DART

CORE

Corridor Optimization + Rider Experience

Enhancing streets for transit and people

BEST PRACTICES TOOLBOX

JUNE 2023

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INTRODUCTION

INTRODUCTION

DART bus riders, many of whom rely on the service for their daily needs, often experience delays and unreliable travel times as a result of their bus being stuck in traffic or delayed at an intersection.

DART bus service is not just essential for the daily needs of riders, but plays a critical role in supporting the mobility plans, comprehensive plans, and safety plans of service area cities. By providing access to opportunity and supporting a healthy economy and quality of life, bus service is a vital component of the local and regional mobility network.

However, to fully realize the benefits of bus-based mobility, we need to recognize its value and invest in streets to enhance the role of transit and move buses and people more effectively. The Bus Corridor Improvement Program, referred to as CORE (Corridor Optimization + Rider Experience), is designed to promote transit priority within key bus corridors, enhance operational efficiency, and increase ridership by improving the customer experience.

The initial phase of the CORE program focuses on DART's 22 Frequent Routes and leverages a data-driven, stakeholder-informed, and partnership-oriented methodology. By aligning with DART and partner goals and objectives and drawing on best practices from other metropolitan areas that have made bus speed and reliability a priority, CORE provides a powerful approach to enhancing bus service.

By taking action and supporting the development and implementation of CORE, we can help make a real difference in the lives of DART riders and the communities we serve. With buses capable of carrying over 40 passengers at any given time, let's ensure that this critical mode of transportation reaches its full potential and continues to support the needs of our growing service area.

What are Bus Corridor Improvements?

The CORE program includes these three primary focus areas:

TRANSIT PRIORITY TREATMENTS

Traffic management strategies that allow buses to bypass traffic congestion and improve their travel time and reliability. Examples of transit priority treatments include bus lanes, signal priority, and queue jump lanes.

CONNECTIVITY AND SAFETY

Improving access to bus stops, reducing conflicts and enhancing safety for cyclists and pedestrians along bus corridors.

ADDITIONAL MOBILITY IMPROVEMENTS

Corridor enhancements that align with and support local jurisdictions and community goals and objectives.

Why Make Bus Corridor Improvements?

To make transit service on DART's busiest corridors faster and more reliable, and to offer an improved customer experience that will attract more riders. In addition, these improvements will:

Enhance the attractiveness and competitiveness of public transit as a mode of transportation, which can encourage more people to use it instead of driving alone.

Reduce vehicle miles traveled (VMT) and greenhouse gas emissions by shifting trips from private cars to buses, which have lower per capita environmental impacts.

Improve mobility and accessibility for all, but with an emphasis on transit-dependent individuals who rely on buses for their daily needs.

Support economic development and social equity by connecting people to jobs, education, health care, and other opportunities across the region.

To benefit not only transit riders but also drivers, pedestrians, cyclists, businesses, and the environment by supporting more livable, sustainable, and inclusive communities.

DESIRED OUTCOME

Promote transit priority within key corridors to improve the rider experience, enhance efficiency and increase ridership

- Help DART buses get 'unstuck' from traffic
- Maximize person throughput on DART's busiest corridors
- Improve the rider experience

CORE GOALS

Enhance Speed & Reliability

Coordinate with service area cities to prioritize and implement speed and reliability improvements

Estimate benefits and measure against performance standards

Improve Operational Safety

Reduce conflicts between corridor users

Improve Access & Connectivity

Identify and deploy bike and walk safety upgrades for better transit access

IDENTIFYING BEST PRACTICES

To identify the most appropriate actions DART and service area cities can take to develop and implement transit priority treatments, a nationwide scan of best practices was completed. This scan found a range of approaches with strong collaboration between the transit agency and service area cities being the most essential common ingredient.

Best Practice Examples include:

- King County METRO — Seattle
- MTA New York City Transit — NYC
- CATS Charlotte Area Transit System — Charlotte
- pace — Chicago
- RTD — Denver
- TRIMET — Portland
- TRANSLINK — Vancouver BC

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TRANSIT PRIORITY TREATMENTS

POTENTIAL TRANSIT PRIORITY TREATMENTS

Based on the nationwide best practices review, four categories of potential transit priority treatments are recommended, including:

Source: NYC DOT

STREET AND INTERSECTION DESIGN

Tools that improve speed, safety, access and reliability through the physical design of streets and intersections.

BUS STOPS AND ROUTING

Tools that improve speed and reliability through stop location and spacing.

Source: LA Metro

TRAFFIC REGULATIONS

Transit-beneficial operational modifications that require minimal capital investment, including, when necessary, enforcement.

TRAFFIC SIGNALS

Tools that modify signal timing, phasing, and indications to improve bus speed and reliability.

*Categories derived from King County Metro Transit Speed and Reliability Guidelines and Strategies, August 2021.

