LOMBARD STREET SAFETY PROJECT
FREQUENTLY ASKED QUESTIONS (FAQ)

1. How did you determine what treatments to include in the project proposals?

The SFMTA has developed a toolkit of safety treatments through its WalkFirst and Vision Zero programs. Based on the collision profile of Lombard Street, a high-injury corridor, six treatments were selected to improve safety for people walking, driving, or taking transit.

High-Visibility Crosswalk

Source: NACTO.org

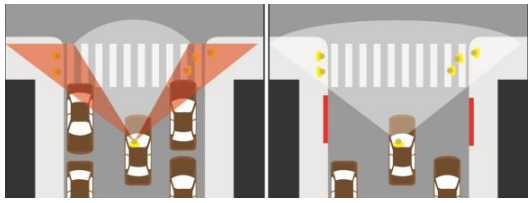
High-visibility crosswalks use longitudinal stripes in addition to, or in place of the standard transverse markings to significantly increase the visibility of a crosswalk to oncoming traffic. While research has not shown a direct link between increased crosswalk visibility and increased pedestrian safety, the Federal Highway Administration (FHWA) determined high-visibility crosswalks have a positive effect on both driver and pedestrian behavior. High-visibility crosswalks have shown to increase the number of drivers yielding to pedestrians, and encourage more pedestrians to cross in the crosswalk.

Advanced Limit Line

Source: seattlebikeblog.com

Limit lines (or stop lines) are solid white lines 12 to 24 inches wide, extending across all approach lanes to indicate where vehicles must stop in compliance with a stop sign or signal. Advanced stop lines reduce vehicle encroachment into the crosswalk and improve the driver's view of pedestrians. On multi-lane roads, advanced stop and yield lines can be an effective tool for preventing multiple threat vehicle and pedestrian collisions.

Daylighting



Source: sfmta.com

Daylighting is a simple pedestrian safety measure that removes parking spaces adjacent to curbs at an intersection, to increase visibility for pedestrians and drivers, and minimize conflicts. By converting a parking space at the crosswalk to a red painted curb, pedestrians can better see vehicles approaching the intersection, and drivers have a clear view of the intersection to see if someone is waiting to cross.

Leading Pedestrian Interval

Source: safety.fhwa.dot.gov

A leading pedestrian interval allows the 'walk' signal for pedestrians to appear three or more seconds before the green signal for drivers. This allows pedestrians to begin to cross the before the light becomes green in the opposing direction, by the time the light changes to green the pedestrian is already several feet away from the curb and therefore more visible to turning vehicles. This brief timing change significantly increases the visibility of pedestrians to drivers, especially drivers attempting to make a right turn.

Pedestrian Bulb

Source: sf.streetsblog.org

Pedestrian bulbs (also called curb extensions) extend the sidewalk into the parking lane to narrow the roadway and provide additional pedestrian space at key locations; they can be used at corners and at mid-block. Curb extensions enhance pedestrian safety by increasing pedestrian visibility, shortening crossing distances, slowing turning vehicles, and narrowing the roadway.

Transit Bulb


Source: sf.streetsblog.org

Transit bulbs are curb extensions that serve as a transit stop. Transit bulbs can improve transit performance and efficiency by eliminating the need for transit vehicles to exit and re-enter the flow of traffic at each stop. They also improve pedestrian flow and facilitate accessible boarding as the bus can align directly with the curb.

At signalized intersections, the recommended location of transit stops is on the farside of the intersection to optimize bus operations, transit signal priority, and traffic flow. This enables the crossing to be located behind the bus, which is preferable for pedestrian safety. Farside transit stops additionally improve safety conditions by eliminating right turning conflicts caused by drivers attempting to maneuver around a bus stopped nearside. The estimated travel-time savings associated with moving bus stops farside is approximately three minutes along the Lombard Street corridor.

