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Proposed Circulation Changes on Upper Market Street at 17th/Castro, 16th/Noe and 15th/Sanchez Streets

Executive Summary

Introduction

The SFMTA's Upper Market Street Safety Project includes the design and implementation of safety improvements for people walking, riding bikes, taking transit, and driving in the Upper Market Street corridor from Castro Street to Octavia Boulevard. The core of the project is a suite of engineering improvements including signal timing, striping and concrete work to improve the safety and comfort of pedestrian crossings, better separate bicycle and vehicle traffic, and improve the safety of intersections for vehicles and bicycles.

SFMTA has developed two additional components of the project, in response to community inputs. One is a comprehensive plan to better manage curb space for parking, loading and delivery. The other is this circulation study.

Circulation Study

At the request of the community, SFMTA undertook this circulation study to explore additional changes to signal timing, phasing, and vehicle movements at the intersections of 17th/Castro/Market, 16th/Noe/Market, and 15th/Sanchez/Market Streets. SFMTA based the design of potential circulation changes on community input, as well as staff observations and analysis, as described in this report. Shaped by this input, the primary goals of the study were to:

- Better protect people walking, bicycling, and driving
- Reduce complexity and the potential for conflicts between various modes of travel
- Reduce the prevalence of vehicles weaving between each other through intersections

Proposed Changes

Appendix I provides an illustrated map of the proposed changes and safety improvements along with a bulleted summary. Appendix II provides an illustrated map of anticipated diversion, or net changes in vehicle volumes as modeled by SFMTA staff. The proposed circulation changes are:

- 17th/Castro/Market
    - Add protected left turn phases for east- and westbound Market Street
- 16th/Noe/Market
    - Add protected left turn phase for westbound 16th Street
    - Prohibit left turns from Noe Street and eastbound 16th Street
- 15th/Sanchez/Market
    - Prohibit left turns from Sanchez Street

Background

Prior Planning
The improvements in this circulation study are strongly rooted in recommendations from years of prior planning as documented in the following reports: Castro & Upper Market Retail Strategy (2015), Duboce Triangle Neighborhood Association (DTNA) Online Upper Market Survey (2013), Market-Octavia Area Plan (2010), Upper Market Vision & Recommendations (2008), and Castro/Upper Market Community Benefits District (Castro CBD) Neighborhood Beautification and Safety Plan (2008). Appendix III includes excerpts from these reports that document some of the community's requests for transportation safety improvements along Upper Market Street, which influenced the recommendations of this study.

Public Outreach
As SFMTA has worked to translate the recommendations of the community's prior plans into physical designs, agency staff conducted numerous meetings with members of the public and Community Leaders (representing Duboce Triangle Neighborhood Association, Castro Merchants and Castro CBD) to solicit input, including but not limited to:

- Market Octavia Citizen Advisory Committee – October 20, 2014
- Community Leaders Meeting – October 27, 2014
- DTNA Monthly Meeting – December 8, 2014
- Community Leaders Meeting – March 13, 2015
- Community Open House – May 5, 2015
- Community Leaders Meeting – September 25, 2015
- Curb Management Workshop – November 18, 2015
- Community Leaders Meeting – April 1, 2016

In addition, SFMTA has briefed Walk San Francisco (WalkSF) and the SF Bicycle Coalition (SFBC) on the project several times at regularly scheduled SFMTA meetings. Throughout these meetings, and in the prior planning documents, Upper Market Street community leaders, members of the public, and pedestrian and bicycle advocates have repeatedly requested that SFMTA develop technical solutions to address the complexity of the 5- and 6-legged intersections along Market Street to reduce confusion and potential for conflict between modes of travel – especially between people walking and driving.

In May 2015, SFMTA proposed a circulation study as a "future possibility" that would follow the implementation of long-term improvements that are currently in design; however, in response to community requests, SFMTA has undertaken a *focused* circulation study to accelerate exploration of opportunities to reduce complexity at the following intersections:

- 17th/Castro/Market
- 16th/Noe/Market
- 15th/Sanchez/Market

SFMTA elected not to study additional changes at 14th/Church/Market because of recent signal improvements made at that intersection. This report summarizes the study and its findings, and also describes potential circulation changes that were not studied in detail, but which could be explored at a future date if additional improvements are desired by the community and/or the SFMTA.

