

# ENTRIPS



**EASTERN NEIGHBORHOODS**  
TRANSPORTATION IMPLEMENTATION PLANNING STUDY

## FINAL REPORT

DECEMBER 2011





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The SFMTA would also like to acknowledge the efforts of the Eastern Neighborhoods Citizens Advisory Committee, the EN TRIPS Community Task Force, and the community members who participated in EN TRIPS workshops.

The EN TRIPS project was made possible in part through funding from Caltrans, the Metropolitan Transportation Commission, and the San Francisco Foundation.

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# EXECUTIVE SUMMARY

## BACKGROUND AND SCOPE

San Francisco's Eastern Neighborhoods are made up of the diverse communities of the Mission District, South of Market, Central Waterfront, Showplace Square, and Potrero Hill. These neighborhoods, along with the San Francisco Planning Department, worked together to complete the Eastern Neighborhoods Community Plan. The plan, adopted in 2009, outlines opportunities for increased housing and new development throughout the eastern third of San Francisco. The plan also includes a vision for changes in the transportation network to support proposed land use changes.

This Eastern Neighborhoods Transportation Implementation Planning Study (EN TRIPS) begins to implement the transportation vision established in the Eastern Neighborhoods area plans. It addresses impacts of growth and change in the Eastern Neighborhoods by identifying, designing, and seeking funding for key transportation infrastructure projects. The study included the following steps, which were all completed with extensive public involvement:

1. Perform technical analysis to determine existing and future circulation needs based on land use growth and change.
2. Select a number of key corridors which are candidates for short term improvement and which are not already being considered in other studies.
3. Evaluate a number of potential concepts for each corridor and determine the overall effect on circulation caused by changes on individual corridors.
4. Create conceptual designs for the most promising alternatives, and evaluate the opportunities and constraints resulting from changing the circulation system.
5. Develop funding and implementation strategies for the proposed projects.

The project sought to identify and prioritize transportation needs in the major transportation networks in the Eastern Neighborhoods, and then advanced the highest priority transportation projects that were unlikely to be met through other efforts. Following adoption of this plan, the proposed projects will be moved forward into environmental review and detailed design.

EN TRIPS was guided by the transportation objectives established through the Eastern Neighborhoods Area plans. These objectives have a strong multi-modal focus, recognizing the need to efficiently move people and goods through a variety of modes of transportation.

## SUMMARY OF MAJOR CHALLENGES AND OPPORTUNITIES

Major challenges and opportunities for the Eastern Neighborhoods transportation system are discussed below. The chapters that follow propose transportation capital investments and circulation changes that begin to address many of these issues.

### Capacity for movement of people and goods

- The Eastern Neighborhoods transportation system is already at or near capacity in some corridors during peak periods. As growth occurs, system capacity may be further taxed.
- Maintaining sufficient system capacity in growing neighborhoods will require improved alternatives to travel by private vehicle.

### Livability

- The challenges in the transportation system decrease livability in the South of Market area.
- Areas with lower projected growth also require pedestrian and public realm improvements.

### Connectivity

- Throughout the Eastern Neighborhoods, barriers such as elevated freeways, railroad tracks, wide arterials, and steep topography interrupt paths of travel and divide neighborhoods.
- The regional-scale rail service investments planned for the Eastern Neighborhoods create both opportunities and connectivity challenges.
- The Eastern Neighborhoods remain the industrial heart of San Francisco. Even as neighborhoods change, the heavy and light industry businesses that provide nearly 30,000 jobs in Eastern Neighborhoods plan areas will continue to require delivery trucks of all kinds.

## CORRIDOR PROJECTS

Responding to major land use and transportation system changes in the coming decades, the EN TRIPS project sought to develop major capital investments to improve transportation and the public realm on a small number of very important transportation corridors in the study area. The priority projects aim not only to address major challenges for circulation and livability at the neighborhood scale, but also to address challenges for the overall Eastern Neighborhoods circulation system. While the selected projects were the focus of design effort, the EN TRIPS plan also proposes circulation changes for the surrounding transportation networks where doing so supports the project goals and helps to meet EN TRIPS project objectives. Finally, the project sought to advance corridors for which design and circulation planning work could help to inform future improvement projects for several other priority Eastern Neighborhoods corridors. The recommended project designs are summarized below and detailed in Chapters 4, 5, and 6 of this report.

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**Figure ES-1 EN TRIPS Priority Corridors**



## 16<sup>th</sup> Street Corridor

Sixteenth Street is a major east-west corridor connecting the Eastern Neighborhoods and connecting the Eastern Neighborhoods to the rest of the city. In a part of the city marked by multiple barriers (including hilly terrain, US 101 and Interstate 80, and the Caltrain right-of-way), 16<sup>th</sup> Street it is the only east-west street that allows for continuous travel all the way from the Mission District to Mission Bay. Substantial development is expected in several neighborhoods connected by 16<sup>th</sup> Street including the north Mission District, Showplace Square, and Mission Bay. The 22 Fillmore currently provides transit service along 16<sup>th</sup> Street from the Castro district as far east as Kansas Street in Potrero Hill. In the future, SFMTA plans to re-route Route 22 so that it serves the full length of 16<sup>th</sup> Street to Mission Bay.

Sixteenth Street was identified as a high-need corridor in the Eastern Neighborhoods area plans, and improvements to the corridor were specified as a priority project by the San Francisco Board of Supervisors. The segment of 16<sup>th</sup> Street between Potrero Avenue and Seventh Street was prioritized for investment because of expected residential growth, forecast vehicle congestion, transit capacity constraints, and community priority.

### Project Objectives

In designing transportation improvements for 16<sup>th</sup> Street, the SFMTA was guided by the principles listed below. With a limited right-of-way, project design requires tradeoffs between each of these priorities, but the project alternatives attempt to strike a balance between priorities.

- **Transit performance.** The project should maximize transit speed and reliability on 16<sup>th</sup> Street while providing a safe and comfortable waiting environment for passengers.
- **The public realm.** Open space, landscaping, and other urban design elements should be enhanced to upgrade 16<sup>th</sup> Street to a "green connector" street.
- **Pedestrian conditions.** Pedestrian comfort and safety should be improved. Currently, this segment has limited pedestrian facilities.
- **Bicycle conditions.** A safe, comfortable, and attractive bicycle route should be provided within the corridor.
- **Vehicle circulation.** The street grid as a whole should continue to accommodate east-west vehicle travel between the Mission District, Potrero Hill, Showplace Square, and Mission Bay.
- **Parking and loading.** Delivery access to businesses should be maintained and parking opportunities should be provided where possible, but parking and loading is less important than through-travel in this segment.
- **Deliverability and cost-effectiveness.** The project should maximize cost-effectiveness and speed delivery of the most crucial transit priority improvements.

### Project Development

The EN TRIPS project team developed a total of nine project alternatives. The project alternatives share a number of similarities. First, all of them provide dedicated transit lanes (either on the center or the side of the street), as well as other transit priority treatments such as near-level boarding and transit signal priority. All would restrict left turns for vehicles at most intersections on 16<sup>th</sup> in order to maintain capacity for through-travel. Most would remove a large share of the

parking on 16<sup>th</sup> Street. Key differences between the alternatives include the placement of bicycle facilities (either 16<sup>th</sup> or 17<sup>th</sup> Street), the type of transit only lane (center or side-running), and the placement of bus stops (boarding island or curb stops).

