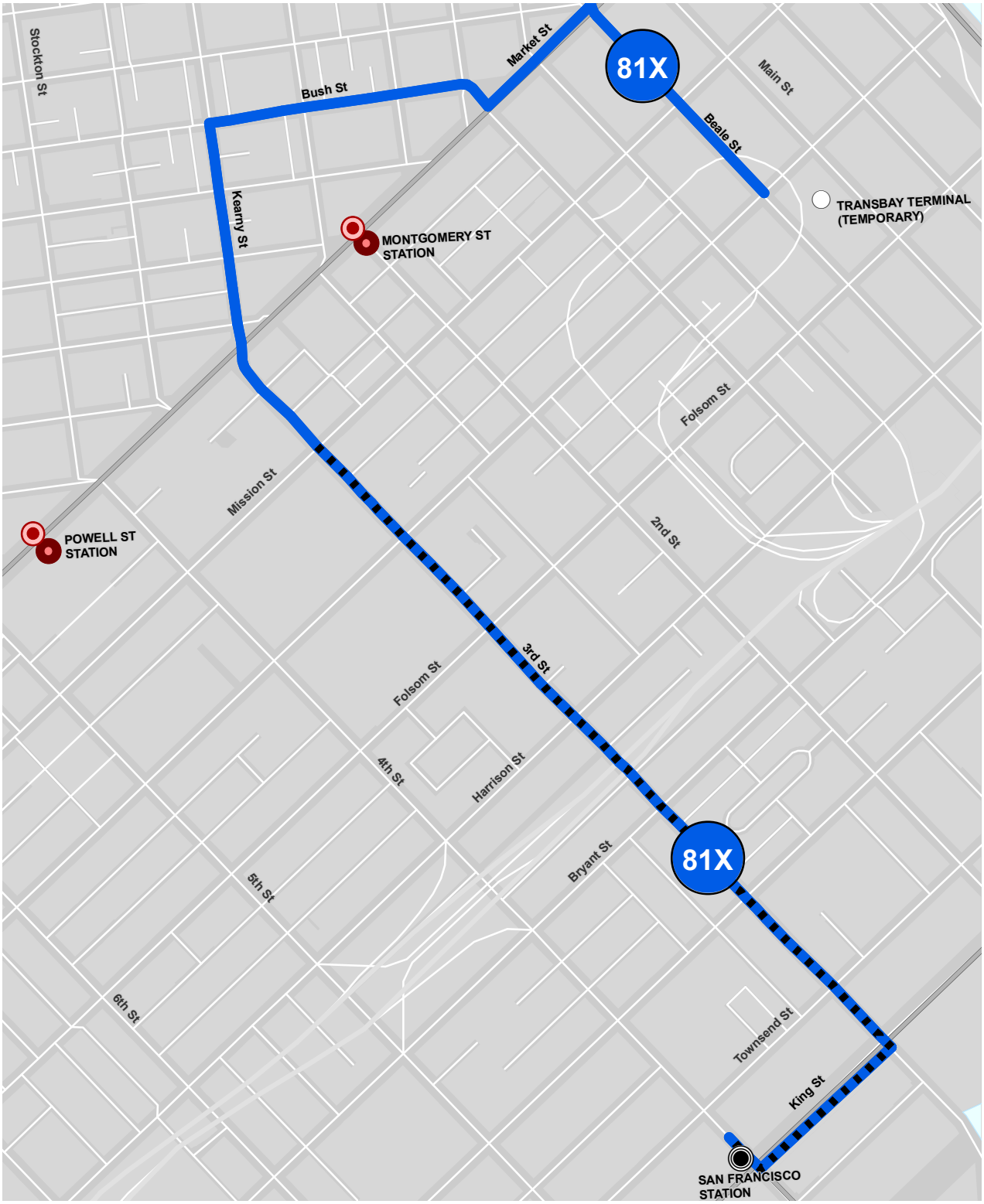
Frequency

	Current	Proposed	Frequency
AM	Sunday and Holidays only	Saturday, Sunday and Holidays	N/A
PM	Sunday and Holidays only	Saturday, Sunday and Holidays	N/A

Update

- Proposal Implemented as a Pilot Program in November 2012.

