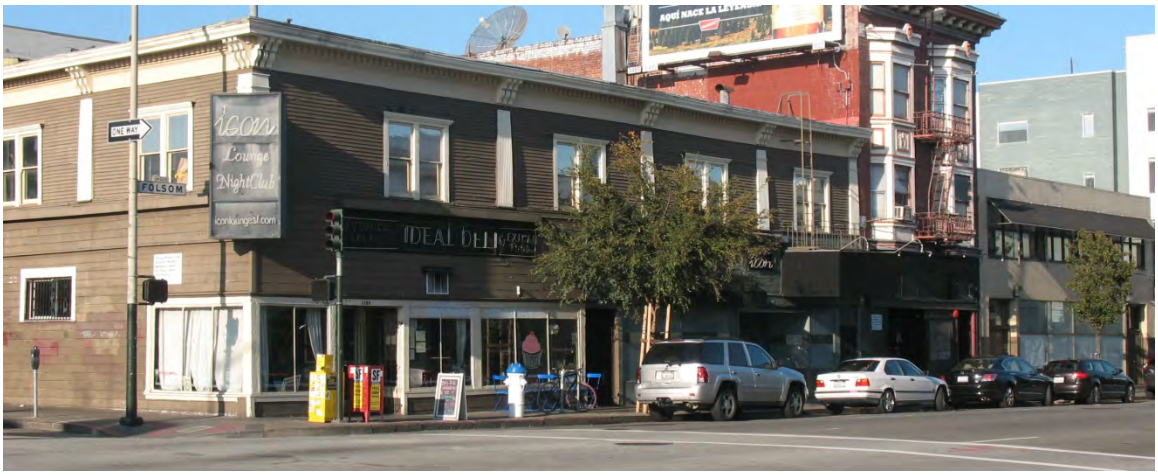
5 FOLSOM AND HOWARD STREET CORRIDOR



5.1 ISSUES AND OPPORTUNITIES

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 Eastern Neighborhoods area plans call for redesigning Folsom Street as a "Civic Boulevard," and improving Folsom was specified as a priority project by the San Francisco Board of Supervisors. The Western SOMA Community Plan also identifies the western segment of Folsom Street as a priority for improvement. Howard Street is included in this discussion because it has many of the same transportation challenges, and because the two streets work together as a pair, so that changes to Folsom may require changes to Howard.

The Folsom/Howard corridor is made up of four distinct segments. They include

- **The Embarcadero to First Street.** In this segment, both Folsom and Howard Streets are two-way for vehicle traffic (although Folsom offers westbound circulation only for buses and taxis between Fremont and Main). Land uses are primarily downtown office.

SFMTA's Route 76 uses Folsom and Howard Streets in this segment, and there is an eastbound bicycle lane on Folsom and a marked westbound bicycle route on Howard. The future site of the Transbay Transit Center is just north of Howard.

- **First Street to Fifth Street.** At First Street, Folsom and Howard shift to one-way circulation (eastbound Howard and westbound Folsom) for vehicles and bicycles. West of Second Street, the SFMTA's Route 12 and the planned 11 Downtown Connector operate eastbound on Folsom with westbound service provided on Harrison. Land uses remain primarily office, and the Moscone Center/Yerba Buena complex occupies the block between Third and Fourth Streets. Very high volumes of vehicle traffic use these segments of Folsom and Howard during peak periods traveling to and from Interstate 80.
- **Fifth Street to 11th Street.** Vehicle and bicycle circulation remain one-way in this segment. Under the TEP recommendations, bus service will be provided on Folsom by the 27 Folsom and the 11 Downtown Connector. Vehicle volumes are somewhat lower than in the segment to the east. Land uses shift to the mix of PDR, moderate-density residential enclave districts, and service businesses that characterizes the western South of Market neighborhood. The segment of Folsom Street between Sixth and Ninth Streets has been designated with neighborhood commercial zoning. This segment has been selected as the focus of the EN TRIPS corridor design project and is discussed in more detail below.
- **11th Street to Division Street.** At 11th Street, Folsom and Howard Streets curve towards due South in a transition toward the Mission District street grid. Traffic volumes are lower in this segment than they are farther east, and both streets shift back to two-way operations. The eastbound bicycle lane continues on Folsom, but the westbound bicycle corridor terminates at 11th. Just north of the Central Freeway, Howard Street forms a Y with South Van Ness Avenue. Northbound vehicle traffic traveling from the Mission District on South Van Ness Avenue feeds onto Howard Street headed eastbound, while south/westbound Howard Street traffic is diverted onto South Van Ness Avenue northbound.
- **South of Division Street/Central Freeway.** South of Division Street, Folsom Street becomes a relatively low-volume street traveling north and south through the Mission District with bus service from the 27 Folsom. It was recently converted from four lanes to three, and bicycle lanes are planned between 14th and 19th Streets (and eventually to 25th). Land uses are mostly PDR from Division to 14th Streets. South of 14th, land uses become primarily residential and service. South Van Ness is a higher volume four-lane arterial, with a mix of PDR and residential land uses.

The circulation concepts presented below include proposed changes for all of these segments of Folsom and Howard Streets along with designation of roles and priorities for the other east-west streets in the corridor. A central element and an important first step toward these area-wide improvements, the segment of Folsom and Howard Streets between Fifth and 11th Streets was selected for development as an EN TRIPS priority project.

Folsom and Howard Project Segment – Fifth to 11th

The segments of Folsom and Howard between Fifth and 11th 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. Details of the Fifth to 11th Street segment are as follows.

Land Use

Land use densities in the segment are currently moderate with a mix of PDR, retail, and service interspersed with residential enclave districts centered on alleys. Folsom Street is also projected to see substantial growth in residential and employment density as a result of recently completed land use planning efforts. The Eastern Neighborhoods area plans permit increased residential densities on Folsom between Third and Sixth Streets with neighborhood-serving retail for the block of Folsom between Sixth and Seventh Streets. The Western SOMA Community Plan updates land use controls for Folsom Street between Seventh and Ninth Streets with Neighborhood Commercial–Transit (NC-T) zoning and heights up to 65 feet. The plan includes more restrictive mixed-use zoning for Howard Street between Seventh and Ninth.

Transit

The SFMTA currently provides transit service eastbound on Folsom in this segment by the 12 Folsom-Pacific on 20-minute headways. Westbound service is provided on Harrison Street. Under TEP recommendations, eastbound Route 27 service will be shifted from Bryant Street, and Route 12 will be discontinued if favor of the new 11 Downtown Connector service. Together, these routes will provide eastbound service at 8-minute headways. The TEP also contemplated the possibility of shifting westbound service to a two-way Folsom Street.

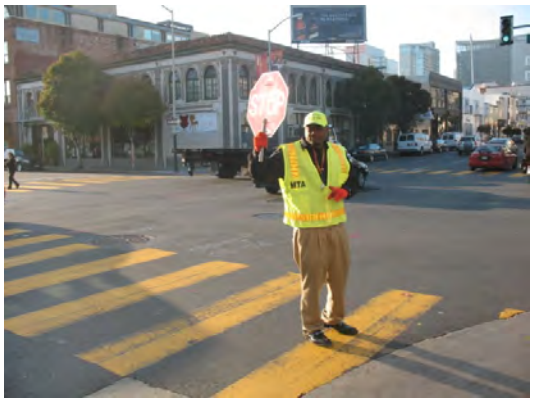
Each of these routes is designated as a local service under the TEP, and future transit ridership volumes are forecast to be relatively low. One block north of Howard, Mission Street is designated as a rapid corridor and a Transit Priority street. Mission has bi-directional transit service provided by the 14, 14x, and 14L on 4-minute headways during peak periods.

Vehicle Circulation

Working together in a one-way couple, Folsom and Howard Streets travel through the center of the western and eastern South of Market neighborhoods, connecting them to the Transbay District and downtown. With a total of seven one-way lanes of traffic capacity and lacking direct freeway access, Folsom and Howard Streets have modest peak period vehicle delays in this segment. During off-peak hours, very wide vehicle rights-of-way and relatively low traffic volumes combine to support high vehicle travel speeds that diminish pedestrian safety and comfort. Traffic volumes are forecast to grow as overall travel demand increases in the future.

Just to the south, Harrison and Bryant Streets carry high volumes of vehicle traffic and serve as the location of vehicle queues waiting to approach freeway ramps for Bay Bridge bound traffic. The north-south arterials that cross Folsom and Howard in this segment (Fifth through 10th Streets) also carry very large volumes of vehicle traffic to and from freeway ramps.

Pedestrian conditions



Like other South of Market arterials, Folsom and Howard Streets have limited pedestrian facilities. Pedestrian challenges include both wide crossing distances and long distances between street crossings. While Howard Street's twelve foot sidewalks satisfy the Better Streets Plan minimum recommended width for mixed use streets, Folsom Street's ten foot sidewalks fall below this standard. Folsom also has relatively high pedestrian injury collision rates of 25 and 32 per mile east and west of Fifth between 2004 and 2008. Some pedestrians use the South of Market's network of alleys to avoid these conditions on the major arterials. However, the alleys offer a patchwork of connectivity; when they do carry through from block to block, they lack signalized crossings at arterials.

Bicycle conditions

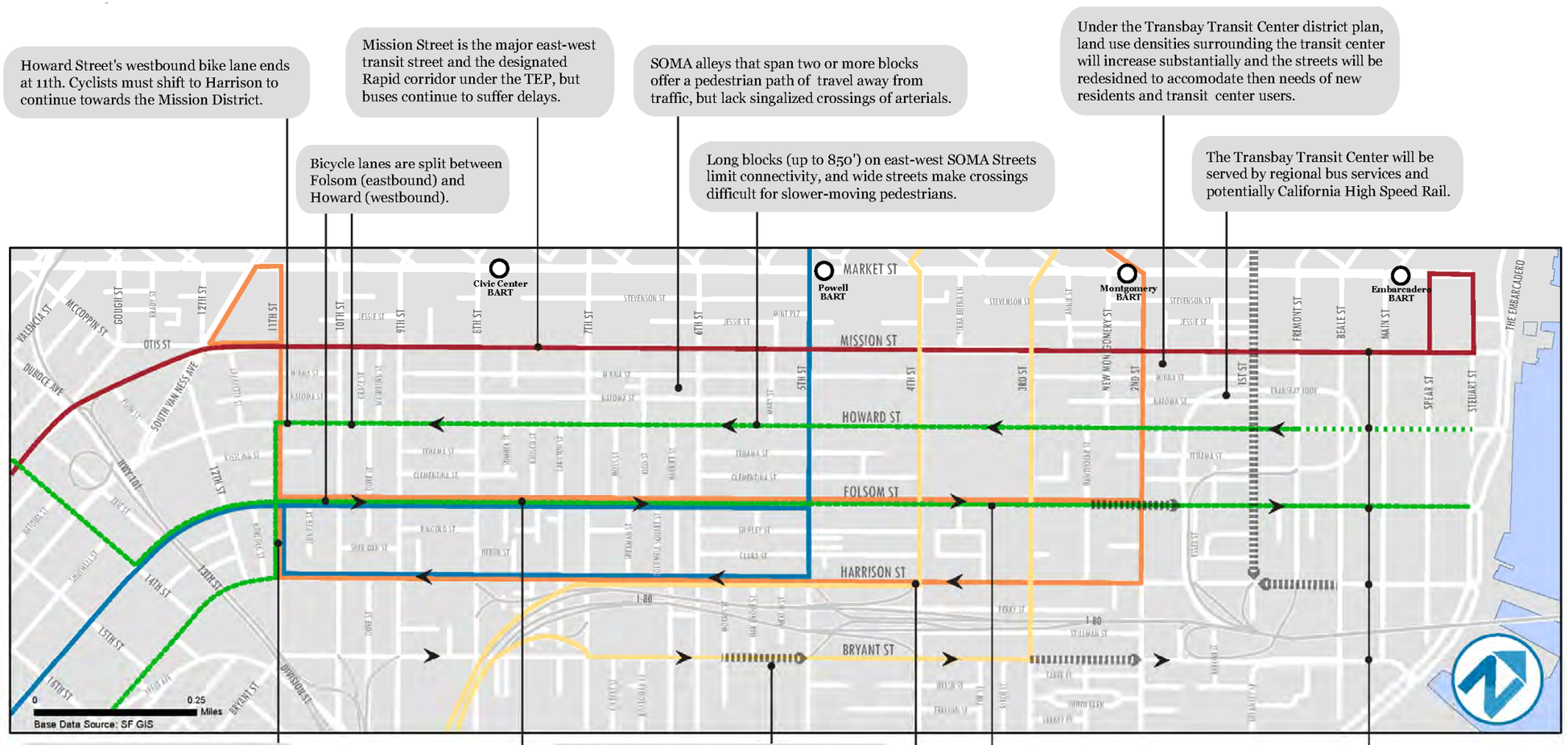
Folsom and Howard Streets also work together to provide the major east-west bicycle corridor though the South of Market. Located on relatively high-volume, high-speed vehicular streets and lacking any buffer from traffic; these facilities are used mostly by experienced cyclists and may present a challenge to inexperienced, occasional, or slower-moving cyclists. Still, this corridor is a vital link in the city's bicycle network as there is no existing or potential parallel east-west route South of Market Street or north of Townsend.

The westbound lane of Howard Street terminates at 11th Street just before Howard Street itself terminates at South Van Ness Avenue. Cyclists wishing to continue into the Mission District and points south must deviate north to Market Street or south to Harrison Street.

The Folsom Street Fair

The Folsom Street Fair is the world's largest "leather" event, and one of the largest annual public events in California. It has been hosted since 1984 on the last Sunday in September on Folsom between 7th and 12th streets. The preferred configuration of the Fair places two rows of 10-foot wide booths in the center of the street and also requires 14-feet of clear right-of-way to serve as a fire lane. This arrangement places a requirement on the minimum width of the street and influences the street design concepts that follow.

Figure 5-1 Folsom Street Corridor Issues and Opportunities



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5.2 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 project should seek to improve comfort for pedestrians while reducing the risk of collisions. To respond to pedestrian connectivity challenges such as long blocks and wide streets, the project should seek to add safe crossing points while reducing crossing distances. Folsom Street is the highest priority for pedestrian improvements, but Howard Street conditions should be improved where possible as well. Improving pedestrian connectivity on parallel routes, including alleyways, should also be explored.
- **The public realm.** *Open space, landscaping, and other urban design elements on Folsom Street should be upgraded.* The Eastern Neighborhoods area plans designate Folsom Street as a Civic Boulevard, and the Western SOMA Community Plan identifies Folsom Street as the center of an emerging neighborhood commercial district. The public realm, including pedestrian and public space, wayfinding, and landscaping should be upgraded to help Folsom Street perform these functions. In addition, the design of the street should support the Folsom Street Fair. While Howard Street does not have the same community importance, its public realm should be upgraded where possible as well.
- **Transit legibility**. *Transit service should be consolidated on two-way streets to improve legibility where possible.* The bus routes serving Folsom are currently divided by direction of travel with westbound service provided on Harrison Street. The project should consider opportunities to improve legibility for passengers and to improve access to the emerging neighborhood commercial district on Folsom by combining this service on a two-way Folsom Street (as contemplated by the TEP).
- **Transit performance.** *Transit speed and reliability should be maintained*. The TEP designates the transit routes that serve Folsom Street as Local, rather than Rapid routes. However, the project should strive to preserve at least the existing levels of transit speed and reliability. More robust transit priority should be implemented on designated transit priority streets traveling east-west through the South of Market including Mission Street.
- **Bicycle conditions.** *A safe, comfortable and attractive bicycle route should be provided within the corridor*. Bicycling should be made safer, more comfortable, and more attractive. A high priority should be placed on maintaining at least the existing bicycle quality of service in the corridor. As both vehicle and cyclist volumes may increase over time as overall travel demand grows, the project will seek to develop protected bicycle facilities and/or consolidate directions of travel.
- **Vehicle circulation.** *The project should maintain adequate east-west vehicle capacity in the South of Market network as a whole*. While the project will repurpose some vehicle space on Folsom and/or Howard Streets to improve the public realm and conditions for other modes, it should maintain enough vehicle capacity in the network as a whole so that existing South of Market vehicle volumes can continue to be accommodated with undue increases in delay for drivers and transit riders. The City will strive to accommodate any growth in travel demand in this corridor with improvements to non-auto modes.

- **Parking and loading.** *Parking and loading access to businesses should be maintained.* A number of street-fronting businesses on Folsom and Howard taking loading from the sidewalk, and costumer parking can help support the goal of a neighborhood commercial district on Folsom Street. A supply of on-street parking should be maintained although the total amount of parking spaces may be reduced to provide space for other needs. Remaining parking should be managed to ensure availability at all times.
- **Deliverability and cost-effectiveness.** *The project should maximize cost-effectiveness and speed delivery of the highest priority improvements.*

5.3 FRAMEWORK FOR EAST-WEST CIRCULATION IN THE SOUTH OF MARKET DISTRICT

Folsom and Howard Streets function in the context of the South of Market street grid and the city's wider transportation networks. In re-thinking Folsom Street, it is necessary to carefully consider and refine the roles and functions of the five major east-west arterials between Market and Brannan Streets, including Mission, Howard, Folsom, Harrison, and Bryant Streets, as well as the surrounding network of alleys.

The following framework for east-west circulation informed development of project alternatives and most of its key features are common to all of the alternatives. Circulation elements that are unique to each project alternative are detailed later in this chapter.

Mission Street

Improving transit speed and reliability is essential to accommodating the growth in travel demand forecast for the Eastern Neighborhoods. The project alternatives developed for Folsom and Howard seek to maintain enough roadway capacity such that local transit service will not be unduly slowed by traffic congestion. However, the transit service proposed for Folsom Street will continue to operate in mixed-flow traffic. As travel demand grows, the South of Market area will require an east-west corridor with the highest level of transit priority to protect it from potential increases in vehicle delay.

As recommended in the TEP, Mission Street will be the major transit priority street in this corridor. Robust transit priority should be prioritized for Mission Street, both in its Mission District and South of Market segments, with tolerance for reducing vehicular capacity or restricting vehicle turing movements if necessary to achieve transit performance goals. Consideration should be given to a median transitway treatment similar to the one envisioned by this project for 16th Street (See Chapter 4). Detailed design for transit priority on Mission Street will be carried out in future planning efforts.

Folsom and Howard Streets

The project alternatives developed below consider numerous potential configurations for Folsom and Howard Streets. However, the combined functions of the streets remain fairly consistent across the range of alternatives. Generally speaking, it is envisioned that Folsom Street will serve as the South of Market's "main street," with an emerging neighborhood commercial district supported by calmed traffic, an enhanced public realm, local transit service, and managed on-street parking.

The South of Market's major east-west bicycle facility will be on Folsom, Howard, or split between the two streets. Most alternatives envision that for at least part of its length, this facility will be physically separated from traffic to improve cyclist comfort. Local transit will be provided on Folsom Street by the 27 Folsom and the 11 Downtown Connector. In two-way alternatives, service will be bi-directional. In one-way alternatives, westbound service will be provided on Harrison Street.

Overall peak period vehicle capacity for this pair of streets will be reduced moderately from its current level, but the Folsom/Howard pair will continue to serve as major arterials in the SOMA network. The alternatives reduce total lanes of vehicle capacity from the current combined seven lanes to between four and six lanes depending on the alternative. In some cases, vehicle turning movements may be restricted.

Harrison and Bryant Streets

Harrison and Bryant Streets act as a one-way couplet carrying high volumes of traffic to and from Interstate 80. During the PM peak period, major queuing occurs at the approaches to the I-80 ramps on both streets. Harrison and Bryant Streets will continue to perform this function in the future, and the demand for vehicle travel on these streets may grow as overall travel demand increases in the coming decades.