Based on the evaluation, the three most promising concepts were selected for additional analysis, design, and community input. The concepts advanced include the Median Transitway (Alternative 1), the Center Queue Jump (Alternative 4), and the Green Median (Alternative 7). The Median Transitway is recommended as the concept that provides the greatest benefits across the full range of project objectives. This alternative is summarized below, and developed in detail in Chapter 4.

In addition, in section 4.5 of this report, the two other promising alternatives are summarized. It should be noted that, in the judgment of the project team, the recommended alternative is clearly the strongest concept across the range project objectives. However, these additional options are included for stakeholder review and potential inclusion as alternatives in environmental review.

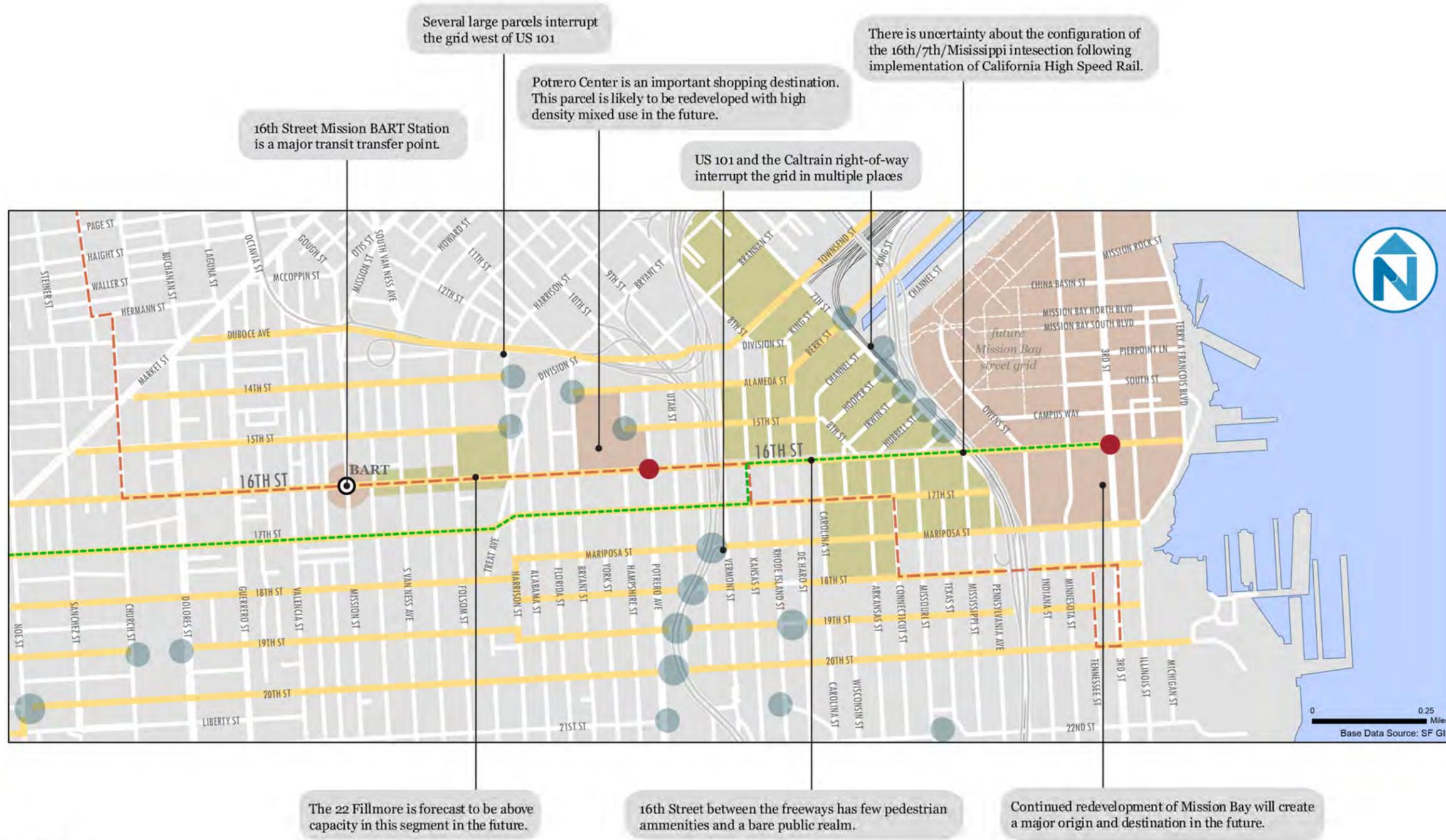
### **Recommended Alternative**

The recommended alternative would provide the strongest transit priority to the re-aligned 22 Fillmore, a service that is of vital importance to the future of the Eastern Neighborhoods as a whole. It would also substantially upgrade pedestrian conditions and improve the public realm. While it would remove a segment of bicycle lanes on 16<sup>th</sup> Street, bicycle travel would be accommodated in a new high-quality bicycle facility on 17<sup>th</sup> Street. While this alternative will require major public investment, it can be easily phased, with the most crucial transit priority and pedestrian safety aspects of the project implemented first, followed by the costlier public realm improvements when funding becomes available.

Traffic impacts of the proposed transit priority treatments will be analyzed in detail as part of the TEP environmental review process. This project will maintain one lane of traffic in the eastbound direction (as today) while reducing westbound vehicle lanes from two to one. A number of factors could help offset this reduced capacity: first, a substantial increase in transit performance could reduce the demand for vehicle trips in this corridor. Second, the City can invest in reconnecting the east-west transportation grid in this part of the city, relieving some of the burden on 16<sup>th</sup> Street as the primary east-west vehicle route. Similarly, continued efforts at Transportation Demand Management and parking management at Mission Bay could also reduce the demand for vehicle trips.

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Figure ES-2 16th Street Corridor Issues and Opportunities