81X Caltrain Express



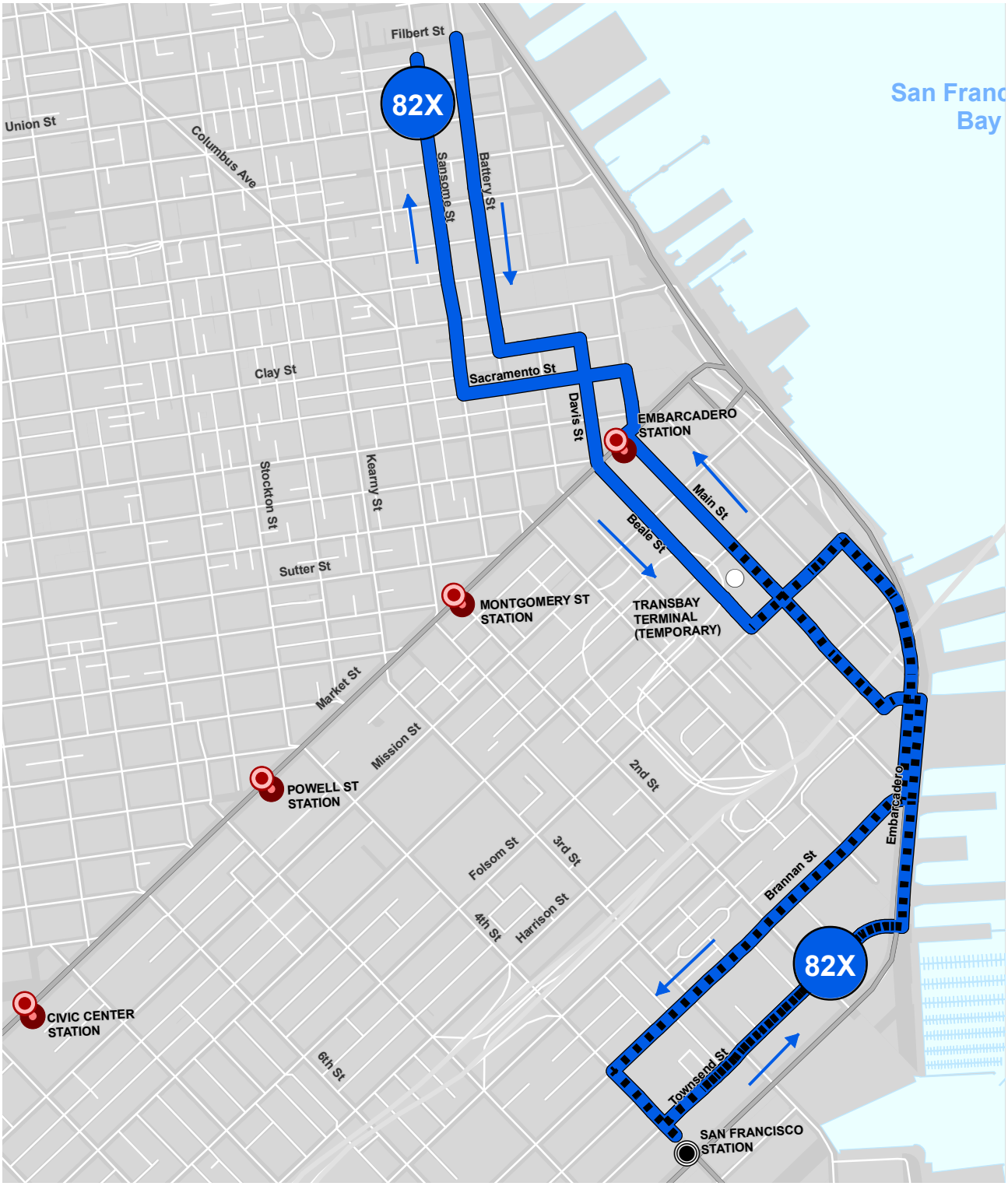
Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

