UITP ADVANCING PUBLIC TRANSPORT

ACTION POINTS

REGIONS THRIVE WITH CONGESTION-FREE BUS NETWORKS

AUGUST | 2025

PREFACE

When was the last time you — or your organisation — took a step back and reviewed how public transport operating speeds had changed over a five- or ten-year period? More than likely, your speeds have decreased, and your travel time has increased. Doing nothing to achieve congestion-free routes for public transit isn't maintaining the status quo — it's allowing slow degradation to take hold. Speeds decline, reliability weakens, and people choose other options. And yet, solutions are within reach. What would your network look like if every route operated at its full potential? If buses moved freely, efficiently, and competitively?

BRT bus lanes in San Francisco, USA. Source: Manel Rivera Bennassar

It's time to take a hard look at how buses are treated in your city:

- *How many kilometres of dedicated bus lanes exist? Are buses stuck fighting with private cars for space?*
- *How often do you see a bus stop at a red light in your city? Every unnecessary stop is a lost opportunity.*
- *Who is responsible for optimising bus performance?*

Who owns the streets? Who decides? Who acts? The public transport authority (PTA)? The city? The region? The national government? The public transport operator (PTO)? A mix of stakeholders? Too often, these questions lead to a frustrating ping-pong of blame that wastes time while congestion worsens and speeds decline.

Many agencies do not have the political support or financial resources to implement large-scale programmes to improve public transport. The examples we provide below demonstrate that even small, intersection-level changes or operational improvements can have major impacts on the bus system and can be implemented quickly.

This Action Point, prepared by the UITP Bus Committee, is being published together with the Policy Brief 'Net-Zero Mobility: Social Considerations for Limiting Private Vehicle Access', prepared by the

UITP Transport and Urban Life Committee. We invite readers to first review the Policy Brief and then this Action Point from a practical perspective. The aim is to provide inspiration and confidence to practitioners to work towards the 'Shift' and especially 'Improve' phases within the Avoid-Shift-Improve framework presented in the aforementioned Policy Brief.

Act now – make changes that give surface public transport priority, no matter how small!

INTRODUCTION

GROWING URBANISATION

Imagine your region being known for protecting the environment, providing economic/educational opportunities to all residents, and supporting both government efficiency and business development. You would have one of the most desirable places to live in the world.

According to the United Nations Development Programme (UNDP), by 2050, 70% of the global population will live in a city, a 15% increase over today. As urbanisation skyrockets, it will put even more pressure on the sustainability and mobility/equity needs of cities. Traffic congestion, double parking, frequent stop signs, and increased demand on existing transport infrastructure will combine to choke the liveability out of urban areas and create a death spiral, with only one remedy: public transport.

OVERARCHING GOALS

Right-of-way through infrastructure expansion to improve movement in these dense locations is often both cost-prohibitive and counter to sustainable growth. However, choosing to use existing resources based on common worldwide values, when done right, can build trust with communities, promote racial and social equity, enhance economic vitality, and combat climate change.

Implementing decisions that align with global commitments like the *UN Sustainable Development Goal 11* greatly expands the potential for a more equitable and sustainable urban future. **Clean vehicles are not enough to green our cities**. Despite advances in zero-emission car technology, public transport remains the most efficient, inclusive, and sustainable urban transport option.

> *"Unless we continue to change the way we travel to more sustainable, space-efficient options, our streets will grind to a halt, our air quality will worsen, public health will suffer, and we will fail to tackle the climate emergency."*
>
> *Transport for London Bus Action Plan*

Strategic decisions to implement public transport priority measures throughout the world will help us realise the vision laid out by the UN, and UITP has taken proactive steps to make that vision a reality.

The 2025-2028 UITP Strategy Plan[1] lays out a vision of ***moving people for a sustainable and inclusive world.*** It focuses on methods that advance three crucial, common municipal goals:

- **Economic vitality:** Maximise people's movement, giving the city room to expand business activity and housing supply despite limited roadway space.
- **Social equity:** Increase opportunities to connect all residents to jobs, education, healthcare, and social activities.
- **Environmental protection:** Reduce greenhouse gases, particulate matter, and other emissions.

ACHIEVING THESE GOALS

Most urban areas already have the ingredients needed to achieve this vision: public roadways and a public transport system.

Re-allocating scarce roadway space to public transport is difficult, but improving public transport service is not just about getting people where they need to go faster — it's about implementing the goals and values of a sustainable, liveable world.