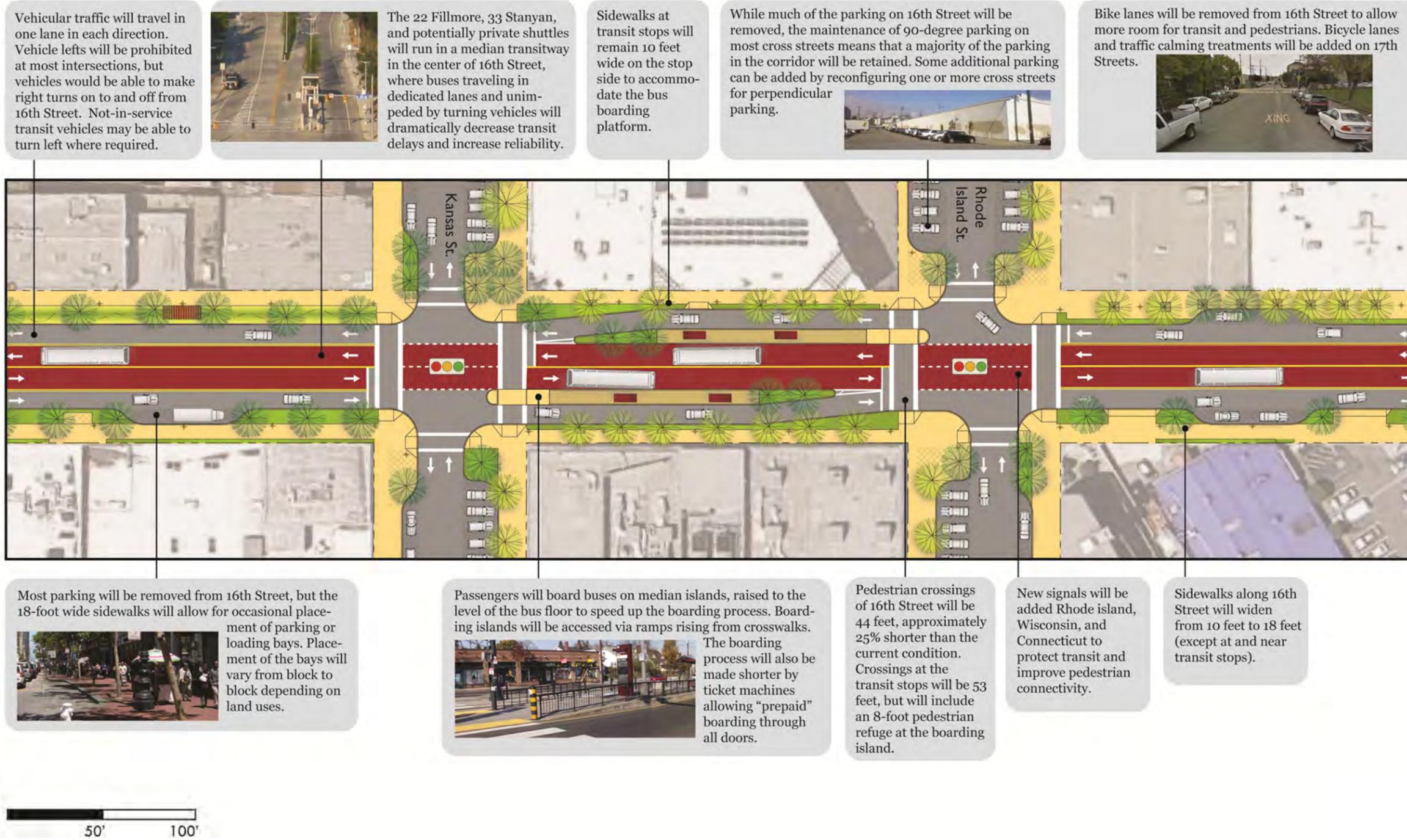


LEGEND

- - - Bicycle Route 40
- East-west vehicle routes
- Vehicle congestion forecast
- Breaks in vehicle network
- - - 22 Fillmore (current alignment)
- Major origin/destination
- New development permitted under the Eastern Neighborhoods land use plans

Figure ES-3 16th Street Corridor Operations Concept

The recommended alternative for 16th Street is based on a few key features, including increasing transit reliability by the creation of a median transitway; extension of sidewalks; and moving bicycle circulation to 17th Street.



## Folsom and Howard Streets Corridor

Folsom and Howard Streets are major arterials in the South of Market area running north-east and south-west between the Embarcadero and the Mission District. For most of this distance, they function as a one-way couplet carrying large volumes of vehicles traveling during peak periods. Local transit service operates eastbound on Folsom Street with westbound service provided on Harrison Street. Folsom Street has an important community role in the western South of Market. Already home to much of the neighborhood's night life, it is envisioned as an emerging daytime neighborhood commercial district between Sixth and Ninth Streets. On the last Sunday in September, the Folsom Street Fair draws many thousands of people to the neighborhood.

The segments of Folsom and Howard between Fifth and 11<sup>th</sup> Streets have been prioritized for analysis and investment over other segments of the corridor because of expected residential and employment growth and community priority. This segment was identified as an area of need by participants in the EN TRIPS community workshops, Eastern Neighborhoods area plans process, and Western SOMA Community Task Force.

### Project Objectives

In designing improvements in the Folsom Street corridor and developing a concept for east-west circulation in the South of Market, the project team was guided by the principles listed below. With a limited right-of-way, project design requires tradeoffs. The design alternatives that follow recognize the need for balance between priorities.

- **Pedestrian conditions.** *Pedestrian connectivity, comfort, and safety should be improved.*
- **The public realm.** *Open space, landscaping, and other urban design elements on Folsom Street should be upgraded.*
- **Transit legibility.** *Transit service should be consolidated on two-way streets to improve legibility where possible.*
- **Transit performance.** *Transit speed and reliability should be maintained.*
- **Bicycle conditions.** *A safe, comfortable and attractive bicycle route should be provided within the corridor.*
- **Vehicle circulation.** *The project should maintain adequate east-west vehicle capacity in the South of Market network as a whole.*
- **Parking and loading.** *Parking and loading access to businesses should be maintained.*
- **Deliverability and cost-effectiveness.** *The project should maximize cost-effectiveness and speed delivery of the highest priority improvements.*

### Project Development

Based on the evaluation detailed in Chapter 5 of this report, the four most promising concepts were selected for additional analysis, design, and community input. The concepts advanced include all three of the two-way, three-lane Folsom Street configurations and a single one-way option. After detailed review of these alternatives, Alternative 5, with two-way Folsom and Howard Streets and a two-way cycletrack on Folsom, emerged as the concept that appears to provide the greatest benefits across the full range of project objectives.

In section 5.6 of this report, the three other promising alternatives are summarized. Each includes an alternative circulation concept. In addition, the findings of a detailed traffic analysis of the alternatives are provided in Appendix A. Unlike the 16<sup>th</sup> Street project, where one alternative emerged as clearly the strongest, each of these remaining Folsom/Howard alternatives is competitive with the recommended alternative. Each is a balance of priorities, differing from the other alternatives with respect to the scale of public realm improvements, connectivity for different modes, traffic impacts, transit performance, and cost. These additional options are included for stakeholder review and potential inclusion as alternatives in environmental review.

### **Recommended Alternative**

The recommended alternative reduces crossing distances and provides signalized mid-block crossing on every block to improve pedestrian connectivity and safety. It consolidates the TEP's 27 Folsom and the 11 Downtown Connector on Folsom Street, offering eight-minute headways in both directions. By shifting westbound service from Harrison Street, the efficiency of both routes improves, and traffic modeling suggests that transit delay would not increase as a result of increased traffic congestion. A buffered two-way cycletrack on Folsom Street would offer a protected bicycle facility that improves connectivity to the Mission District and points south.

While this alternative would provide additional pedestrian space at corner bulbs and bus stops, it would not widen sidewalks on either Folsom or Howard Streets leaving Folsom with 10-foot sidewalks (Howard Street sidewalks are now 12-feet wide). However, because it would not move curb lines, this concept could be implemented at a substantially lower cost than the others. On Howard Street, a landscaped median will augment the public realm and provide pedestrian refuges.