82X Levi Express



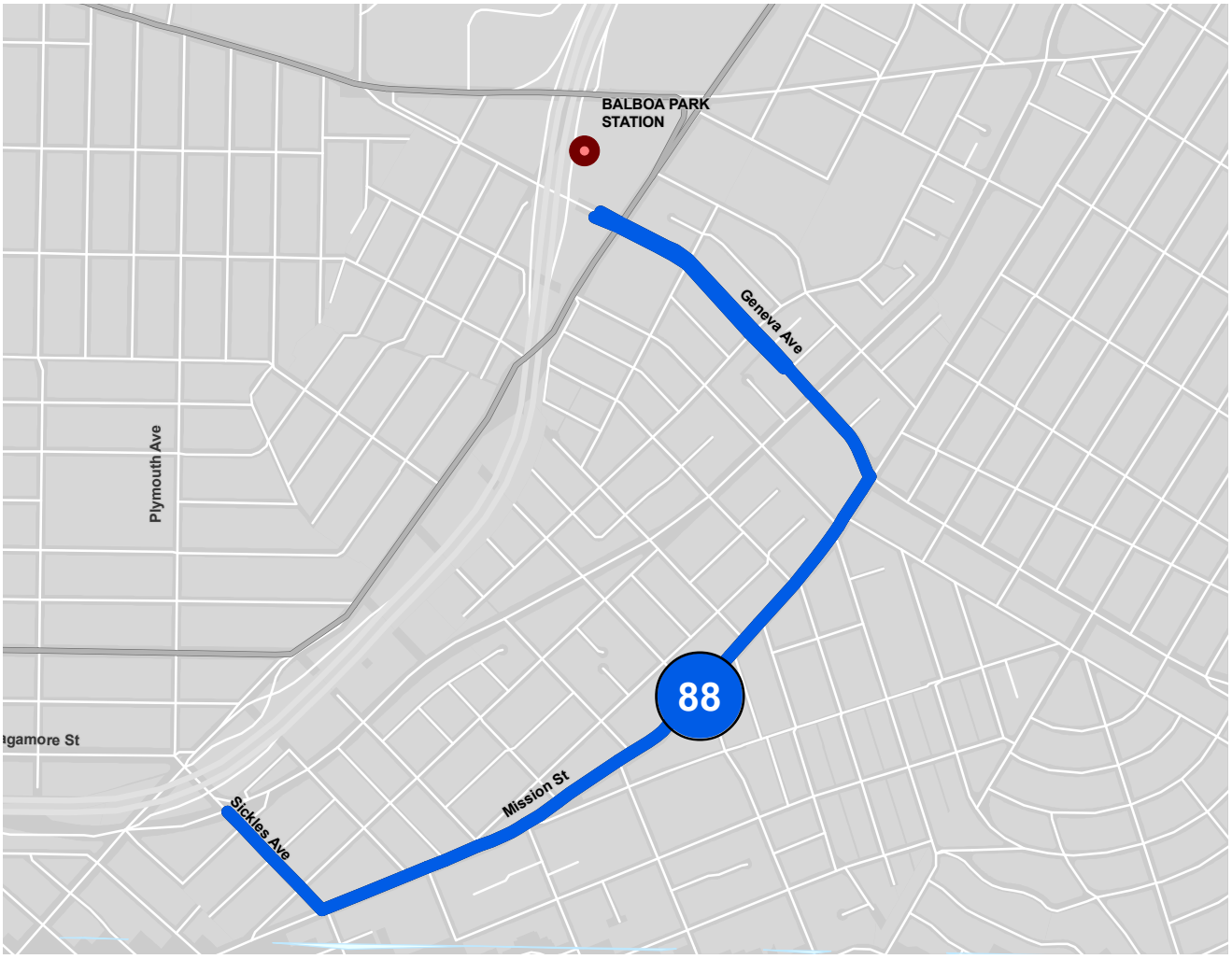
Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

88 BART Shuttle



Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

HC

90 Owl - ON HOLD

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

91A Owl - ON HOLD

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

91A Owl - ON HOLD

Overview

- In conjunction with 91B Owl, would replace the existing 91 Owl. This bus would operate between 1 and 5 a.m. weekdays, and between 1 and 6 a.m. on Saturday and Sunday.
- Existing 91 Owl loop line would be split in two to improve reliability.
- Would operate from Mission Street/San Jose Avenue in Daly City to the Caltrain Station at Fourth and King streets via 19th Avenue, Lombard Street, Columbus Avenue, and Stockton and Fourth streets.
- Would connect with the 14 Owl, and also connect with SamTrans at the Daly City BART Station.
- Frequency of service would be the same as the existing 91 Owl – every 30 minutes.
- The Daly City terminal loop would follow John Daly Boulevard, Mission Street, Flournoy Street, San Jose Avenue, to John Daly Boulevard.
- The Caltrain Station terminal loop would follow Fourth, Townsend, and Third streets.