POTENTIAL TREATMENTS OVERVIEW

Low	Medium	High
◆	◆◆	◆◆◆

	GOALS			CONSIDERATIONS		
	Enhance Speed & Reliability	Improve Safety	Improve Access & Connectivity	Coordination Level (estimated)	Cost Range (estimated)	Spot or Segment
STREET AND INTERSECTION DESIGN						
Dedicated Bus Lane	◆◆◆	◆◆	◆	◆◆	◆◆	Segment
Queue Bypass (Short Bus Lane)	◆◆◆	◆◆	◆	◆◆	◆◆	Segment
Roadway Channelization	◆	◆◆	◆	◆◆	◆◆	Segment
Turn Radius Improvements	◆	◆		◆◆	◆	Spot
Speed Hump Modifications	◆			◆	◆	Segment
BUS STOPS & ROUTING						
Bus Stop Location Optimization	◆◆	◆◆	◆	◆	◆	Spot
Route Design	◆◆			◆◆	◆	Segment
Bus Stop Lengthening	◆◆	◆◆	◆◆	◆◆	◆◆	Spot
Bus Bulbs	◆◆	◆◆	◆◆	◆◆	◆◆	Spot
Boarding Islands	◆◆	◆◆	◆	◆◆	◆◆	Spot
TRAFFIC REGULATIONS						
Turn Restrictions/Exemptions	◆	◆◆		◆◆	◆	Spot
Parking Removal/Alterations	◆	◆		◆◆	◆	Spot/Segment
TRAFFIC SIGNALS						
Passive Traffic Signal Retiming	◆◆◆			◆◆	◆◆	Segment
Transit Signal Priority (Active)	◆◆◆			◆◆	◆◆	Segment
Signal Modifications	◆◆			◆◆	◆	Spot
New Signal Installation	◆◆			◆◆	◆◆◆	Spot
Queue Jumps	◆◆			◆◆	◆◆	Spot

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STREET AND INTERSECTION DESIGN

Tools that improve speed and reliability through the physical design of streets and intersections

DEDICATED BUS LANE

Dedicated bus lanes are a portion of the street designated by signs and markings for the preferential or exclusive use of transit vehicles, sometimes permitting limited use by other vehicles.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆◆
Improve Safety	◆◆
Improve Access & Connectivity	◆

Figure 1: Dedicated Bus Lane Example from NACTO

TYPICAL APPLICATION

Downtown settings or streets with high motor vehicle traffic and transit vehicle volume and congestion.

POTENTIAL BENEFITS

Reduce delays due to traffic congestion and help raise the visibility of high-quality bus service.

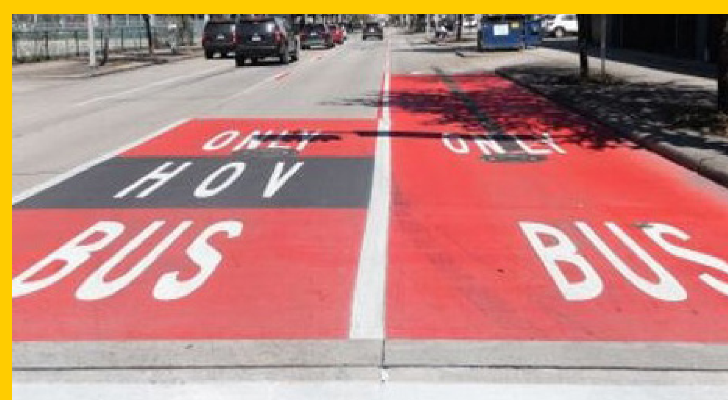
CHALLENGES

Strict enforcement is necessary to maintain their use and integrity. Subject to encroachment due to double-parking, deliveries, or taxicabs. Ongoing maintenance of colored markings.

DEDICATED BUS LANE EXAMPLE

Houston METRO has implemented dedicated bus lanes that improve transit speed and reliability. They have also included an additional lane that promotes ridesharing by dedicating the lane to buses and high-occupant-vehicles (HOV).

- Implemented on Travis Street from Gray St. to Commerce St. in Downtown Houston
- Implemented in 2005



- The red striping and markings provide visual instruction to road users. These red lanes improve traffic flow by having designated lanes for public transit vehicles, and they can also improve safety for drivers, cyclists, and pedestrians.

QUEUE BYPASS (SHORT BUS LANE)

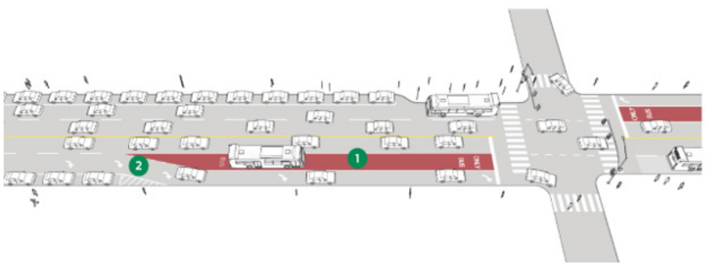
Queue Bypass or short bus lanes, allow transit vehicles to bypass long queues that form at major cross streets.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆◆
Improve Safety	◆◆
Improve Access & Connectivity	◆

Figure 2: Queue Bypass Example from NACTO



TYPICAL APPLICATION

At the approaches to signalized intersections via separate lane and transit signal.

POTENTIAL BENEFITS

Allow transit vehicles to bypass general vehicle queues and right-turn queues.

CHALLENGES

Subject to encroachment due to double-parking, deliveries, or taxicabs. Strict enforcement is necessary to maintain their use and integrity.

QUEUE BYPASS (SHORT BUS LANE) EXAMPLE

MTA in New York City initiated the Better Buses Restart initiative in 2020 which resulted in over 16 miles of new dedicated bus lanes.

Queues along W 86th Street approaching Central Park West during peak hours often prevented the bus from accessing the stop.

The queue jump lane at E 86th Street at the approach to 5th Avenue provides a better positioning for buses. The design of the lane created channelization that reduced the general travel lanes to a single lane to further prioritize bus movements.