Definitions

Inbound: *Buses traveling in the eastbound direction.*

Outbound: *Buses traveling in the westbound direction.*

Nearside: *Near side bus stops are located immediately before an intersection.*

Farside: *Farside bus stops are located immediately after an intersection.*

2. What is the quantified safety impact of the proposed treatments?

Proposed Treatment	Safety Impact
High-Visibility Crosswalk	The installation of a high-visibility crosswalk has been shown to decrease crashes by 37%.[i]
Advanced Limit Line	Several studies indicate that the installation of advance limit lines decrease pedestrian-vehicle conflicts and increase the distance between a yielding vehicle and the crosswalk.[ii,iii,iv,v] However, the Highway Safety Manual indicates the crash effects of advance limit lines are currently unknown.[vi]
Daylighting	The installation of daylighting at intersections has been shown to decrease crashes by 30%.[vii]
Leading Pedestrian Interval	The installation of a leading pedestrian interval at an intersection has been shown to decrease crashes by 33%.[viii,ix,x]
Pedestrian Bulb	Research suggests that pedestrian bulbs contribute to safety by reducing the average number of vehicles that pass a waiting pedestrian before yielding to the pedestrian. [xi] Overall, vehicle speeds were 14% lower at locations with pedestrian bulbs than at locations without.[xii] Research has shown that in the event of a collision, slower vehicle speeds dramatically increase a pedestrian's chance of survival.[xiii]
Transit Bulb	Research has found that replacing traditional transit stops with a transit bulb improves traffic congestion and transit efficiency. Blocks with farside stops saw a reduction in travel-times during both peak and non-peak hours.[xiv] Transit bulbs have a similar safety impact to pedestrian bulbs. Farside bulbs offer additional safety benefits compared to a nearside bulb because people walking can cross behind as opposed to in front of the bus, and the bus does not interfere with right turning vehicles.

Project plans indicating the proposed treatments along the corridor can be found in the document and reports section of the project page at: https://www.sfmta.com/projects-planning/projects/lombard-street-safety-project.
*The placement of transit shelters would be determined with fronting properties to ensure proper site lines.

3. *How do the proposed safety treatments impact parking?*

Figure 1. Parking Impact Associated with Proposed Treatment by Intersection

Intersection	Restored Parking	Parking Loss Associated with Treatments			Net Impact on Parking
		Daylighting	Pedestrian Bulb	Transit Bulb	
Richardson & Chestnut		-6	-1		**-7**
Richardson & Francisco		-1			**-1**
Richardson & Lombard		-1	-2		**-3**
Lombard & Broderick		-1			**-1**
Lombard & Divisadero	4		-2	-2	**0**
Lombard & Scott		-4			**-4**
Lombard & Pierce	8	-1	-1	-3	**3**
Lombard & Steiner			-5		**-5**
Lombard & Fillmore	5			-9	**-4**
Lombard & Webster		-2			**-2**
Lombard & Buchanan		-3			**-3**
Lombard & Laguna			-1	-6	**-7**
Lombard & Octavia		-2			**-2**
Lombard & Gough			-2	-5	**-7**
Lombard & Franklin		-3			**-3**
TOTAL	**17**	**-24**	**-14**	**-25**	**-46**

Note: the restored parking illustrates relocated bus stops that would become parking spaces

4. *What mitigation measures has the SFMTA taken to reduce the parking loss and accommodate loading needs?*

The total parking loss of the initial proposals was 54 spaces; the parking loss of the updated proposals is 46. The initial 54 spaces did not include three pedestrian bulbs on Richardson recently added based on feedback from the community. To reduce the parking loss the SFMTA shortened a number of transit bulbs to maintain more parking spaces. Additionally, the SFMTA worked with businesses along the corridor to relocate and add commercial and passenger loading zones. If business owners are interested in replacing permit parking spaces with metered spaces please contact Hank Wilson at Hank.Wilson@sfmta.com manager of SFPark.