Figure ES-5 Folsom and Howard Streets Corridor Issues and Opportunities

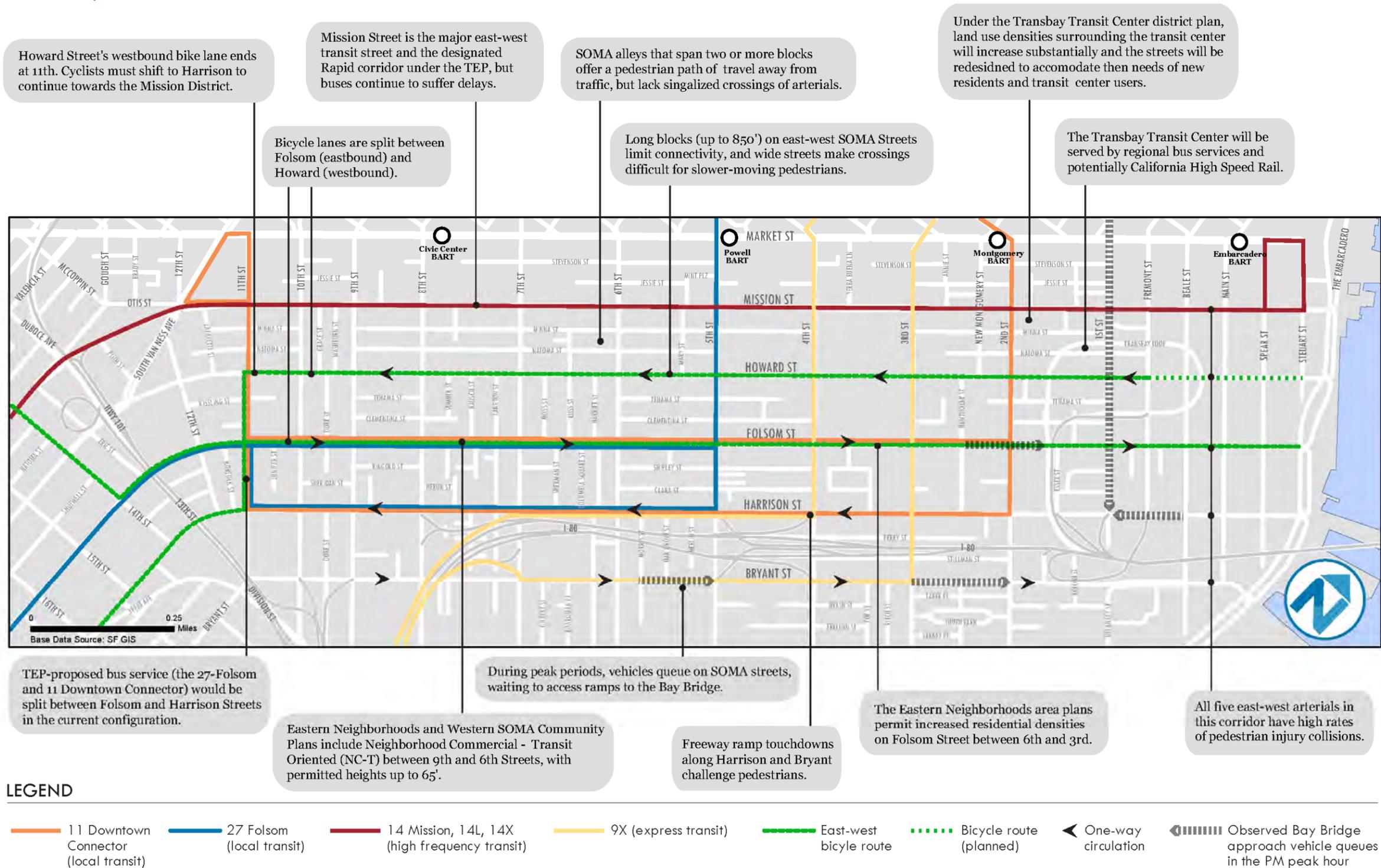


Figure ES-6 Folsom Street Operations Concept

The Transportation Concept for Folsom Street converts vehicle travel to two-way, allowing for bi-directional bus service. However, because the street's "two-plus-one" lane configuration will allow eastward travel to remain dominant, this alternative has characteristics typically associated with one-way travel, such as signal timing, traffic calming, and opportunities for mid-block crossings. The concept also includes a two-way cycletrack that will be buffered from vehicle traffic by the parking lane and a buffer area along the sidewalk edge.