Developing and Testing the Potential Changes

At the request of the community, the goal of this circulation study was to explore changes to signal timing, phasing, and vehicle movements to reduce complexity and the potential for conflicts between various modes of travel at the intersections of 17th/Castro/Market, 16th/Noe/Market, and 15th/Sanchez/Market Streets. SFMTA staff based the design of potential circulation changes on the observations, analysis and community input as described in the above existing conditions and background sections. The primary goal of the study was to better protect people walking, bicycling, and driving, and to reduce or better separate the weaving between vehicles that occurs when people driving are allowed to make permitted turn movements.

Data Driven Approaches to Safety

Upper Market Street is on the vehicle, bicycle and pedestrian high injury network. In support of Vision Zero, the City's goal of eliminating severe and fatal traffic injuries, the SFMTA seeks to employ data-driven strategies to improve intersection safety for all modes, with special emphasis on the most vulnerable road users: people walking.

As documented by the joint San Francisco Planning Department and SFMTA WalkFirst pedestrian safety program[1], left turn movements disproportionately contribute to traffic injuries, citywide. Vehicles making left turns are also cited by SFMTA staff and members of the public as less predictable for people walking. As such, this focused circulation study explored the potential of reducing and/or better controlling left turn movements at the large, multi-legged intersections on Market Street to improve safety for all road users.

In general, staff studied left turn prohibition on the streets with the lowest volume of left turns to minimize the volume of vehicles that would be diverted. Where higher volumes of left turns were present or expected, staff chose instead to study the potential of protecting the left turn movement.

Methodology

SFMTA performed intersection Level of Service (LOS) analysis using Synchro software to evaluate the performance of each of the three intersections along the corridor for both AM and PM peak hours. LOS provides a letter grade 'A' through 'F' corresponding to the level of delay, with 'A' meaning there is no delay and 'F' meaning there is a long delay before a vehicle can clear the intersection. This analysis provides a "worst case" scenario using the peak 15-minutes of the AM and PM peak hour volumes on the corridor and provides the existing and proposed vehicle delay for each movement, to allow side-by-side comparisons.

SFMTA staff modeled the performance of potential individual circulation changes at each intersection in isolation. Staff then combined the proposed changes that proved feasible into a larger scenario model to determine impacts across all four intersections, including 14th/Church/Market[2].

Appendix IV includes detailed tables showing traffic volumes and LOS for approach, approach average, and intersection average, for both existing and proposed scenarios.

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[1] http://walkfirst.sfplanning.org/

[2] While no circulation changes are proposed at 14th/Church/Market, some diversion of vehicles to this intersection is expected, as shown on the map in Appendix II in the tables within Appendix IV.

Making Trade-offs

Simplifying movements at these complex intersections necessarily requires making certain trade-offs. When one vehicle movement is prohibited to reduce potential conflicts with pedestrians, bicyclists or other drivers, that movement must go to another segment of the network. As such, SFMTA acknowledges that restrictions on vehicle movements at certain intersections will result in diversion of volumes and turn movements to adjacent streets and intersections.

SFMTA attempted to limit or mitigate increases in vehicle delay and diversion that would result from the proposed changes. However, in line with the study's goals of reducing complexity at the corridor's large and multi-legged intersections, some diversion of left turns to simpler 4-way intersections, and some diversion of left turns to a series of right turns or alternative routes was determined to be acceptable. Where possible, SFMTA staff has been able to improve the level of service for certain approaches by adjusting signal timing along with the proposed circulation changes.

Diversion

Appendix II includes a "context" map that shows traffic diversion anticipated by SFMTA staff. The figures on this map represent the net increase/decrease of traffic on each street that is expected to result from the proposed changes. While SFMTA cannot accurately predict all of the choices drivers will make, the agency is committed to studying the impacts of any implemented changes and responding to community feedback. Should the community and/or SFMTA determine that adverse impacts result from the implementation of proposed improvements, SFMTA will work with the community to reinstate the prior configurations and/or pursue modifications to the changes.

Existing Conditions

The SFMTA conducted AM and PM peak hour traffic counts at the study intersections in January 2016 to ensure the most recent data would be used in the circulation study. See Appendix IV for traffic volumes. The following section details SFMTA analysis and community input that framed the circulation study's approach to developing improvements at each intersection.

17th/Castro/Market – Existing Conditions
Vehicle through, left, and right turn volumes are highest along Market Street, and lower along Castro Street. The eastern leg of 17th Street is closed at Jane Warner Plaza except for Muni F-line movements, and the western leg of 17th Street is one way away from Market Street. Currently, left turns are prohibited from Castro Street onto Market Street in both directions and prohibited from eastbound Market Street to northbound Castro Street; left turns are permitted/protected from westbound Market Street to southbound Castro Street.