5. *What are the travel patterns in the surrounding Lombard Street neighborhood?*

For the population residing within zip code 94123, which encompasses both Cow Hollow and the Marina, approximately 16% of the population does not own a vehicle. This has remained relatively consistent between 2011 and 2014. The percentage of the population age 16 and older commuting by vehicle decreased from 52% in 2011 to 45% in 2014, while public transit ridership increased from 30% to 34% during the same time period.

Figure 2. Mode of Transportation for Commuters Age 16+ for Zip Code 94123

Mode Choice	2011	2012	2013	2014
Commute by Vehicle	52%	49%	47%	45%
Commute by Public Transit	30%	30%	31%	34%
Commute by Walking	4%	4%	4%	5%
Commute by Taxi, Motorcycle, Bicycle, or Other Means	4%	5%	5%	6%
Worked at Home	10%	11%	12%	11%

Source: American Community Survey 5-Year Estimates

Commuter Shuttles

The SFMTA's Commuter Shuttles program provides permits for access to a network of designated loading locations for commuter shuttles. The program's pilot period ends January 31, 2016 and the on-going program commences February 1, 2016. Currently, commuter shuttles stop at the southeast, southwest and northeast corners of Lombard and Pierce as well as the northwest corner of Divisadero; however, the project team has recommended to the Commuter Shuttle Program to consolidate and relocate shuttle stops to Lombard and Scott Streets in an effort to reduce interference with bus service.

For additional information regarding the commuter shuttle program please visit: https://www.sfmta.com/projects-planning/projects/commuter-shuttles-policy-and-pilot-program.

6. Where would the new transit stops and bulbs be located along the Lombard Street corridor?

Lombard and Divisadero (existing transit stop)

New transit bulbs will be located on the NW and SE corners of Lombard and Divisadero. Buses traveling in the inbound direction will now stop on the farside of the intersection.

Lombard and Pierce (existing transit stop)

New transit bulbs will be located on the NW and SE corners of Lombard and Pierce. Buses traveling in both the inbound and outbound directions will now stop on the farside of the intersection.

Lombard and Fillmore (existing transit stop)

New transit bulbs will be located on the NW and SE corners of Lombard and Fillmore. Buses traveling in both the inbound and outbound directions will now stop on the farside of the intersection.

Lombard and Laguna (existing flag stop)

New transit bulbs will be located on the NW and SE corners of Lombard and Laguna. This is an existing flag stop servicing the 91 – Owl. Buses traveling in both the inbound and outbound directions will now stop on the farside of the intersection.

Lombard and Gough (new transit stop)

New transit stops and bulbs will be located on the NW and SE corners of Lombard and Gough. Buses traveling in both the inbound and outbound directions will now stop on the farside of the intersection.

7. Which bus routes would stop at the proposed farside bulbs?

Four MUNI bus lines operate along the Lombard Street corridor, including:

- 28 – 19th Avenue
- 28R – 19th Avenue
- 43 – Masonic
- 91 – Owl

Note: Golden Gate Transit operates three daily bus routes and 17 commuter bus routes (Monday-Friday service only) that use the Fillmore stop. In the inbound direction, buses stop at the Fillmore location when requested by onboard passengers; conversely, in the afternoon, outbound buses may be flagged by Golden Gate passengers waiting at the Fillmore bus stop. Morning survey results found that approximately 6 buses per hour were requested to stop at Fillmore, or one bus every 10 minutes and the average bus dwell time is 11 seconds.

8. How many people would be waiting for the bus at each stop? What is the frequency of bus

service?

Figure 3. Daily Boardings Inbound (Eastbound) at Transit Stops along Lombard Street *

Route	Divisadero			Pierce			Fillmore			Laguna			Gough		
	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)
28 - 19th Avenue	8	0	1	5	0	0	11	2	2	1	0	0	0	0	0
28R - 19th Avenue	--	--	--	--	--	--	4	2	0	--	--	--	--	--	--
43 - Masonic	8	0	1	3	0	1	3	0	1	--	--	--	--	--	--
91 - Owl	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Total	**16**	**0**	**2**	**8**	**0**	**1**	**20**	**4**	**3**	**1**	**0**	**0**	**0**	**0**	**0** *