*Proposal on Hold Pending Additional Community Outreach

91B/N Owl - ON HOLD

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

RA

91B/N Owl - ON HOLD

Overview

- In conjunction with 91A Owl, would replace the 91 Owl.
- Existing 91 Owl loop line would be split in two to improve reliability.
- 91B would be through-routed with the N Owl (Fourth and Townsend streets to West Portal Station via Third Street, Geneva and Ocean avenues).
- Frequency of service would be the same as the existing 91 Owl - every 30 minutes.
- Cargo Way segment would be eliminated.

*Proposal on Hold Pending Additional Community Outreach

108 Treasure Island

Legend

- Recommended Route
- Rail Network
- Muni Metro Stations
- BART Stations
- Caltrain Stations

Proposed Changes

None

Appendix

Acronyms & Abbreviations

Acronym/Abbreviation	Definition
ADRP	Archeological data recovery plan
AMP	Archeological monitoring program
AQTR	Air Quality Technical Report
ARB	California Air Resources Board
B20	20 percent biodiesel blend
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BCDC	Bay Conservation and Development Commission
bgs	below ground surface
BMPs	Best Management Practices
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
CAS	Climate Action Strategies
CFG Code	California Fish and Game Code
CEQA	California Environmental Quality Act
CH4	methane
CCSF	City College of San Francisco
CO2	carbon dioxide
CO2E	carbon dioxide-equivalent measures
CRHR	California Register of Historical Resources
CSO	combined sewer overflow
CTCDC	California Traffic Control Devices Committee
CUPA	Certified Unified Program Agency
DPH	San Francisco Department of Public Health
DPW	San Francisco Department of Public Works
DTSC	California Department of Toxic Substances Control
ERO	Environmental Review Officer
FARR	Final Archeological Resources Report

Acronyms & Abbreviations

FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FY	fiscal year
GHGs	greenhouse gases
HRER	Historic Resource Evaluation Response
LID	low-impact design
LRV	light rail vehicle
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
MMTCO2E	million metric tons of CO2E
MSDS	Materials Safety Data Sheet
Muni	San Francisco Municipal Railway
N2O	nitrous oxide
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NOP	Notice of Preparation of an Environmental Impact Report and Notice of Public Scoping
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	California Archaeological Site Survey Northwest Information Center
OHP	Office of Historic Preservation
OPR	Office of Planning and Research
OWE	Overhead Wire Expansion
PAR	Preliminary Archaeological Review Checklist
PDF	Portable Document Format
PDR	paleontological discovery report
POP	Proof of Payment Group in the Security Operations Unit of SFMTA

Acronyms & Abbreviations

PRMMP	Paleontological Resources Monitoring and Mitigation Program
RPD	San Francisco Recreation and Park Department
RTPs	regional transportation plans
SCI	Systemwide Capital Infrastructure
SEIR	Subsequent Environmental Impact Report
SFFD	San Francisco Fire Department
SFHA	Special Flood Hazard Area
SFMTA	San Francisco Municipal Transportation Agency
SFPD	San Francisco Police Department
SFPUC	San Francisco Public Utilities Commission
SFUSD	San Francisco Unified School District
SoMa	South of Market Area
TDM	Travel Demand Management
TEP	Transit Effectiveness Project
TIS	Transportation Impact Study
TPS	Transit Preferential Streets
TSP	Transit Signal Priority
TTPI	Terminal and Transfer Point Improvements
TTRP	Travel Time Reduction Proposals
UCSF	University of California, San Francisco
UST	Underground storage tank

Glossary

Term	Definition
Alignment	The ground plan of a roadway, rail line, transit route, or other facility, showing the alignment or direction as distinguished from a profile, which shows the vertical element.
All Way Stop	An intersection for which every approach is controlled by stop signs.
All-door boarding	When passenger boarding is permitted at multiple doors and not just the front door of the transit vehicle.
a.m. peak	The morning commute period in which the greatest movement of passengers occurs, generally from home to work or school; the portion of the morning service period where the greatest level of ridership is experienced and service provided, generally between 7 a.m. and 9 a.m.
Biodiesel fuel	Biodiesel refers to a vegetable oil- or animal fat- based diesel fuel. Biodiesel is typically made by chemically reacting lipids (e.g., vegetable oil, animal fat (tallow) with an alcohol producing fatty acid esters. Biodiesel is meant to be used in standard diesel engines and is thus distinct from the vegetable and waste oils used to fuel *converted* diesel engines. Biodiesel can be used alone, or blended with petrodiesel.
Boarding and alighting	To get on and off a transit vehicle.
Bypass lane	A lane that allows transit vehicles to bypass general traffic congestion approaching an intersection. Applications at signalized intersections may include an exclusive traffic signal phase to allow transit vehicles to move through the intersection ahead of general traffic. See also “queue jump.”
Bypass wires	Overhead wires used by a trolley coach to bypass a second trolley coach.