With public transport priority measures, buses become vehicles for prosperity. With dedicated space, public transport becomes faster, more reliable, and consequently more attractive to passengers. By reducing travel time and improving reliability, opportunity is increased for all! Access to employment, education, and leisure increases dramatically, creating more liveable, sustainable cities.

By making quick, inexpensive modifications to roadway infrastructure that prioritise public transport, urban areas can, almost overnight, begin delivering on these goals, which are the keys to unlocking a sustainable, successful future. This presents a key opportunity for policymakers to achieve noticeable improvements in the short term with a limited budget, complementing, rather than replacing, long-term investments in bus rapid transit (BRT) corridors, light rail, or other mass transit projects. At the same time, transit priority programmes for each urbanised area will need to take into account local considerations and have an implementation process that aligns with local laws, customs, and policies.

This UITP Action Points highlights case studies where urban areas have reclaimed public space to achieve sustainability goals and provides a framework for getting started. It serves as an update to the 2001 UITP Position Paper,[2] acknowledging that while many overarching challenges remain relevant, new trends and technologies present fresh challenges and opportunities.

1 UITP Strategy Plan 2025-2028
2 2001 UITP Position Paper 'A Congestion-Free Bus Network'

Bangkok BRT. Source: Manel Rivera Bennassar

PROSPERITY FOR ALL

How can public transport support a sustainable future?

There are many ways to prioritise public transport, ranging from grade-separated public transport-only lanes to intersection-based improvements like bus bulbs or turn pockets. But they all advance the goals stated above, and locations around the world have had success in implementing a range of projects, both big and small.

All the measures and examples in this document are directly or strongly linked to increasing the average commercial speed of buses and reducing the variability of average waiting times. Average commercial speed is defined in the equation below.

$$\textit{Average Commercial Speed} = \frac{\textit{Total Distance (km)}}{\textit{Total Travel Time (h)}},$$

where travel time includes stops and time lost in congestion or at traffic lights.

As seen in the examples in this document, increasing commercial speed benefits not only bus operations but also overall urban mobility and efficiency. The case studies below provide sustainable mobility champions with the facts, ideas, and examples needed to challenge the status quo.

IMPROVING EQUITY

The 14 Mission corridor in **San Francisco,** United States (US) serves 46,000 daily riders, 80% of whom are considered low-income. The corridor was redesigned to include 6.4 miles (10.3 km) of bus-only lanes, and 50 signalised interactions received public transport signal priority (TSP), 7 public transport bulbs, and 29 pedestrian bulbs, resulting in a 31% decrease in travel time and a 25% improvement in reliability. Most important, there are now 26,000 additional jobs within the same half-hour public transport travel time.

SUPPORTING ECONOMIC GROWTH AND RECOVERY

The Queen-Mary Corridor in **Montreal,** Canada carries 8,000 peak period public transport riders (over 25,000 daily) and launched peak-hour bus/taxi lanes in 2022. Within a year of implementation, the project reduced public transport travel times in the corridor by 20% and improved reliability by up to 35%, supporting residents returning to work in post-2019 coronavirus disease (COVID-19) pandemic recovery and providing a vital link for hourly wage workers.

PROVIDING ENVIRONMENTAL PROTECTION

The Q-link network in **Groningen,** the Netherlands, allows buses to use hard shoulders on motorways during congestion, ensuring fast and reliable travel times despite heavy traffic conditions. This approach provides buses with a significant travel time advantage without requiring major road infrastructure modifications or expansion. The system connects regional villages and suburban areas to central employment hubs, such as the university hospital and city centre, improving access to public transport and reducing reliance on private vehicles.

Figure 1. Bus using highway's hard shoulder to avoid congestion. Source: OV Bureau

PUBLIC TRANSPORT-SPECIFIC PRIORITIES

Beyond overarching liveability goals, the chapter *What Operators Need to Be Efficient* in the UITP Report 'Bus Network Planning from the Operators' Perspective' highlights operational considerations such as the importance of ensuring smooth travel time at a high commercial speed[3] — recognised as a key factor in improving bus operations worldwide. Readers are encouraged to check out this chapter for reference and context. The report emphasises that public transport priority infrastructure can directly address the two biggest challenges faced by public transport agencies worldwide, which were exacerbated by the COVID-19 pandemic: decline in ridership and operational funding issues.

One of the key learnings from the pandemic was that the absence of private car congestion significantly improved bus operations. The Transport for London Bus Action Plan notes, "On several routes, the improved bus journey times enabled the same service frequency to be operated with fewer vehicles, with more than 100 peak time buses able to be redeployed elsewhere. Sustaining these improved bus journey times in the long term would help us to keep existing customers and attract new customers".[4] This observation provides clear evidence of how much private car congestion disrupts buses, reinforcing the need to prioritise public transport.