Figure 4. Daily Boardings Outbound (Westbound) at Transit Stops along Lombard Street

Route	Divisadero			Pierce			Fillmore			Laguna			Gough		
	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)	Total Daily Boardings	AM Peak (6-9AM)	PM Peak (4-7PM)
28 - 19th Avenue	115	10	33	142	9	38	177	11	48	144	15	40	8	2	3
28R - 19th Avenue	--	--	--	--	--	--	42	7	9	--	--	--	--	--	--
43 - Masonic	188	34	48	160	21	40	--	--	--	--	--	--	--	--	--
91 - Owl	4	0	0	1	0	0	7	0	0	1	0	0	0	0	0
Total	**307**	**44**	**81**	**303**	**30**	**78**	**226**	**18**	**57**	**145**	**15**	**40**	**8**	**2**	**3**

*Ridership data for the Gough location is preliminary because of the recent service change; information will be updated when the data becomes available.

The 28R route, which is part of MUNI's rapid network, has a frequency of 7 minutes during the AM peak, and 10 minutes during the PM peak. The 28, which is the local bus service, makes all stops along the 28 Daly City route and has a frequency of 10 minutes during the AM and PM peak. The 43 Masonic has a frequency of 9 minutes during the AM peak, and 10 minutes during the PM peak. The 91 OWL has a frequency of 30 minutes and only operates between approximately 1:00 – 6:00 AM. Based on these frequencies, using the Divisadero outbound stop as an example, there are 81 patrons boarding between 4:00 – 7:00 PM or 27 patrons an hour, and twelve buses an hour, six servicing the 28 route and six servicing the 43 route. If both buses arrive at the same time, on average, less than three people are waiting at a given time.

9. How would the relocation of bus stops impact crime on my block?

Existing research shows that denser areas generate more criminal incidents in comparison to lower-density more suburban neighborhoods. These areas are often well-served by mass transit.[xv] Studies show, however, that mass transit does not cause crime, and that land use and density are better indicators for elevated crime rates. For example, crime rates were higher at transit stops located near alleys, liquor stores, check cashing establishments, and vacant buildings. Transit stops located away from desolate spaces, empty lots, vacant buildings, and in front of establishments that offer opportunities for natural surveillance, reported lower crime rates.[xvi]

For transit stops located in areas with higher crime rates, there are multiple strategies to reduce the prevalence of crime at and around transit stops. None of the proposed bus stop locations are in front of establishments that based off previous studies would lead to an increase in crime rates.[xvii] If the project is approved the SFMTA will include an analysis on crime in its evaluation efforts.

10. Who is responsible for the maintenance and liability of the proposed treatments?

Clarification regarding responsibility for liability, maintenance, and cleaning is being developed. The project team will update the community when a determination is confirmed.

Bulb and Transit Shelter Cleaning

Clear Channel is responsible for ensuring that transit shelters are clean, and free of graffiti and garbage. They are responsible for both the area within the transit shelter itself and within five feet surrounding the shelter. Currently, Clear Channel is cleaning twice per week. For additional cleaning requests, please contact 311 or visit: http://www.sf311.org/.

11. What is the environmental review process for the Lombard Street Safety Project?

The Lombard Street Safety Project is undergoing environmental review, which considers factors such as air quality, noise, and transportation impacts. The Project requires review for both the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). For CEQA, the San Francisco Planning Department (SF Planning) is the lead agency; as such, staff from the Planning Department are reviewing the project details to determine if the project, as proposed, is within the scope of the analysis completed for the Transportation Effectiveness Project Environmental Impact Report. Links to access the Final EIR can be found in the details section of the project page (link is provided in question two). Documentation for this review is submitted to SF Planning which will make the CEQA determination; documentation will also be submitted to Caltrans. With respect to NEPA, Caltrans is the delegated authority. City staff will develop all necessary documentation to comply with NEPA requirements and submit to Caltrans.

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