Given the need to re-dedicate space to pedestrians, cyclists, and transit on other east-west streets in the South of Market, Harrison and Bryant Streets will be maintained as a one-way couplet at or near their current vehicle capacity and will continue to serve as major east-west vehicle routes to and from Interstate 80 during peak periods. It is recommended that the City encourage the majority of truck traffic in this corridor to make use of Harrison and Bryant Streets. In two-way Folsom alternatives, westbound transit service will be moved from Harrison Street to Folsom Street. In one-way Folsom Street alternatives, westbound service will remain on Harrison.

While vehicle circulation will remain a high priority on Harrison and Bryant, future planning efforts should focus on improving pedestrian safety and connectivity on these streets particularly around freeway ramp touchdowns.

Signal timing

For all five arterials in this corridor, it is recommended that traffic signals be used to moderate vehicle speeds and improve pedestrian connectivity. Ideally, the progression would be timed to between 12 and 15 mph, speeds that would nearly eliminate the possibility of fatal collisions with pedestrians while allowing vehicles, transit, and cyclists to travel at a regular speed. While it may not be possible to achieve the precise preferred progression speed in both the north-south and east-west directions in the South of Market, signal cycle length and progressions speeds will be reassessed for the South of Market as a whole to achieve the optimal combination of north-south and east-west progression speeds.

In the case of the imbalanced two-way Folsom and Howard Street alternatives discussed below, if it is not possible to progress signals in both directions, progression in the dominant direction of travel will be favored. Where possible, each block in this corridor should have signalized, mid-block crossing with pedestrian bulb-outs to improve pedestrian connectivity and calm vehicle traffic.

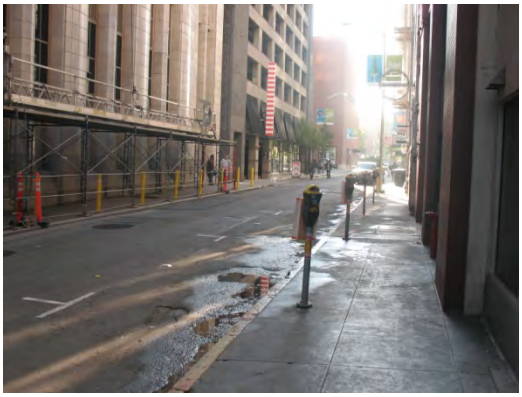
Alleys

The South of Market's network of alleyways serves several vital functions for the neighborhood. In western SOMA, they are home to numerous small PDR business as well as residential enclave districts. Further east, alleyways serve as rear loading areas for large office and other downtown uses. Throughout the neighborhood, the alleyways serve as cut-throughs and paths of travel for pedestrians, particularly those wishing to be further removed from vehicle traffic.

The alleyways serve this pedestrian circulation role despite irregular connectivity, high-speed vehicle cut-throughs, and limited pedestrian amenities. As a complement to the proposed changes to South of Market arterials, it is recommended that they City invest incrementally in the alleyways, upgrading them both as public spaces and as pedestrian travel routes.

Many SOMA alleys connect through for just one block and have limited potential as through-travel routes. However, several alleys span two or more blocks but are limited as through-travel routes by the absence of signalized crossings of arterials. For example, if properly signalized, Minna and Natoma Streets present the potential for an east-west pedestrian path of travel between Ninth and Fourth Streets (and on Minna potentially as far east as the Transbay Terminal in a long-term scenario).

To help improve pedestrian circulation, it is recommended that Minna and Natoma Streets be upgraded as a pedestrian corridor with traffic calming, signalized mid-block crossings of arterials, pedestrian-scale lighting, and landscaping added where appropriate to improve these streets as a continuous east-west pedestrian path of travel. Incremental work towards this goal has already begun with the SFCTA's Western SoMa Neighborhood Transportation Plan calling for improvements to Minna and Natoma between Seventh and Ninth Streets and new signalized mid-block crossings of Seventh and Eighth Streets.



Parking management

For all streets in this corridor, it will be essential to manage on-street parking to ensure availability both to maintain convenient access and so that additional vehicle traffic is not added to South of Market streets by drivers circling in search of on-street parking. This will be particularly important in and around the emerging neighborhood commercial district on Folsom Street.

Under the SF*park* downtown pilot project[1], the SFMTA installed new parking meters that accept credit cards along Folsom Street between First and Third Streets. As part of the implementation

[1] http://sfpark.org/wp-content/uploads/2011/11/Draft-Mission-Bay-Parking-Management-Strategy-10.28.11.pdf

of the EN TRIPS project, SF*park* should monitor parking occupancies along the full length of Mission, Folsom, Howard, Harrison, and Bryant Streets between Third and 12th, adding additional parking meters and adjusting prices as necessary to ensure availability.

Further development of the circulation concept

Distinctive features of the circulation plan for the recommended alternative are described in more detail in Section 5.5. For a short list of four other promising alternatives, major potential variations from the recommended circulation concept are discussed in Section 5.6.

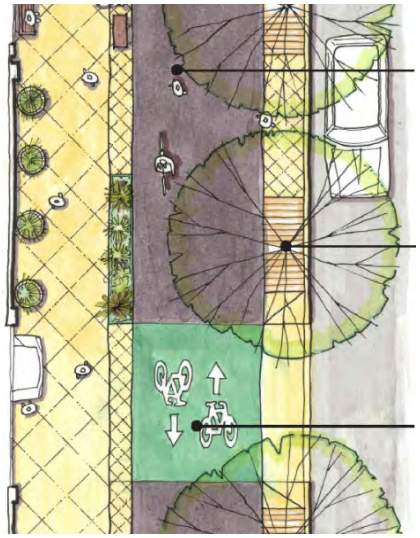
Why protected bicycle lanes?

Most of the concepts developed for Folsom and Howard Streets propose bicycle lanes that are physically buffered from traffic. They include a three to five foot buffer and a parking lane between the bicycle lane and the traffic lane. The bicycle facilities themselves can be either one-way or two-way.

Protected or separate bicycle lanes have been adopted with success in North American cities including New York, Vancouver, Portland, and Long Beach. San Francisco's first protected bicycle lane was recently approved for JFK Boulevard in Golden Gate Park. While not the right design for every street, projected bicycle lanes are particularly well suited for South of Market arterials for a number of reasons.

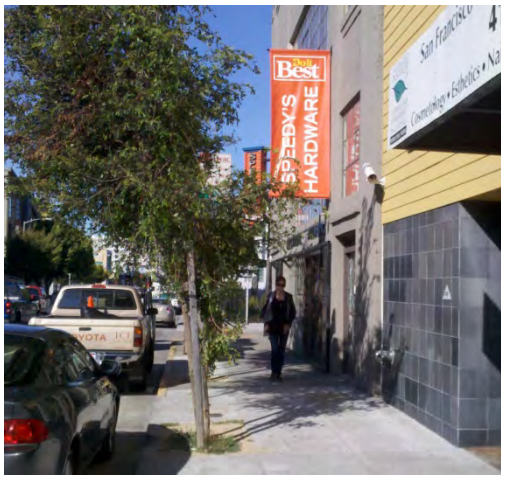
- Folsom and Howard have both high volumes of cyclists and relatively high volumes of traffic. To encourage more than just the most experienced cyclists to travel by bicycle in SOMA, some buffer from traffic will be required.
- Research has demonstrated that the best way to improve cyclist safety is to increase the number of cyclists on a given street. Protected bicycle lanes haven proven their value in attracting new cyclists.
- On streets like Folsom that have both ordinary bike lanes and bus service, conflicts between buses and cyclists can occur at stops (this is a particular concern for Folsom when the frequency of bus service increases in the future). By routing bicycle lanes behind stops in protected lanes, these conflicts can be avoided.
- Finally, when pedestrian refuges are placed in the parking lane on the street side of a protect bicycle lane, it narrows the effective street crossing distance for pedestrians. Reducing crossing distance is an important goal of the Folsom and Howard projects.

Protected bicycle lanes must be carefully designed to minimize conflicts with turning vehicles at intersections and pedestrians throughout their length. Special care must also be taken to ensure that they do not hinder universal access in any way. The facilities proposed for Folsom and Howard Streets have been designed with these goals in mind.



How can transportation support a neighborhood commercial district on Folsom Street?

Streets with various circulation patterns can support vibrant neighborhood commercial districts. Balanced two-way streets are common for commercial streets in San Francisco (Noe, Haight, and Clement Streets), but small-scale commercial also thrives on imbalanced two-way streets (Post Street in Japantown and 16th Street in the Mission District) and one-way streets (Grant Avenue in San Francisco, Telegraph Avenue in Berkeley). More important than traffic circulation patterns are ease of access, the quality of the public realm, and the character of the building stock.



A great commercial street is a great place to walk

Fundamentally, pedestrians must feel comfortable and safe. In the South of Market, improving pedestrian comfort begins with calming traffic and buffering pedestrians from moving cars. Improving connectivity by narrowing street crossing distances and adding signalized mid-block crossings will help pedestrians to access the street. Street trees, landscaping, lighting, benches, and other pedestrian amenities can help improve the public realm.

Even when all of these conditions improve, the long gaps in active street frontages that characterize Folsom Street (many of which are likely to persist under updated zoning) will make it hard for this retail district to draw pedestrians along its length as the continuous urban fabric does on streets like Clement or Valencia. Given these challenges, a number of other strategies may help support retail success on Folsom:

- Enhance Transit. Relatively frequent, bi-directional transit service with multiple stops along the commercial corridor can help customers get to shops and make transit users into new customers.
- Maximize bicycle access. High-quality bicycle facilities and plentiful bicycle parking will allow customers to access the street, and will bring many potential new customers through the neighborhood. Bicycle travel is a good way to access a corridor like Folsom where there are gaps in the urban fabric that may interrupt slower pedestrian travel.
- Commit to parking management. On-street parking should be managed to ensure availability. Properly priced meters will encourage turnover and shift employees and long-term parkers elsewhere, freeing up spaces for customers.
- Add active uses to the parking lane. Adding to the pedestrian realm through flexible use of parking lanes is particularly appropriate for a street like Folsom. Café seating or other active uses in the parking lane could help add visual interest that helps draw pedestrians along the corridor.
- Encourage new storefronts and other active uses. San Francisco's great neighborhood commercial streets are characterized by many businesses closely space together and facing the street. To achieve this feel, there will need to be gradual turnover in the street's building stock. NC-T zoning will help encourage dynamic use of existing buildings, but ultimately some additional permitted height and intensity of use may be required to foster a thriving commercial district on Folsom Street.

5.4 ALTERNATIVES DEVELOPMENT AND EVALUATION

KEY ●●● Greatest benefit ○ Neutral ●●● Greatest impact

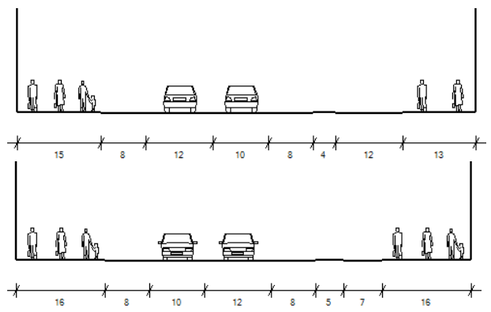
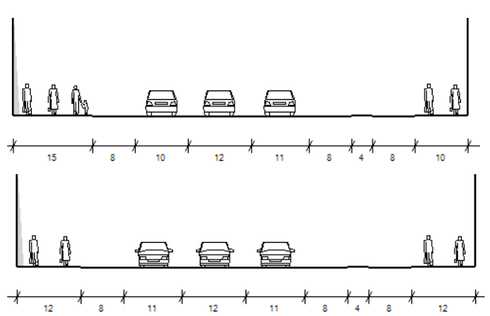
Full list of project alternatives

The SFMTA, working with other City departments, the study team and the public developed a total of eight project alternatives for Folsom and Howard Streets. These alternatives are described and evaluated for each project objective in the tables below. The project alternatives share a number of similarities. First, all of them provide reduced pedestrian crossing distances through pedestrian bulb outs; all seek to reduce vehicle speeds by progressing signals at a consistent, moderate speed. All alternatives maintain parking lanes on both streets, and most provide protected bicycle facilities. Key differences between the alternatives include the directionality of travel for vehicles and transit (there are both one-way and two-way alternatives for Folsom Street and Howard Street), the location of bicycle facilities (either on Folsom, on Howard, or split between them), and the width of sidewalks. All eight alternatives are summarized and evaluated below. In the next section, the recommended alternative is developed in detail. Finally, in Section 5.6, three other promising alternatives were evaluated in greater detail presented for comparison.

Folsom and Howard Streets: One-way alternatives

The alternatives presented on this page maintain one-way operations on Folsom and Howard Streets. Signals would be timed to favor a steady vehicle progression, and mid-block signals would be fixed-time. These alternatives vary with respect to the number of one-way lanes.

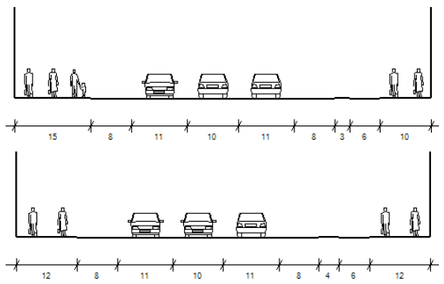
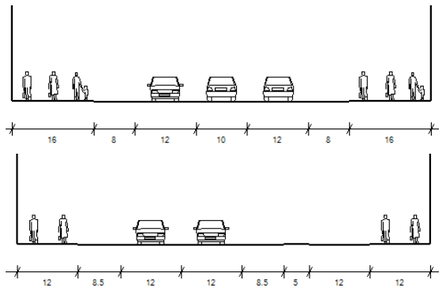
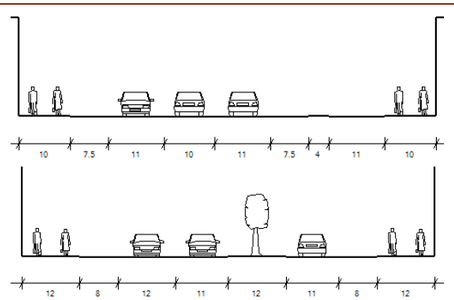
Figure 5-2 Alternatives featuring a one-way Folsom Street

	Description	Cross Section	Pedestrian conditions	The public realm	Transit performance	Transit legibility/ consolidation	Bicycle conditions	Vehicle circulation	Parking and loading	Cost comparison	Notes	Disposition
1	Folsom: One-way, two lanes, two-way cycletrack Howard: One-way, two lanes, one-way cycletrack		●●●	●●●	●	○	●●●	●	●	$$$	This alternative would narrow the roadway to two, one-way lanes on each street, providing important benefits for pedestrians, cyclists, and the public realm with 15-foot sidewalks, greatly narrowed crossing distance, wide cycletracks, and traffic calming. It would not provide for one-way circulation or consolidation of transit routes onto Folsom Street. It would require the expense of moving curblines on both streets. It is very likely that the project would be implemented on Folsom Street first, and the Howard Street project would be optional.	Carried forward
2	Folsom: One-way, three lanes, one-way cycletrack Howard: One-way, three lanes, one-way cycletrack		●●	●	○	○	●●	○	●	$$	This alternative would narrow the roadway to three one-way lanes on both Folsom and Howard Streets and provide one-way buffered bike lanes on both streets. It would provide bulb outs and mid-block crossings but widen the sidewalk on one side of Folsom rather than both sides. The net gain for pedestrians would be less, but the vehicle capacity would be higher, which would result in less transit delay. Transit would not be consolidated.	Not carried forward because Alternative 1 provides many of the same benefits with greater gain for pedestrians.

Two-way, three-lane Folsom alternatives

Each of the alternatives summarized on this page converts Folsom Street to two-way operations in order to achieve transit consolidation. In each, Folsom Street would provide two lanes eastbound and one lane westbound. Signals would be timed to favor a steady eastbound progression at moderate speed. In some cases, mid-block signals may be pedestrian-actuated. These alternatives vary with respect to the configuration of Howard Street and the placement of bicycle faculties.

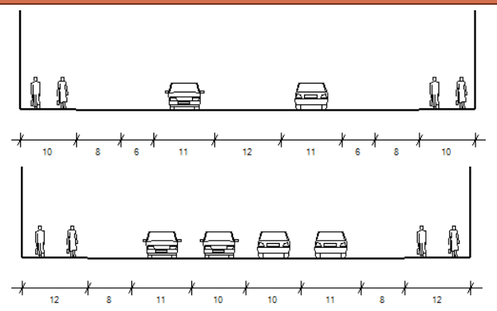
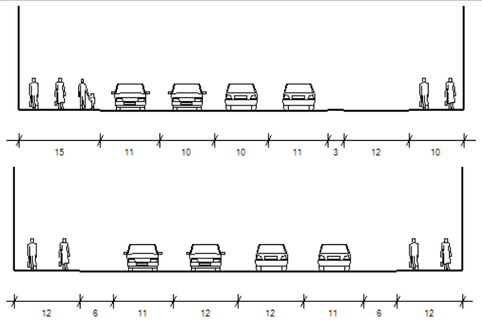
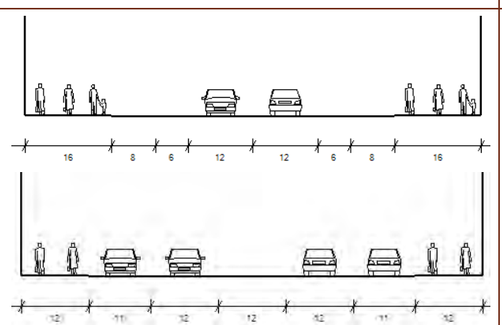
Figure 5-3 Alternatives featuring a two-way, three-lane Folsom Street

	Description	Cross Section	Pedestrian conditions	The public realm	Transit performance	Transit legibility	Bicycle conditions	Vehicle circulation	Parking and loading	Cost comparison	Notes	Disposition
3	Folsom: Two lanes EB, one lane WB with one-way cycletrack Howard: Two lanes WB, one lane EB with one-way cycletrack		●●	●●	○	●●	●●	●	●	$$	This alternative would allow for three lanes of traffic on each street plus buffered bicycle lanes. Two lanes would operate in the dominant direction of travel (eastbound on Folsom and westbound on Howard), while a third lane would operate in the opposite direction. A one-way cycletrack would be provided on each street. It allows for transit consolidation, upgraded bike facilities, six lanes of vehicle capacity to reduce transit delay, and wider sidewalks on one side of the street.	Carried forward
4	Folsom: Two lanes EB, one lane WB Howard: Two lanes WB with two-way cycletrack		●●●	●●●	●	●●	●	●	●	$$	This alternative would create a two-way Folsom Street, with two eastbound lanes and one westbound lane. Two-way travel would allow for transit service to be consolidated. All bicycle facilities would be removed from Folsom. A two-way bicycle cycletrack would be added on Howard Street, which would be narrowed to two westbound vehicle lanes. This alternative would maximize pedestrian space on a two-way Folsom Street while providing premium bicycle facilities on Howard. Howard has bicycle connectivity to the Mission District,	Carried forward
5	Folsom: Two lanes EB, one lane WB with two-way cycletrack Howard: Two lanes WB, one lane EB with center turn lane/median		●●	●	○	●●	●●●	●	●	$	This alternative would provide a two-way Folsom, with two lanes eastbound and one lane westbound. Instead of widening the Folsom Street sidewalks, it would provide a two-way cycletrack on Folsom. Howard would also be converted to two-way, with two westbound lanes, two eastbound lanes, and a landscaped median/turn lane. It would allow for transit consolidation, six lanes of vehicle capacity to maintain transit speeds, and a premium bicycle facility with optimal connectivity. While it improves pedestrian connectivity, It would not widen sidewalks and provides little new pedestrian space.	Carried forward

Folsom/Howard: Two-way, two-lane Folsom alternatives

Each of the alternatives summarized on this page converts Folsom Street to two-way operation but provides just one through-lane in each direction. These alternatives would substantially reduce vehicle capacity on Folsom, changing its role from an arterial to a neighborhood street. To maintain transit operations at an acceptable level, major diversion of vehicle traffic from Folsom would be required. To absorb part of this diversion, more capacity is provided on Howard Street.