86th Street is part of MTA's Select Bus Service, their bus rapid transit (BRT) network. Customer travel times typically improve 10-20% along corridors with priority treatments.

Photo 1: Queue Jump Lane on Eastbound E 86th Street at Central Park West

ROADWAY CHANNELIZATION

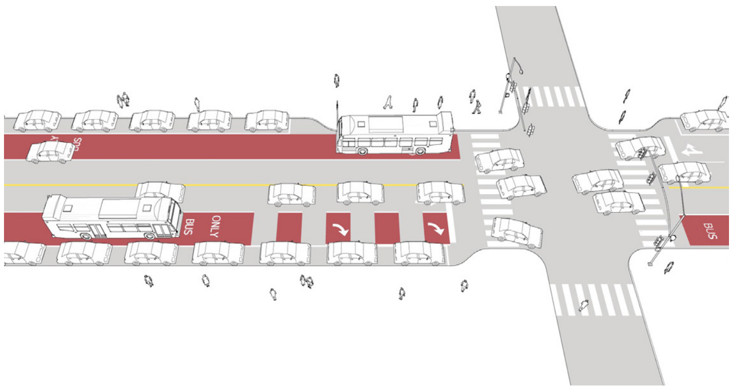
Roadway channelization for buses helps by having different lanes serve a specific purpose, such as having bus-only lanes.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆
Improve Safety	◆◆
Improve Access & Connectivity	◆

Figure 3: Transit Corridor Example from NACTO



TYPICAL APPLICATION

Can be implemented on any transit corridor served by bus or other forms of transit such as streetcars.

POTENTIAL BENEFITS

Allows buses to safely and conveniently move into specific lanes.

CHALLENGES

Conflicts with other road users can occur causing delay.

ROADWAY CHANNELIZATION EXAMPLE

New York City implemented several improvements to the Sheepshead Bay Road Corridor to improve safety. Some of the improvements will also aid bus services such as creating channelized roadways to increase bus reliability.

TURN RADIUS IMPROVEMENTS

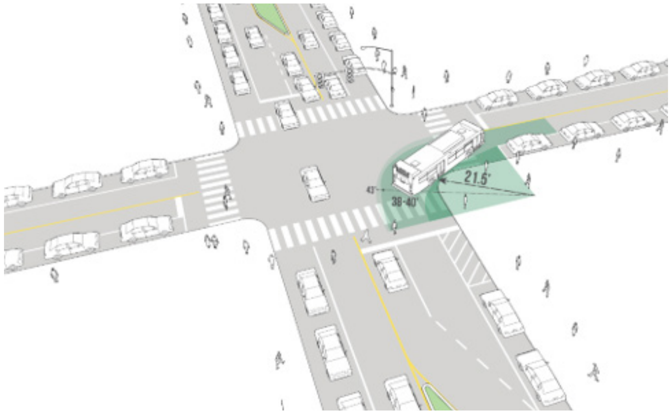
Transit vehicles typically require an effective turning radius of approximately 20–30 feet depending on lane width and presence of curbside parking lanes.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆
Improve Safety	◆
Improve Access & Connectivity	

Figure 4: Turn Radius Improvement Example from NACTO



TYPICAL APPLICATION

At the approaches to signalized intersections.

POTENTIAL BENEFITS

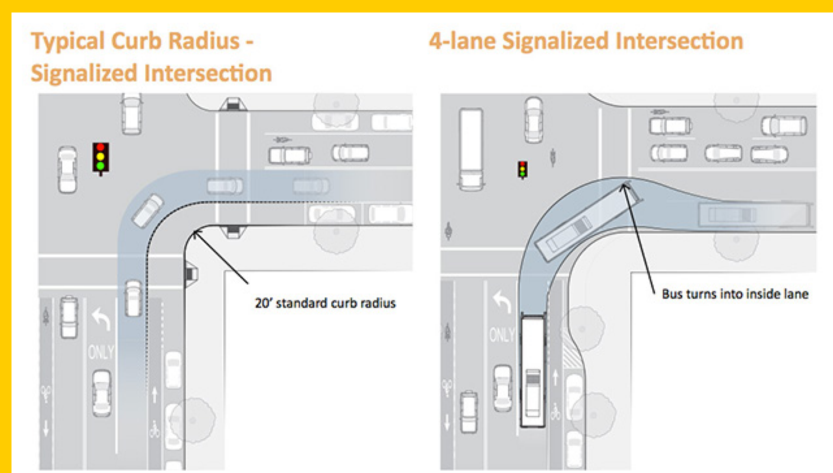
Curb extensions typically reduce pedestrian crossing distances.

CHALLENGES

May have to use part of the oncoming travel lane and/or move stop bar to accommodate for the wide turn.

TURN RADIUS IMPROVEMENTS EXAMPLE

The City of St. Paul has developed a new streets design manual that calls out specific designs for curb radii that considers turning movements of buses and how to effectively design turns that won't impede on bus travel.



