Implementation Program Features

Feature Summary

Improvements to Muni Routes described in this Implementation Workbook consists of various features designed to improve Muni Reliability and Create a Rapid network. The following typology lists the various implementation features included for each Muni Route:

1 - Muni Service Changes

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

2 - Transit Priority Features

MUNI STOP LOCATIONS

BUS STOPS

- Relocate Stops
- Adjust Stop Spacing

PEDESTRIAN ENVIRONMENT

PEDES-TRIAN

- New Transit Bulb
- New Ped Bulb/Island
- Boarding Island
- Widen Sidewalk
- Extend Bulb
- New Crosswalk
- Extend Boarding Island

CURB SPACE

CURB SPACE

- New Loading Zone
- New Tow-Away Zone
- New Bus Zone
- Remove Loading Zone
- Extend Loading Hours
- Extend Tow-Away Hours
- Extend Bus Zone
- New No Parking Anytime

SIGNALS AND RULES OF THE ROAD

SIG-NALS

- New Traffic Signal
- Bus Only Signal
- Turn Restrictions
- Extend Transit Hour Lanes
- Remove Stop Sign

ROADWAYS

ROAD-WAYS

- New Transit Lane
- Traffic Calming
- Reconfigure Lanes
- New Bike Lanes
- New Turn Pocket

Muni Service Changes

The service changes for route restructuring, frequency improvements, and vehicle type changes, which will direct resources where they are needed most, reduce crowding, and improve connections to regional transit. As part of Muni Forward implementation, service changes include:

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

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

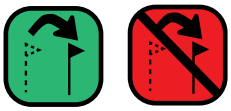
Transit Priority Features

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

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

Muni Stop Locations

- **Relocate Stops**
- **Adjust Stop Spacing**



Signals and Rules of the Road

- **New Traffic Signal**
- **Bus Only Signal**

- **Turn Restrictions**

- **Extend Transit Hour Lanes**

- **Remove Stop Sign**

Roadways

Transit Priority Features

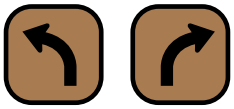
- New Transit Lane

- Traffic Calming

- Reconfigure Lanes

- New Bike Lanes

- New Turn Pocket



Curb Space

- New Loading Zone

- New Tow-Away Zone

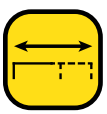
- New Bus Zone

- Remove Loading Zone

- Extend Loading Hours

- Extend Tow-Away Hours

- Extend Bus Zone



- New No Parking Anytime

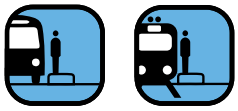
Transit Priority Features

Pedestrian

- **New Transit Bulb**

- **New Ped Bulb/Island**

- **Boarding Island**

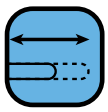


- **Widen Sidewalk**

- **Extend Bulb**

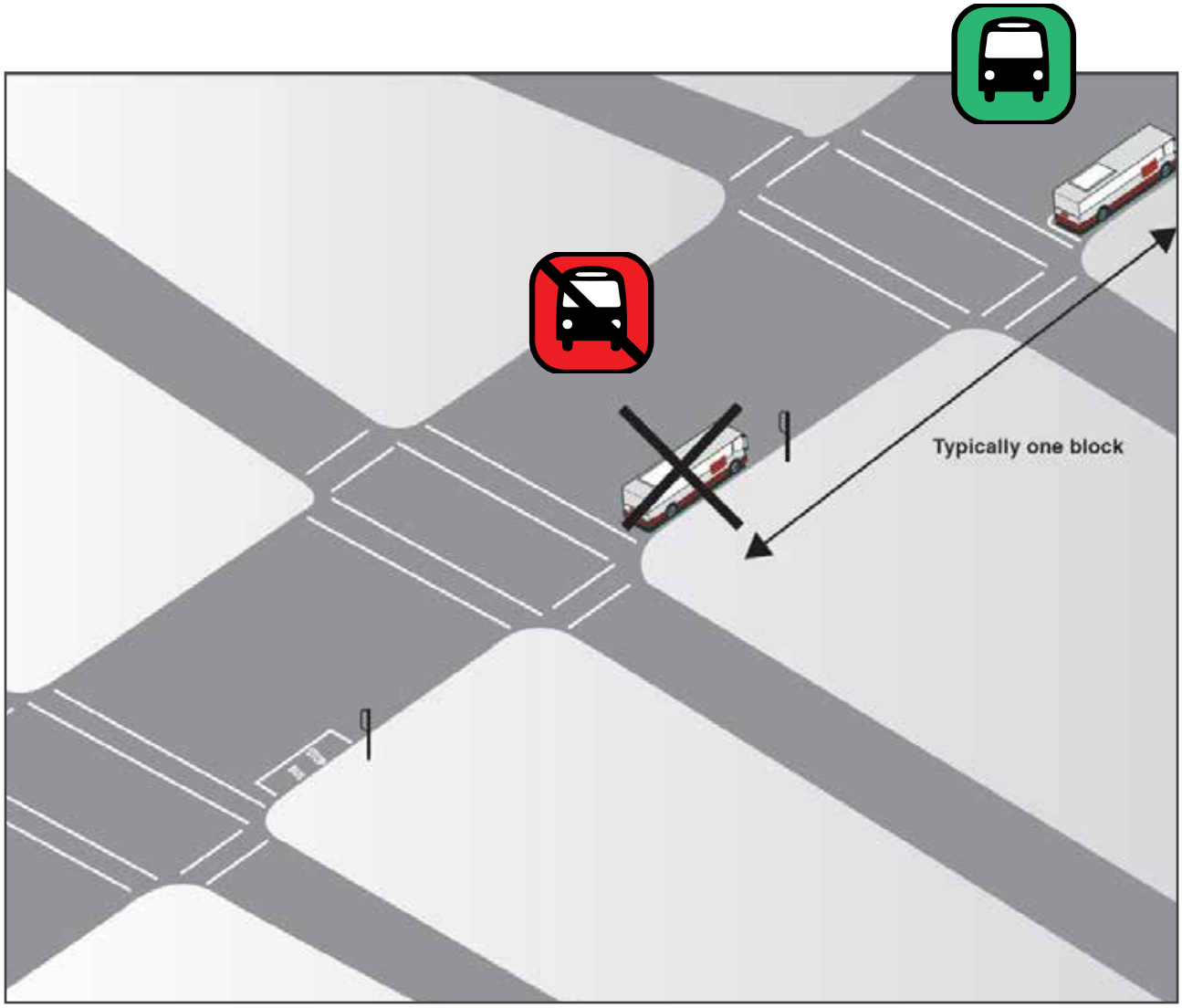
- **New Crosswalk**

- **Extend Boarding Island**



The Pedestrian improvements listed above are changes to the street included in Muni Forward projects that support SFMTA's goal of achieving Vision Zero. Vision Zero is San Francisco's policy commitment to eliminate all traffic-related fatalities by 2024. The frequency of traffic fatalities in the City of San Francisco constitutes a public health crisis. More information and additional projects is available at: http://www.sfmta.com/projects-planning/projects/vision-zero/

Features: Muni Stop Locations

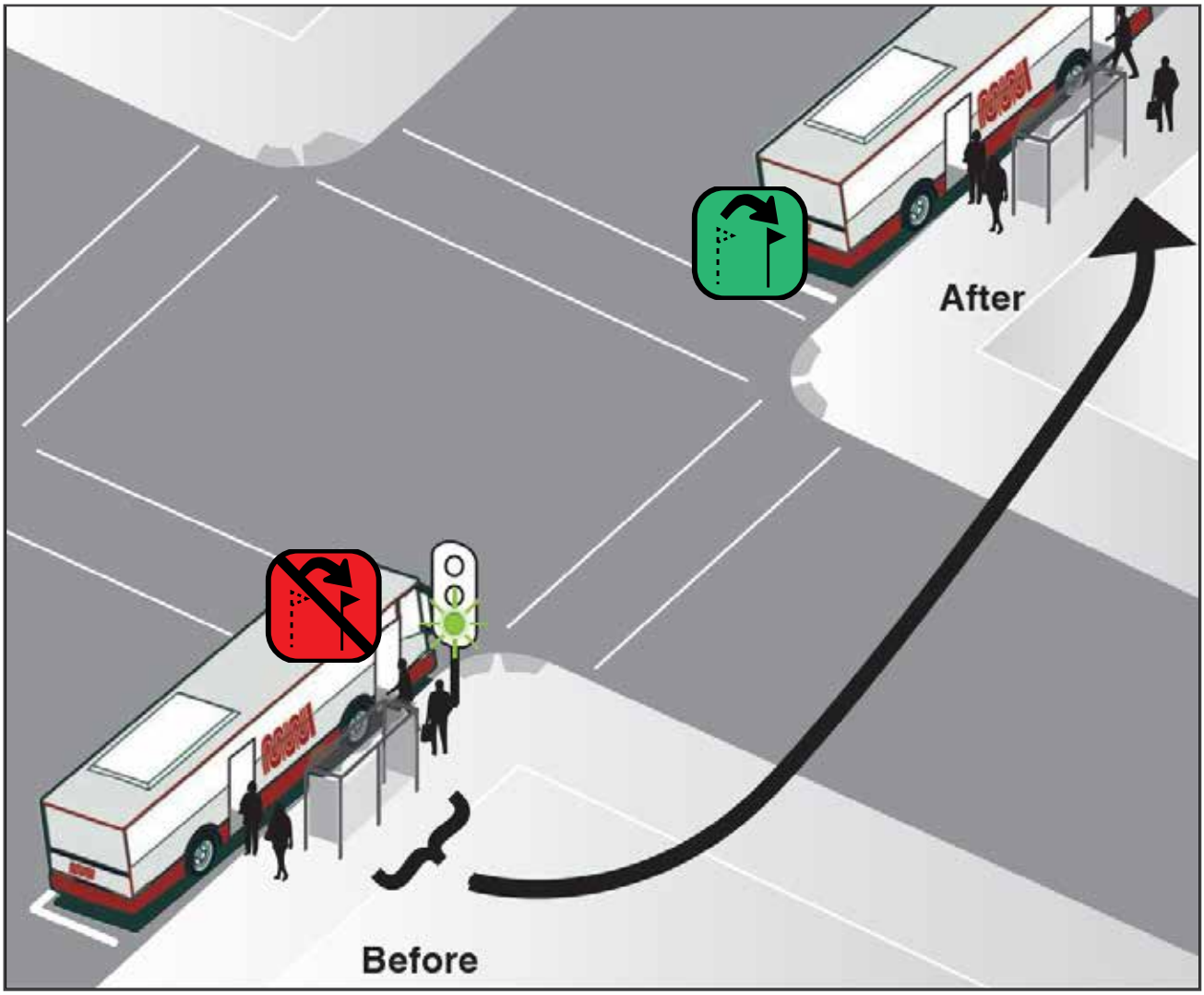


Adjust Stop Spacing

New Stop
Adding a stop in this location would space stops more evenly along the route. Even spacing provides a balance between time spent walking to or from a stop and time spent riding the bus for the average person.

Remove Stop

Fewer stops along the route means Muni can travel the same distance in less time. Stops are removed in places where another stop is nearby.