Figure 5-4 Alternatives featuring a two-way, two-lane Folsom Street

	Description	Cross Section	Pedestrian conditions	The public realm	Transit performance	Transit legibility	Bicycle conditions	Vehicle circulation	Parking and loading	Cost comparison	Notes	Disposition
6	Folsom: one lane in each direction with center turn lane Howard: Two lanes in each direction		●●●	●	●●	●●	●	●●	●	$	This alternative would provide one through lane in each direction on Folsom Street with a center turn lane, similar to the current configuration of Valencia Street north of 15th and South of 19th. Bicycle lanes would be provided on both sides of the street. Howard Street would be converted to two lanes in each direction, absorbing some of the vehicle capacity diverted from Folsom. This alternative could slow transit and introduce conflicts between buses and cyclists at bus stops.	Not carried forward because of negative impacts on transit due to increased delay and bus-bike conflicts.
7	Folsom: One lane + peak period tow-away lane in each direction Howard: One lane + peak period tow-away lane in each direction		○	○	○	●●	●●	○	●●	$	This alternative would provide one lane in each direction and a parking lane on both sides of the street during off peak periods. During peak travel periods, parking would be eliminated and the street would offer two lanes in each direction. This traffic pattern would be in place on both Folsom and Howard, but Folsom would feature a two-way cycletrack, while Howard would feature a bike lane in each direction.	Not carried forward due to minimal upgrades to pedestrian realm during peak travel periods.
8	Folsom: one lane in each direction with bike lanes Howard: One lane + one peak period tow away lane in each direction, center turn lane/median		●●●	●●●	●●	●●	●	●	●●	$$$	This alternative would reduce Folsom to one lane in each direction at all times of day. Private vehicles would be required to turn right at every intersection, eliminating Folsom as a through-route. To compensate, Howard would be high-capacity during peak periods, with two lanes in each direction and a center turn lane. I t would have just two lanes during off-peak periods. This alternative provides total peak-period traffic capacity similar to the three-lane Folsom alternatives, but converts Folsom Street into a boulevard for bicycles and transit.	Not carried forward because of expense and because planned level of development and transit service does not justify eliminating Folsom as a vehicle through route.

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5.5 RECOMMENDED ALTERNATIVE

Based on the evaluation above, 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. The following project elements are described and illustrated in the remainder of this section.

- **Operations Concept.** Key elements of the design for Folsom and Howard Streets are explored. More detailed specifications for the design of the right-of-way for the full length of the corridor are presented in Appendix B.
- **Circulation Concept.** Circulation functions of the recommended alternative are presented, with a description of how Folsom and Howard Street would function within the circulation framework introduced in Section 5.3.
- **Streetscape, landscape, and public realm improvements.** Recommendations for streetscape, landscape, and public realm improvements are presented. These improvements are integral to the project design and a necessary step towards achieving the vision for this part of the city as laid out in the Eastern Neighborhoods area plans.
- **Phasing plan.** A conceptual phasing plan for this alternative is presented at the end of this section. More detailed phasing, costs, and funding sources will be identified in the EN TRISP Funding and Implementation Plans, to be published under a separate.

In section 5.6, 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 for the Sixteenth 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.

Highlights of 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 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.

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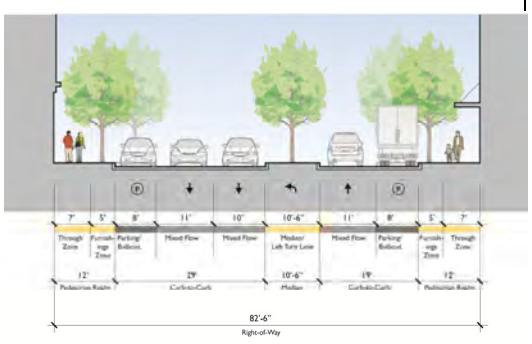
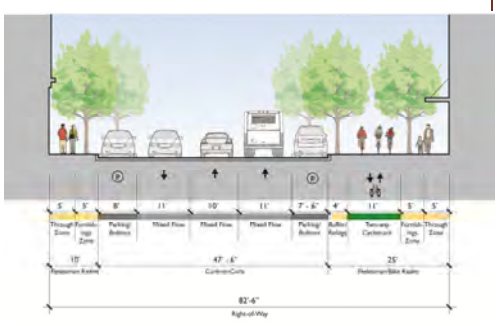
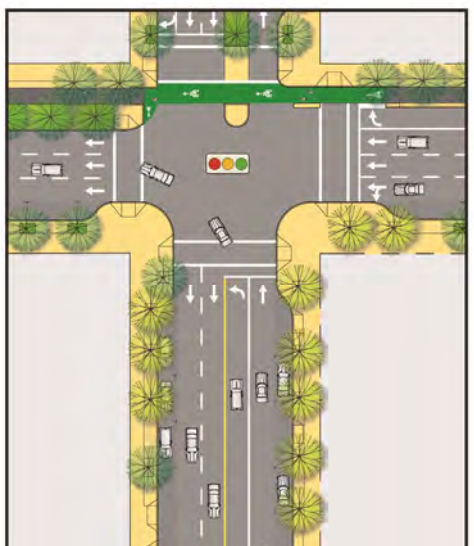
Folsom/Howard Recommended Alternative (Alternative 5)

Howard Street



Folsom Street





This concept would provide a two-way Folsom Street, with two lanes eastbound and one lane westbound. Instead of widening the Folsom Street sidewalks, it would provide a two-way cycletrack. Howard Street would also be converted to two-way operations with two westbound lanes, one eastbound lane, and a landscaped median/turn lane, and no bicycle facilities. Existing curb lines would be left intact.

Pedestrian Conditions. This concept would provide pedestrian bulb-outs and signalized mid-block crossings. Unlike other alternatives, this concept would not widen sidewalks on Folsom Street. At ten feet, sidewalks would continue to fall below Better Streets Plan minimums for Mixed Use Streets. However, effective pedestrian crossing distance would begin at the edge of the cycle track well into the right-of-way. On Howard Street, existing twelve-foot sidewalks would also be maintained. In areas where left turn lanes are not necessary, the landscaped median would serve as a pedestrian refuge on Howard.

The public realm. This concept would enhance the public realm on both streets with new street trees and landscaping and provide more pedestrian space at bulb-outs and bus stops. Parts of Howard Street would be enhanced with a wide landscaped median. However, because ten foot sidewalks would be maintained on Folsom Street, this concept would have fewer opportunities for public space or landscaping than the other alternatives and may result in pedestrian crowding in the future when land use densities are higher.

Transit performance. This concept maintains three lanes of vehicle capacity in each direction avoiding additional vehicle delay that would slow eastbound buses. Westbound buses, operating in a single lane, may be somewhat slower than those operating now on Harrison Street. To ensure that these waiting vehicles do not block north-south streets, transit stops will be placed mid-block (adjacent to new signalized mid-block crossings) rather than at the far side of intersections. Bus routes would be shortened and the total number of turns would be reduced by avoiding the need to travel as far south as Harrison Street thus reducing overall transit travel time.

Transit legibility. This concept would consolidate the 27 Folsom and the 11 Downtown Connector on Folsom Street, providing bus service on eight-minute headways in each direction. Two-way service makes it easier for passengers to understand the transit system. It may also support the neighborhood commercial district by improving transit access to Folsom.

Bicycle conditions. This concept would include a two-way cycletrack on Folsom Street between Fifth and 11th Streets, providing both a protected facility and better connectivity to the Mission District and points south than either Alternative 3 or 4. Beginning at 12th Street, the protected facility would transition to Class II bicycle lanes in both directions, which would continue down Folsom Street into the Mission District.

Vehicle circulation. Folsom and Howard Streets would both be converted to two-way operations with signals designed to favor moderate speeds in the dominant direction of travel. The single-lane direction of travel would serve mostly local trips and (on Folsom) westbound buses. This concept provides enough capacity not to increase overall vehicle delay. However, buses would stop in the westbound lane on Folsom, which would require all vehicles to wait while buses load and offload passengers. Left turns would be prohibited from Folsom, except eastbound at Ninth and 11th. Instead, left-turning vehicles could be accommodated in the dedicated left turn lane on Howard Street.

Parking and loading. As in the other alternatives, parking lanes would be maintained on both sides of Folsom and Howard Streets. Parking would be removed where necessary to provide turn pockets at intersections, and to provide pedestrian and transit bulb-outs. Because this concept would have just two left turn pockets on Folsom, and none on Howard, the parking impact would be less than in any of the other alternatives.

Cost comparison. Because it does not require moving curb lines, this concept would be less expensive to implement than the other Folsom/Howard Alternatives. While raising portions of the cycletrack to sidewalk grade would require substantial investment, doing so would not necessarily require moving the existing curb and gutter. The landscaped median on Howard Street would require ongoing maintenance.

Folsom Street Operations Concept (Recommended Alternative)

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.

"Two-plus-one" lane configuration allows for the vehicular access benefits of a two-way street while prioritizing eastward travel. This encourages slower vehicle speeds and better accommodation of bicycle speeds.

While vehicles have the option of two-way travel, traffic signals are timed to the eastbound traffic, making westbound auto travel more suited to local rather than crosstown trips.

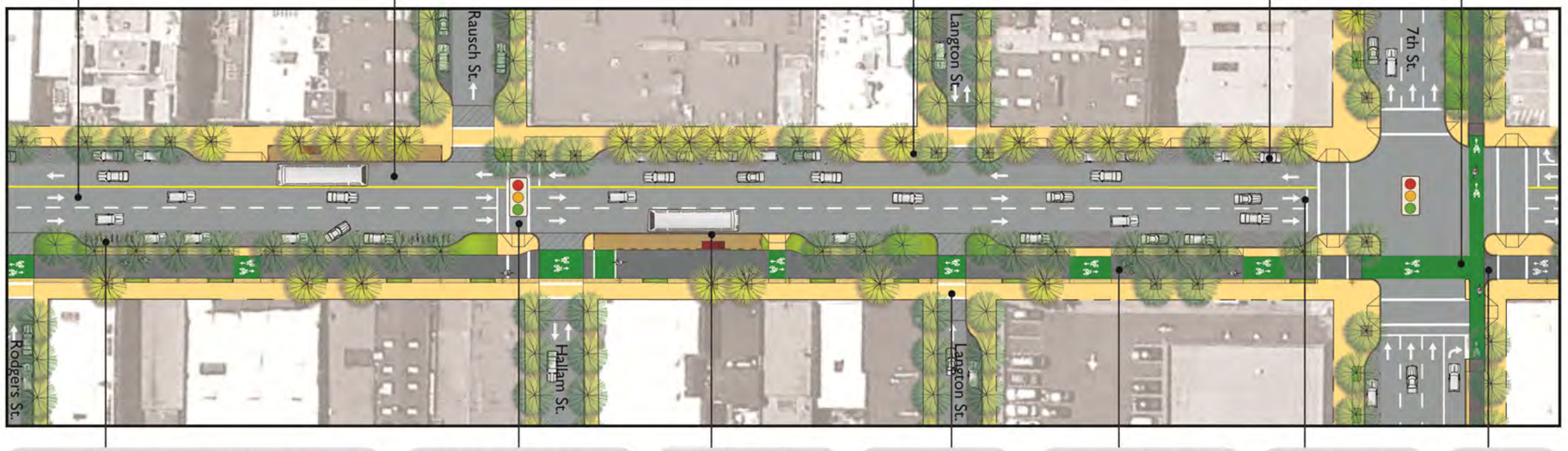
Signals will be timed to allow for a continuous 12-15 mile-per-hour progression to encourage vehicle travel speeds that are safer and more comfortable for cyclists and pedestrians.

Bulb-outs will be added to all intersections where a turn lane is not needed.

Sidewalks on both sides of Folsom Street remain 10 feet wide, but will be treated with new streetscape amenities to increase pedestrian comfort - see Streetscape/ Landscape Concept.

Parking lanes are maintained on both sides of the street, except where bulb-outs or turn lanes are required.

The pavement in areas of potential conflict between cyclists and motorists is colored green.



Some parking spaces can be repurposed as bicycle corrals to improve access to the neighborhood commercial district and other important destinations.

New signalized midblock crossings will allow easier crossing of the street between the widely spaced major cross streets.

The 27-Folsom and 11 Downtown Connector will operate eastbound and westbound on Folsom Street every 8 minutes. Riders will board eastbound buses via islands on the street side of the cycletrack.

Bus stops will be located at mid-block crossings to ensure that westbound vehicles do not block intersections while waiting behind a stopped bus.

At intersections with alleys, the alley roadway ramps up to sidewalk grade, slowing cars as they enter and exit the alleys.

A two-way cycletrack is accommodated between the parking lane and the sidewalk. The cycletrack will be primarily at sidewalk grade and have a buffer area separating it from both pedestrians and people exiting parked cars.

Vehicle left turns are restricted from most Folsom intersections, reducing the number of turn pockets required and diverting some trips to Howard, which will provide a left turn lane serving both directions of travel.

At major intersections, the cycletrack ramps down from sidewalk grade to street grade.

50' 100'

December 21, 2011

Howard Street Operations Concept (Recommended Alternative)

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.

Howard will have two westbound lanes and one eastbound lane. A two-way configuration provides vehicle circulation options while helping to calm traffic.

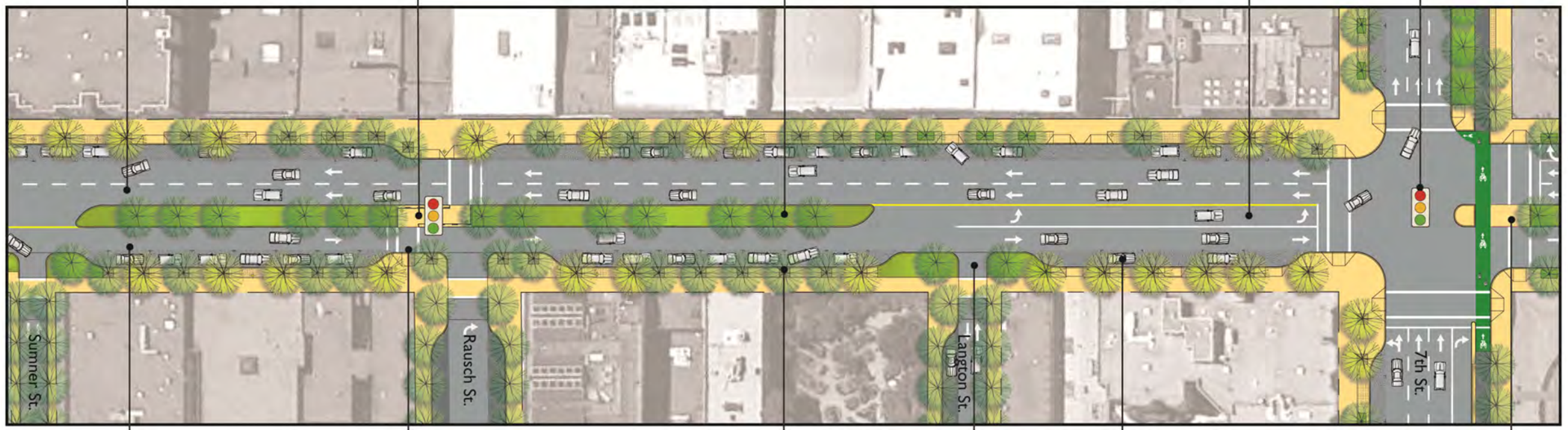
A median pedestrian refuge, as well as bulb-outs, will greatly reduce pedestrian crossing distances at mid-block crossings.

The existing westbound bicycle lane will be removed from Howard between 5th to 11th, replaced with a new two-way cycletrack on Folsom.

Landscaped medians will be added in the middle segments of blocks.

Left turn pockets occupy the median space where needed. Convenient left turns off Howard will compensate for restricted lefts off Folsom.

Signals will be timed to allow for a continuous 12-15 mile-per-hour progression to encourage vehicle travel speeds that are safer and make the street more comfortable for pedestrians.



While vehicles have the option of two-way travel, traffic signals are timed to the westbound traffic, making eastbound auto travel more suited to local rather than crosstown trips.

New signalized midblock crossings will allow easier crossing of the street between the widely spaced major cross streets. The median refuge will allow for two-phase pedestrian crossing.

Sidewalks on both sides of Howard Street will remain 12 feet wide, but will be treated with new streetscape amenities to increase pedestrian comfort - see Streetscape/ Landscape Concept.

At intersections with alleys, the alley roadway ramps up to sidewalk grade, slowing cars as they enter and exit the alleys.

Parking lanes will be maintained on both sides of the street, except where bulb-outs or turn lanes are required.

At intersections with major cross streets, such as 7th Street, where a left turn pocket is not needed, the planted median can extend to the intersection, allowing for a pedestrian refuge in the middle of Howard Street.

50' 100'

Folsom and Howard Street Corridor Circulation Concept (Recommended Alternative)

Consolidate local transit service on Folsom Street to improve system legibility and improve access to the neighborhood commercial district.

Implement robust transit priority on Mission Street to create an east-west transit spine in the south of Market.

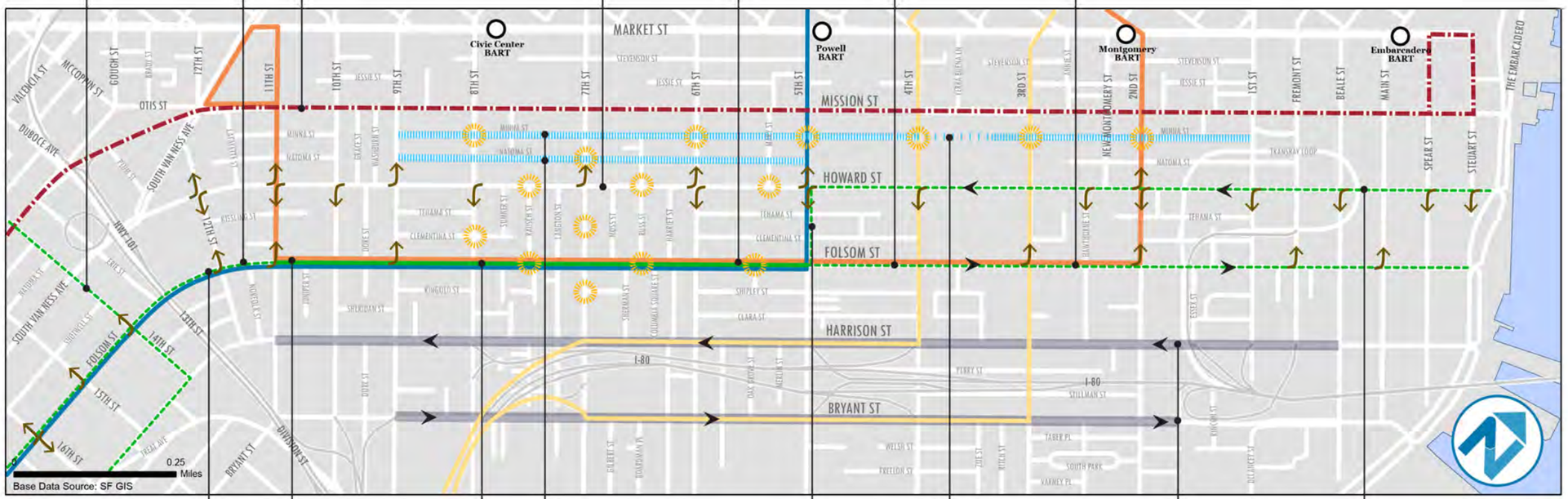
Between 11th and 5th, convert Folsom Street to two lanes eastbound and one lane westbound.