Because the left turn from westbound Market onto southbound Castro Street is permitted-protected, people crossing Castro on the south side of Market may be exposed to vehicles making left turns. Because left turns are prohibited on eastbound Market Street, some people choose to drive on eastbound 18th Street to reach northbound Castro Street. This results in increased through traffic on these streets, as well as increased left turns from eastbound 18th Street onto northbound Castro Street.

16th/Noe/Market – Existing Conditions
Vehicle through and right turn volumes are highest along Market Street, and lower and roughly equal along Noe and 16th Streets. The highest volume left turn at this intersection is from westbound 16th Street onto westbound Market Street, comprising nearly half of all left turns at this intersection. No turn movements are prohibited or protected.

Because all turn movements are currently allowed, a person entering this intersection – whether they are walking, riding a bike or driving – can expect a vehicle to potentially cross their path during all phases. The geometry of these three intersecting streets creates an especially large intersection and therefore long travel distances for vehicles making most turns. These factors contribute to confusion and an increased perception of risk for people walking, riding bikes and driving. It can be difficult for people to anticipate the movements for vehicles, bikes and pedestrians under these conditions.

In addition to these general conditions, the SFMTA and community members have observed the following specific challenges at this intersection:

> 16th Street traffic often experiences delay and confusion as opposing directions of traffic attempt to make through and left turn movements. For example, when one driver is waiting to make a left turn from westbound 16th Street onto Market Street, they may temporarily block the path of a vehicle coming toward them that is attempting to make a through or left turn movement along eastbound 16th Street. This condition sometimes results in westbound vehicles being unable to complete their turn movements within the allotted signal time, and they may end up blocking the intersection or crosswalk.
>
> Noe Street traffic experiences similar delay and confusion with opposing through and turning movements. Additionally, people driving northbound on Noe Street making right turns onto

Market Street are sometimes confused by the red traffic signal they observe on Market Street (which is holding Market Street traffic) and stop before completing their turn. When this happens, these vehicles may block traffic on 16th Street, which has the following phase.

Because left turns are currently prohibited from eastbound Market Street onto northbound Castro Street, people driving inbound the from the west who want to access northbound Castro or Divisadero Streets contribute to part of the volume of left turn movements from eastbound Market Street onto westbound 16th and northbound Noe Streets. These left turn movements create the potential for conflict between people driving and people walking across 16th and Noe Streets on the north side of Market Street.

<u>15th/Sanchez/Market – Existing Conditions</u>
Vehicle through volumes are highest along Market Street, and left turn volumes are roughly equal along Market and along 15th Streets. Sanchez has the lowest left turn volumes.

People driving and riding bikes are permitted to make left and right turns from all approaches to this intersection. As such, a vehicle may be expected in any crosswalk during every phase. The three intersecting streets also create an especially large intersection and therefore long travel distances for vehicles making most turns. These factors contribute to confusion and an increased perception of risk for people walking, riding bikes and driving. It can be difficult to anticipate the direction of movements for vehicles, bikes and pedestrians under these conditions.

In addition to these general conditions, the SFMTA and community members have observed the following specific challenges at this intersection:

Sanchez Street traffic often experiences delay and confusion as opposing directions of traffic attempt to make through and left turn movements. For example, when one driver is waiting to make a left turn from southbound Sanchez Street onto Market Street, they may temporarily block the path of a vehicle coming toward them that is attempting to make a through or left turn movement along northbound Sanchez Street.

Sanchez Street is a designated bicycle route in part because of the connection it provides to the Wiggle bike route. Left turn movements from Sanchez Street onto Market and 15th Streets can pose a particular hazard to people riding bikes on Sanchez, as they may be obscured behind vehicles waiting to make left turns.

Proposed Circulation Changes

The following section describes the proposed changes at each study intersection, including benefits and trade-offs. Readers may find it helpful to reference the maps in Appendix I and Appendix II in parallel with the following descriptions of proposed changes.

17th/Castro/Market – Proposed Changes

SFMTA proposes a new dual protected left turn phase for turns from east- and westbound Market onto Castro Street. Eastbound Market Street would be given a new 100-foot long left turn pocket, and westbound Market Street would use the existing left turn pocket. New signal hardware would be required at this intersection, and signal timing would be adjusted to create the new separated phase.