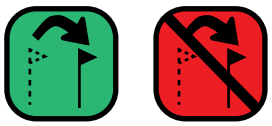
Relocate Stops

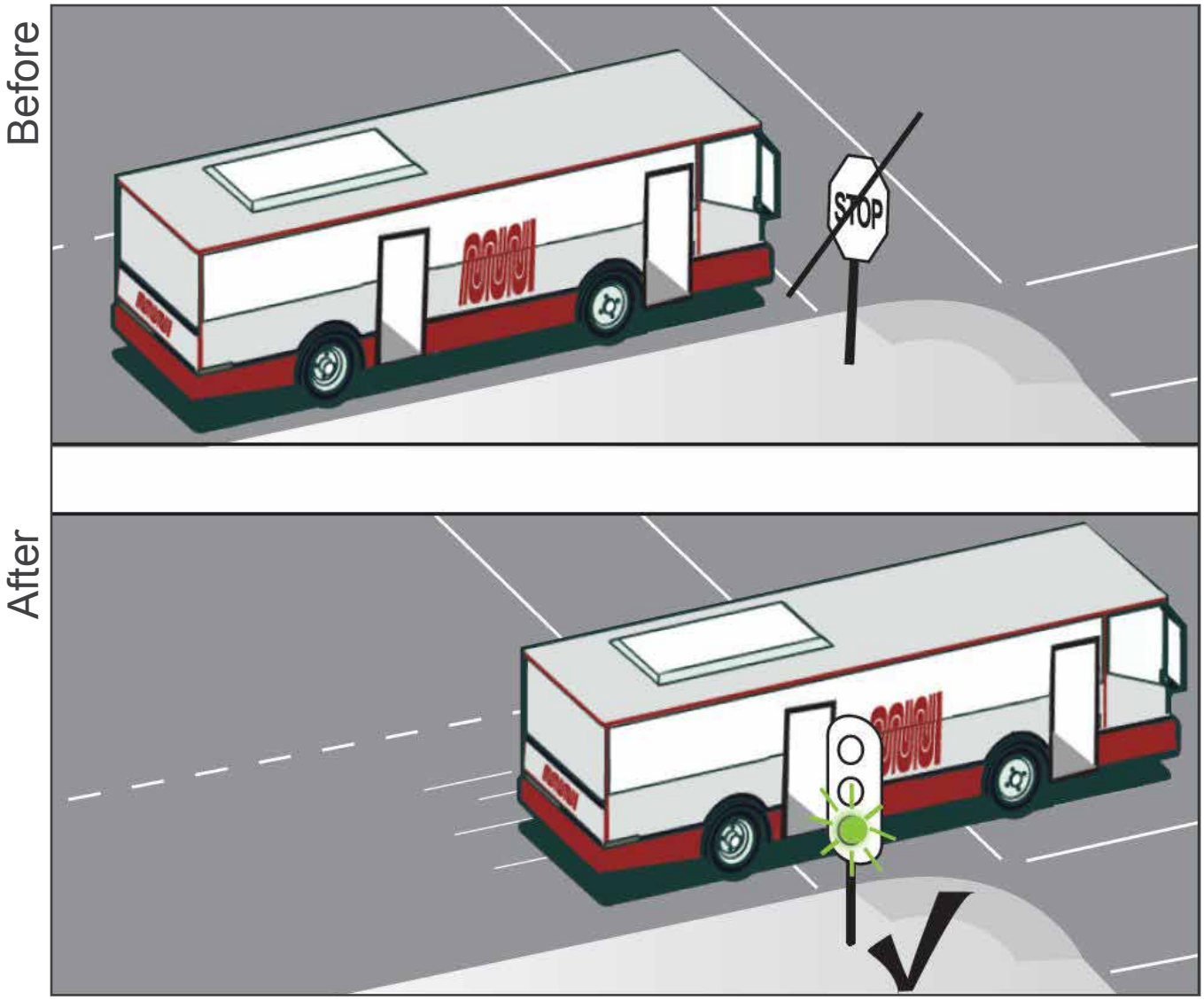
At intersections with stop signs:

Places the stop next to the stop sign at this intersection. Stopping at the stop sign while picking up passengers saves time.

At intersections with traffic lights:

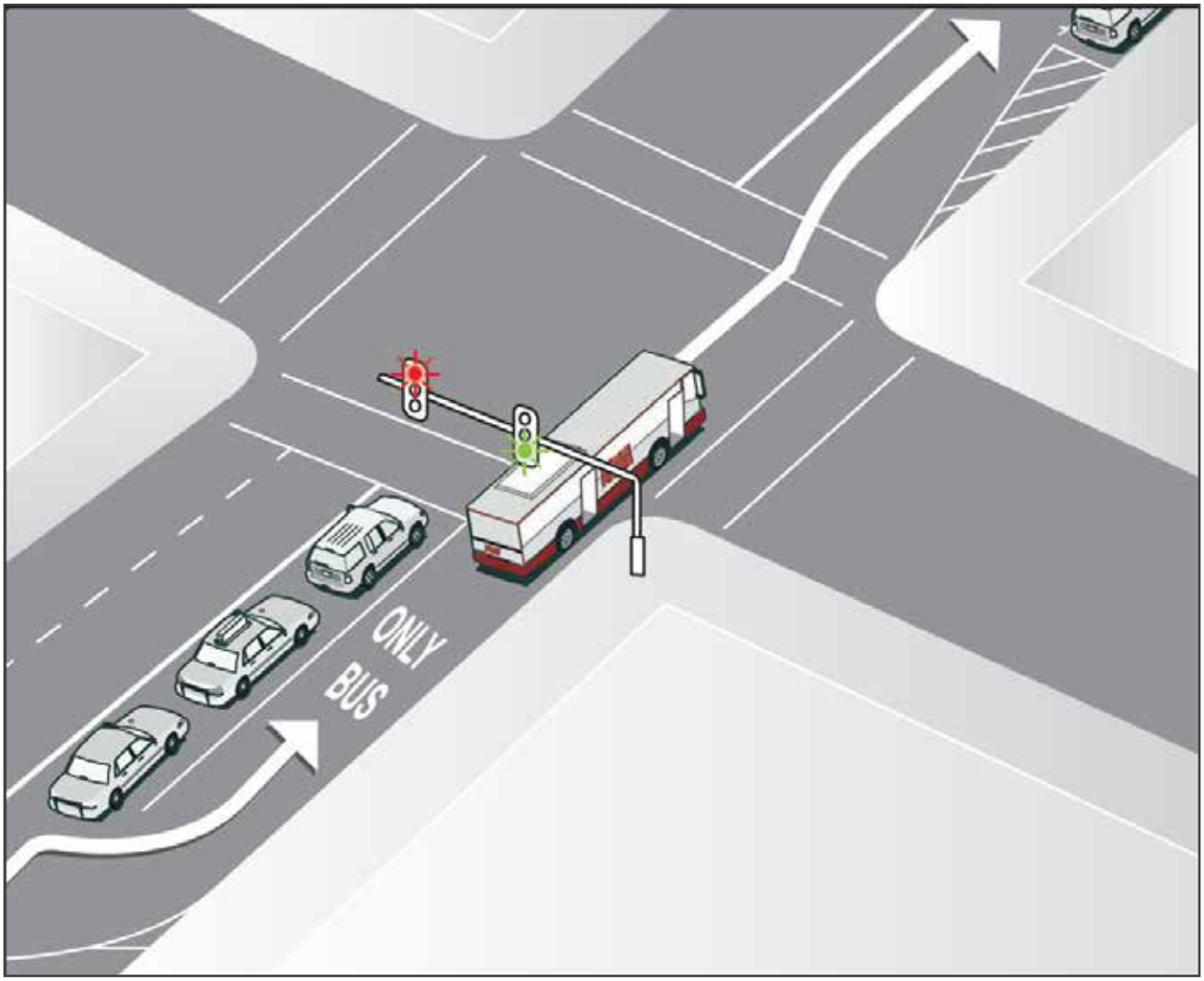
Places the stop on the other side of the traffic light, so that Muni can get through the intersection prior to loading and unloading passengers. This saves time and makes Muni more reliable.