Convert 14th Street to two-way between Guerrero and Folsom, and add westbound sharrows.

Between 11th and 5th, convert Howard to two-way operation, with two lanes westbound, one lane eastbound, and a center turn-lane/landscaped median. Remove bicycle lane.

Between 4th and 5th, convert Folsom to three lanes eastbound and one lane westbound.

Between 2nd and 4th, remove a parking lane and add a westbound bus-only lane. This segment will remain one-way for vehicles.



Add a westbound/southbound bicycle lane on Folsom between 11th and 14th Streets.

Restrict lefts off of Folsom during peak periods.

Ensure implementation of 5th Street bike lanes as per the San Francisco Bicycle Plan.

Explore opportunities to improve pedestrian connectivity through the Metreon site to Yerba Buena Gardens.

Complete the proposed bike lane on Howard between Fremont and the Embarcadero.

Add a two-way buffered cycletrack on the south side of Folsom between 5th and 11th Streets.

Enhance alternate pedestrian paths of travel on Minna and Natoma Streets by adding signalized mid-block crossings of arterials, traffic calming, landscaping, and pedestrian-scale lighting on these alleys.

Retain substantial vehicle capacity on Harrison and Bryant Streets, which will remain major freeway approach routes and recommended truck routes.

LEGEND

- Permitted left off of Folsom or Howard during peak periods
- One-way circulation
- East-west bicyle route
- Cycletrack
- 11 Downtown Connector (local transit)
- 27 Folsom (local transit)
- Mission Street Transitway (rapid transit)
- 9X (express transit)
- Enhanced pedestrian path of travel
- Pedestrian actuated signalized mid-block crossing
- Recommended truck routes

Circulation Concept Detail (Recommended Alternative)

The overall framework for east-west circulation in the South of Market District between Mission and Bryant Streets is outlined in Section 5.3. This section provides detail on how circulation on Folsom and Howard would be managed under the recommended alternative.

Folsom Street transit consolidation

Consolidating both directions of transit service on Folsom Street is an important project objective and a key feature of the recommended priority project alternative. Two-way operation on Folsom would support user understanding (transit routes that operate in both directions on the same street are simpler and more "legible") and improve access to the emerging neighborhood commercial district along Folsom between Sixth and Eighth Streets.

The concept proposed for the priority project segment would convert Folsom Street between Fifth and 11th Streets to two-way operation. This would allow the 27 Folsom, which currently operates westbound on Harrison Street west of Fifth Street, to operate westbound on Folsom instead. Additional changes to Folsom Street between Second and Fifth Streets will be required to allow the current 12 Folsom and the planned 11 Downtown Connector to operate in both directions on Folsom Street. These are detailed below.

- **Folsom from 11th to Fifth.** Between Fifth and 11th streets (the EN TRIPS priority project segment), Folsom Street would accommodate two-way travel for both buses and private vehicles. There would be two eastbound travel lanes and one westbound travel lane. Westbound transit travel speed along Folsom would be somewhat slower than along Harrison. However, shifting Routes 12 and 11 in the westbound direction from Harrison to Folsom would reduce the length of each route by 1,100 feet and eliminate two required turns, potentially fully offsetting this impact. In the westbound direction, buses would stop in the single westbound travel lane, requiring vehicles to wait while transit passengers board and off-board the bus.[2] To ensure that these waiting vehicles do not block north-south travel at intersections, transit stops will be placed mid-block (adjacent to new signalized mid-block crossings) rather than at the far side of intersections.
- **Folsom from Fifth to Fourth.** Between Fourth and Fifth Streets, where retail uses predominant (and thus maintaining the on-street parking supply has higher priority), one travel lane should be converted to a westbound mixed-flow travel lane, serving both buses and private vehicles. While the two-way cycletrack would terminate at Fifth Street, an eastbound bicycle lane would continue to Second Street on the south side of the street as it does today.
- **Folsom from Fourth to Second.** Current and forecast traffic volumes on Folsom increase as one moves to the east. During the PM peak period, Folsom serves as a primary access route to the Bay Bridge. Because Bay Bridge-bound vehicles turn right at Essex Street, much of this traffic is on the south side of the street. Between Second and Third Streets, buses will avoid the Bay Bridge queue by operating in the left lane with a boarding island far-side at Third Street. This area also has more office and fewer retail

[2] If it is determined that this configuration introduces too much delay for westbound vehicles, westbound buses could instead stop at a standard curbside stop (rather than a bus bulb), at which they would pull out of the flow of traffic. Eastbound buses would continue to use a bulb stop. In this case, bus stops in both directions should be moved to the far side of intersections.

uses, and the back side of the Moscone Center/Yerba Buena complex occupies the entire north side of the block between Third and Fourth Streets. In this segment, the parking lane on the north side of the street should be removed and the space repurposed as a curbside westbound bus-only lane. Because this lane would be wider than the existing parking lane, it would be necessary to remove one of the existing eastbound travel lanes. Three eastbound travel lanes and the eastbound bicycle lane should remain. Because this westbound lane would not be open to private vehicles, this treatment would improve transit speed and reliability in this two-block segment.

Folsom Street bikeway

The recommended alternative calls for a two-way parking buffered cycletrack on Folsom Street. In this design, Folsom Street will become the primary street for bicycle travel to and from the Mission District and points south into the South of Market area, and through the South of Market as far east as Fifth Street. Eastbound bicycle travel would continue in a Class II bicycle lane on Folsom Street as far east as Second Street. Westbound cyclists between the Embarcadero and Fifth Street would continue to use the existing Howard Street bike lane. Those continuing west would transition to Folsom using the planned Fifth Street bicycle lanes.

- **Folsom Street bikeway from 11th to Fifth.** Between Fifth and 12th Streets, cyclists will travel in a buffered two-way facility on the south side of Folsom Street. In their final build-out, these facilities will be primarily at sidewalk grade, with a buffer space and a parking lane separating them from traffic. They will ramp down to street grade approaching major intersections. At curb cuts and alleyway crossings of the cycletrack, parking will be set back from the crossing a sufficient distance to ensure clear sight lines.

  The edge between the cycletrack and the sidewalk will be clearly marked with a tactile treatment to ensure that visually impaired pedestrians can recognize the boundary between pedestrian and bicycle space. At designated pedestrian crossings of the cycletrack (including mid-block crossings and bus stops), a different tactile treatment will be applied to help visually impaired individuals locate and utilize the crossing. Design treatments will be used to slow cyclists at mid-block pedestrian crossings and indicate that cyclists are entering a pedestrian space. These treatments may include a narrowing of the cycletrack, a small pedestrian refuge in the center of the cycletrack to create a horizontal diversion for cyclists in both directions, and/or pedestrian actuated flashing beacons to alert cyclists to the presence of a crossing pedestrian.
- **Bicycle Facilities east of Fifth Street.** At Fifth Street, the separated bikeway would terminate. Eastbound cyclists would continue in the existing class II bicycle lane on the south side of Folsom Street as far east as Second Street. Westbound cyclists would use the existing westbound bicycle lane on Howard Street between Second and Fifth Streets. At Fifth Street, they would use the planned Fifth Street bicycle lanes to transition from Howard Street to Folsom. To allow for this circulation pattern, the implementation of the Fifth Street bicycle lanes as specified in the San Francisco Plan is an essential component of the EN TRIPS priority project and should be prioritized.
- **Folsom street bicycle lanes from 12th to 14th Streets.** At 12th Street the buffered facility would terminate, but class II bicycle lanes would continue on both sides of Folsom Street. The existing eastbound bicycle facility would remain in place, while a south/west bound bicycle lane would be added between 12th and 14th Streets. (If it is necessary to maintain a left turn lane westbound at Division Street for traffic capacity reasons, the

Class II lane could be dropped and replaced with sharrows for a short segment approaching Division). South of Division Street, a bicycle lane could be added in the southbound direction by narrowing the existing travel lanes slightly. In this segment, the north/eastbound 27 Folsom would operate side-by-side with class II bicycle lanes. Bicycle lanes would be dropped at bus stops, and buses would merge across the bicycle lane. With low transit frequencies and only moderate volumes of cyclists, this arrangement should not present an operational problem for this segment.

- **Bicycle connectivity south of 14th Street.** Bicycle lanes are planned and will be implemented shortly on Folsom Street between 14th and 19th Streets (and eventually as far south as 25th), allowing for strong connectivity in both directions between the Mission District and the Folsom Street bikeway in SOMA. In addition, as proposed in the 16th Street Corridor section of this document under Grid Repair, 14th Street should be converted to two-way operations for both vehicles and cyclists. The existing eastbound bicycle lane would be maintained, allowing connectivity to Harrison Street bicycle lanes and points west, while westbound sharrows would be added allowing connectivity to Valencia Street bicycle lanes and points west.

Folsom and Howard vehicle circulation

The Eastern Neighborhoods area plans prioritize improvements to conditions for transit, bicycle, and pedestrian travel choices. This prioritization is essential if the Eastern Neighborhoods transportation system is to accommodate the forecasted growth in travel demand while maintaining neighborhood liveability. Given these priorities, this plan tolerates changes that increase vehicle delay where necessary to meet other project goals. However, because transit will continue to operate in mixed-flow traffic on Folsom and Howard Streets, keeping traffic delay on these streets to a manageable level during peak periods is required for effective function on east-west transit service in the South of Market District.

Today, Folsom and Howard Streets provide a total of seven lanes of vehicle capacity (four eastbound on Folsom Street and three westbound on Howard). This capacity is currently more than is required to maintain acceptable traffic conditions during peak periods and far more than is required during off-peak periods. The proposed alternative would reduce this total from seven to six lanes (two eastbound and one westbound on Howard, two eastbound and one westbound on Folsom). They would also put in place a series of accommodations for and restrictions to vehicle turning movements to support faster and more reliable transit service and to reduce conflicts with cyclists at intersections.

- **Signalization for through-traffic.** Folsom and Howard Streets should be managed to encourage moderate vehicles speeds that are safe and comfortable for pedestrians. In addition to the traffic calming that can be expected to result from converting to two-way circulation, and narrowing the roadway in places with bulb-outs, signals will be timed to favor 12-15 mph progression in the dominant direction of travel. (Depending on the configuration of mid-block signals and the progression speed chosen, it may be possible to time signals to progress at a constant speed in both directions. This possibility is discussed further below). Twelve- 15 mph vehicle speeds virtually eliminate the possibility of fatal collisions with pedestrians. Signals will be equipped with transit priority at both cross-street and mid-block signals that would hold the green phase when necessary for eastbound buses.

- **Management of right turns** . On Folsom and Howard Streets, right turns would be permitted at all intersections except those where a one-way cross street removes the possibility. At the approach to these intersections, the parking lane would be dropped, and a right turn pocket would be provided. On Howard Street, no special signalization would be required to manage right turns. On Folsom Street, there will be a two-way cycletrack on the south side of the street. To reduce conflicts between cyclists and right turning vehicles, signals would be set as follows: during the green time for through vehicles on Folsom, an initial period of time would be provided for through cyclists, with right turns prohibited. Once cyclists have cleared the intersection, cyclist through-movement would be given a red light, and vehicle right turns would be permitted. Because right turning vehicles and westbound cyclists would be facing each other at this location and passing on each other's left, it is imperative that clear sightlines be maintained and a generous raised concrete buffer be provided to remove the possibility of head-on collisions.
- **Management of left turns.** Converting Folsom and Howard Streets to two-way operations introduces the potential for left turn conflicts on both streets. When vehicles wait in the travel lane to turn left, they block through-traffic. On busy streets with few breaks in oncoming traffic, this arrangement can reduce the effective peak-period capacity of the street by one lane in each direction. As a result, most two-way streets in the South of Market either restrict left turns or provide dedicated space for left-turners to wait. For the recommended concept, left turns should be handled as follows.

  On Howard Street, a center lane will be used for a landscaped median at mid-block and for a left turn lane at intersections where required. Left turns would be permitted in both directions (except where left turns are not possible due to one-way cross streets), but no dedicated signal phase would be provided.

  On Folsom Street, no left turns would be permitted from the single westbound lane at any time of day. Eastbound lefts would be permitted from the through-lane outside of peak periods but during peak periods left turn lanes would be prohibited in the project segment except at Ninth Street. At Ninth Street, a left turn pocket would be provided by dropping the parking lane on the south side of the street in the approach to the intersection and shifting the through travel lanes to the curb. Through-traffic would shift back toward the centerline of the street in the intersection, and the parking lane would resume at the far side of the intersection.

  As a result of this configuration, most peak-period left turns in the corridor would be accommodated on Howard Street. This arrangement would have the effect of shifting a share of the corridor's trips from Folsom to Howard, freeing up some capacity and reducing delay for transit on Folsom Street.
- **Alleyway entrances and exits.** Where Folsom and Howard Streets intersect with alleyways, traffic calming treatments will be applied to benefit pedestrians and cyclists. Turning radii will be tightened with bulb-outs, and the roadway will be raised to the street grade to clearly indicate to drivers that they are entering a space where vehicle through movement is a lower priority. As at the intersection of Seventh and Minna, where this treatment is already in place, tactile treatments will be applied to indicate to visually impaired individuals that they are crossing a roadway.

Folsom and Howard Street mid-block crossings

Signalized mid-block crossings will be placed on each block. Crossings will be placed at or near the alleys when they are present. These crossings will be configured as follows.

- **Howard Street.** Signalized mid-block crossings will be situated near alleys (including Rausch, Russ, and Mary Streets). Sidewalk extensions will be added on both sides of the street to narrow crossing distances.

  Howard Street will also have a landscaped median, which will serve as a refuge to allow pedestrians to cross the street in two movements. A two-phase pedestrian crossing will allow traffic progression to be synchronized in both directions, and for the mid-block signals to be fixed time (as opposed to pedestrian-actuated). Fixed-time signals at mid-block crossings will encourage drivers to maintain a constant speed, rather than speeding up on Howard's long blocks and then waiting at major intersections.

- **Folsom Street.** On Folsom Street, signalized mid-block crossings will be added at Rausch, Russ, and Falmouth alleys. At these locations, sidewalk extensions into the parking lane would be added on the north side of the street. On the south side of the street, a pedestrian refuge would be located in the parking lane (see the Folsom Street Bikeway section for a discussion of treatments to ensure safe crossings of the cyceltrack in this location).

  Because Folsom Street would have two-way traffic but no pedestrian median refuge, it may not be possible to configure signals for steady progression in both directions. If bi-directional signal coordination is not possible, signal timing will favor eastbound progression. In this case, pedestrian actuated (rather than fixed-time) mid-block signals may be necessary to ensure that westbound buses are not unnecessarily delayed. The precise configuration of Folsom Street mid-block signals will be determined during detailed design. Whether mid-block signals are fixed-time or pedestrian actuated, transit signal priority would be provided to extend the green light phase for an approaching bus.

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Folsom Street Streetscape and Landscape Concept (Recommended Alternative)

The Streetscape/Landscape Concept for Folsom Street aims to achieve a "Civic Boulevard" as identified in the Eastern Neighborhoods area plan for SoMa. The design includes different but complementary approaches to the two sides of the street. On the side of the street with the cycletrack, the concept includes treatments that seek to visually and physically buffer the sidewalk-grade bicycle facility through paving patterns, landscaping, and placement of furnishings while also providing amenities and quality space for all users of the street. On the other side of the street, the design concept maintains the 10-foot wide sidewalks, but creates a uniformormity to the appearance of the streetscape by adding regularly spaced street trees, pedestrian-scale lighting, and other street furniture where appropriate. Where Folsom Street crosses alleys such as Rausch Street, bulb-outs provide opportunities for stormwater management, landscaping, and public space. This concept draws from design guidance provided by the City of San Francisco Better Streets Plan.

Where existing street trees are absent, new street trees in grates are added as a unifying design element. Trees are regularly spaced in coordination with adjacent parking spaces.

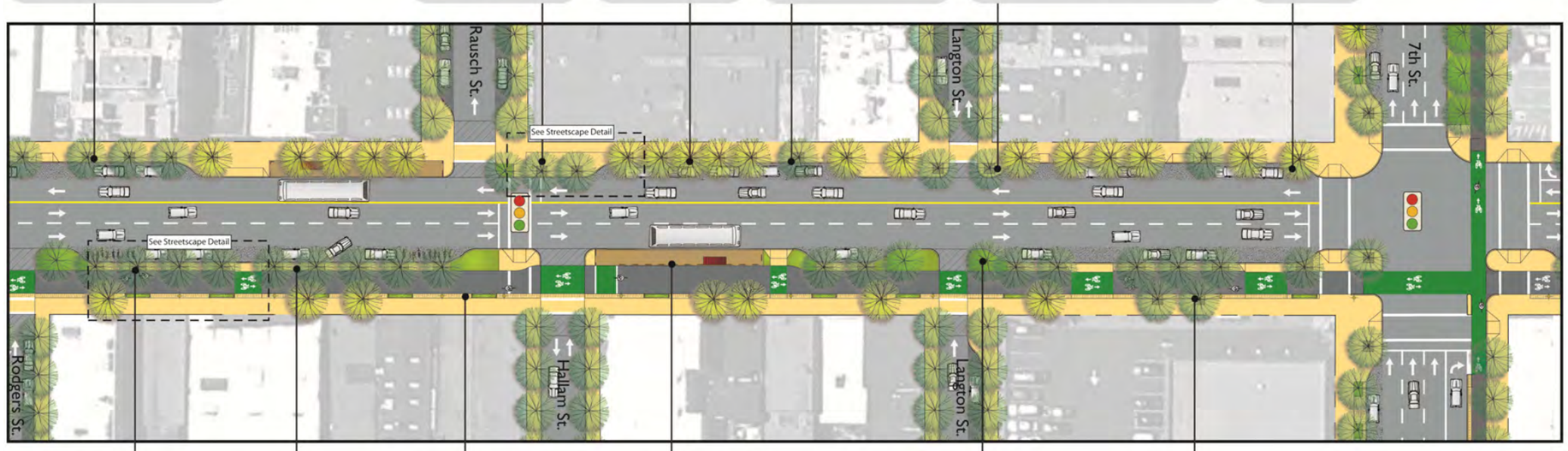
Because the sidewalks on Folsom Street will remain 10 feet wide, extended bulb-outs are the main opportunities for additional pedestrian space.

Existing trees can be accommodated in the new streetscape in most cases. Larger tree grates improve tree health.

Where existing trees remain and already occur with some regularity, new trees and tree grates "fill in" the pattern.

Trees near potential conflict points between autos and cyclists on the cycletrack will be pruned to have a 14-foot minimum clearance to their lowest branches to ensure visibility, per Better Streets Plan, while creating an entry/exit "marker" at alleys.

The parking lane can be treated with permeable paving for stormwater infiltration.



New trees are planted with grates, wood platforms, or another walkable surface in the 4-foot buffer area between the parking lane and the cycletrack. These trees create a unified look for the street.

A 4-foot area between parking spaces and the cycletrack provides room to exit parked cars and access the sidewalk safely. Treating this area with the same paving as the furnishings zone on the other side of the cycletrack creates the visual effect of a buffer bracketing the cycletrack.

A narrow strip of special paving, planter strips, occasional trees, and furnishings creates a buffer separating pedestrians from cyclists on the cycletrack, while still leaving enough clear space for "Main Street" activities like pedestrian through travel, outdoor dining, and display space.