17th/Castro/Market – Benefits

A dual protected left turn phase would better serve the demand for vehicle travel from points west of Upper Market to northbound Castro and Divisadero Streets. Protecting the phases would eliminate the potential for left turn collisions between vehicles and pedestrians crossing both legs of Castro Street.

This change would reduce the volume of cut through traffic using 18th Street to access Castro Street, thereby improving traffic flow on both 18th and Castro Streets, and reducing the potential for left turn collisions between vehicles and pedestrians crossing Castro Street on the north side of 18th Street.

This change would also reduce the volume of left turns from eastbound Market Street to westbound 16th and northbound Noe Streets; some of these turns are now assumed to take place in the new protected left turn phase on northbound Castro Street. This would further reduce the potential for conflicts between vehicles and people crossing 16th and Noe Streets on the north side of Market Street.

In the AM peak hour, northbound Castro Street experiences a decrease in delay of one letter grade, from D to C, and there is a minor decrease in delay on northbound Castro Street in the PM peak hour.

17th/Castro/Market – Trade-offs

In the AM peak hour, the proposed improvements result in increased delay for westbound Market Street of three LOS letter grades, from A to D, staying within acceptable performance. There are minor increases in delay on eastbound Market Street and for the intersection overall, but the changes remain within existing letter grades.

In the PM peak hour, the proposed improvements result in increased delay for westbound Market Street of two LOS letter grades, from A to C, staying within acceptable performance. There are minor increases in delay for Market Street east- and westbound, and for the intersection overall, but the changes remain within existing letter grades.

Existing AM Peak	Castro NB	Market WB	Castro SB	Market EB
Approach LOS	D (36.2)	A (4.8)	D (45.8)	C (28.7)
Intersection LOS	C (27.3)			

Proposed AM Peak	Castro NB	Market WB	Castro SB	Market EB
Approach LOS	C (31.5)	D (35.8)	D (45.8)	C (30.5)
Intersection LOS	C (34.1)			

Existing PM Peak	Castro NB	Market WB	Castro SB	Market EB
Approach LOS	C (32.3)	A (2.6)	F (115.6)	C (22.7)
Intersection LOS	D (35.2)			

Proposed PM Peak	Castro NB	Market WB	Castro SB	Market EB
Approach LOS	C (29.8)	C (24.4)	F (115.6)	C (26.9)
Intersection LOS	D (44.1)			

Key:
blue text indicates negative change from existing scenario (higher volumes, more delay)
green text indicates positive change from existing scenario (lower volumes, less delay)

<u>16th/Noe/Market – Proposed Changes</u>
SFMTA proposes a new protected left turn phase for westbound 16th Street, and prohibiting left turns from eastbound 16th Street onto eastbound Market Street as well as southbound Noe Street, and north- and southbound Noe Street. Westbound 16th Street would use the existing left turn lane for the new protected turn phase. New signal hardware would be required at this intersection, and signal timing would be adjusted to create the new separated phase. Signal timing would also be adjusted to change the sequence of phases (the order in which streets get a green light) from the current *Market > F-line > Noe > 16th* to the proposed *Market > 16th > Noe > F-line*.

16th/Noe/Market – Benefits
A protected left turn phase for westbound 16th Street, combined with a left turn prohibition for eastbound 16th Street would greatly simplify movements during the 16th Street phase. Vehicles and bikes making left turns from westbound 16th onto westbound Market or southbound Noe Streets during the protected phase would not encounter any conflicts with on-coming vehicles. Vehicles and bikes making through movements along 16th Street would not encounter any on-coming left turns, or be blocked behind vehicles queued while waiting for a gap to make left turns. This would also eliminate conflicts between vehicles making left turns and pedestrians during the 16th Street phase.

SFMTA expects a small amount of vehicle diversion to westbound 16th Street, so that phase – which would now include the protected left turn – would be extended and would actually reduce delay over existing conditions despite the increase in volume, by a full letter grade from ‘E’ to ‘D’ (approach average LOS).

Prohibiting left turns from north- and southbound Noe Street would similarly simplify movements along Noe Street for people driving, riding bikes and walking. Vehicles and bikes making through movements along Noe Street would not encounter any on-coming left turns, or be blocked behind vehicles queued while waiting for a gap to make left turns. This would also eliminate conflicts between vehicles making left turns and pedestrians during the Noe Street phase.