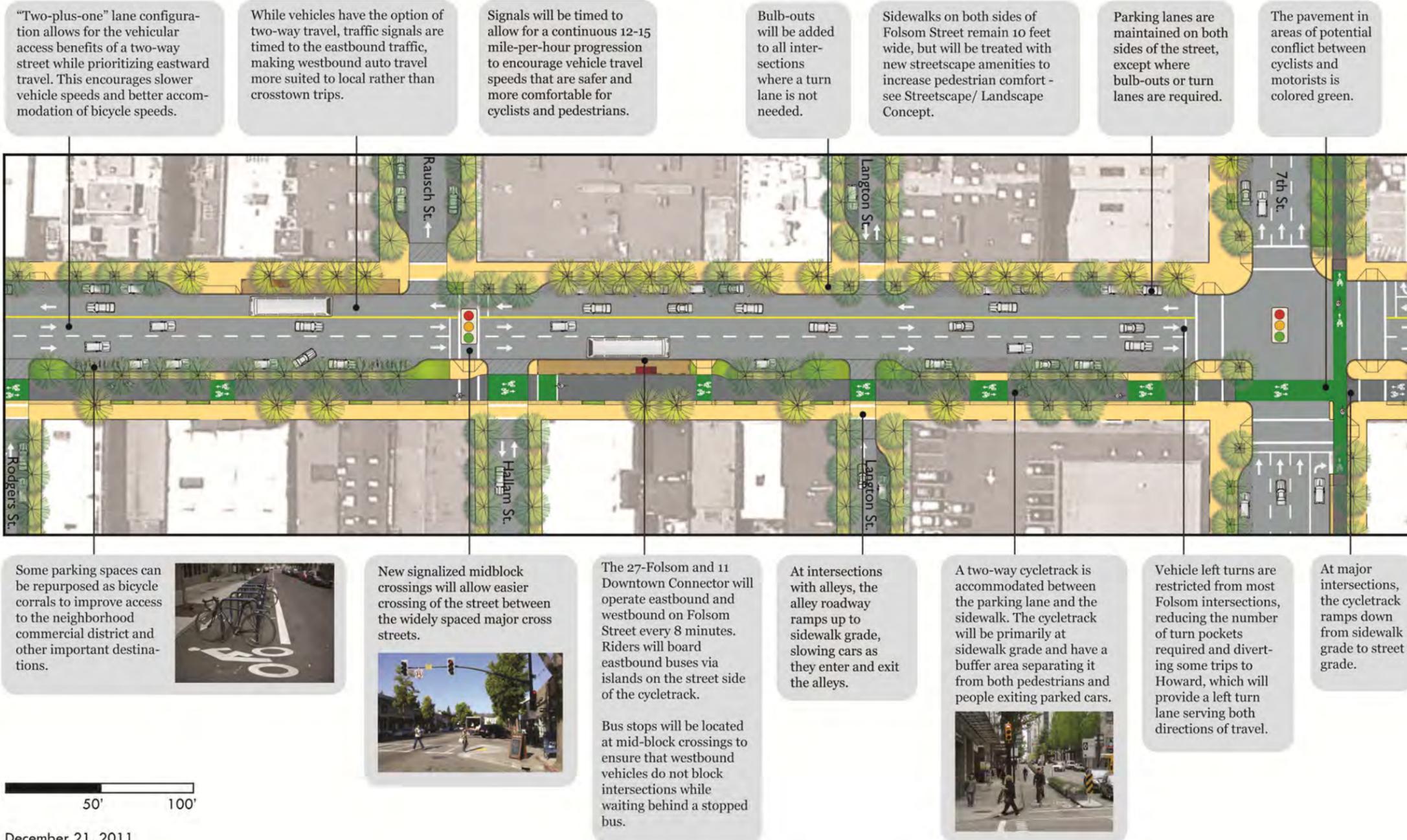
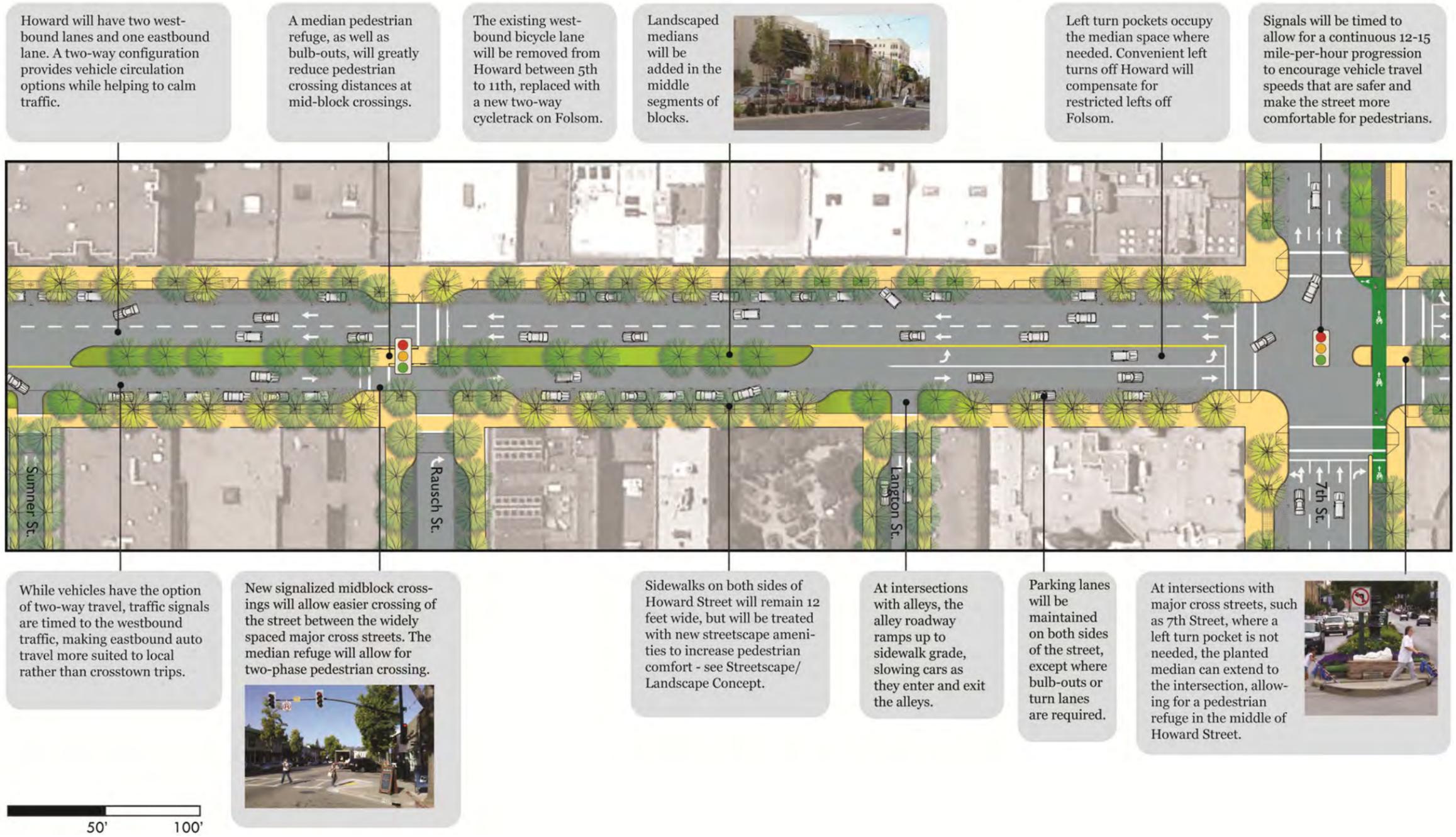


Figure ES-7 Howard Street Operations Concept

The Transportation Concept for Howard Street converts vehicle travel to two-way. However, because the street's "two-plus-one" lane configuration will allow westward travel to remain dominant, this alternative has characteristics typically associated with one-way travel, such as signal timing, traffic calming, and opportunities for mid-block crossings. A center median will allow turn pockets where needed, add a major green design element to the street, and allow for pedestrian refuges at midblock and some major street crossings.



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## Seventh and Eighth Streets Corridor

Seventh and Eighth Street work together as a one-way couplet in the South of Market area, traveling north and south between Market Street and Townsend Street. The 19 Polk provides local transit service every 15 minutes, traveling north on Seventh Street and south on Eighth Street. Seventh and Eighth Street are designated as major arterials in the City's Congestion Management Plan Network.

These two streets share issues and opportunities that are also common to the other north-south arterials in the South of Market area. All of these streets are designed and managed to primarily carry high traffic volumes during peak periods. Improving the public realm and conditions for other modes on these streets will require some reduction in vehicle capacity. Capacity reductions will have to be carefully designed to avoid unwanted impacts on the surrounding transportation networks, particularly transit operating in mixed-flow traffic.

Seventh Street also has a special role as an Eastern Neighborhoods connector street. Unlike parallel streets, Seventh continues south of Mission Creek, traveling through Showplace Square and intersecting with the Potrero Hill grid at 16<sup>th</sup> Street. The Eastern Neighborhoods area plans to identify Seventh as a "green connector" street.

The Seventh and Eighth Street corridor has three distinct segments: Market Street to Harrison Street, Harrison Street to Townsend Street, and Townsend Street to 16<sup>th</sup> Street. The full length of Seventh Street has been designated as a "green connector" street in the Eastern Neighborhoods land use plan and will require investment in the public realm. As a first step, and as an investigation in how to address the set of issues that challenge all of the South of Market's north-south arterials north of the freeways, the Seventh and Eighth Street couplet between Market and Harrison was selected as an EN TRIPS priority project.

### Project Objectives

In designing improvements in the Seventh and Eighth Street corridor, the project team was guided by the principles listed below. With a limited right-of-way, project design requires tradeoffs. The design alternatives that follow attempt to strike a balance between priorities.