Glossary

California Traffic Control Devices Committee (CTCDC)	This committee advises the California Department of Transportation (Caltrans) about standards and polices for official traffic control devices in California. Through this committee, Caltrans fulfills its obligation to consult with local agencies and the public, before adopting rules and regulations prescribing uniform standards and specificatio ns for all official traffic control devices used in California.
Capital improvement project	A project that requires changes to physical infrastructure.
Capital infrastructure	Physical structures or devices that provide long-term support to the operation of transit service.
Capital investment	One-time change to physical infrastructure for improvement, either to replace worn out infrastructure or to add new infrastructure. Contrasts with operating investments and expenses, which are on-going.
Center lane	A travel lane located in the middle of the roadway, beyond the curb lane and, in roadways with two or more travel lanes in each direction, the innermost lane.
Community Connector Van Service	Community Connector service provided by smaller vehicles such as vans or shuttle buses.
Community Connectors	Low-ridership bus routes that circulate through San Francisco's hillside residential neighborhoods and fill in gaps in coverage to connect customers to the core network.
Contraflow lane	A lane in which restricted traffic flows in the opposite direction of the adjacent lanes, limited to certain vehicle types such as transit or carpool vehicles.
Corridor	A broad geographical band that follows a general directional flow or connects major sources of trips. It may contain a number of parallel streets and highways and many transit lines and routes.
Couplet	A pair of parallel streets that operate one-way in opposite directions.

Glossary

Crosswalk	Legally designated location for pedestrians to cross from one side of a roadway to the other. Present at all intersections that intersect at approximately right angles; may be marked or unmarked.
Curb cut	Location where the sidewalk curb is depressed to the level of the roadway for a curb ramp, driveway, or other feature.
Curb lane	The lane of traffic closest to the curb, which may or may not have parking adjacent to it. (Opposite of center lane).
Curb ramp	Location where the curb is depressed to the level of the roadway to provide a flush transition from the sidewalk to the roadway to enable accessible street crossing or movement.
Curbside	The side nearest to the curb; in a divided 4-lane road, the curbside lane is the right lane.
Customer	A person who rides a transportation vehicle, excluding the driver.
Dedicated turn lane	A lane from which a vehicle is required to turn left or right.
Diesel hybrid-electric motor coaches	Diesel hybrid-electric buses or motor coaches are electric buses that get their electricity from a small diesel engine. The diesel engine powers a generator that, together with traction batteries that store the energy, supplies the necessary electrical energy to move the bus through the streets of San Francisco. A diesel hybrid-electric bus can also recover and store braking energy. This increases the vehicle's fuel economy and brake life.
Duct bank	A conduit, typically installed underground, used to run power supply and other wired infrastructure from one point to another.
Dwell time	The time when a bus is stopped to load and unload customers at a transit zone.

Glossary

Expanded alternative	The Expanded Alternative for the TTRP corridors employs TPS Toolkit elements that may have a greater potential to trigger additional physical environmental effects, such as substantial changes to traffic, bicycle, or pedestrian circulation or similar impacts, whereas the Moderate Alternative is expected to have fewer physical environmental effects due to the nature of the TPS Toolkit elements chosen for each TTRP corridor.
Express service	Service operated non-stop over a portion of an arterial in conjunction with other local services. The need for such service arises where customer demand between points on a corridor is high enough to separate demand and support dedicated express trips.
Farside of intersection	The second or furthest side of the intersection encountered when passing through. Contrasts with nearside of intersection.
Flag stop	A transit stop where the bus or LRV stops within a traffic lane without a designated curbside transit zone, often adjacent to parked vehicles. Often marked with a sign or painted marking noting the transit route.
Frequency of service	The amount of time scheduled between consecutive buses or trains on a given route segment; in other words, how often the bus or train comes (also known as Headway)
Headway	The scheduled time interval between any two revenue transit vehicles operating in the same direction on a route.
Implementation schedule	The planned dates and durations of time during which the proposed project would be carried out.
Inbound direction	Unless otherwise defined, inbound means headed toward Embarcadero Station or Downtown. It is the opposite of outbound direction. Routes that do not go to the Embarcadero Station or Downtown or serve Embarcadero / Downtown mid-route have explicit definitions for inbound and outbound (e.g. 22 Fillmore is defined as heading inbound to the Marina and outbound to Potrero Hill; the F Market & Wharves is defined as heading inbound to Fisherman's wharf and outbound to Castro).