Leaning bars along the back of the transit boarding platform provide an amenity for waiting transit riders and create a visual and physical separation of platform and cycletrack.

Bulb-out areas separated from the sidewalk by the cycletrack can be used for greening and stormwater management.

New trees on the outside of the cycletrack and those planted on the inside achieve an "allee effect". Trees on the outside should be planted with grates and staggered with the trees on the inside of the cycletrack.

50' 100'

LEGEND

Existing tree | New tree | Public space opportunity | Planter strip | Permeable paving | Tree grate + Pedestrian Light

Howard Street Streetscape and Landscape Concept (Recommended Alternative)

The Streetscape/Landscape Concept for Howard Street maintains the 12-foot wide sidewalks, but reorganizes this space through the introduction of a generous Through Zone and a Furnishings/Edge Zone that will contain regularly spaced street trees, pedestrian-scale lighting, room for people to enter and exit parked cars, and permeable paving. The centerpiece of the Howard streetscape will be a planted median, a feature unique among SoMa streets. This median will green the street, reduce the overall scale of the street to be more comfortable for pedestrians, and add a potential stormwater management (LID) feature. Like other EN TRIPS street designs for the SoMa area, the Howard streetscape design will reconfigure intersections with alleys so that pedestrian crossings of alleys are raised, and bulb-outs at alley entrances will provide a conspicuous entry/exit marker. The concept draws from design guidance provided by the City of San Francisco Better Streets Plan.

Landscaped median provides greening opportunity, human scale, and potential for stormwater management (LID).

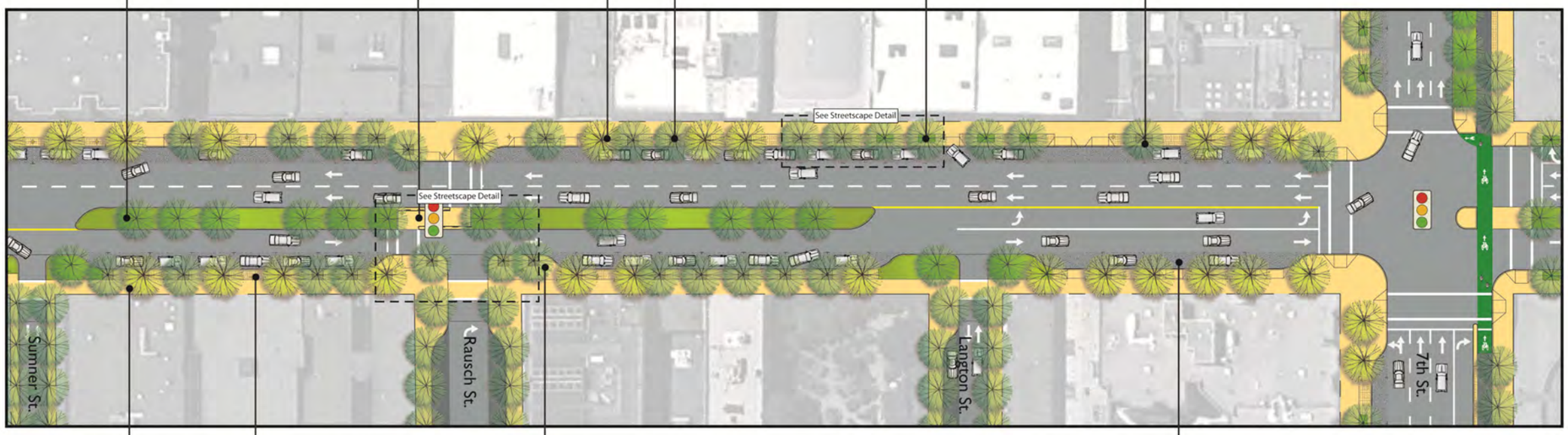
Median allows for a pedestrian refuge at the new midblock crossing.

Existing trees can be accommodated in the new streetscape in most cases. Larger tree grates improve tree health.

Where existing trees remain and already occur with some regularity, new trees and tree grates "fill in" the pattern. Trees can be in grates or in planter strips.

Where existing street trees are largely absent, new street trees in grates are added as a unifying design element. Trees are regularly spaced in coordination with adjacent parking spaces.

Where new trees are added, a paved area along the edge of the sidewalk is maintained for people entering and exiting parked cars.



The Through Zone of the sidewalk allows for pedestrian travel.

The Furnishings Zone of the sidewalk contains street trees, pedestrian lighting, and street furniture.

Bulb-outs are opportunities for public space, greening, and stormwater management (LID).

The parking lane can be treated with permeable paving for stormwater infiltration.

50' 100'

LEGEND

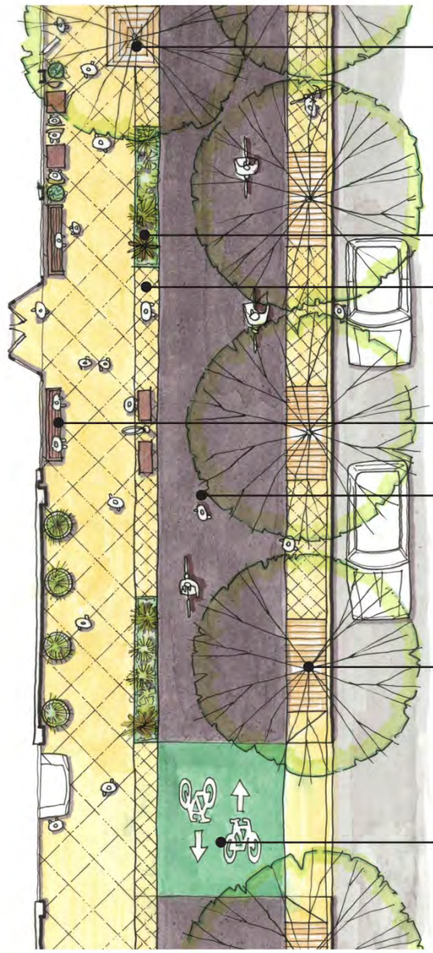
Existing tree | New tree | Public space opportunity | Planter strip | Permeable paving | Tree grate | Pedestrian Light

Folsom and Howard Street Streetscape and Landscape Concept Detail (Recommended Alternative)

Folsom Street

Streetscape Treatment Type: 10-foot Sidewalk with Cycletrack - Typical

This treatment is appropriate for the block faces of Folsom Street that include a cycletrack. This design is based on buffering the cycletrack - in part visually, in part physically - from pedestrians and parked vehicles; framing the cycletrack as a civic amenity by lining it on both sides with landscape and furnishings; and allowing enough of the sidewalk to be used for walking and activities along building frontages like dining and display.

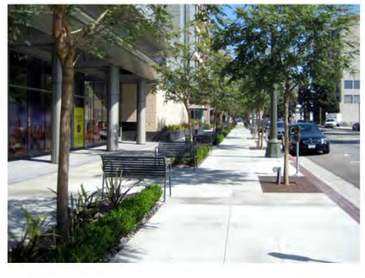


Existing street trees can be accommodated into this streetscape. Their vitality can be increased by increasing their tree pit area and the addition of 5-foot-by-5-foot tree grates that will not diminishing the pedestrian through zone.

The pedestrian realm's furnishings zone and the edge zone both have a similar, more intricately scored paving pattern that is distinctive from the sidewalk. This creates a consistent visual buffer on both sides of the cycletrack, reducing the potential for cyclist-pedestrian collisions.

The cycletrack, at sidewalk grade, is paved with asphalt or other material that visually contrasts with the sidewalk paving.

Driveways, like other points where cyclist-motorist conflicts are possible, are treated with standard green coloring. The pedestrian realm runs through driveways, uninterrupted.



In the furnishings zone of the pedestrian realm, narrow planter strips alternate with areas for furnishings, such as pedestrian lighting and newspaper racks. Especially in Folsom Street's "Main Street" area (between 6th and 8th Streets), this zone should be carefully designed to balance space for furnishings, room for walking, and building-adjacent space used by stores and restaurants.

The concept allows room for a frontage zone where tables, seating, planters, and goods on display can be placed along the building frontages, supporting a "Main Street" character for Folsom Street.

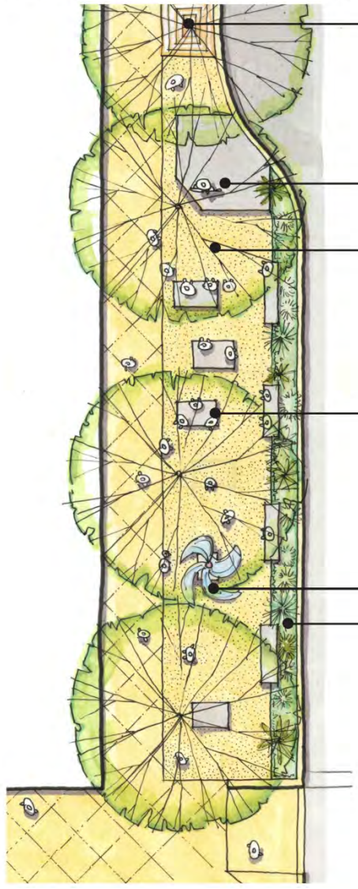
Evenly spaced street trees planted in the 4-foot buffer between the cycletrack and the parking lane are an important unifying feature of the street. Trees are accommodated in a 4-foot-by-8-foot tree grates or other treatment that allows walking across the tree pit area.

Folsom and Howard Street Streetscape and Landscape Concept Detail (Recommended Alternative) (Continued)

Folsom Street

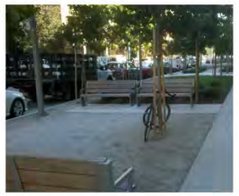
Streetscape Treatment Type: 10-foot Sidewalk at Mid-Block Bulb-Out

This treatment is appropriate where an extended bulb-out occupies a street corner and especially in areas with potentially high-foot traffic, such as this sample location at Rausch Street. The sample design uses the majority of the sidewalk and bulb-out space to create a small public space, thus addressing the need for small public spaces that serve the neighborhood expressed in the Eastern Neighborhood plans. The design includes places to sit, significant landscaping, public art, and distinctive lighting. Such small public spaces along Folsom, especially those in the street's neighborhood commercial core, should be carefully designed to support the desired "Civic Boulevard" character, here illustrated as including a small "stage" platform, seating, public art, and the buffering from traffic through landscaping.



Existing street trees can be accommodated into the new design. Their vitality improves by increasing their tree pit area and the addition of 5-foot-by-5-foot tree grates that will not diminish the through zone.

Public spaces can be made more welcoming and distinguished from the through zone of the sidewalk by paving them in a permeable, ADA-compliant surface such as decomposed granite.



Small public spaces in bulb-outs can include focal points, such as a small platform that can serve as a performance stage, "soapbox", seating, or a place to put community or food booths.

Low seat "blocks" or walls can provide places to sit in a variety of orientations.

Public art projects can express neighborhood identity.

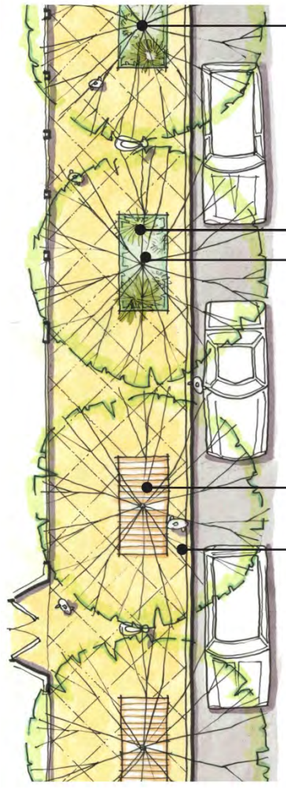
A 2-foot planter strip helps buffer small public spaces on bulb-outs from moving traffic.

Folsom and Howard Street Streetscape and Landscape Concept Detail (Recommended Alternative) (Continued)

Howard Street

Streetscape Treatment Type: 12-foot Sidewalk - Typical

This treatment is appropriate for most block faces of Howard Street. Sidewalks will remain 12 feet wide, but the pedestrian realm can be reconfigured to incorporate existing trees and add new trees, so that regularly spaced street trees become a unifying element for the corridor's wide range of dissimilar land uses. The pedestrian realm shown in this concept accommodates pedestrian through movement and movement in and out of parked cars, allows for some use of sidewalk space by adjacent uses, and supports tree health. It is flexible in responding to varying needs for hardscape surfaces and the integration of street greening.



Regularly spaced trees will help to unify the visual appearance of the Howard streetscape.

Where there is less foot traffic, tree pits can be planted with grasses and shrubs to further green the street.

Tree pits are set back from the face of curb to allow people to exit parked cars and access the sidewalk safely and comfortably.

Trees are planted in pits 4 feet wide by at least 6 feet - and up to 14 feet - long, depending on the amount of foot traffic.

Where there is more foot traffic and tree pits are shorter, tree grates can be used to expand the effective amount of walkable surface while still improving tree health.

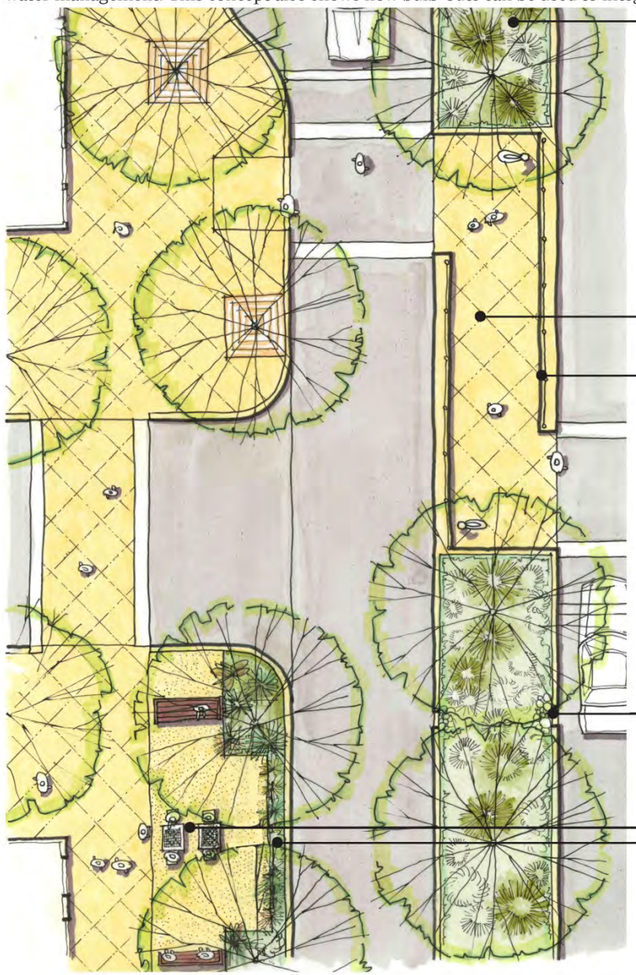
Alternately, wooden "grates" can be placed over tree pits, or in one long continuous strip, allowing for walking, water infiltration, and healthier soils for trees.

Folsom and Howard Street Streetscape and Landscape Concept Detail (Recommended Alternative) (Continued)

Howard Street

Streetscape Treatment Type: Mid-Block Crossing

This treatment is appropriate for areas along Howard Street where a mid-block crossing occurs. This concept shows how the center median is a key feature of the streetscape, with trees and other landscaping, a pedestrian refuge, potential decorative elements such as railings and pedestrian-scale lighting, and the potential for storm-water management. This concept also shows how bulb-outs can be used to integrate small-scale public spaces.



The median can be planted with clusters or regularly spaced trees, as well as shrubs and grasses. A landscaped median will reduce the perceived width of the street and make it more comfortable to pedestrians.

The median accommodates a large refuge for pedestrians crossing Howard Street and includes pedestrian scale lighting, special paving that contrasts with the street surface, and railings.

Railings present opportunities for enriching the visual interest of the streetscape through decorative or artistic treatments.

If roadway crowning allows, the median can be designed as a LID feature for stormwater infiltration and conveyance.

Where desired and properly cared for by the community, amenities like chess tables can add interest to public small spaces in bulb-outs.

A 2-foot planter strip helps buffer small-scale public spaces in bulb-outs from moving traffic.

Folsom and Howard Street Corridor Project Phasing (Recommended Alternative)

Because the recommended alternative does not propose moving curb lines, most of its key features can be implemented quickly, once environmental review is complete and funding is available.

In this first phase, Folsom and Howard Streets would be converted to two-way operation, and the cycletrack would be implemented on Folsom between Fifth and 11th Streets. Street operations would be adjusted to allow for two-way transit between Second and Fifth Streets. A westbound bicycle lane would be striped between 11th and 14th Streets to improve connectivity to the Folsom Street cycletrack. Pedestrian bulb-outs and mid-block crossings would be added. A landscaped median would be added on Howard, and landscaping and other streetscape elements would be added to Folsom Street to enhance its role as a Civic Boulevard.

Some associated circulation changes could be delayed into a second phase following project implementation or implemented incrementally. These include upgrading of the pedestrian path of travel on Minna and Natoma and implementation of robust transit priority on Mission Street. Specific cost estimates will be included in the EN TRIPS Funding and Implementation Plan.

Figure 5-5 EN TRIPS Folsom/Howard Priority Project Phasing

	Phase 1	Phase 2
Circulation	Two-way Folsom Street between Fourth and 11th (2 lanes EB, 1 lane WB). Striping and signals.	
Circulation	Two-way Howard Street between Fifth and 11th (2 lanes WB, 1 lane EB, center turn lane). Striping and signals.	
Circulation	Re-time SOMA signals to favor moderate progression speeds on both east-west and north- arterials.	
Bikes	Stripe an 11' two-way parking-buffered cycletrack on South side of Folsom Street between Fifth and 12th.	Raise cycletrack and buffer to sidewalk grade.
Bikes	Upgrade signals to allow split right-bike through phasing.	
Transit	Construct mid-block bus bulbs.	
Pedestrian	Construct pedestrian corner bulbs with landscaping.	
Pedestrian	Add threefixed-time signalized, mid-block crossings on Folsom (Rauch, Russ, and Falmouth) and Howard (at Rauch, Russ, and Mary Streets).	
Public Realm	Add landscaping and pedestrian amenities.	
Public Realm	Add landscaped median in center turn lane on Howard between Fifth and 11th (except where left turn pockets are required).	

Figure 5-6 EN TRIPS Folsom/Howard Corridor Associated Circulation Changes — Project Phasing

	Phase 1	Phase 2
Transit	Remove curb parking on north side of Folsom between Second and Fourth Streets and replace with contraflow transit lane. Striping, signals, overhead wire.	
Bike		Two-way 14th Street between Guerrero and Folsom.
Bikes	Implement Fifth Street bicycle lanes as per SF bicycle plan.	
Bikes	Stripe westbound/southbound bicycle lane on Folsom between 11th and 14th.	
Transit		Design and implement robust transit priority for Mission Street.
Pedestrian	Upgrade Minna and Natoma between Sixth and Eighth Streets with traffic calming, landscaping, and signalized, mid-block crossings of Seventh and Eighth Streets.	
Pedestrian		Complete upgrade of pedestrian path of travel on Minna and Natoma between Ninth and Fourth Streets.

5.6 OTHER PROMISING ALTERNATIVES

In addition to the recommended alternative described in the previous section (Alternative 5), three other concepts were selected for additional analysis, design, and community input. These include a single one-way option and two additional three-lane Folsom Street options. These additional options are included for stakeholder review and potential inclusion as alternatives in environmental analysis of the project.