New Traffic Signal

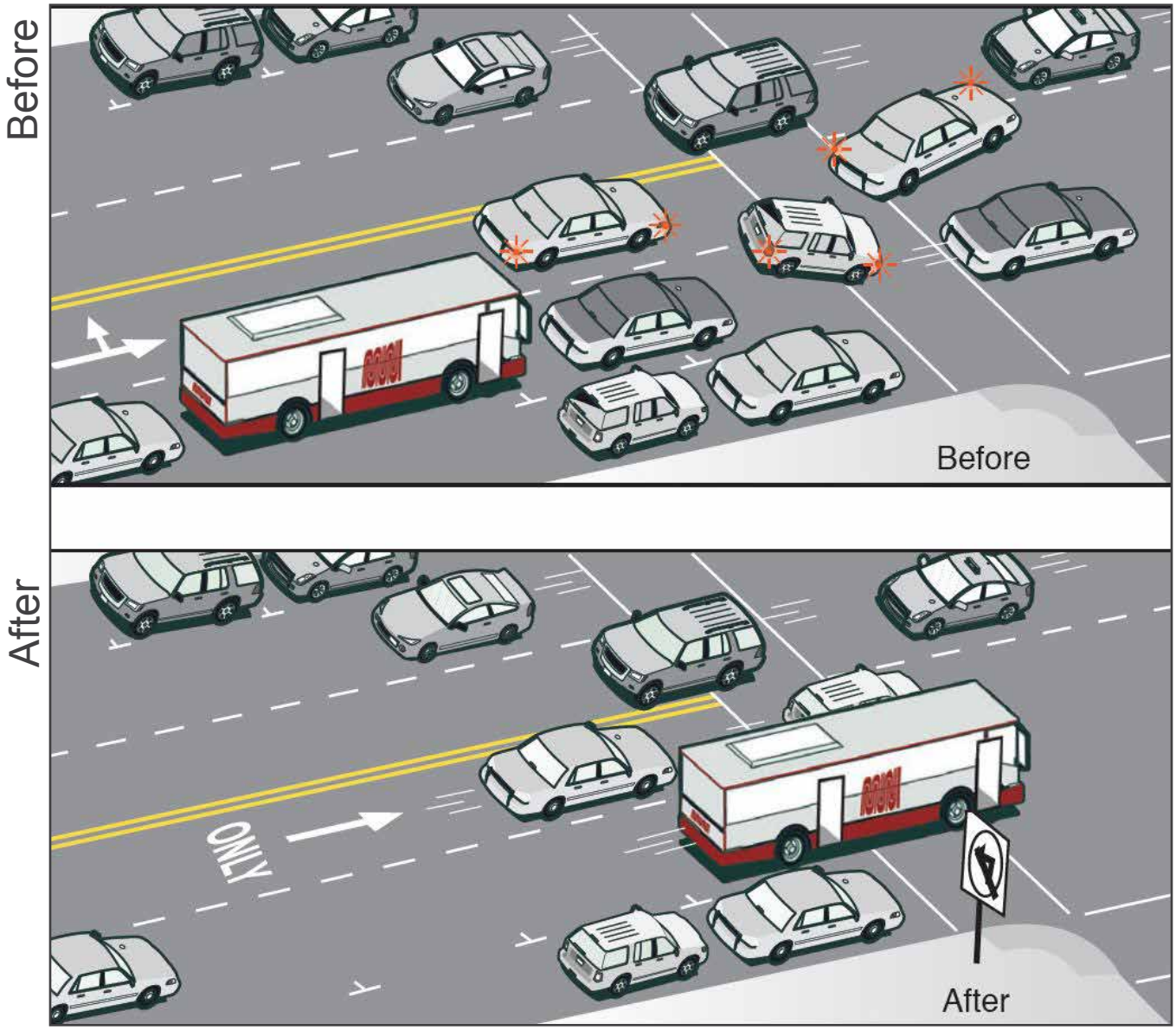
Reduces the amount of stops the bus makes along its route and makes it possible to introduce transit signal priority (TSP) at intersections.



Bus Only Signal

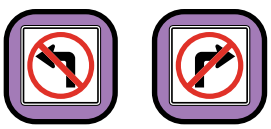
A bus-only signal gives Muni a green light before the rest of traffic, allowing Muni to bypass a long line of cars waiting at the light instead of waiting for room to merge into traffic. This would save time and improve reliability.

Features: Signals and Rules of the Road



Turn Restrictions

Cars waiting to turn block the intersection for through traffic, including Muni. Prohibiting turns at the intersection would reduce delays to Muni.



Extend Transit Lane Hours

Congestion extends beyond the peak period, requiring extended hours to maintain reliable buses throughout the day. Also, a 24-hour lane is less confusing to drivers than a lane which is restricted only at certain times.