Glossary

Key Stop	Light Rail Transit Service stops that include high floor boarding platforms for accessibility.
Lane modifications	Lane modification proposals would change the configuration of travel and parking lanes within the existing right-of-way, typically with striping and signage. Proposed lane modifications include creating transit- only lanes, creating transit queue jump/bypass lanes, creating dedicated turn lanes, and widening mixed-flow lanes by reducing the number of mixed-flow lanes. *[see IS, pp. 41-46.]*
Layover	A layover is a period of time included in the schedule at the end of a trip that typically takes place at a transit terminus. It serves two major functions: recovery time for the schedule to ensure on-time departure for the next trip and, in some systems, operator rest or break time between trips. Layover time is often determined by labor agreement, requiring “off-duty” time after a certain amount of driving time.
Light rail vehicle (LRV)	Light rail vehicles are a form of urban rail public transportation that generally has a lower capacity and lower speed than heavy rail and metro systems, but higher capacity and higher speed than traditional street- running tram systems. The SFMTA’s fleet of 151 Breda light rail vehicles (LRV), are used in the operation of the six Muni Metro Lines (J, K, L, M, N and T). The vehicles operate in conditions which range from level boarding and exclusive right-of-way in the Muni Metro Subway segments, to high-floor semi-dedicated right-of-way segments on some surface segments, to low-floor, mixed-flow operation on a variety of streets and street types. LRVs provide an efficient, high capacity means of transporting large numbers of passengers.
Limited Service or Limited Stop Service	Faster train or bus service where designated vehicles stop only at transfer points or major activity centers, usually about every 1/3 to 1/2 mile. Limited stop service is usually provided on major trunk lines operating during a certain part of the day or in a specified area in addition to local service that makes all stops. As opposed to express service, there is not usually a significant stretch of non-stop operation.

Glossary

Local Network	Bus routes that complement and connect to the Rapid Network to create the core network, allowing customers to get to most destinations in San Francisco with no more than one transfer.
Local service	A type of operation that involves frequent stops and consequent longer travel times, the purpose of which is to deliver and pick up transit customers as close to their destinations or origins as possible.
Midblock Stop	A transit stop where customers may alight or board that is not at an intersection of two streets.
Moderate alternative	The TTRP proposals with the more limited TPS Toolkit elements that are expected to have fewer physical environmental effects than those of the Expanded alternative TTRP corridor proposals due to the nature of the TPS Toolkit elements chosen.
Motor coach	A bus powered by a diesel engine that can typically utilize biodiesel fuel as an energy source.
Nearside of Intersection	The first or nearest side of intersection encountered when passing through. Contrasts with farside of intersection.
Network	The configuration of streets or transit routes and stops that constitutes the total transportation system.
Network enhancements	Changes to the transit network which will improve reliability and efficiency. For example, providing transit signal priority.
Network restructuring	Changes made to the network after evaluation to improve reliability and efficiency, including creation of new routes, changes to route alignment, elimination of underutilized existing routes or route segments, changes to the frequency and hours of transit service, changes to transit vehicle type on specific routes, changes to mix of local/limited/express services on specific routes.
Operational improvements	Changes made to procedures and transit operations that do not result in changes to infrastructure.
Optimizing transit stop	Locating the transit stop on one side or the other of an intersection for greater efficiency. *[See IS, p. 31.]*