- **Pedestrian conditions.** *Pedestrian connectivity, comfort, and safety should be improved.*
- **The public realm.** *Open space, landscaping, and other urban design elements should be upgraded.*
- **Transit performance.** *Transit speed and reliability should be maintained.*
- **Bicycle conditions.** *A safe, comfortable, and attractive bicycle route should be provided within the corridor.*
- **Vehicle circulation.** *The project should maintain adequate north-south vehicle capacity in the South of Market network as a whole.*
- **Parking and loading.** *Parking and loading access to businesses should be maintained.*
- **Deliverability and cost-effectiveness.** *The project should maximize cost-effectiveness and speed delivery of the highest priority improvements.*

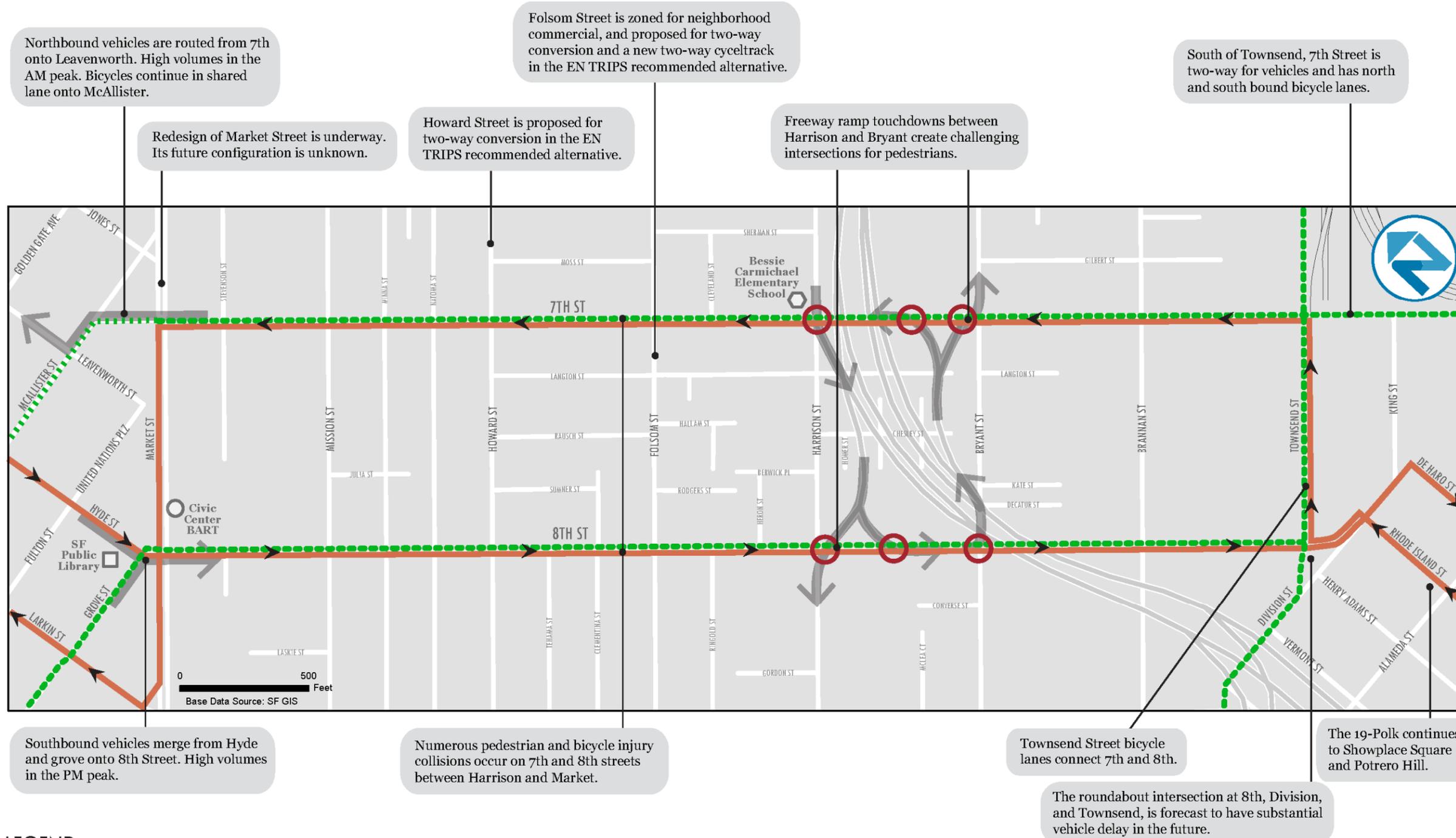
## Recommended Alternative

Based on the evaluation above, the three most promising concepts were selected for additional analysis, design, and community input. After detailed review of these options, the SFTMA recommends Alternative 2, which reduces 7<sup>th</sup> and 8<sup>th</sup> Streets to three, one-way lanes, invests in pedestrian connectivity and additional pedestrian space and adds a buffered one-way cycletrack to each street, as the concept that appears to provide the greatest benefits across the full range of project objectives.

In section 6.5 of this report, two other alternatives are summarized with the recommended alternative's key differences highlighted. In addition, the findings of a detailed traffic analysis of the alternatives are provided in Appendix A. These additional options are included for stakeholder review and potential inclusion as alternatives in environmental analysis of the project.

The recommended alternative reduces crossing distances and provides signalized, mid-block crossings on every block to improve pedestrian connectivity and safety. By maintaining one-way circulation, it allows signals to be synchronized to favor a steady progression of vehicles at a moderate speed. A buffered one-way cycletrack on each street would offer a protected space for cyclists moving north and south in the western South of Market area. It would widen sidewalks on the side of the street opposite the cycletrack providing additional space for pedestrians, landscaping, and other amenities. Investment in the public realm on Seventh Street, in particular, will help that street fulfill its role as a "green connector" as identified in the Eastern Neighborhoods area plans. Sidewalk widening would require substantial resources. However, this alternative could be easily phased with the cycletrack, bulbs, and pedestrian refuges installed in the first phase and sidewalk widening implemented in a second phase when funding becomes available.

Figure ES-9 Seventh and Eighth Streets Corridor Issues and Opportunities



LEGEND

- Freeway ramp touchdowns
- Bicycle route (existing lanes)
- Bicycle route (planned lanes)
- 19-Polk (local transit)
- One-way circulation
- Vehicular flow

Figure ES-10 Seventh and Eighth Streets Operations Concept

The concept for 7th and 8th Streets is based on a few key features, including retention of one-way traffic but reduction to three lanes; a protected cycletrack buffered from traffic by the parking lane, and extension of sidewalks on one side of the street.