Remove Stop Sign

Removing a stop sign at intersections saves time by eliminating an extra stop from the route. Other traffic calming and safety measures would be added to slow down speeding cars without affecting Muni.

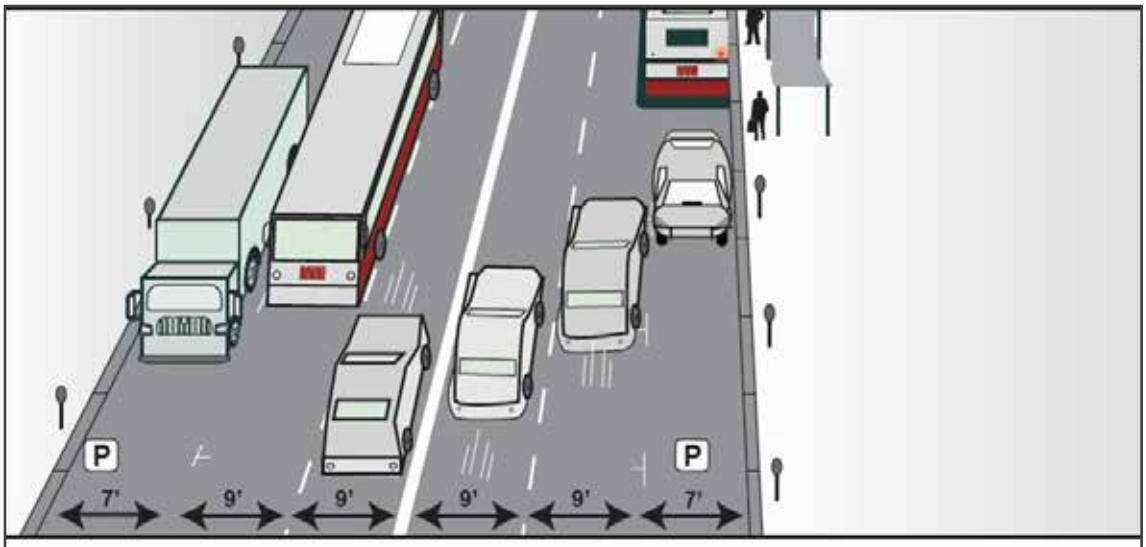
New Transit Lane

A transit only lane gives Muni vehicles their own lane separate from regular traffic. This helps Muni bypass traffic jams, which saves time and improves reliability.

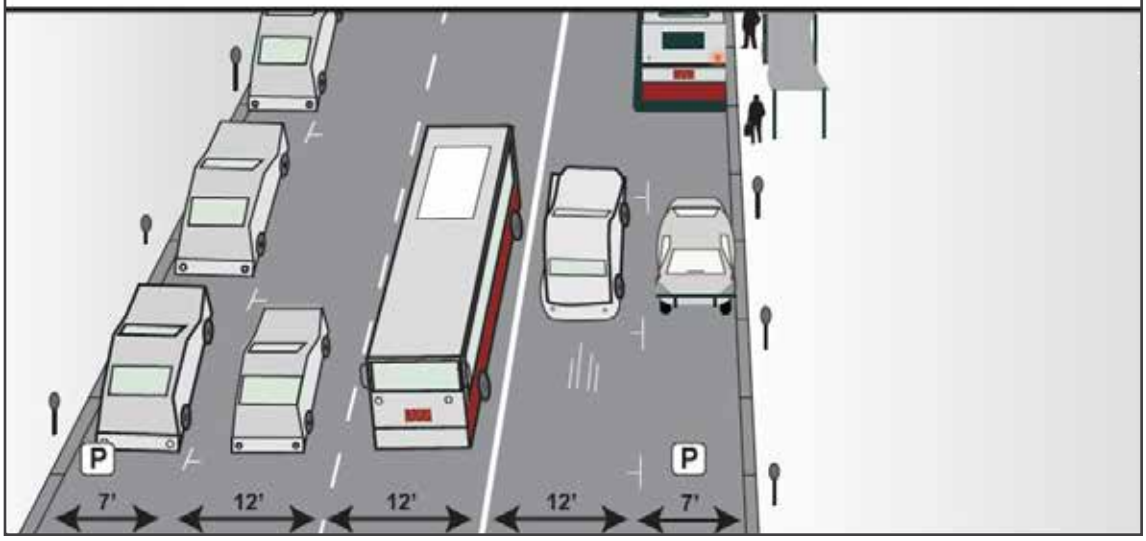
Traffic Calming

Traffic calming improves pedestrian and traffic safety, promotes non-motorized activity along the street, which can encourage transit use. Traffic calming measures used instead of stop signs reduce Muni travel times while slowing down the speed of vehicle traffic.