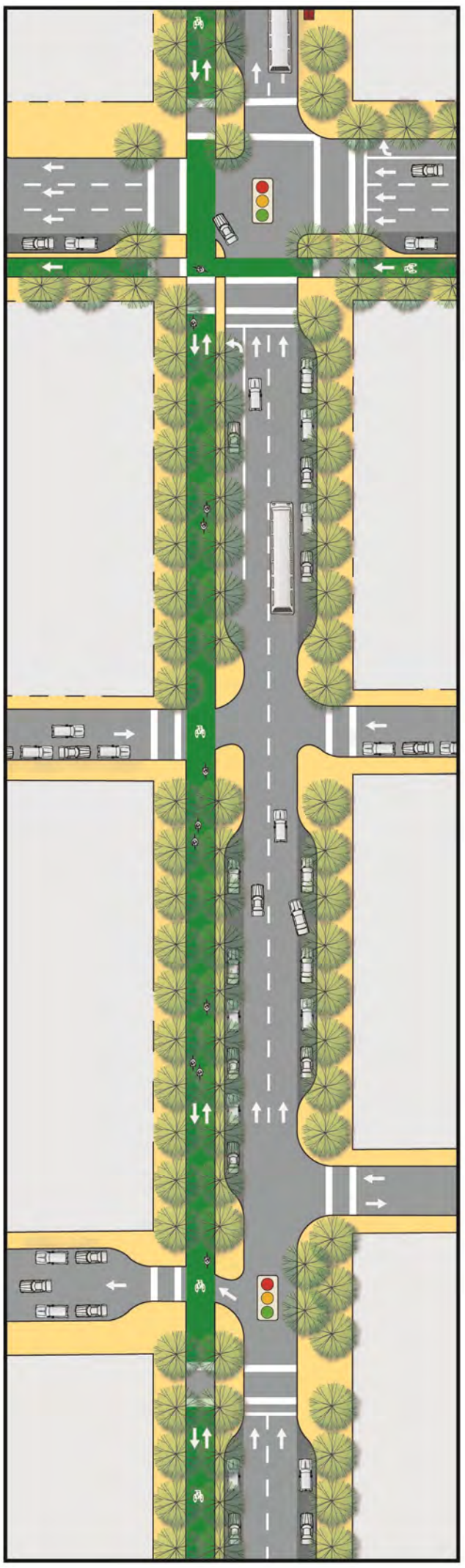
There are important policy tradeoffs between the four different alternatives. Key differences between these concepts and the recommended alternative are summarized below. In addition, the findings of a detailed traffic analysis of the four alternatives are provided in Appendix A. These alternatives merit further consideration during the environmental phase of the project.

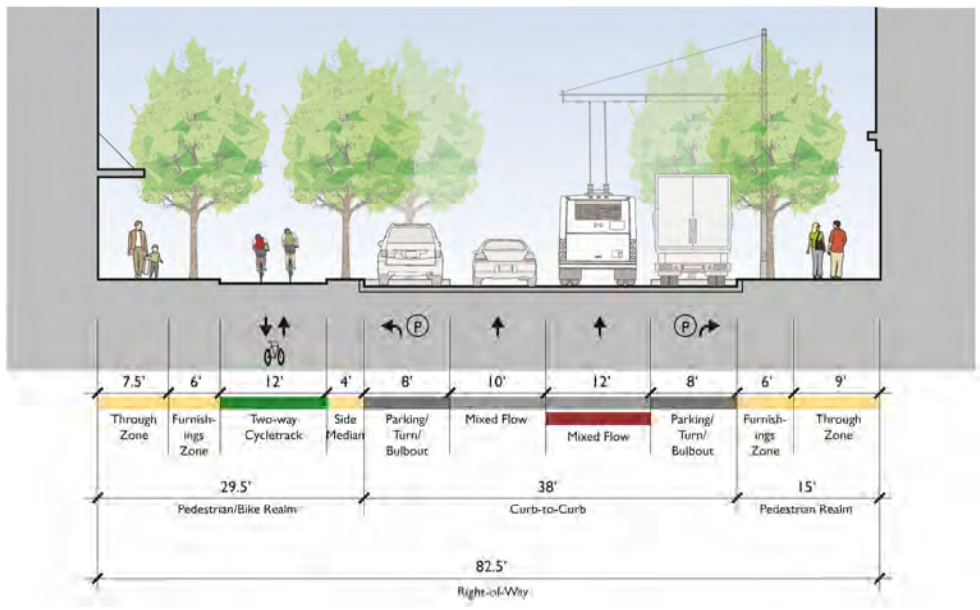
- **Alternative 1: One-way Folsom and Howard.** This alternative would narrow the roadway to two one-way lanes on each street providing important benefits for pedestrians, cyclists, and the public realm with 15-foot sidewalks, greatly narrowed crossing distance, wide cycletracks, and traffic calming. The major advantage of this alternative is that, by avoiding the turning conflicts that come with two-way streets, it allows for an acceptable amount of vehicle capacity to be retained with more than half of the street's right-of-way dedicated to non-vehicular uses. One-way circulation also allows for both streets to be coordinated for a steady progression at whatever speed is desired, and for fixed-time mid-block signals to be provided on every block. It would not allow for consolidation of transit routes onto Folsom Street. It would require the expense of moving curb lines on both streets. It is very likely that the project would be implemented on Folsom Street first, and the Howard Street project would be optional and completed in a later phase.
- **Alternative 3: Two-way Folsom and Howard with one-way cycletracks.** This alternative is very similar to the recommended alternative, providing two-way circulation on both streets. The primary difference is that it would provide a one-way cycletrack on each street, allowing for sidewalks on the non-cycletrack side of Folsom Street to be widened to 15-feet in a second phase of the project. This increase in sidewalk space would enhance the Folsom Street public realm and bring the sidewalk on that side of the street to the level recommended by the Better Streets Plan, but it would also substantially increase the cost of the project. Westbound cyclists would continue to have to divert out-of-direction from Howard Street to Harrison to reach the Mission District bicycle network. Because no turn lane would be provided on Howard, more left turn pockets would be required on Folsom, reducing parking and pedestrian bulb space while removing the parking buffer between moving vehicles and the cycletrack in some places.
- **Alternative 4: Two-way Folsom and one-way Howard, with two-way cycletrack on Howard.** This alternative provides a two-way Folsom Street that is similar to the recommended Alternative's Folsom design, but with bicycle facilities removed and sidewalks widening to 15 feet on both sides of the street. This additional space could be used for landscaping, public spaces, and other elements to greatly upgrade Folsom's public realm. The sidewalk widening would also add substantial expense to the project. Howard Street would be very similar to the Folsom Street design envisioned in Alternative 1, with two lanes of traffic and a buffered two-way cycletrack. A key advantage of this alternative is that, because Howard is unconstrained by transit operations or freeway queues east of Fifth Street, a Howard Street cyceltrack could eventually be extended all the way to the Embarcadero. However, to make this facility connect to the

Mission District on its western end, it would have to be extended down South Van Ness Avenue to 14th Street, removing parking on the east side of South Van Ness. Because it would have lower overall eastbound traffic capacity than Alternative 3 or the recommended alternative, this option would lead to some additional traffic delay (and thus additional transit delay).

Alternative 1 and 3 are summarized in brief below, and a circulation diagram is provided for each. Alternative 4 has been developed in more detail to illustrate design tradeoffs between these concepts and the recommended alternative, emphasizing the streetscape and landscape potential for a Folsom Street "Civic Boulevard" that includes wide sidewalks.

Folsom/Howard Alternative 1





This alternative maintains both Folsom and Howard as one-way streets, reducing each to two lanes. A two-way cycletrack would be provided on Folsom, and a one-way cycletrack on Howard.

Pedestrian Conditions. This concept would provide wide sidewalks on both Folsom and Howard, narrowing pedestrian crossing distance to just two lanes in many places (and no more than three lanes where turn pockets are present). As in all alternatives, it would provide signalized mid-block crossings on every block improving pedestrian connectivity on the long (850-foot) Folsom and Howard blocks. Signals would be timed to encourage steady vehicle travel, contributing to a safe and comfortable pedestrian environment. Mid-block pedestrian crossings could be operated on a fixed cycle, making crossings more convenient for some pedestrians and helping to enforce the intended progression speed.

The public realm. This alternative would result in more than half of the Folsom Street right-of-way dedicated to non-vehicular space, leaving numerous opportunities for new public spaces and landscaping. The wide bicycle facility would double as a fire lane during the Folsom Street Fair, allowing the Fair to maintain its current configuration despite the narrower street.

Transit legibility. This concept would maintain eastbound service from the 27-Folsom and 11-Downtown Connector on Folsom Street, with westbound service provided on Harrison Street. Splitting service by direction in this way makes the transit system somewhat less legible for passengers. In addition, Harrison Street, with its high volumes of fast-moving freeway-bound traffic, is a less desirable waiting environment for passengers.

Transit performance. By reducing capacity to two lanes, this concept would increase traffic delay somewhat on Folsom Street, slowing eastbound buses through this segment. Westbound buses, still operating on Harrison, would be unaffected.

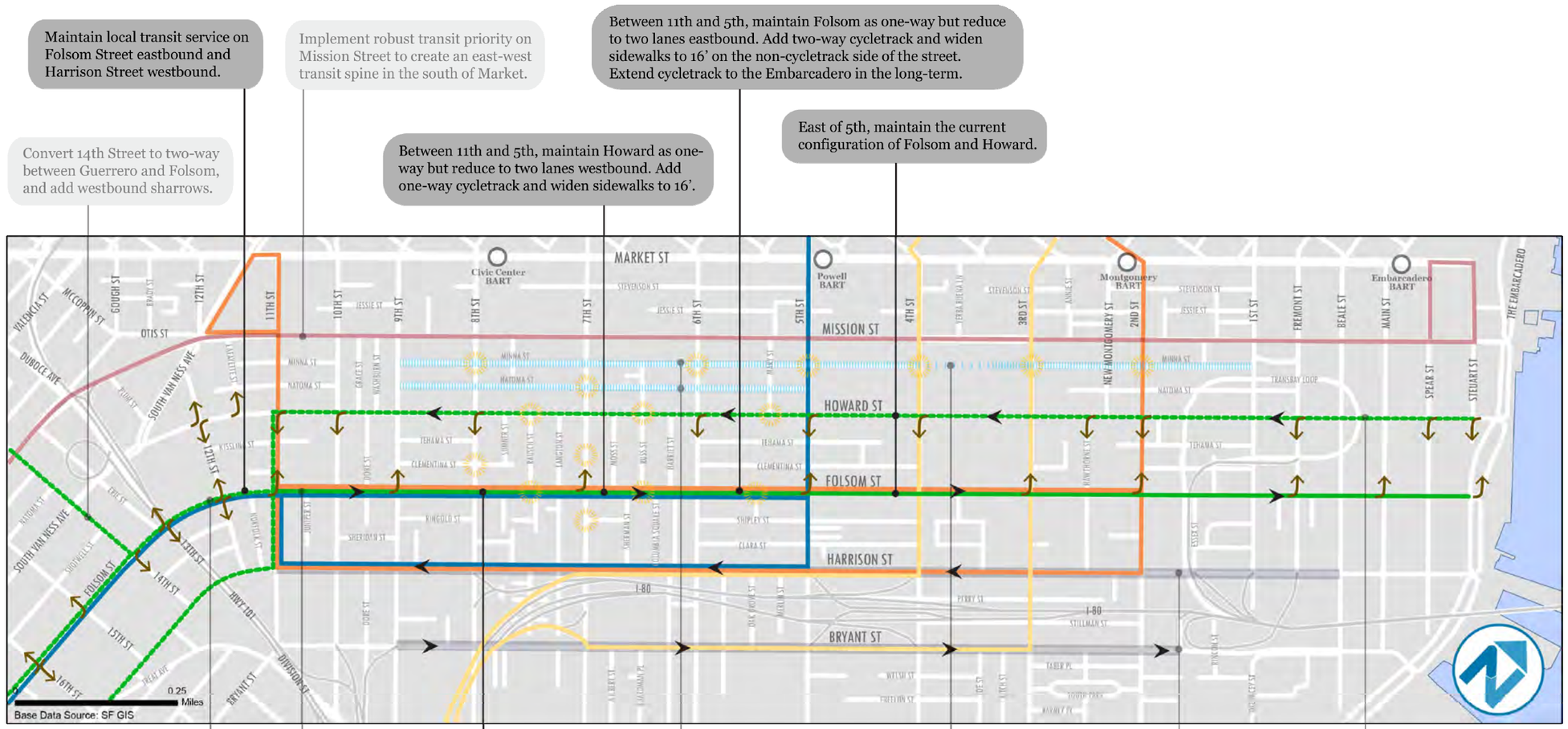
Vehicle circulation. In this concept, Folsom and Howard Streets would continue to function as a one-way couplet, reduced to two lanes in each direction with turn pockets provide at intersections. This change would reduce vehicle capacity and increase delay somewhat. Unlike the two-way alternatives, this configuration would not require any new restrictions to vehicle left turn movements.

Bicycle conditions. This alternative would provide wide buffered bicycle lanes with a two-way cycletrack on Folsom Street. It would also provide the best bicycle connectivity of any alternative: It would provide a strong two-way connection to the Mission District bicycle network, and unlike the recommended alternative, this alternative would allow a two-way protected bicycle facility to be continued all the way to the Embarcadero on Folsom Street. (This differs from the recommended alternative which, because it must accommodate two-way transit on Folsom, must shift westbound bicycle facilities to Howard at Fifth Street.) If the project were implemented on Howard as well, an additional one-way cycletrack could be added, although this facility would have poor Mission District connectivity.

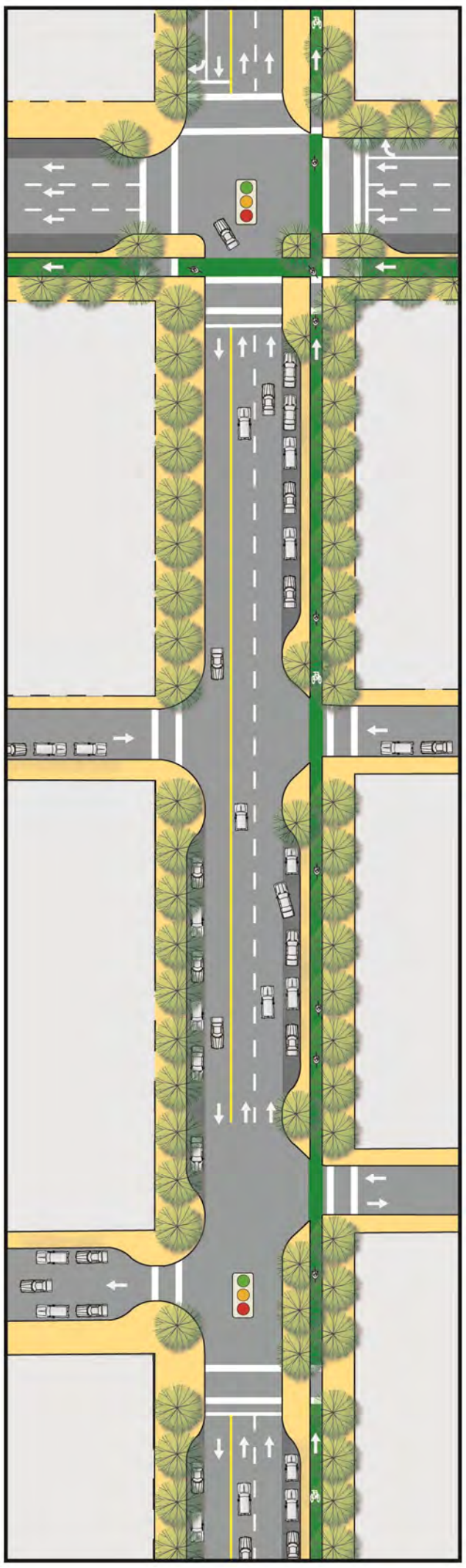
Parking and loading. As in the other alternatives, parking lanes would be maintained on both sides of Folsom and Howard Streets. Parking would be removed where necessary to provide turn pockets at intersections and pedestrian and transit bulb-outs.

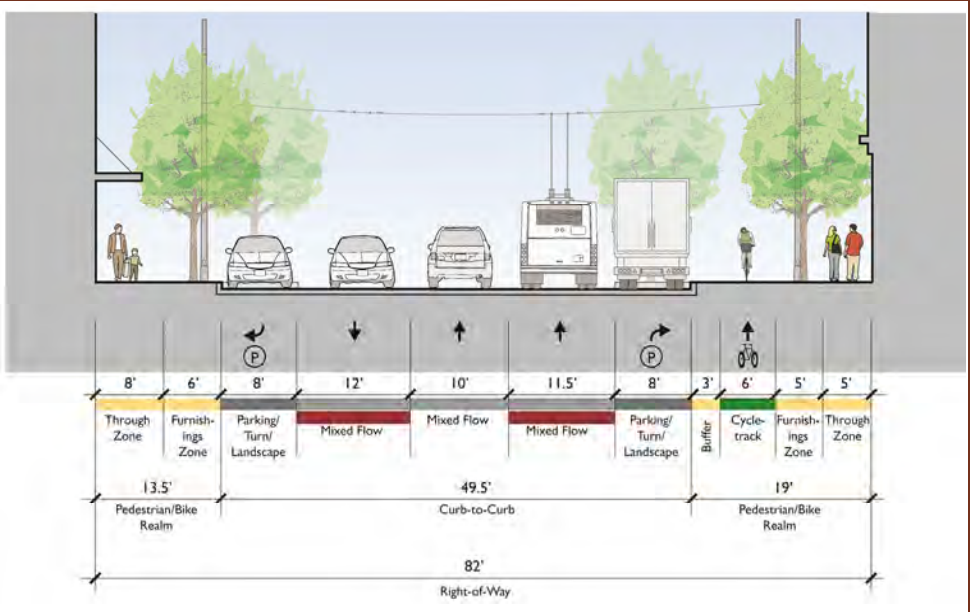
Cost comparison. This project would require moving the curb lines along one side of Folsom Street, a large expense. It would not require major changes to signalization as would the two-way alternatives. It is expected that the Folsom Street project would be implemented first. On Howard Street, which is a lower community priority for improvement, the project could be implemented later or not at all. The fact that the changes to Folsom proposed in this alternative do not require changes to Howard Street makes it among the most feasible and implementable Folsom Street projects.

Figure 5-7 Folsom/Howard Alternative 1 Circulation Concept



Folsom/Howard Alternative 3





This alternative provides two-way vehicle circulation on both Folsom and Howard, a one-way protected bicycle lane on each street, and wider sidewalks on one side of Folsom.

Pedestrian Conditions. This alternative would widen the Folsom Street sidewalk to 15 feet on one side, leaving the existing curb line intact on the cycletrack side of the street. It would narrow pedestrian crossing distances, though not as much as Alternative 1. It would also provide pedestrian bulb-outs and signalized mid-block crossings. Signals would be timed to favor moderate vehicle speeds in the dominant direction of travel. However, mid-block signals may have to be pedestrian-actuated, rather than fixed-time.

The public realm. This concept would widen the sidewalk on one side of Folsom Street creating additional room for landscaping or public spaces. With a somewhat narrower cycletrack buffer than other alternatives, it does not provide as many opportunities for landscaping.

Transit performance. Because it maintains three lanes of vehicle capacity in each direction, this alternative is not forecast to increase vehicle delay, and would thus not further delay eastbound buses as compared to the current configuration. Westbound buses, operating in a single lane, may be somewhat slower than those operating now on Harrison Street. However, bus routes would be shortened and the total number of turns would be reduced by avoiding the need to travel as far south as Harrison Street, thus reducing overall transit travel time and operating costs.

Transit legibility. This alternative would consolidate the 27 Folsom and the 11 Downtown Connector on Folsom Street, providing bus service on eight-minute headways in each direction. Two-way service makes it easier for passengers to understand the transit system. It may also draw more transit passenger to Folsom Street, supporting the commercial district.