SPEED HUMP MODIFICATIONS

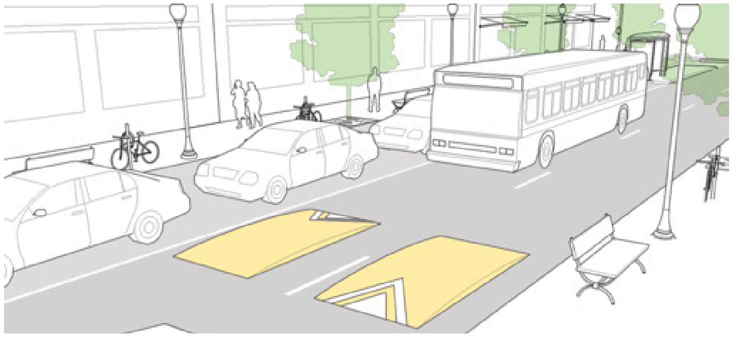
Modifications to speed humps include speed humps that have wheel cut-out openings to allow large vehicles like buses to pass unaffected while continuing to reduce car speeds.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆
Improve Safety	
Improve Access & Connectivity	

Figure 5: Speed Hump Modification Example from NACTO



TYPICAL APPLICATION

On roadways that have or need traffic-calming measures.

POTENTIAL BENEFITS

Reduces speeds for vehicles while minimizing impacts and reducing wear and tear on buses.

CHALLENGES

Requires coordination with city to construct.

SPEED HUMP MODIFICATIONS EXAMPLE

The City of Cincinnati installed temporary speed cushions on Winneste Avenue as a pilot project. The speed cushions help reduce traffic speed and increase pedestrian safety while having minimal delay to transit operations.

	Before	After
Percentage of Vehicles Speeding	95%	11%
Average Speed	37 mph	20 mph
Percentage of Vehicles Exceeding 40 mph	25%	0%

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BUS STOPS AND ROUTING

Tools that improve speed and reliability through stop location and spacing

BUS STOP LOCATION OPTIMIZATION

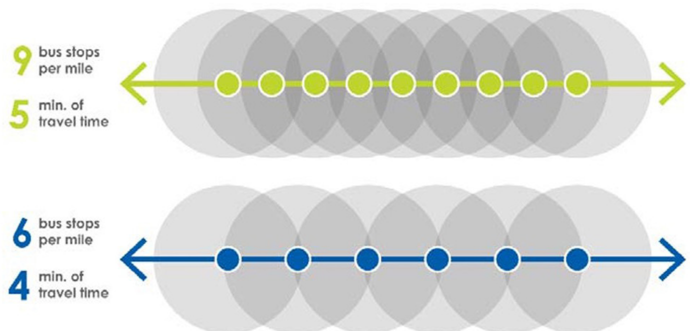
Relocation or consolidation of bus stops to optimize placement and minimize delay while considering pedestrian accessibility.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	◆◆
Improve Access & Connectivity	◆

Figure 6: Example of very close bus stop spacing from Transit Center



TYPICAL APPLICATION

On bus corridors where very close stop placement results in excessive bus delay.

POTENTIAL BENEFITS

Improve bus flow, speed and reliability.

CHALLENGES

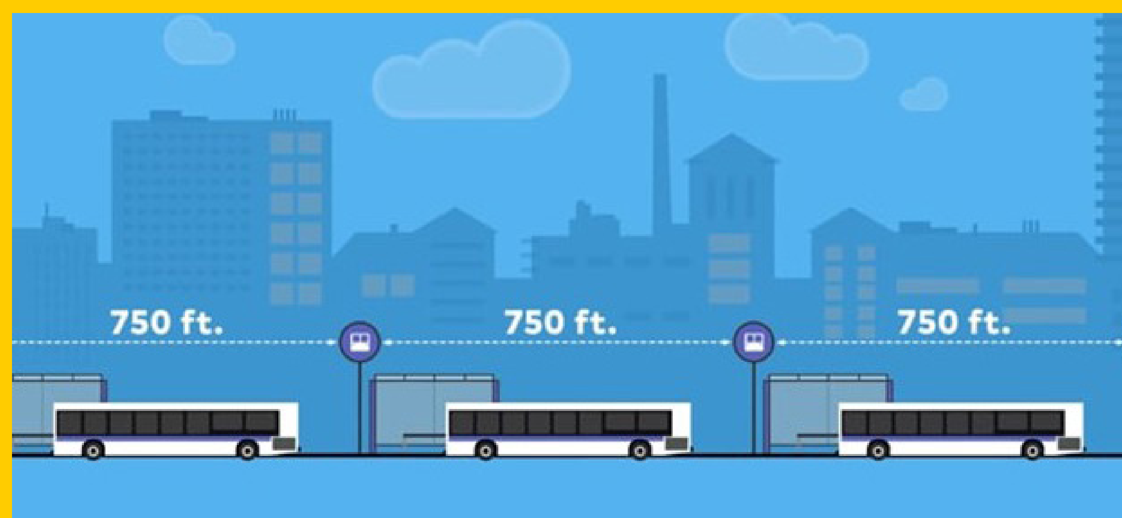
Bus stop siting and relocation can raise rider and neighborhood concerns.

BUS STOP LOCATION OPTIMIZATION EXAMPLE

Chicago Transit Authority (CTA) conducted a study on bus stop spacing for corridors where transit service was modified.