Before



After



Reconfigure Lanes

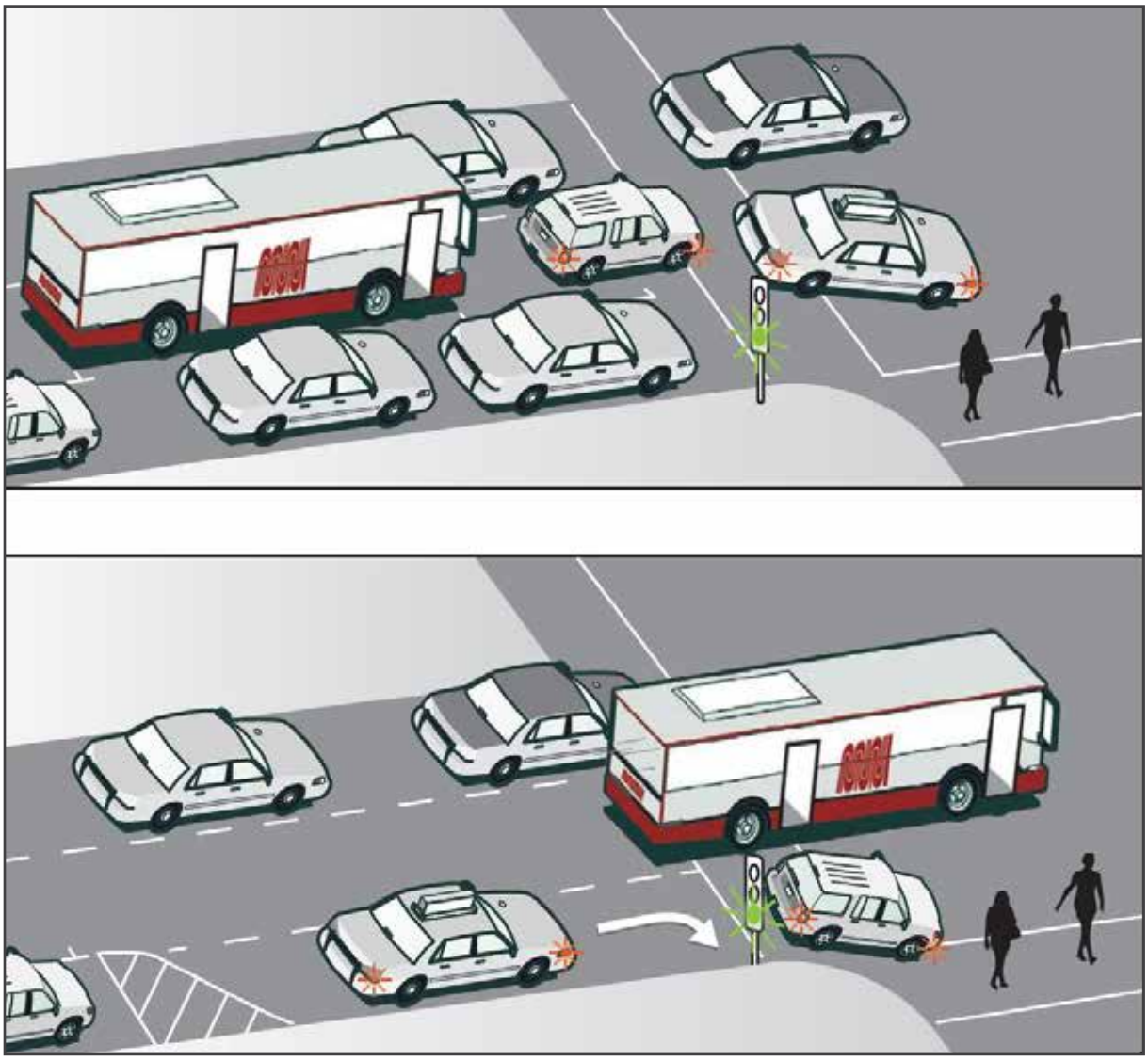
Widens the travel lanes, reducing the number of times Muni is blocked by a vehicle in an adjacent travel or parking lane. This would reduce delays and make Muni more reliable.

New Bike Lanes

Adding a bike lane makes a street safer for cyclists, and can also reduce delay for Muni. A separate bike lane provides space for these vehicles to pass each other safely and with less friction.