Finally, changing the sequence of phases (the order in which streets get a green light) from Market > F-line > Noe > 16th to Market > 16th > Noe > F-line would allow any vehicles that stop in the intersection after making the right turn from northbound Noe onto Market Street to clear the intersection on the following phase, which would now be Market Street, rather than block traffic on 16th Street as would previously have been the case.

In the AM peak hour, westbound 16th Street experiences a decrease in delay of one LOS letter grade, from E to D. There is a minor decrease in delay for southbound Noe Street. In the PM peak hour, the proposed improvements result in a decrease in delay of one LOS letter grade for northbound Noe Street and westbound 16th Street, from E to D, and there are minor decreases in delay for southbound Noe Street and for the intersection overall.

16th/Noe/Market – Trade-offs

In the AM peak hour, the proposed improvements result in increased delay for eastbound Market Street of one LOS letter grade, from A to B, staying within acceptable performance. There are minor increases in delay on westbound Market Street and eastbound 16th Street and for the intersection overall, but the changes remain within existing letter grades.

In the PM peak hour, there and minor increases in delay on east- and westbound Market Street and eastbound 16th Street, but the changes remain within existing letter grades.

Existing AM	Noe NB	16th St WB	Market WB	Noe SB	16th St EB	Market EB
Approach LOS	D (50.7)	E (60.0)	C (34.5)	D (45.1)	E (57.1)	A (6.8)
Intersection LOS	C (28.6)					

Proposed AM	Noe NB	16th St WB	Market WB	Noe SB	16th St EB	Market EB
Approach LOS	D (48.3)	D (40.4)	D (49.7)	D (39.9)	E (69.7)	B (15.9)
Intersection LOS	C (33.4)					

Existing PM	Noe NB	16th St WB	Market WB	Noe SB	16th St EB	Market EB
Approach LOS	E (55.2)	E (58.6)	C (20.5)	D (44.5)	D (44.1)	B (15.0)
Intersection LOS	C (31.0)					

Proposed PM	Noe NB	16th St WB	Market WB	Noe SB	16th St EB	Market EB
Approach LOS	D (42.1)	D (41.8)	C (24.4)	D (44.3)	D (54.8)	B (19.0)
Intersection LOS	C (30.7)					

Key:
blue text indicates negative change from existing scenario (higher volumes, more delay)
green text indicates positive change from existing scenario (lower volumes, less delay)

<u>15th/Sanchez/Market – Proposed Changes</u>
SFMTA proposes prohibiting left turns from north- and southbound Sanchez Street.

15th/Sanchez/Market – Benefits
Prohibiting left turns from north- and southbound Sanchez Street would simplify movements along Sanchez Street for people driving, riding bikes and walking. Vehicles and bikes making through movements along Sanchez Street would not encounter any on-coming left turns, or be blocked behind vehicles queued while waiting for a gap to make left turns. This will especially improve safety for people riding bikes on Sanchez coming to and from the Wiggle as they would no long be obscured behind vehicles waiting in a queue to make left turns. This would also eliminate conflicts between vehicles making left turns and pedestrians during the Sanchez Street phase.

In the AM peak hour, the proposed improvements result in a decrease in delay for eastbound Market Street with a change in LOS grade of one letter, from B to A, a minor decrease in delay for north- and southbound Sanchez Street, and a slight decrease in delay for the intersection overall. In the PM peak hour, there is a minor decrease in delay for north- and southbound Sanchez Street.

15th/Sanchez/Market – Trade-offs
In the AM peak hour, the proposed improvements result in minor increases in delay for westbound Market Street and east- and westbound 15th Street, but the changes remain within existing letter grades.

In the PM peak hour, the proposed improvements result in minor or no changes in delay, with no change in LOS letter grades. There are increases in delay for east- and westbound 15th Street, eastbound Market Street, and for the intersection overall, but the changes remain within existing letter grades.