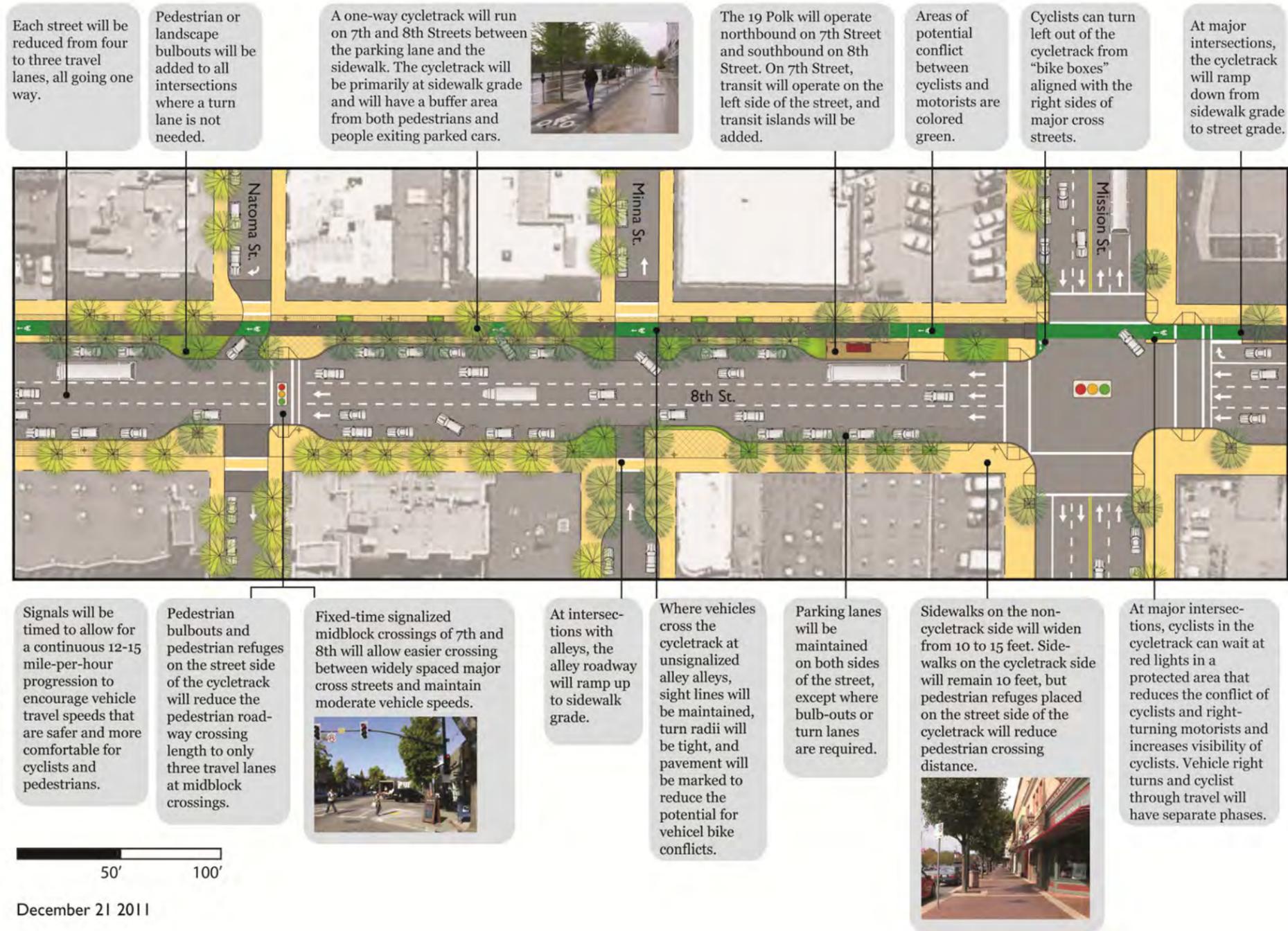
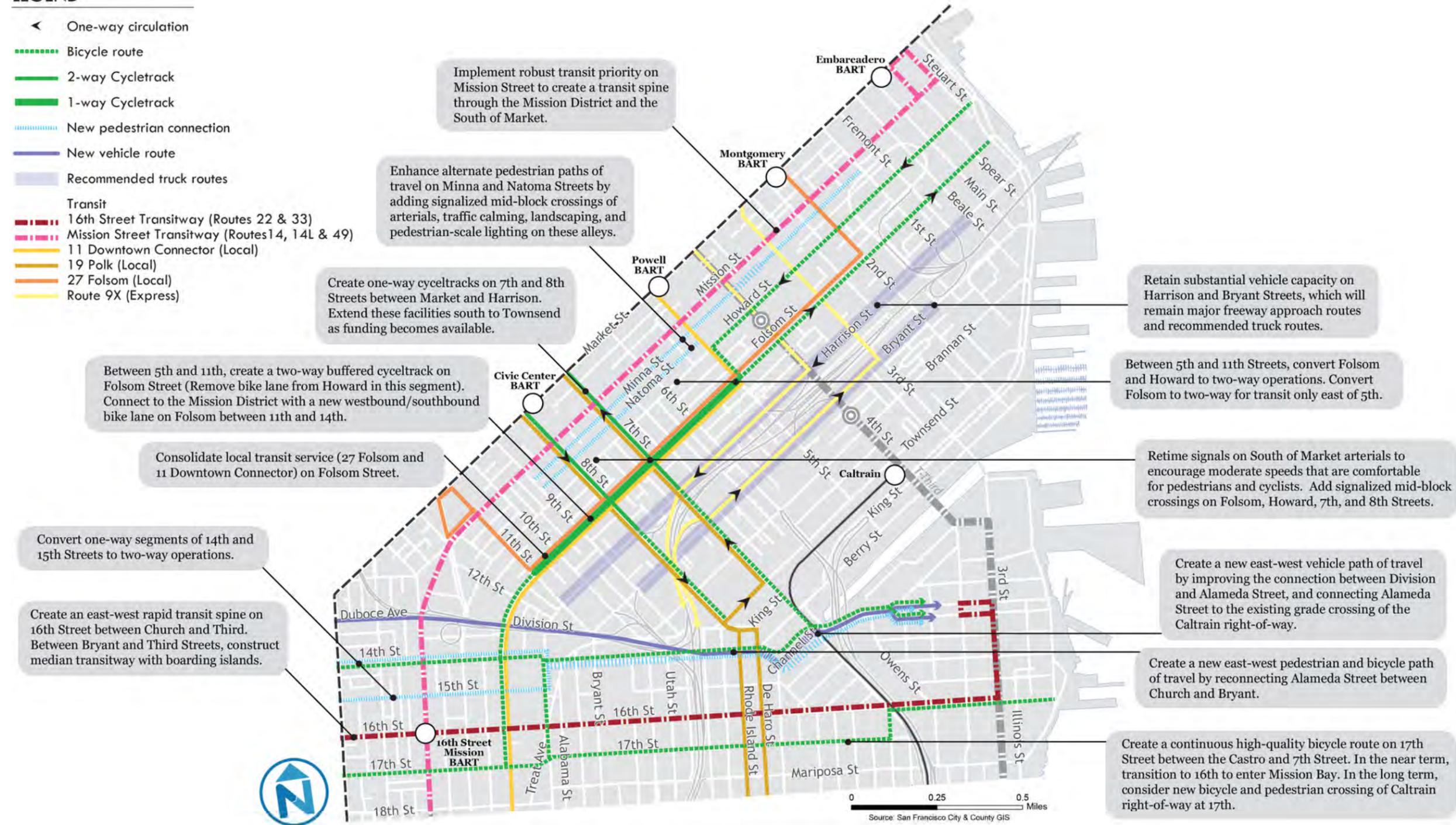


Figure ES-11 EN TRIPS Priority Projects Combined Circulation Concept

LEGEND

- ◀ One-way circulation
- ⋯ Bicycle route
- 2-way Cycletrack
- 1-way Cycletrack
- ⋯ New pedestrian connection
- New vehicle route
- Recommended truck routes
- Transit
- ▬ 16th Street Transitway (Routes 22 & 33)
- ▬ Mission Street Transitway (Routes 14, 14L & 49)
- ▬ 11 Downtown Connector (Local)
- ▬ 19 Polk (Local)
- ▬ 27 Folsom (Local)
- ▬ Route 9X (Express)



NOTE: This diagram illustrates highlights of the ENTRIPS corridor project circulation concepts. Detail is provided in Chapters 4,5, and 6. Transit and bicycle routes unaffected by these proposals are not shown.