Stop consolidation and the introduction of the express routes led to time savings of 5-7% for both local and express routes.*

*Source: https://dimnioras.gitlab.io/documents/research-projects/StopSpacing_Study_DimitrisNioras.pdf



ROUTE DESIGN

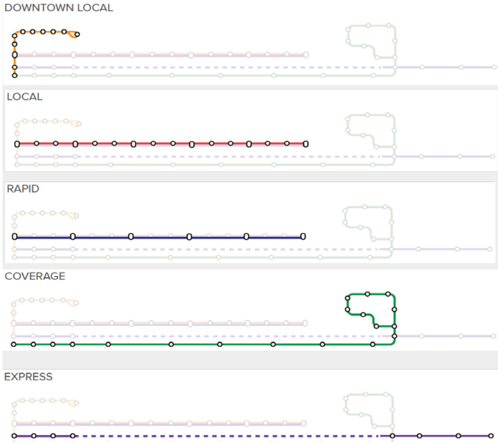
Simple, direct routing on arterials without major deviations or loops simplifies the system and reduces travel times, may be paired with first/last mile improvements for accessibility.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	
Improve Access & Connectivity	

Figure 7: Bus Route Example from NACTO



TYPICAL APPLICATION

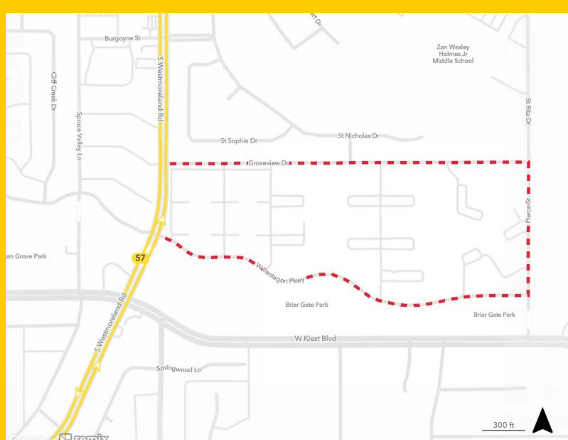
Systemwide where feasible.

POTENTIAL BENEFITS

Fewer turning movements improves travel times and makes the system more legible for customers.

CHALLENGES

High ridership locations may not be along arterials, requiring route deviations.



ROUTE DESIGN EXAMPLE

Dallas Area Rapid Transit (DART) completed a major restructuring of their entire bus network, and made it operational in January 2022. Overall DART streamlined routes, and significantly expanded on-demand service (Go Link). By making the new bus routes more direct, focusing on major transit corridors, and reducing the number of bus stops, DART bus service is faster, ensuring passengers get to their destinations quicker and improving connections.

- With the implementation of this new service, 74% of DART service-area residents have access to transit services within walking distance.
- The new service increases the number of jobs that an average resident of the DART Service Area can reach in one hour by 34% compared to the prior bus network

BUS STOP LENGTHENING

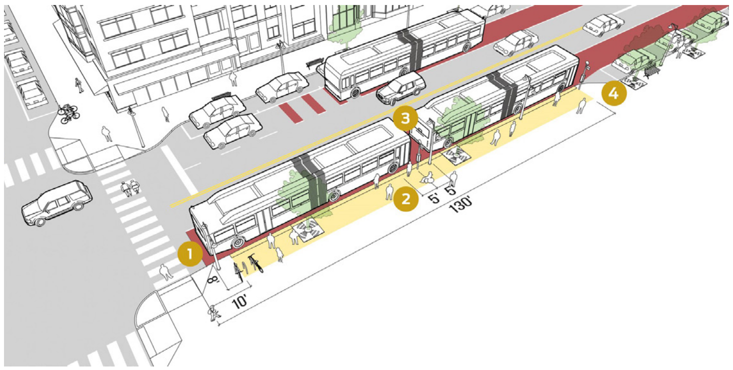
Short transition distances into bus stop areas or pullouts add delay to transit service and require sharper transitions to the curb.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	◆◆
Improve Access & Connectivity	◆◆

Figure 8: Bus Stop Lengthening Example from NACTO



TYPICAL APPLICATION

Applicable where sharp entry/exit angles slow entry or exit.

POTENTIAL BENEFITS

Longer stops ease transitions into and out of stops. Can be used to distribute queuing riders along the sidewalk.

CHALLENGES

Require more curb length, reduces curbside parking spots.

BUS STOP LENGTHENING EXAMPLE

New York MTA removed several bus stops along its B38 route to accommodate the transition to longer buses. With this they also updated some of the stops to be longer to accommodate the longer buses. The longer buses will make the route more efficient by carrying more people.

BUS BULBS

Bus bulbs are permanent sidewalk extensions that allow buses to pull up to the curb without leaving the travel lane, saving valuable time.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	◆◆
Improve Access & Connectivity	◆◆

Figure 9: Bus Bulb Example from NACTO

TYPICAL APPLICATION

Applicable in both dedicated and mixed-traffic conditions for locations where buses are delayed re-entering travel lanes.

POTENTIAL BENEFITS

Reduces travel delay and boarding delay, by eliminating transition movements into and out of bus stop areas. This also also acts as a curb extension to shorten pedestrian crossings.

CHALLENGES

Traffic buildup behind transit vehicles.

BUS BULB EXAMPLE

A study conducted by the City of New Jersey looked at the benefits a bus bulb would have on transit travel times. The study concluded that bus travel time savings as a result of the bus bulbs ranged between 15 and 30 seconds per bus stop.