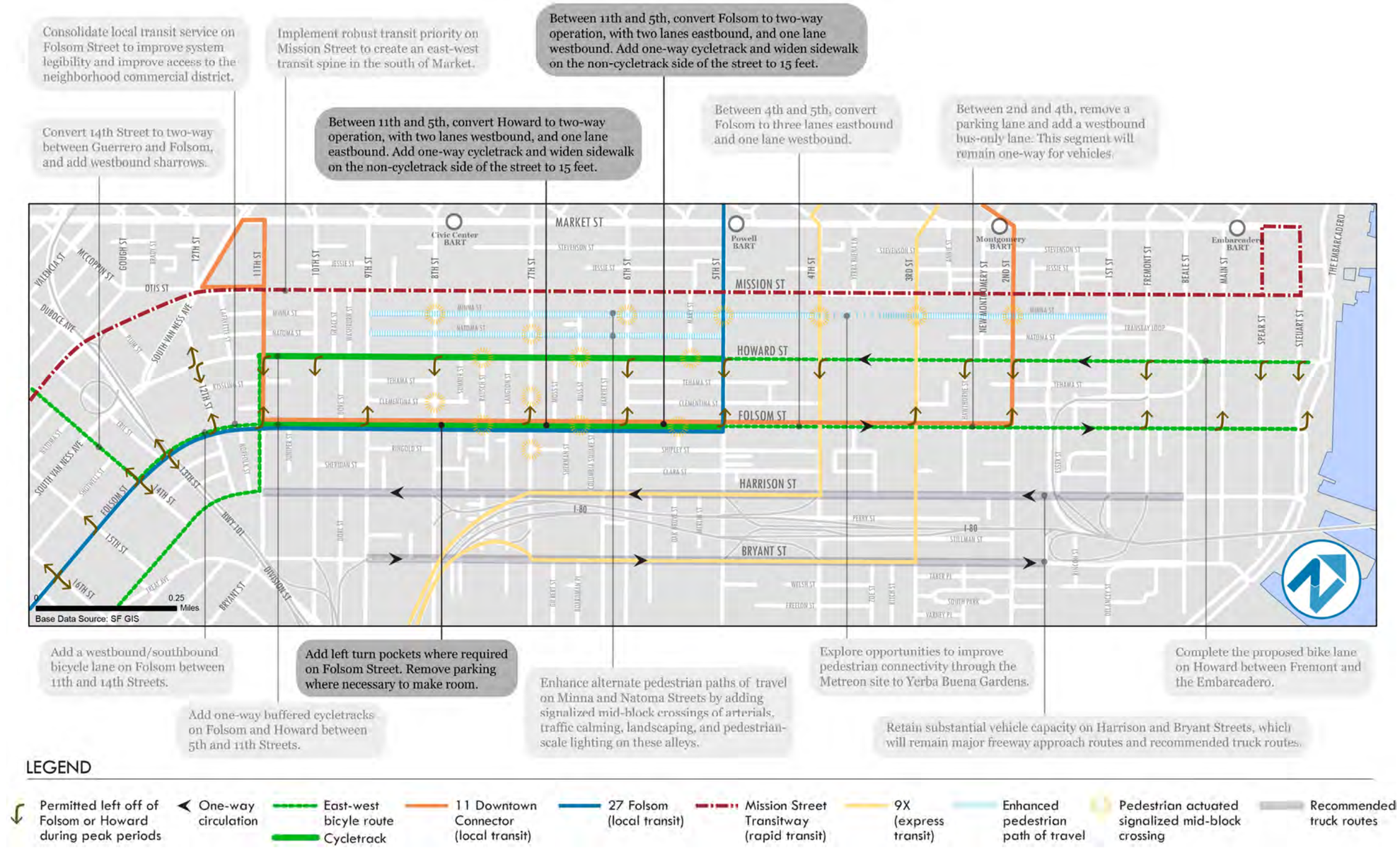
Vehicle circulation. In this concept, both Howard and Folsom would be converted to two-way operations. Folsom Street would have two lanes eastbound and one lane westbound, with Howard Street the reverse. Signals would be timed to favor moderate speeds in the dominant direction of travel. The single-lane direction would serve mostly local trips and on Folsom, westbound buses. By maintaining three lanes in each direction, this alternative provides a similar level of vehicle capacity to what is available today. However, buses would be stopping in the westbound lane on Folsom, which would require all vehicles to wait while buses load and offload passengers. Left turns would be prohibited for vehicles traveling eastbound on Howard or westbound on Folsom. For the dominant direction of travel, left turn pockets would be provided where necessary by shifting the through-travel lanes to the curb.

Bicycle conditions. This alternative would provide one-way, buffered bicycle lanes – eastbound on Folsom Street, westbound on Howard. While these facilities would offer more comfortable facilities than what exists today, there is some concern that one-way facilities, particularly on a two-way street, would encourage some cyclists to ride against the specified direction of travel. The split facilities would not require westbound cyclists to transition from Howard to Folsom Street at 5th, as the recommended alternative does. However, the existing one-way Howard Street bicycle lane has poor connectivity on its western end. To improve this condition, a southbound bicycle facility could be added to South Van Ness Avenue between Howard and 14th Street.

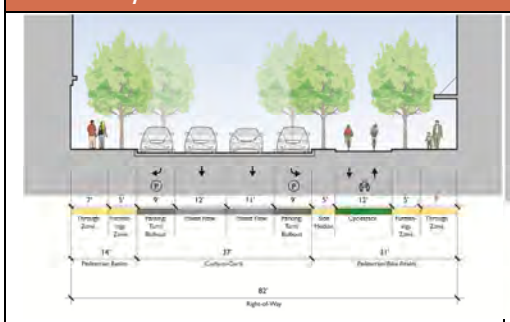
Parking and loading. As in the other alternatives, parking lanes would be maintained on both sides of Folsom and Howard Streets. Parking would be removed where necessary to provide turn pockets at intersections, pedestrian and transit bulb-outs.

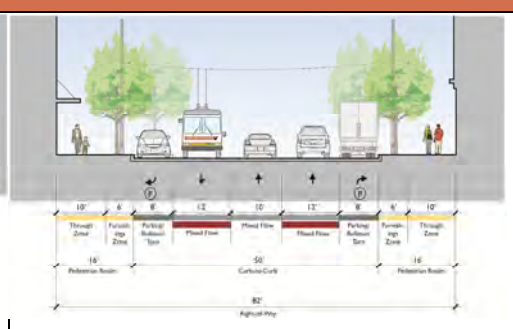
Cost comparison. This project would require moving the curb line along one side of Folsom Street, a major expense. It would also require major changes in signalization to achieve two-way circulation on both streets. Finally, this alternative requires major changes to both Folsom and Howard Streets. An advantage of this alternative is that it could be easily phased: in an initial phase, the two-way conversion could be implemented and the cycletrack, bulb outs, and bus bulbs added. The sidewalk could be widened in a second phase when funding becomes available.

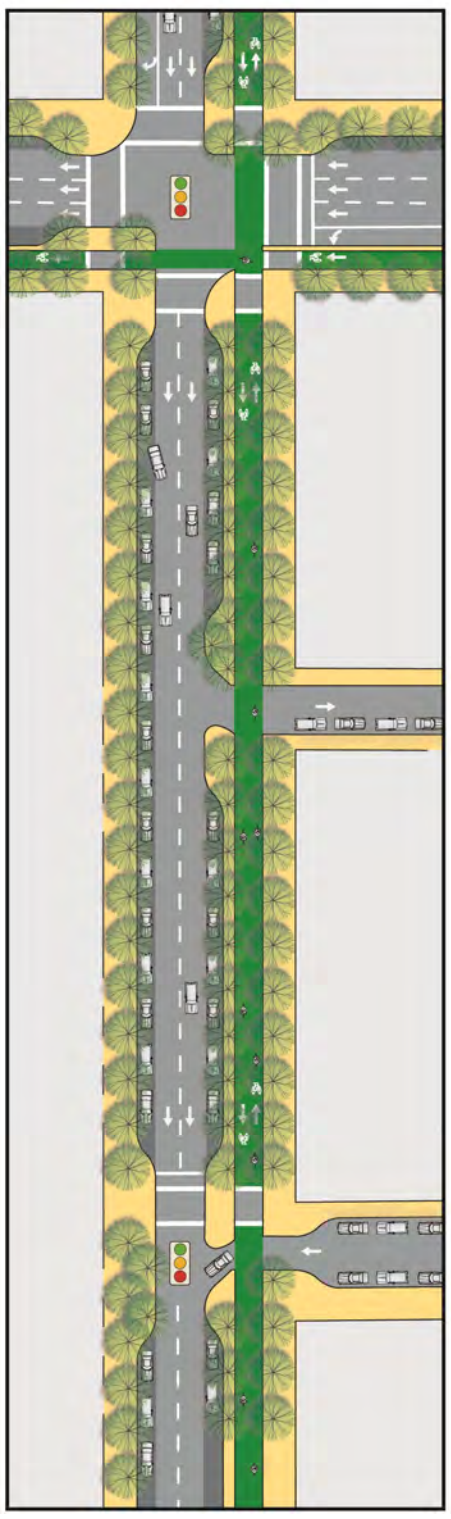
Figure 5-8 Folsom/Howard Alternative 3 Circulation Concept

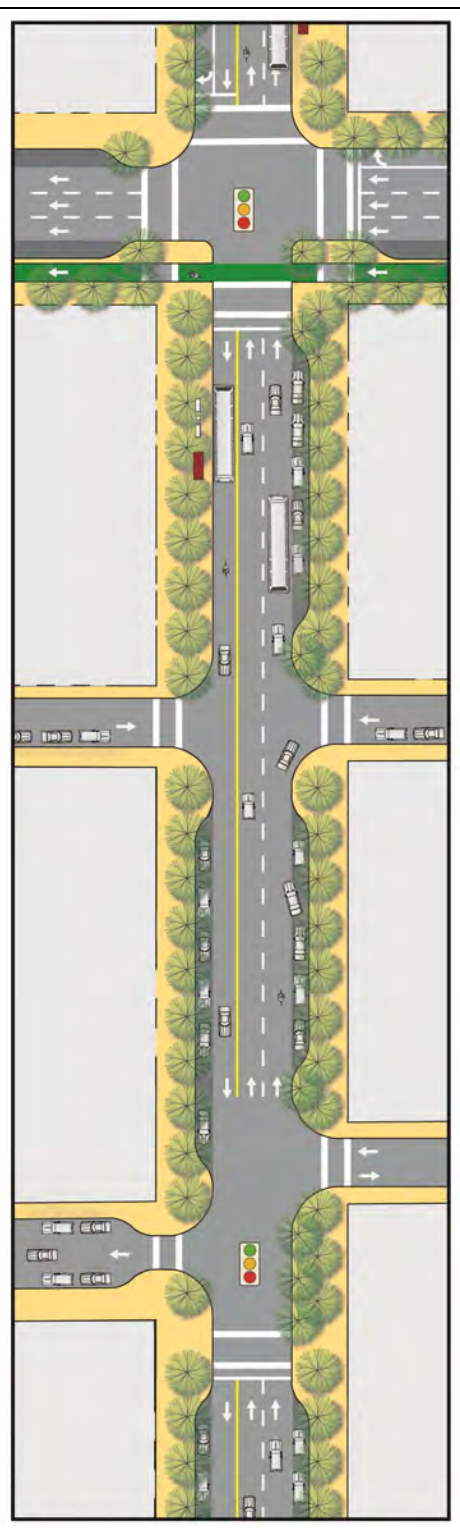


Folsom/Howard Alternative 4









This alternative provides two-way vehicle circulation on Folsom while maintaining a one-way Howard. It moves all bicycle facilities to a two-way cycletrack on Howard, repurposing space on Folsom to provide wide (16') sidewalks on both sides of the street. A circulation concept, transportation operations concept, and landscape concept are provided on the pages that follow.

Pedestrian Conditions. As in the other alternatives, this concept would provide pedestrian bulb-outs and signalized mid-block crossings. Signals would be timed to favor a 12-15 mph vehicle progression in the dominant direction of travel. On Howard Street, this alternative would look much like Alternative 1, narrowing crossing distances to just two lanes and providing fixed-time mid-block signals. However, to reduce costs, the Howard Street project would likely be implemented without widening the sidewalks.

The public realm. With very wide sidewalks on Folsom Street, this alternative would provide ample room for landscaping and public spaces with a somewhat narrower cycletrack buffer than other alternatives. A wide cycletrack buffer on Howard Street would provide opportunities for landscaping and public spaces.

Transit legibility. Like Alternatives 3 and 5, this concept would consolidate the 27 Folsom and the 11 Downtown Connector on Folsom Street, providing bus service on eight-minute headways in each direction. Two-way service makes it easier for passengers to understand the transit system. It may also draw more transit passengers to Folsom Street supporting the commercial district.

Transit performance. Because this concept includes two eastbound lanes (rather than three, as in alternatives 3 and 5), it could result in some additional vehicle delay, thus slowing eastbound buses somewhat. Westbound buses, operating in a single lane, may be somewhat slower than those operating now on Harrison Street. To ensure that these waiting vehicles do not block north-south streets, transit stops will be placed mid-block (adjacent to new signalized mid-block crossings), rather than at the far side of intersections. As in Alternatives 3 and 5, bus routes would be shortened by avoiding the need to travel as far south as Harrison Street, thus reducing overall transit travel time.

Bicycle conditions. This concept would remove all bicycle facilities from Folsom, instead providing a wide buffered two-way cycletrack on Howard Street. A key advantage of this facility is that it could eventually be extended east all the way to the Embarcadero, rather than terminating at 5th Street. Its major drawback is poor connectivity on its western end, where Howard intersects with South Van Ness Avenue. To maintain acceptable bicycle connectivity to the Mission District and points south, a narrow (10') two-way cycletrack could be extended south on the east side of South Van Ness Avenue to 14th Street, removing curb parking on one side of that block. If 14th Street were converted to two-way operations (as proposed in the 16th Street Corridor Circulation Concept), this facility would then connect to the Mission District bicycle network.

Vehicle circulation. As in Alternatives 3 and 5, Folsom Street would be converted to two-way operations, with two lanes eastbound and one lane westbound. Signals would be timed to favor moderate speeds in the dominant direction of travel. Howard Street would remain one-way westbound but would be reduced to two lanes. With reduced vehicle capacity, delay would increase somewhat during the peak period. On Folsom, buses would stop in the westbound lane, which would require all vehicles to wait while buses load and offload passengers. Left turns would be prohibited for vehicles traveling eastbound on Howard or westbound on Folsom. Eastbound on Folsom, left turn pockets would be provided where necessary by removing parking and shifting the through-travel lanes to the curb.

Parking and loading. Parking lanes would be maintained on both sides of Folsom and Howard Streets. Parking would be removed where necessary to provide turn pockets at intersections, and to private pedestrian and transit bulb-outs. Because more left turn pockets would be required in this alternative than in Alternative 5, the parking impact would be greater.

Cost comparison. This project would require moving the curb line along both sides of Folsom Street, a significant expense. It would also require major changes to signalization on both streets. The project could be implemented without moving curb lines on Howard Street. Phasing this concept would be more complex than phasing Alternative 3.

Folsom Street Operations Concept (Alternative 4)

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 widens both sidewalks to 16 feet to create the Civic Boulevard environment specified by the Eastern Neighborhood plans. This design concept removes bike lanes from Folsom Street, but a two-way protected cycletrack is added to Howard Street.

"Two-plus-one" lane configuration allows for the vehicular access benefits of a two-way street while prioritizing eastward travel. This encourages slower vehicle speeds and better accommodation of bicycle speeds.

While vehicles have the option of two-way travel, traffic signals are timed to the eastbound traffic, making westbound auto travel more suited to local rather than crosstown trips.

Sidewalks on both sides of Folsom Street are widened to 16 feet, enhancing Folsom's role as a Civic Boulevard. See Streetscape/ Landscape Concept.

Signals will be timed to allow for a continuous 12-15 mile-per-hour progression to encourage vehicle travel speeds that are safer and more comfortable for cyclists and pedestrians.

New signalized midblock crossings will allow easier crossing of the street between the widely spaced major cross streets.

The 27-Folsom and 11 Downtown Connector will operate eastbound and westbound on Folsom Street every 8 minutes. Riders will board eastbound buses via islands on the street side of the cycletrack.

Bus stops will be located at mid-block crossings to ensure that westbound vehicles do not block intersections while waiting behind a stopped bus.

Parking lanes are maintained on both sides of the street, except where bulb-outs or turn lanes are required.

At intersections with alleys, the alley roadway ramps up to sidewalk grade, slowing cars as they enter and exit the alleys.

Bulb-outs provide quality additional pedestrian space. Where bulb-outs are located, the pedestrian realm is 24 feet wide.

Left turn pockets occur on Folsom where needed; Through lanes shift to the right.

Bulb-outs will be added to all intersections where a turn lane is not needed.

Howard Street Operations Concept (Alternative 4)

The Transportation Concept for Howard Street maintains one-way traffic, but reduces the number of lanes to two. The one-way travel allows 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.

Signals will be timed to allow for a continuous 12-15 mile-per-hour progression to encourage vehicle travel speeds that are safer and more comfortable for cyclists and pedestrians.

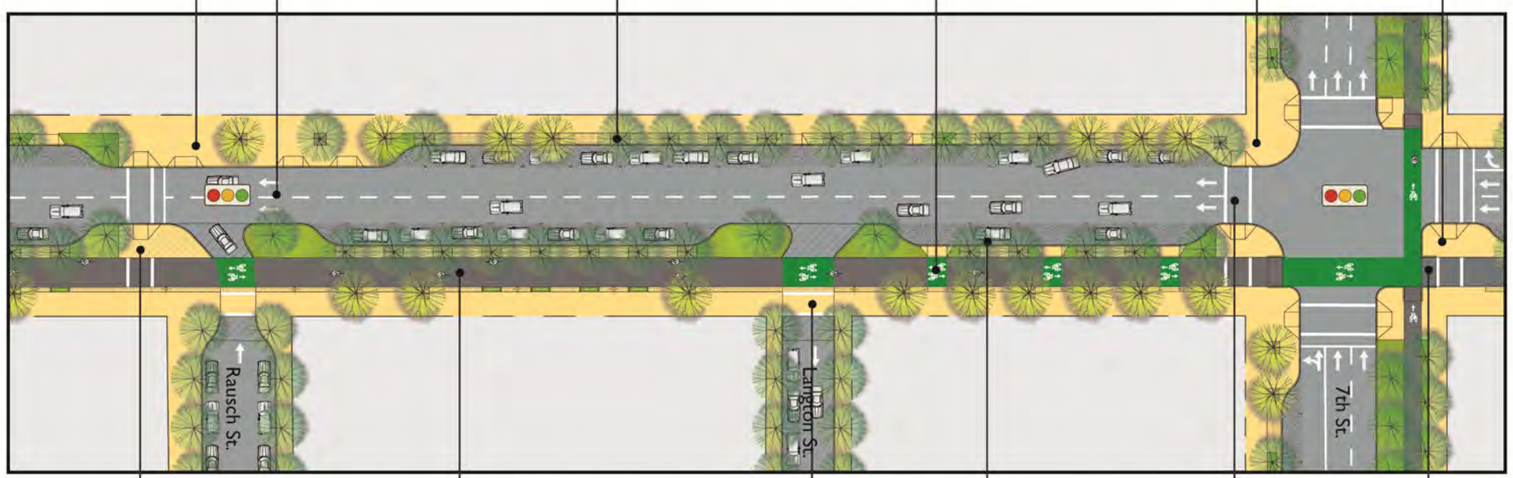
The reduction of auto travel to two lanes going a single direction will allow traffic signal timing to encourage safer vehicle speeds and accommodate bicycle speeds.