Existing AM	Sanchez NB	15th St WB	Market WB	Sanchez SB	15th St EB	Market EB
Approach LOS	D (46.6)	E (56.1)	C (21.6)	D (40.2)	F (99.8)	B (13.6)
Intersection LOS	C (33.7)					

Proposed AM	Sanchez NB	15th St WB	Market WB	Sanchez SB	15th St EB	Market EB
Approach LOS	D (45.2)	E (56.8)	C (21.7)	D (36.8)	F (106.3)	A (7.1)
Intersection LOS	C (31.1)					

Existing PM	Sanchez NB	15th St WB	Market WB	Sanchez SB	15th St EB	Market EB
Approach LOS	D (51.4)	E (71.4)	A (3.8)	D (44.4)	E (58.9)	C (26.4)
Intersection LOS	C (29.9)					

Proposed PM	Sanchez NB	15th St WB	Market WB	Sanchez SB	15th St EB	Market EB
Approach LOS	D (46.2)	E (78.3)	A (3.8)	D (40.0)	E (64.1)	C (30.1)
Intersection LOS	C (31.5)					

Key:
blue text indicates negative change from existing scenario (higher volumes, more delay)
green text indicates positive change from existing scenario (lower volumes, less delay)

<u>14th/Church/Market – Benefits and Trade-offs Only</u>
No circulation changes are proposed at this intersection. However, SFMTA assumes the proposed changes at 16th/Noe/Market and 15th/Sanchez/Market will result in some vehicle diversion onto eastbound 14th Street. Despite the additional volume, SFMTA's proposed adjustments to signal timing result in only minor changes in delay with no change in LOS letter grades, with the exception of a *reduction* in delay from B to A for eastbound Market Street in the AM peak hour. See Appendix IV for the detailed tables.

Options and Scenarios for Future Study
The following section describes potential circulation changes that SFMTA explored but did not ultimately include in scenario modeling. A future study could consider these changes, if the community and/or SFMTA determined there was demand and identified additional staff resources.

Protected left turns from Market Street onto 16th/Noe and 15th/Sanchez
The community has voiced support for protecting left turns, which this study has proposed at three locations. SFMTA staff decided not to study protected left turns from Market Street onto 16th/Noe or 15th/Sanchez Streets because the ratio of through movements to left turns is very low, and because of the anticipated additional signal time required to safely separate the through and left turn phases. Additionally, the highest existing volume of permitted (not protected) left turns from Market onto a side street are from eastbound Market Street onto westbound 16th and northbound Noe Street – a share of these left turns are expected to use the proposed protected left turn phase onto northbound Castro Street, reducing the volume of left turns at 16th/Noe Streets.

Additional Noe Street Changes
SFMTA considered additional changes to Noe Street, including converting the street to one-way only – away from Market Street – to remove some of the traffic volume moving through the intersection of 16th/Noe/Market. Staff considered this change individually on the north and south legs, as well as to both legs simultaneously. SFMTA also considered the potential to close the north leg of Noe Street to traffic, to similarly reduce traffic volume through the intersection. These changes were not included in the combined scenario modeling component of this study; they were anticipated to have more negative impacts than benefits when compared with the other potential changes being considered. However, the presence of the seasonal Wednesday farmer's market, which closes the north leg of Noe Street, indicates there may be potential for this or other changes as described above. A future study, perhaps in partnership with the SF Planning Department, could further explore such options.

SFMTA also considered the potential of a Noe Street right turn prohibition (on red and green) as a way to eliminate the risk of drivers stopping in the middle of the intersection after turning onto Market Street, which blocks 16th Street traffic. This right turn prohibition was excluded from the scenario modeling component of this study because the resequencing of phases at 16th/Noe/Market will accomplish the same goal.

Funding and Implementation
SFMTA accelerated this focused circulation study ahead of the originally anticipated schedule. As such, there is no dedicated implementation funding available at this time.

However, as some of the signal timing changes require adjustment to signal programming only, and the proposed left turn prohibitions require installation of signage only, it is potentially feasible to implement some of the recommendations in the near-term. If community support exists for a phased implementation, SFMTA will need to study the specific impacts of each phase to ensure there are no circulation issues with partial implementation.

Installation of new signal hardware is necessary to add protected left turn phases, as recommended by this study. Unlike turn prohibitions, these improvements require signal design and coordination, and may be complicated by the need to upgrade signal infrastructure. As such, the timeline for these improvements is long-term, and requires design and capital funding be identified.

The proposed improvements are all reversible. Should the community and/or SFMTA determine that adverse impacts result from the implementation of proposed improvements, it will be possible to reinstate the prior configurations and/or pursue modifications to the changes.

Next Steps
SFMTA will review the results of this circulation study with community leaders, advocacy groups, and members of the public to gauge support for the recommended changes and collect input on possible adjustments and/or phased implementation. Based on this feedback and in consultation with the City Traffic Engineer, SFMTA will determine if and how to move forward with a funding and implementation strategy.