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## A VISION FOR TRANSPORTATION IN THE EASTERN NEIGHBORHOODS

The priority projects presented in this plan were selected not only to meet pressing needs on those particular streets but also because their lessons have the potential to be applied more broadly. Along with their associated circulation concepts, the proposals advance a set of strategies for addressing the major transportation challenges that the city will face in the coming decades. Based on wider application of those strategies, this long term vision for transportation in the Eastern Neighborhoods is as follows.

- **Capacity for movement of people and goods.** In order to accommodate growing travel demand, the Eastern Neighborhoods transportation system will be reconfigured to prioritize high-capacity modes. While vehicles will remain an important mode of transportation, peak period vehicular capacity will be reduced somewhat. Major steps toward achieving this vision will include development of true rapid transit corridors for SFMTA's most important bus routes, development of a network of bicycle facilities to serve people of all ages and abilities, and strategic efforts to managing vehicle system capacity including both parking and roadway capacity.
- **Livability.** Streets in the Eastern Neighborhoods will be upgraded to meet the vision expressed in the Better Streets Plan. Specific strategies will include adding landscaping and amenities, new pedestrian spaces, enhancing pedestrian crossings, and calming traffic on arterials to speeds that are safe and comfortable for pedestrians. This effort will include particular commitment to creating livable streets in the South of Market.
- **Connectivity.** The Eastern Neighborhoods transportation networks are disrupted by multiple barriers. San Francisco will engage in a gradual, opportunistic, but fully coordinated effort to reconnect the grid and restore connectivity for all modes. Major steps will include a restored east-west grid south of Division Street; a better connected South of Market pedestrian grid; upgraded transit connectivity between Showplace Square, Potrero Hill, and downtown; complete grids in Mission Bay and Central Waterfront; and a full integration with the regional transit system.

## NEXT STEPS

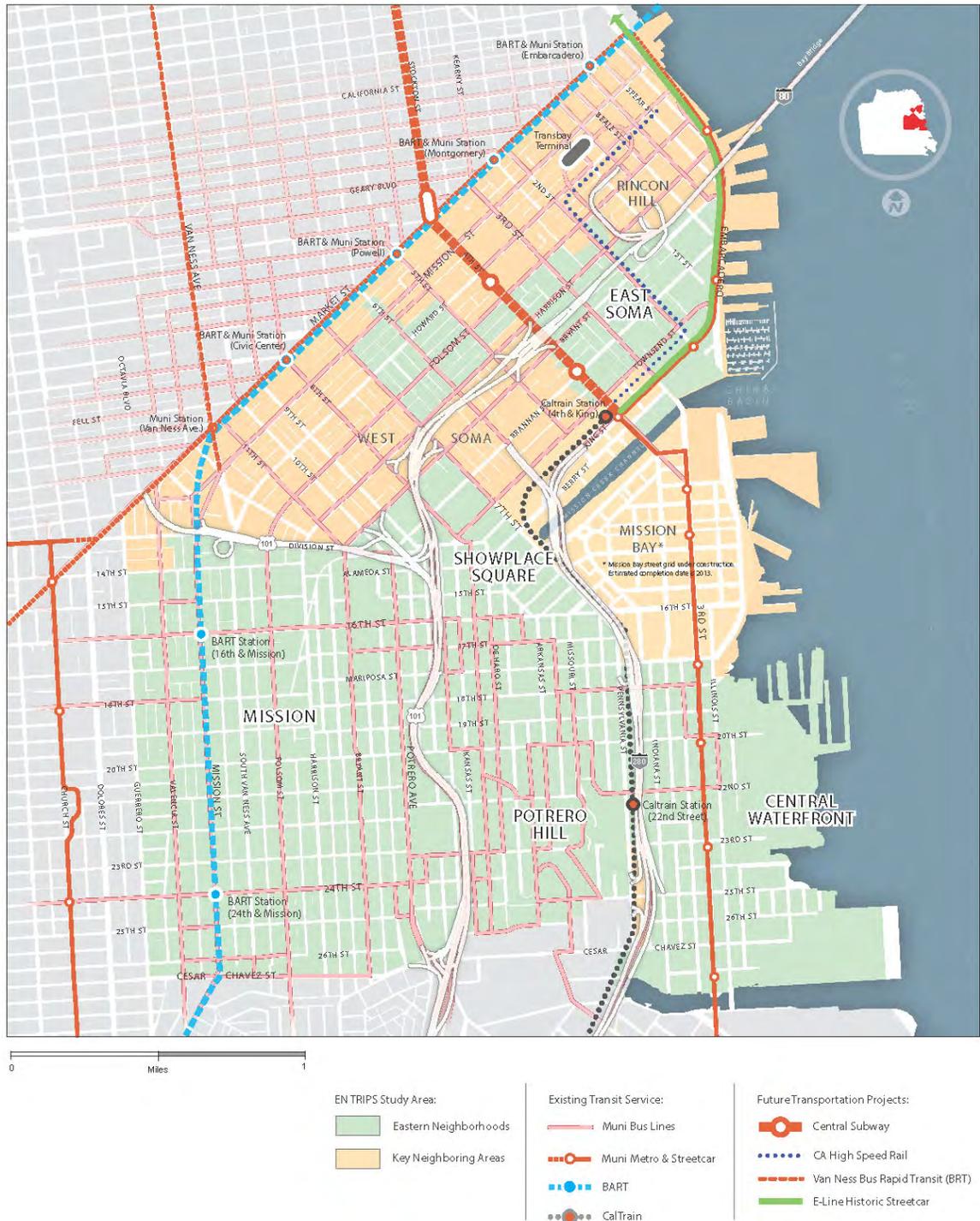
The SFMTA and its partner agencies will work toward implementing this vision on several tracks. The first, the City will work toward implementing the EN TRIPS priority projects. The EN TRIPS Funding and Implementation plan, to be published under a separate cover, will detail the specific steps necessary to realize the priority projects. It will include:

- A strategy for environmental review.
- Itemized project cost estimates.
- A timeline and phasing plan to ensure that the most pressing needs can be met as quickly and cost-effectively as possible.

In addition, realizing the vision will require ongoing effort through existing planning efforts and programs. As discussed in the recurring transportation challenges section of this report, the work of existing programs of the SFMTA and its partner agencies will continue to work towards meeting the needs expressed in this planning effort

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**Figure 1-1 EN TRIPS Study Area**



Source: San Francisco Planning Department