Howard Street sidewalks remain 12 feet wide, but will be treated with new streetscape amenities to increase pedestrian comfort - see Streetscape/ Landscape Concept.

The pavement in areas of potential conflict between cyclists and motorists is colored green.

One-way traffic eliminates the need for some turning move-ments, leaving more space for pedestrians.

Bulb-outs will be added to all intersections where a turn lane is not needed.



New signalized midblock crossings will allow easier crossing of the street between the widely spaced major cross streets.

A two-way cycletrack on Howard Street takes the place of bike lanes on Folsom and Howard. A Howard Street bikeway could be extended east to the Embarcadero, but parking removal would be required on South Van Ness for this facility to connect to the Mission District.

At intersections with alleys, the alley roadway ramps up to sidewalk grade, slowing cars as they enter and exit the alleys.

Parking lanes are maintained on both sides of the street, except where bulb-outs or turn lanes are required.

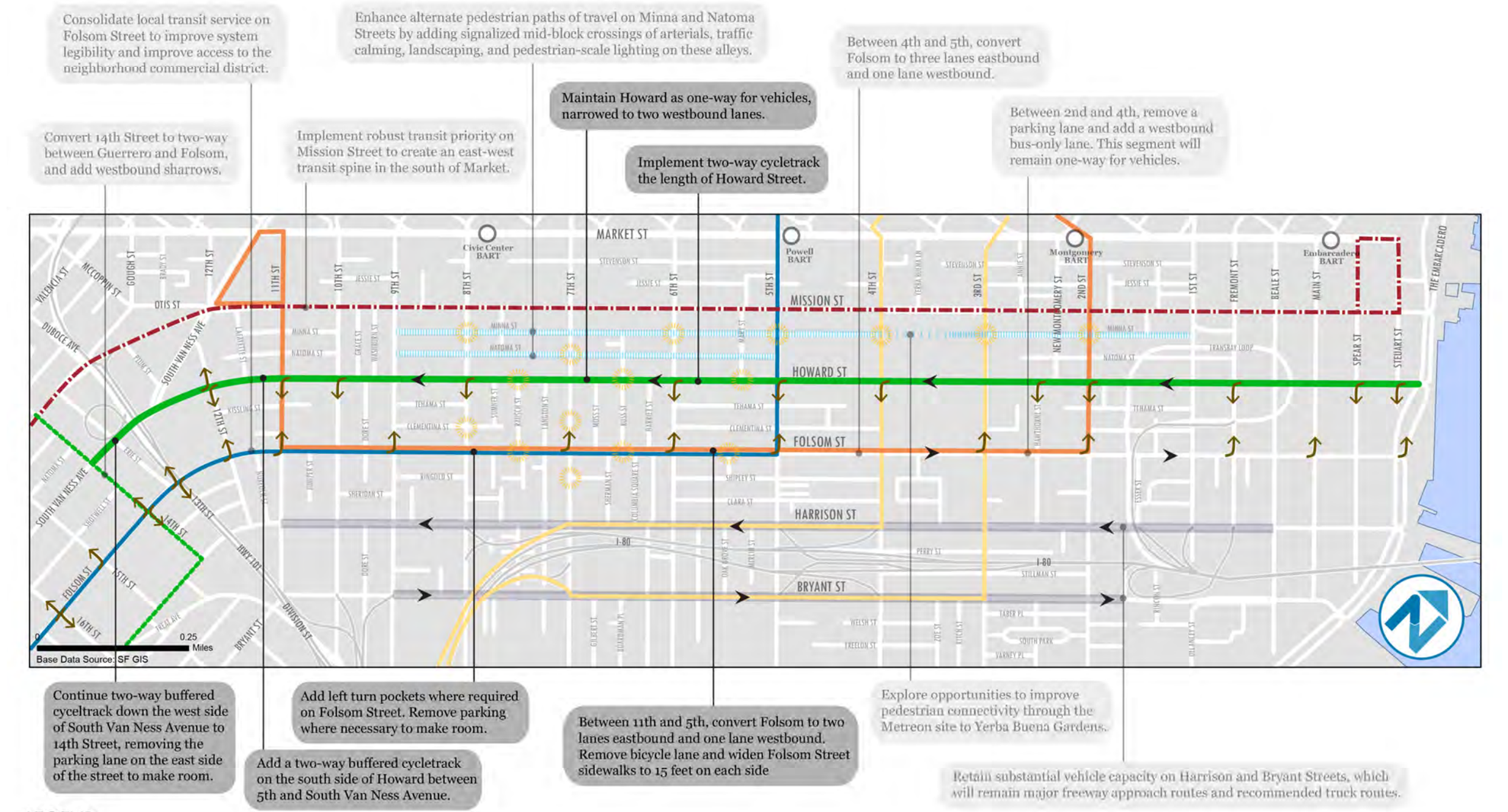
Potential for very short, two lane pedestrian crossings.

At major intersections, the cycletrack ramps down from sidewalk grade to street grade.

LEGEND

Existing tree | New tree | Public space opportunity | Planter strip | Permeable paving | Tree grate | Pedestrian Light

Folsom and Howard Street Corridor Circulation Concept (Alternative 4)



Folsom Street Streetscape and Landscape Concept (Alternative 4)

The Landscape/Streetscape Concept for Folsom Street is based on the much wider pedestrian realm. 16-foot sidewalks on both sides of the street can accommodate the range of activities occurring on a neighborhood "Main Street," including a wide through zone, a wide furnishings zone for trees and other plantings and street furniture, and a frontage zone along buildings for seating, planters, and display. The addition of bulb-outs creates the opportunity for quality public spaces along Folsom Street.

Existing trees can be kept in the new design. In this situation, the trees bisect the sidewalk and make for a wide furnishings zone, or else a secondary through zone. Existing trees should be placed in tree grates, which allow for enough soil volume without excessively pinching the through zone. An 8-foot through zone should be maintained where feasible.

Where a substantial line of new trees exists, new trees can "fill in" this pattern of existing trees.

New tree plantings occur in tree pits that can be 4 or 6 feet wide, and can be planted with other grasses and shrubs, while leaving enough room to exit parked cars.

A 16-foot pedestrian realm has ample space to accommodate the various uses of the sidewalk, including a through zone that allows a comfortable amount of clear space for walking as well as seating or display along buildings; and a furnishings zone with a more textured and/or permeable paving treatment that allows for furnishings, landscape, and room for exiting parked cars.

Bulb-outs at intersections with SoMa Alleys like Langton Street provide a variety of public open space opportunities that will depend on the adjacent use and community needs, such as seating areas, rainwater gardens, and small community gardens.

At intersections with SoMa Alleys, the alley roadway ramps up to sidewalk grade to create minimal interruption of Folsom Street's pedestrian realm.

LEGEND

Existing tree | New tree | Public space opportunity | Planter strip | Permeable paving | Tree grate | Pedestrian Light

Howard Street Streetscape and Landscape Concept (Alternative 4)

The Streetscape/Landscape Concept for Howard Street includes different but complementary approaches to the two sides of the street. On the side of the street with the cycletrack, the concept includes treatments that seek to visually and physically buffer the sidewalk-grade bicycle facility through paving patterns, landscaping, and placement of furnishings while also providing amenities and quality space for all users of the street. On the other side of the street, the design concept maintains the 12-foot wide sidewalks, but creates a uniformormity to the appearance of the streetscape by adding regularly spaced street trees, pedestrian-scale lighting, and other street furniture where appropriate. Where Folsom Street crosses alleys such as Rausch Street, bulb-outs provide opportunities for stormwater management, landscaping, and public space. This concept draws from design guidance provided by the City of San Francisco Better Streets Plan.

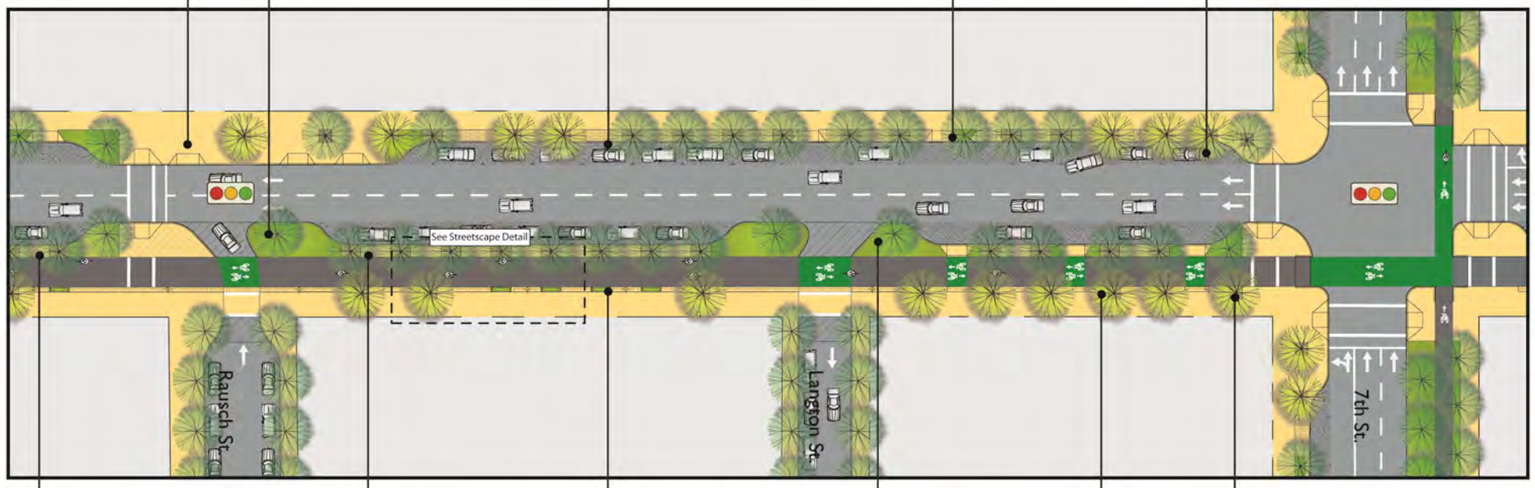
Extended bulb-outs are the main opportunities for additional pedestrian space.

Trees near potential conflict points between autos and cyclists on the cycletrack will be pruned to have a 14-foot minimum clearance to their lowest branches to ensure visibility, per Better Streets Plan, while creating an entry/exit "marker" at alleys.

Where existing trees remain and already occur with some regularity, new trees and tree grates "fill in" the pattern.

Where existing street trees are absent, new street trees in grates are added as a unifying design element. Trees are regularly spaced in coordination with adjacent parking spaces.

The parking lane can be treated with permeable paving for stormwater infiltration.



New trees are planted with grates, wood platforms, or another walkable surface in the 4-foot buffer area between the parking lane and the cycletrack. These trees create a unified look for the street.

A 4-foot area between parking spaces and the cycletrack provides room to exit parked cars and access the sidewalk safely. Treating this area with the same paving as the furnishings zone on the other side of the cycletrack creates the visual effect of a buffer bracketing the cycletrack.

A narrow strip of special paving, planter strips, occasional trees, and furnishings creates a buffer separating pedestrians from cyclists on the cycletrack.

Bulb-out areas separated from the sidewalk by the cycletrack can be used for greening and stormwater management.

New trees on the outside of the cycletrack and those already existing on the inside achieve an "allee effect".

Existing trees can be accommodated in the new streetscape in most cases. Larger tree grates improve tree health.

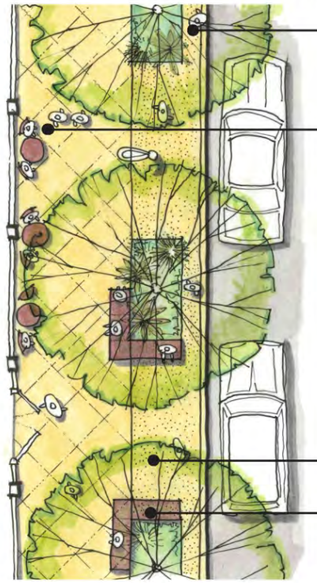
LEGEND

Existing tree | New tree | Public space opportunity | Planter strip | Permeable paving | Tree grate | Pedestrian Light

Folsom and Howard Street Streetscape and Landscape Concept Detail (Alternative 4)

Streetscape Treatment Type: 16-foot Sidewalk - Typical

This treatment is appropriate for most block faces of Folsom Street. The 16-foot pedestrian realm generously accommodates a balance of multiple needs in a strongly urban setting: it accommodates pedestrian through movement and movement in and out of parked cars, provides a significant amount of flexibility in how adjacent uses can utilize sidewalk space in the frontage and furnishing zones, provides opportunities for the integration of small-scale public spaces and street greening, and supports tree health.

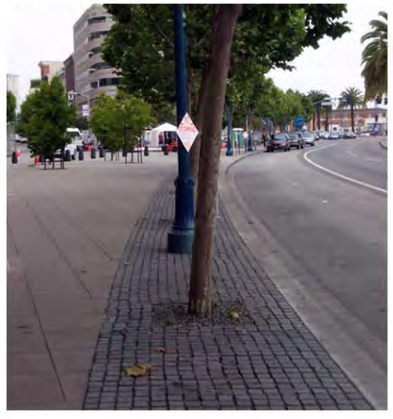


A 9-to-10-foot through zone allows generous space for walking as well as cafe seating, display, window shopping, or other uses along building frontages.

Informal seating walls wrap around tree pits that can be planted with shrubs and grasses.

An edge zone allows space for people to enter and exit parked cars.

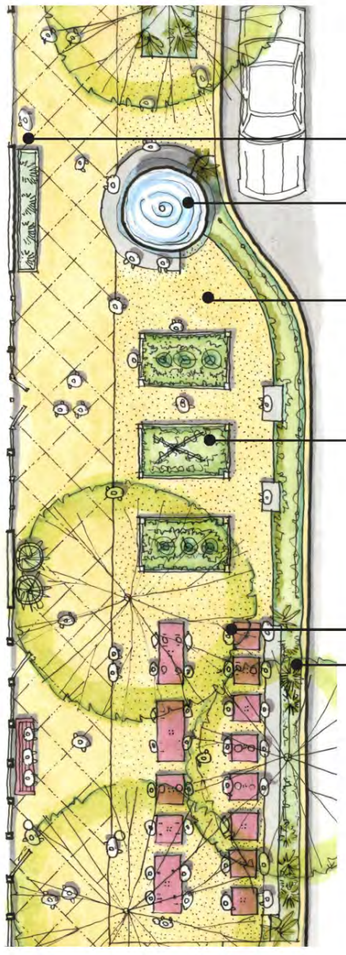
A 4-to-5-foot furnishings zone can accommodate trees, other landscape, pedestrian lights, and other street furniture. The furnishings zone's surface is a permeable material such as decomposed granite or cobblestones to reduce impermeable surfaces and to improve tree health.



Folsom and Howard Street Streetscape and Landscape Concept Detail (Alternative 4) (Continued)

Streetscape Treatment Type: 16-foot Sidewalk at Mid-Block Bulb-Out

This treatment is appropriate where an extended bulb-out occupies a street corner and especially in areas with potentially high-foot traffic. Where bulb-outs occur in this alternative for Folsom Street, there is approximately 24 feet of width to the pedestrian realm, enough space to accommodate a range of activities. This design demonstrates how businesses such as restaurants can use the space of the bulb-out in a way that it also functions as a small public space with seating and landscaping. Such small public spaces along Folsom Street, especially those in the street's neighborhood commercial core, should be carefully designed to support the desired "Civic Boulevard" character.



In addition to the usable space of the bulb-out, the 16-foot sidewalk is wide enough to allow for seating, planters, and display along the frontages of buildings.

Public spaces can be made more welcoming and distinguished from the through zone of the sidewalk by paving them in a permeable, ADA-compliant surface such as decomposed granite.

Where desired and properly cared for by a community, a rainwater harvesting tank can provide water for landscaping or gardens and can be designed as a public art piece that expresses neighborhood identity.

Where desired and properly cared for by a community group or an adjacent business such as a restaurant, the bulb-out can accommodate raised planter beds for herbs or vegetables.

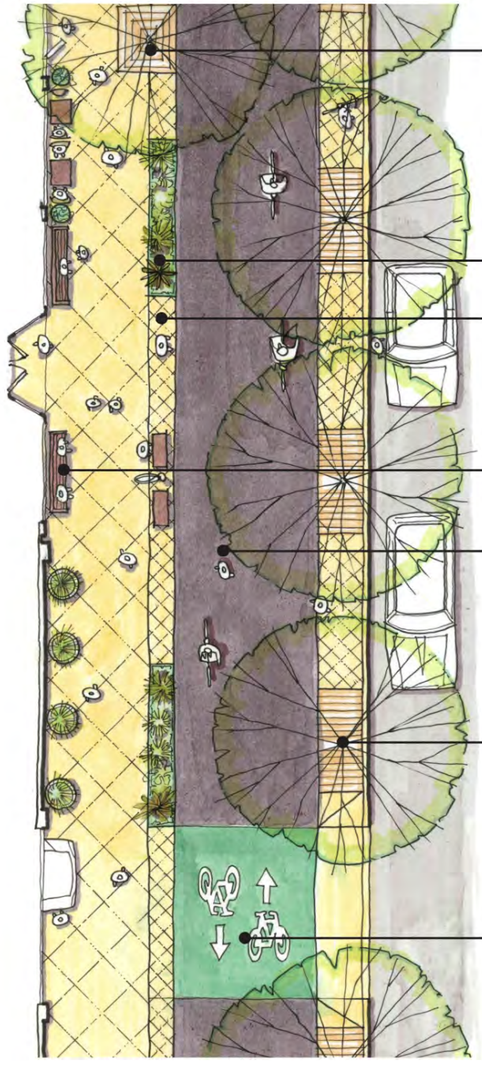
A 2-foot planter strip helps buffer small public spaces on bulb-outs from moving traffic.

The bulb-out provides generous space for outdoor restaurant seating.

Folsom and Howard Street Streetscape and Landscape Concept Detail (Alternative 4) (Continued)

Streetscape Treatment Type: 12-foot Sidewalk with Cycletrack - Typical

This treatment is appropriate for the block faces of Howard Street that include a cycletrack. This design is based on buffering the cycletrack - in part visually, in part physically - from pedestrians and parked vehicles; framing the cycletrack as a civic amenity by lining it on both sides with landscape and furnishings; and allowing enough of the sidewalk to be used for walking and activities along building frontages like dining and display.



Existing street trees can be accommodated into this streetscape. Their vitality can be increased by increasing the tree pit area and the addition of 5-foot-by-5-foot tree grates that will not diminishing the pedestrian through zone.

The pedestrian realm's furnishings zone and the edge zone both have a similar, more intricately scored paving pattern that is distinctive from the sidewalk. This creates a consistent visual buffer on both sides of the cycletrack, reducing the potential for cyclist-pedestrian collisions.

The cycletrack, at sidewalk grade, is paved with asphalt or other material that visually contrasts with the sidewalk paving.

Driveways, like other points where cyclist-motorist conflicts are possible, are treated with standard green coloring. The pedestrian realm runs through driveways, uninterrupted.

In the furnishings zone of the pedestrian realm, narrow (2-to-4-foot) planter strips alternate with areas for furnishings, such as pedestrian lighting and newspaper racks.

The concept allows room for a frontage zone where tables, seating, planters, and goods on display can be placed along the building frontages.

Evenly spaced street trees planted in the 4-foot buffer between the cycletrack and the parking lane are an important unifying feature of the street. Trees are accommodated in a 4-foot-by-8-foot tree grates or other treatment that allows walking across the tree pit area.