Glossary

Outbound direction	Unless otherwise defined, outbound means headed away from Downtown or Embarcadero Station. This is the opposite of inbound direction. Routes that do not go to Downtown or Embarcadero Station have explicit definitions for inbound and outbound (e.g. 22 Fillmore is defined as heading inbound to the Marina and outbound to Potrero Hill)
Overhead wires	Wires suspended over streets and rail tracks to provide electric power to trolley coaches and LRVs.
Owl Service	Service that operates during the late night/early morning hours or all night service, usually between 1:00 a.m. and 6:00 a.m.
Paratransit	Transportation service for individuals with disabilities who are unable to use fixed-route transit service. The service must be comparable to the fixed-route service and is required by the Federal Americans with Disabilities Act.
Parking restriction	Where the ability to park is limited in duration, type of vehicle, type of use, type of driver, or is forbidden.
Peak period	The hours in the morning or evening when most commuters are commuting and the travel system carries the largest number of passengers (transit) or vehicles (traffic). The morning peak period is generally between 7 a.m. and 9 a.m. and the evening peak period is generally between 4 p.m. and 6 p.m., although these hours may change over time. If not specified, evening commute hours are usually meant.
Pedestrian bulb	A sidewalk extension at a non-transit stop that improves pedestrian visibility and minimizes pedestrian exposure to vehicular traffic.
Pedestrian refuge island	Raised median installed in the center of a roadway that provides a safe place for pedestrians to stop while crossing a street.
Platform	Area of pavement raised above a road or railbed where passengers can board or alight from transit vehicles.
Platform Display System	LED (light-emitting diode) electronic display panels on platforms in Metro stations.

Glossary

p.m. peak	The afternoon commute period in which the greatest movement of transit passengers occurs, generally from work or school to home; the portion of the afternoon service period where the greatest level of ridership is experienced and service provided, generally between 4 p.m. and 6 p.m.
Project variant	Several options or “project variants” are under consideration by the SFMTA to allow for flexibility in the phasing and implementation of the TEP. Proposed Service Improvement variants would modify portions of routes or change the type of vehicle used on routes. TTRP variants would modify the locations of one or more TPS Toolkit elements along the corridor. For areas where more than one variant is proposed, only one variant would be implemented.
Protected turn	At signalized intersections, where traffic from a dedicated turn lane is shown green arrow to indicate when vehicles may safely complete that turn while being protected from conflicting vehicles and pedestrians.
Queue jump	A type of roadway geometry and striping that allows transit vehicles to move around vehicles stopped at an intersection, could be combined with a special signal phase to allow transit vehicles to proceed through the intersection in advance of general traffic. See also “bypass lane.”
Rapid Network	Frequent, heavily used bus routes and rail lines that make up the backbone of the Muni system.
Real-Time arrival Signage	LED panels in transit shelters that provide next arrival and emergency messaging; however, these units are also sparingly used to advise customers of service and event-related information and other topics of importance, such as major issues and public input opportunities.
Right-of-way	A right-of-way is a strip of land that is granted, through an easement or other mechanism, for transportation purposes, such as for a pedestrian path, sidewalk, driveway, rail line or highway.

Glossary

Route	A specified path taken by a transit vehicle usually designated by a number or a name, along which customers are picked up or discharged.
Service Improvements	Network restructuring that includes the creation of new routes, changes to route alignment, elimination of underutilized existing routes or route segments, changes to the frequency and hours of transit service, changes to transit vehicle type on specific routes, changes to mix of local/limited/express services on specific routes.
Service management	Improving service delivery on Muni by vehicle and infrastructure maintenance, operator availability, supervision, and traffic management. *[See IS, p. 1, and described in April 2011 Draft Implementation Strategy, pp. 1-4].*
Service Policy Framework	An outline of policies and action items for implementing future transit service changes, including changes proposed as part of the TEP.
Service reliability	How often transit vehicles meet planned schedules of stops.
Service-related Capital Improvements	Physical improvements to the transit system that support, or are in some cases necessary, to implement the TEP Service Improvements, including Terminal and Transfer Point Improvements (TTPI), Overhead wire expansions (OWE), and Systemwide Capital Infrastructure (SCI).
Sidewalk widening	Where the width of the pedestrian right-of-way is increased at the expense of a street or other transportation right-of-way.
Span of Service	The span of hours over which service is operated (e.g., 6 a.m. to 10 p.m). Service span often varies by weekday, Saturday, or Sunday.
State of Good Repair	Federal Transportation Agency (FTA) defined program that seeks to improve the condition of transit capital assets in order to improve transit performance and reliability.