BOARDING ISLANDS

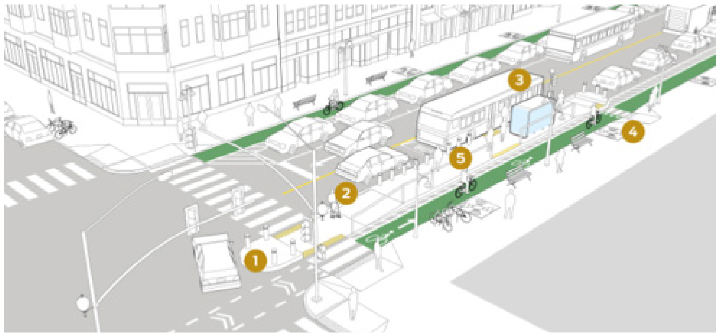
Boarding island stops provide dedicated space for transit passengers and amenities while maintaining a clear pedestrian path on the sidewalk, and/or bicycle lane behind the island.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	◆◆
Improve Access & Connectivity	◆

Figure 10: Bus Boarding Island Example from NACTO



TYPICAL APPLICATION

Applicable on streets with center-running transit, or on routes where high-volume bike lanes are in place.

POTENTIAL BENEFITS

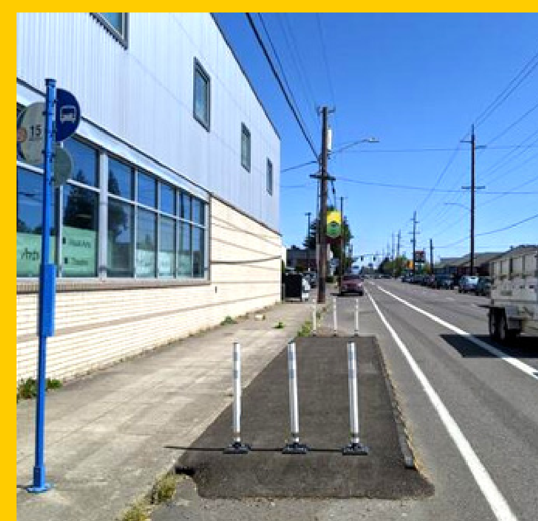
Reduces transit vehicle dwell times, provides a refuge area for pedestrians crossing the street, and minimizes bus/bike conflicts at stops.

CHALLENGES

Right-of-way limitations can restrict feasibility.

BOARDING ISLANDS EXAMPLE

In partnership with TriMet, PBOT installed two types of temporary platforms. The first platform removes the conflict with the bike lane making it safer for bicyclist traveling in the bike lane. They also installed a temporary asphalt platform to assist in boarding of buses.



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TRAFFIC REGULATIONS

Transit-beneficial operational modifications that require minimal capital investment, including, when necessary, enforcement.

TURN RESTRICTIONS/EXEMPTIONS

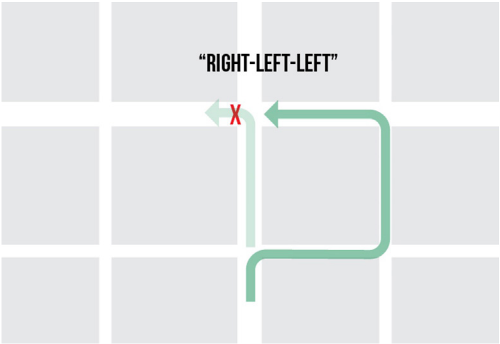
Prohibiting automobile turns (primarily left-turns) where there are no dedicated turn lanes that would present issues to efficient bus movement or pedestrian access, and shifting turn volume to the intersections where they can be best accommodated using signal phases and turn lanes.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆
Improve Safety	◆◆
Improve Access & Connectivity	

Figure 11: Turn Restriction Example from NACTO



TYPICAL APPLICATION

Urban roadways, gridded road networks.

POTENTIAL BENEFITS

Improve transit performance, general traffic performance, and walking and bicycling safety.

CHALLENGES

May be viewed as an inconvenience by motorists.

TURN RESTRICTIONS/ EXEMPTIONS EXAMPLE

As part of the Geary Blvd. Improvement Project, SFMTA proposed left-turn restrictions at some intersections to reduce conflicts between vehicles and people walking and improve traffic safety by increasing driver visibility and providing space for larger center median pedestrian refuges.

PARKING REMOVAL/ALTERATIONS

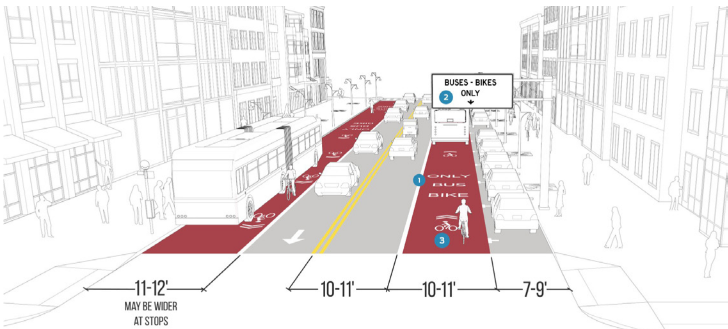
The removal of parking completely or removal of parking spots is sometimes necessary to implement transit measures such as bus lanes.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆
Improve Safety	◆
Improve Access & Connectivity	

Figure 12: Parking Removal/Alterations Example from NACTO



TYPICAL APPLICATION

Urban roadways where bus lanes or transit lanes are planned.

POTENTIAL BENEFITS

Allow spaces for bus lanes and transit lanes as well as bus stop improvements.

CHALLENGES

Stakeholder perceptions regarding loss of parking.