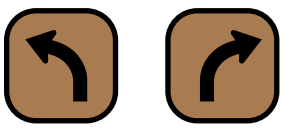
Before

After



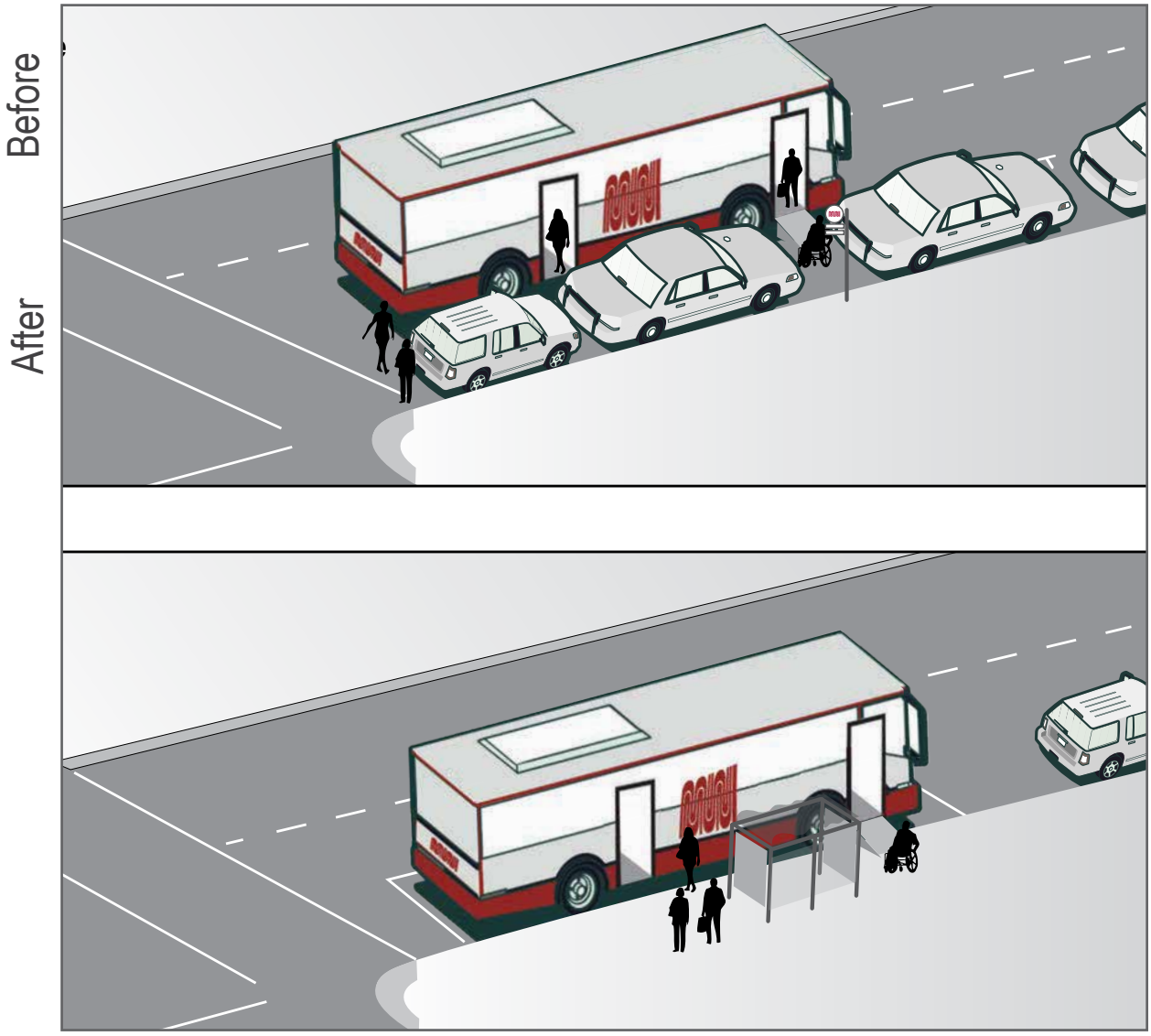
New Turn Pocket

Allows turning autos to clear the through travel lane, reducing the delay buses experience due to heavy traffic.



New Tow-Away Zone

Tow Away Zones create an additional lane for traffic in peak periods, which reduces traffic jams while allowing parking when the extra lane isn't needed. Relieving traffic congestion would reduce delays and make Muni more reliable.



New Bus Zone

New bus zones allow customers to board by the sidewalk, instead of boarding on the street. This makes boarding faster and saves time at each stop as customers don't have to walk through parked cars.

New Loading Zone

A loading zone provides space for commercial vehicles to pull over, preventing them from double parking when making deliveries and blocking Muni. This would reduce delays and make Muni more reliable.

Remove Loading Zone

Traffic on this street is often jammed, slowing down Muni. Removing this loading zone would create an additional lane of traffic and help relieve this congestion, reducing delays and making Muni more reliable.

Extend Loading Hours

In this area, extended hours would allow more deliveries using the same space, preventing them from double parking when making deliveries and blocking Muni. This would reduce delays and make Muni more reliable.

Extend Tow-Away Hours

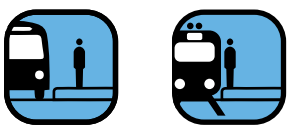
Traffic on this street is often jammed, slowing down Muni. Extending the hours that the tow away zone is active would help relieve this congestion, reducing delays and making Muni more reliable.

New No Parking Anytime Zone

This can be used if traffic on this street is often jammed, slowing down Muni. Removing parking would create an additional lane of traffic and help relieve this congestion, reducing delays and making Muni more reliable.

New Transit Bulb

Buses are delayed merging back into traffic after serving a bus stop. Bulbs reduce this delay, and provide transit riders with a safe place to wait. Additionally, transit bulbs makes boarding safer and faster.

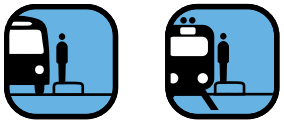


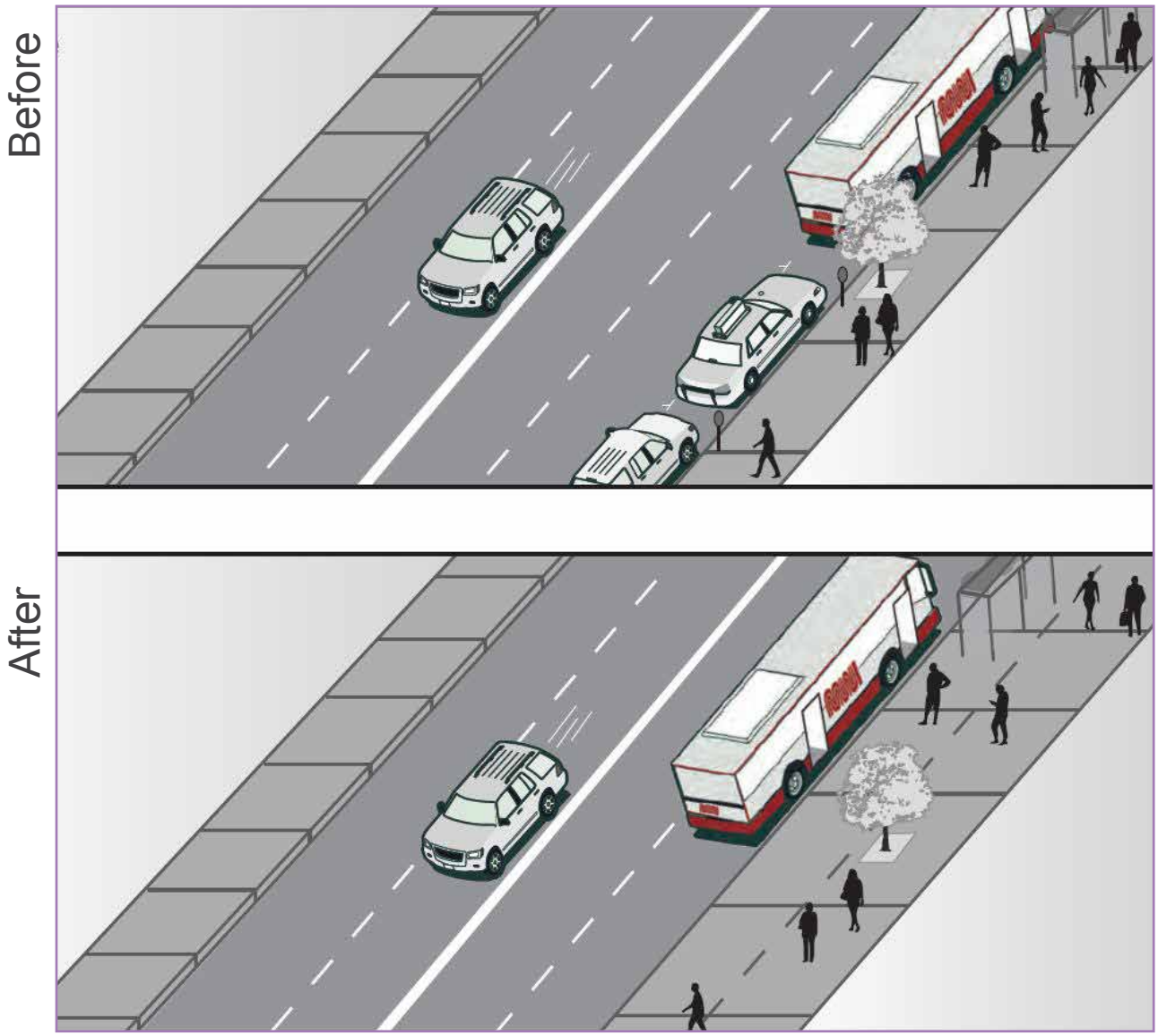
Pedestrian Island and Pedestrian Bulb

A new pedestrian island or bulb improves safety by reducing the crossing distance at intersections. A shorter crossing distance for pedestrians also means less time stopped at red lights for buses.