Glossary

State of Good Repair Investment	An SFMTA project that replaces or rehabilitates transportation capital assets in order to improve the condition of capital assets and improve system performance and reliability.
Stop spacing	The distance between consecutive transit stops. If a bus stop occurs on every block, the stop spacing is every block.
Supplemental service	Service provided that is not daily or weekly. Examples of supplemental service include bus service for professional sports games, or school-day only services for middle schools and high schools. [See http://www.sfmta.com/cms/ mroutes/SupplementalService.htm]
Switches	A switch is a mechanical installation enabling LRVs or Trolley Coaches to be guided from one track or set of overhead wires to another, such as at a railway junction or where a spur or siding branches off.
Terminal	The point where a transit route starts or ends, where vehicles stop, turn or reverse, and wait before departing on their return journeys.
Tow-away Zone	A lane in which private vehicles, if stopped or parked, can be removed and the owners fined.
Traffic calming measure	Roadway devices or practices that encourage drivers to proceed slowly through the use of visual or actual roadway narrowings, horizontal or vertical shifts in the roadway, or other features.
Traffic circle	Generally circular raised areas in the center of an intersection that force vehicles to go slowly around them, provide space for landscaping, and slow traffic by visually narrow the roadway.
Traffic Control Device	These include markings, signs, and signal devices used to inform, guide and control the orderly, uniform and efficient movement of all roadway users.
Transfer	A point or location where two or more transit routes come together at the same time to allow passengers to efficiently connect between intersecting transit routes. A short layover may be provided at timed transfer points to enhance the connection.

Glossary

Transit boarding island	Raised area with a transit stop within the roadway that provides a safe place for customers to board and alight, allowing transit vehicles to use center lanes without having to pull over to the side of the roadway for customers to board
Transit bulb	Curb extension at a transit stop designated for passengers to wait for, board to and alight from transit vehicles. A transit bulb allows transit vehicles to board and alight passengers without pulling in and out of traffic.
Transit service efficiency	A measure of how quickly transit trips are completed, how many transit rides are offered, and the cost to provide transit rides.
Transit signal priority	A name for various techniques to speed up transit at intersections with traffic signals. Transit vehicles signal their impending arrival via radio systems and, on their arrival at the intersection, receive green lights.
Transit stop	Where transit vehicles cease movement to permit customers to alight and board.
Transit stop changes	Transit stop changes adjust the size, location, or type of a transit stop. Transit stop changes reduce travel time by changing the distance between stops, making boarding and alighting easier for customers, reducing transit dwell time, and/or reducing the time it takes for a transit vehicle to move in and out of traffic. *[See IS,* pp. 30-40.]
Transit travel time	A measure of the amount of time for transit vehicles to move between two points along a transit route.
Transit Travel Time Reduction Proposals (TTRP)	The transit corridors along which TPS Toolkit elements are proposed to be applied are 17 of the Rapid Network Corridors.
Transit vehicle	A vehicle used for public mass transit, including Cable Cars, LRVs, Motor Coaches, Hybrid electric/diesel motor coaches, Streetcars, and Trolley Coaches.

Glossary

Transit zone	A zone along a curb where no vehicles aside from transit vehicles may stop or park, and where the transit vehicle allows passengers to board and alight. A transit zone allows room for a transit vehicle to approach a curb for customer boarding and alighting.
Transit-only lane	A travel lane that is dedicated for the exclusive use of transit vehicles.
Travel lane	The right of way in which a vehicle may travel.
Trolley coach	Trolley buses (also known as “trolley coaches” or “trackless trolleys”) are rubber-tired vehicles with motors powered by electricity from overhead wires. “Trolley” refers to the trolley poles on the roof of the bus that are used to transmit the electricity from the overhead wires. Thus, “Electric trolley bus” is a redundant term, but must be used occasionally to differentiate real trolley buses from the faux trolley cars and cable cars that are actually small buses.
Turn lane	A secondary lane from which a turn may be made. Contrast with a no-turn lane.
Turn pocket	A short zone carved out of a lane or curb parking, permitting vehicles to make a turn at a given intersection. Most often used to prevent turning vehicles from blocking non-turning vehicles.
Turn Restrictions	Signs limiting vehicles from turning, which reduces the blockage of transit vehicles and other traffic. Turn restrictions can be part-time or full-time. *[IS, p. 46.]*
Wayfinding signage	Directional signage located on the sidewalk, used to help pedestrians orient themselves and locate nearby destinations