PARKING REMOVAL/ ALTERATIONS EXAMPLE

San Francisco and SFMTA have implemented a project throughout the city to remove over 1,000 on-street parking spots to improve the safety and speed of bus boarding.

6

TRAFFIC SIGNALS

Tools that modify signal timing, phasing, and indications to improve bus speed and reliability.

PASSIVE TRAFFIC SIGNAL RETIMING

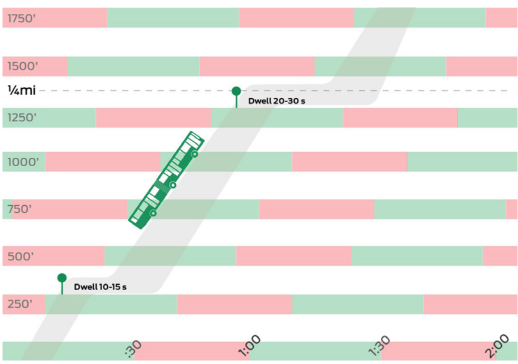
Traffic signal modification to create "green wave" for buses.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆◆
Improve Safety	
Improve Access & Connectivity	

Figure 13: Passive Traffic Signal Retiming Example from NACTO



TYPICAL APPLICATION

Urban roadways with frequent signalized intersections.

POTENTIAL BENEFITS

Reduces dwelling time stopped at signalized intersections and bus delay.

CHALLENGES

Signal timing without consideration of dwell times at bus stops can further cause bus dwell time at intersections.

PASSIVE TRAFFIC SIGNAL RETIMING EXAMPLE

Metropolitan Transportation Commission in California has created the Program for Arterial System Synchronization (PASS) to coordinate with the city on signal timing to improve traffic flow, address safety concerns, prevent stop delays and cut down on air pollution.

PASS BENEFITS

Travel time savings	23%, or more than 3.2 million hours	**Total project costs**	$1.4 million
Fuel consumption savings	16%, or over 3.1 million gallons	**Total lifetime benefits**	$86.2 million
Average auto speed increase	38%	**Overall benefit-cost ratio**	61:1
Total emissions reduction	124 tons		

TRANSIT SIGNAL PRIORITY (ACTIVE)

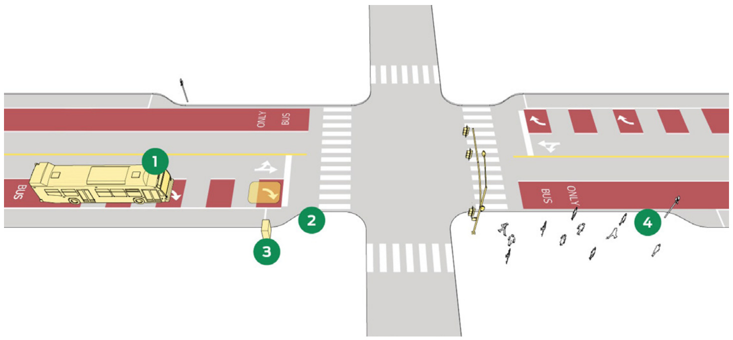
Transit Signal Priority (TSP) tools modify traffic signal timing or phasing when transit vehicles are present, and can work on thru, left-, and right-turning movements.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆◆
Improve Safety	
Improve Access & Connectivity	

Figure 13: Transit Signal Priority Example from NACTO



TYPICAL APPLICATION

Urban roadways with significant traffic and transit volumes.

POTENTIAL BENEFITS

Reduces bus delay and enhances service reliability.

CHALLENGES

Requires coordination with city and bus and signal technology integration.

TRANSIT SIGNAL PRIORITY (ACTIVE) EXAMPLE

SamTrans (California) is implementing a TSP project on its El Camino Real transit route. This project will improve SamTrans' on-time performance by reducing bus delays at intersections in order to provide more reliable service. This project will also have negligible impacts to cross streets.

Combined with other measures, 15 to 20 minutes in travel time savings could result from implementing TSP as one of the measures.

In NYC, TSP has reduced bus travel times about 14% during weekday peak morning and evening commuting periods.

SIGNAL MODIFICATIONS

Intersections updated with shorter signal cycles reduce net delay to transit vehicles, especially at near-side stop locations, or across freeway corridors where frontage roads exist, may also include protected left-turn movements at signalized intersections where they are currently unprotected.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	
Improve Access & Connectivity	

Figure 14: Intersection Update Example from NACTO

TYPICAL APPLICATION

On signalized streets with frequent transit service, in mixed-traffic or dedicated lanes.

POTENTIAL BENEFITS

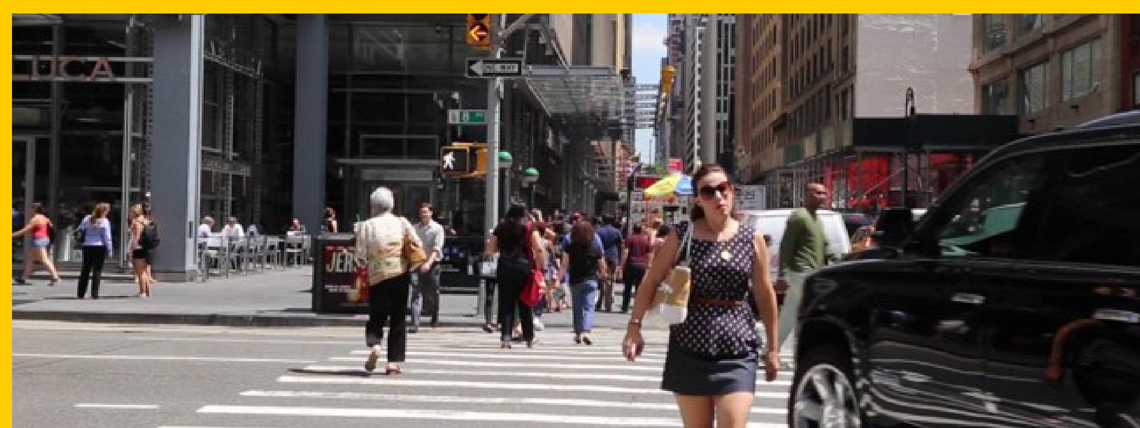
Reduce delay at intersection for buses and other users such as pedestrians.