Boarding Island

Islands provide transit riders a safe place to wait for their train or bus. Customers would no longer have to wait on the sidewalk and board in the street. This makes boarding faster and saves time at each stop, making every passenger's journey shorter.





Widen Sidewalk

A widened sidewalk would improve pedestrian safety and promote walking along the street, which can encourage transit use.

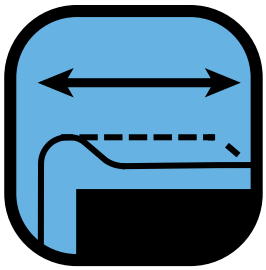
Widening sidewalks can provide space for amenities like café seating, benches, transit shelters, bike racks, trees, and landscaping depending on community input.

New Crosswalk

Crosswalks provide a safe place for pedestrians to cross the street and access transit. This can promote walking along the street, which can encourage transit use.

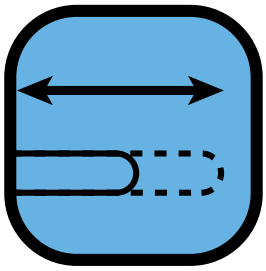
Extend Bulb

Enables bulb to handle more than one vehicle at a time, ensuring arriving Muni vehicles do not have to wait to pick up and drop off passengers.



Extend Boarding Island

Enables boarding island to handle more than one vehicle at a time, ensuring arriving Muni vehicles do not have to wait to pick up and drop off passengers.



Pilot Projects

Overview

Prior to full implementation of the TEP, three pilot projects were launched to gauge the potential costs and benefits of various TEP proposals, and refine our community outreach efforts. These pilots include:

- Church Street Transit-Only Lane
- 76x Marin Headlands Express route
- 5L Flying Fulton pilot

The Church Street Rapid Pilot was launched in March 2013, and establishes center-running, dedicated transit-and-taxi-only lanes along three blocks of Church Street, in both directions,

Church Street Transit-Only Lane

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

Transit Service

- The pilot has largely eliminated congestion-related delay on the J Church and 22 Fillmore through the corridor.
- The pilot has been effective at improving the reliability by up to 20% of outbound trips through the corridor.
- The pilot has been effective at reducing the frequency and magnitude of extreme delay depending on the time of day.

Local Circulation

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

Driver Compliance

- The red paint treatment has been very effective in reducing transit lane violations. Observations confirm a 50% reduction in violations compared to a non-colored transit-only lane.

Muni started service on the 76X Marin Headlands Express on November 17, 2012 to test:

- **The effectiveness of service changes to address travel time and reliability concerns**: As part of the pilot, the route no longer travels south of Market Street to Caltrain, and a new terminal is located at Montgomery BART station. Additionally, remaining stops within the City

76X Marin Headlands Express

of San Francisco are more widely spaced (although all connections to major Muni transfer points will remain). All of the discontinued stops are served by other high-frequency Muni lines.

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

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

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

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

5L Fulton Limited

Muni launched the 5L Fulton Limited pilot project on October 28, 2013, as part of the Transit Effectiveness Project (TEP), which introduced limited stop service to improve service reliability and provide quicker travel times along the 5 Fulton corridor. Additionally, the pilot has increased bus frequency along the corridor with 20-30 percent more capacity during peak periods. Lane reconfigurations along Fulton Street have also been implemented for the purpose of enhancing safety.

Specifically, the pilot program's various improvements include the following:

Service Improvements

- Providing up to 30 percent more capacity on the most crowded portion of the 5 Fulton between Fulton Street/6th Avenue and the Temporary Transbay Terminal
- Evening/weekend service similar to existing service with all electric buses serving all stops.
- Weekdays until 7 p.m., the 5L Fulton Limited electric buses will make all stops between La Playa/Cabrillo streets and Fulton Street/6th Avenue, then limited stops between Fulton Street/6th Avenue and Market/McAllister streets, then all stops between Market/McAllister streets and the Temporary Transbay Terminal.
- Limited stops include Fulton Street at Arguello Boulevard, Fulton Street at Parker Avenue/Shrader Street, Fulton Street at Masonic Avenue, McAllister Street at Divisadero Street, McAllister Street at Fillmore Street, McAllister Street at Van Ness Avenue and McAllister Street at Leavenworth Street (inbound) and Jones Street (outbound).
- Weekdays until 7 p.m., the 5 Fulton short line motor buses will provide added capacity at all stops between Fulton Street/6th Avenue and the Temporary Transbay Terminal.

Street and Bus Stop Improvements

- Extend bus zones to make room for both limited and local buses at shared stops, and to improve safety and accessibility at local stops while allowing limited buses to pass.
- Consolidate bus stops at 10 intersections to reduce bus delays associated with closely spaced stops.
- Relocate bus stops across the street at seven intersections to reduce bus delays at traffic lights and to improve pedestrian safety.
- Widen travel lanes on Fulton Street between Baker and Stanyan streets to improve safety and provide up to 20 new parking spaces on Fulton Street between Central Avenue and Baker Street.
- Remove up to five parking spaces on the east side of Central Avenue between Fulton and McAllister streets to reduce bus delays on this narrow block from congestion.
- Add right-turn lanes at three intersections to help turning traffic and reduce bus delays.

Since the pilot launch, transit service speed and reliability within the Fulton Street corridor has increased and transit riders have provided positive feedback about the added limited stop service.