CHALLENGES

Need to accommodate pedestrian clearance times and crossing distance.

SIGNAL PHASE MODIFICATION EXAMPLE

NYC has created a program to implement shorter traffic signal phases to reduce delay to transit buses. In addition to these shorter phases, the city has also installed other traffic signal measures such as the leading pedestrian signal to promote pedestrian safety.



NEW SIGNAL INSTALLATION

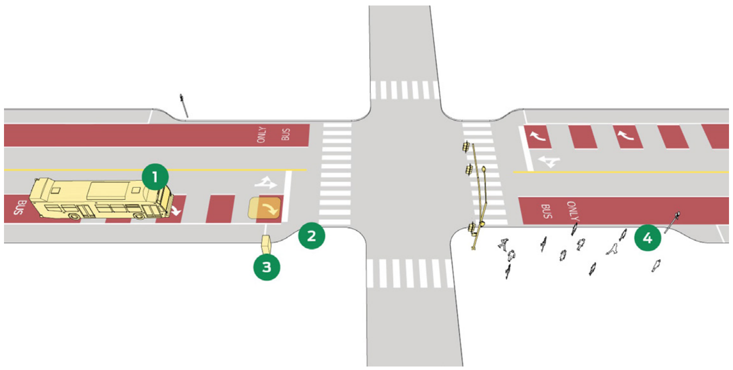
New signal installation can help in phasing out older signals with new modern traffic signals to promote Transit Signal Progression.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	
Improve Access & Connectivity	

Figure 15: TSP signal Example from NACTO



TYPICAL APPLICATION

Typically, when intersections are reconstructed.

POTENTIAL BENEFITS

Improve bus reliability, reduce delay.

CHALLENGES

Can be competing priorities for signal 'share'.

NEW SIGNAL INSTALLATION EXAMPLE

Nashville MTA completed several intersection upgrades along Murfreesboro Pike, one of its busiest corridors. The improvements included technology enabled to help smooth traffic flow and allow WeGo (Nashville's transit system) buses to improve their on-time performance.

QUEUE JUMPS

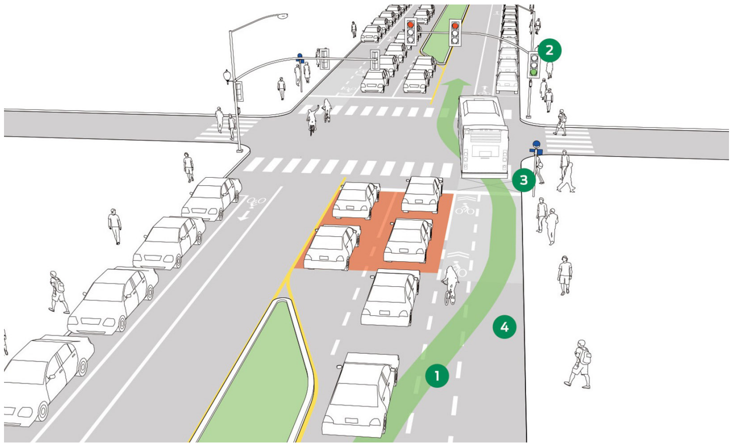
Queue Jumps allow buses to easily enter traffic flow in a priority position.

Low	Medium	High
◆	◆◆	◆◆◆

BUS CORRIDOR TREATMENT RATING

Enhance Speed & Reliability	◆◆
Improve Safety	
Improve Access & Connectivity	

Figure 16: Queue Jump Example from NACTO



TYPICAL APPLICATION

On signalized streets with moderately frequent bus routes.

POTENTIAL BENEFITS

Significantly reduce bus delay at signalized intersections.

CHALLENGES

Right-turn lanes can pose an issue.

QUEUE JUMPS EXAMPLE

To keep buses moving, King County Metro added a queue jump at the intersection at Interurban Ave. S. and 52nd Ave. S.

Buses and right-turning vehicles now share the right lane. Just before southbound traffic gets a green light, the queue jump signal is activated, and buses can go through the intersection before other vehicles.

- Morning commute times saw a 5% improvement in on-time performance
- Morning and afternoon commute trips saw up to an 8-second travel time improvement

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SUMMARY

SUMMARY

- National scan of transit priority treatments indicates a wide range of methods exist to improve bus speed and reliability and enhance the customer experience.
- Case study examples demonstrate benefits and cost-effectiveness of transit priority treatments when well-planned and implemented.
- Careful analysis of bus corridors and 'hot spots' needed to identify most promising alternatives.
- Pilots and demonstration projects can help build support and demonstrate efficacy.