RIDERSHIP

Public transport riders continually score reliable service as the most important attribute to quality public transport service; a person can plan their life around taking a 20-minute public transport trip every day much more easily than if the trip takes 15 minutes four days a week and 25 minutes one day a week.

Poor reliability in bus services often manifests as variable travel times for the same trip. As outlined in the CTA-CDoT Better Streets for Buses,[5] there are a number of issues that lead to unreliable service, including chronic traffic congestion, roadway bottlenecks (such as going from two lanes to one), non-compliance with traffic laws (double parking or blocking the box at intersections), partial or full street closures due to construction or special events, crashes and related emergency response activities, obsolete signal technology, and unfavourable signal timing.

Providing fast, frequent, reliable, safe, and clean public transport can drastically improve ridership. **San Francisco documented a 10% improvement in reliability and a corresponding 20% increase in ridership** in corridors where they implemented public transport priority projects at a time when overall system ridership was decreasing by 2-3% a year.

On the other hand, research shows that a 10% increase in journey times can, on its own, lead to a 6% decrease in bus demand.[6]

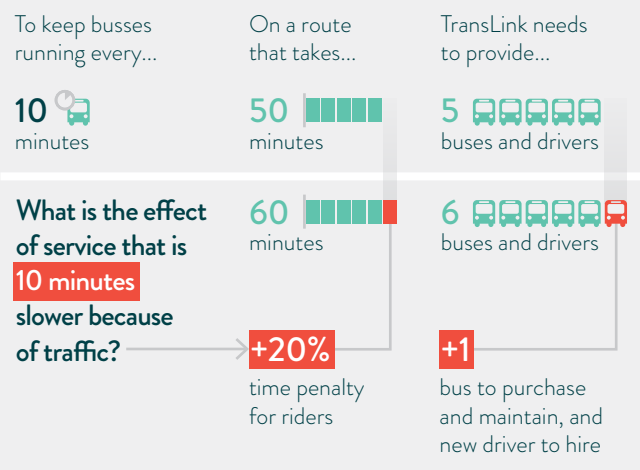
OPERATING REVENUE

Bus priority measures remain a largely untapped asset for many cities and regions, despite their proven benefits. Investing in dedicated infrastructure for buses not only improves service reliability and efficiency but also lowers operational costs.

Reducing public transport travel times means that service frequency can be improved without the need for additional drivers or vehicles. A bus will be able to make a full trip faster, so it can complete more trips with the same amount of resources, thus increasing frequency without increasing costs. Or cities can choose to reinvest the operational savings to address other priorities.

The Papineau Corridor in Montreal, which implemented TSP in 2018, has cut travel times by 4 minutes per trip, saving approximately 325,000 Canadian dollars (CAD) per year in operating costs.

It should be noted that operating revenue can be severely impacted by special events, as well as chronic congestion. One example of a best practice during road work, land use construction, or even demonstration activities is designating temporary bus lanes to minimise revenue loss.



Translink, the cost of delays. Source: Translink

ENERGY CONSUMPTION

The Standardised On-Road Test Cycles (SORT)[7] developed by UITP provide a structured methodology to measure fuel consumption across different bus operation conditions. The methodology identifies commercial speed as a key parameter for the evaluation, emphasising its direct impact on fuel and energy consumption. As stated in the document, **"Consumption reduction following increased commercial speed is a paradox well-known to operators:** commercial speed can only be influenced by structural measures such as dedicated bus lanes, and consequently a reduction in congestion-related stops, which has a favourable impact on consumption."

3 2022 UITP Report 'Bus Network Planning From The Operators' Perspective'
4 2022 Bus Action Plan – Tranport for London
5 CTA Better Streets for Buses Plan
6 The Impact of Congestion on Bus Passengers, Greener Journeys, 2016 7 UITP SORT & E-SORT: Standardised On-Road Test Cycles
7 UITP SORT & E-SORT: Standardised On-Road Test Cycles

Lower commercial speeds, as seen in SORT 1 (12km/h), correspond to higher energy consumption due to frequent stops and acceleration phases, whereas higher speeds in SORT 2 (18km/h) and SORT 3 (25km/h) result in more efficient operations. It is important to note that the SORT methodology involves a much deeper level of calculation and depends on all local conditions. The figures referenced here serve as an example to illustrate the broader principle and provide factual support for the relationship between commercial speed and energy consumption.

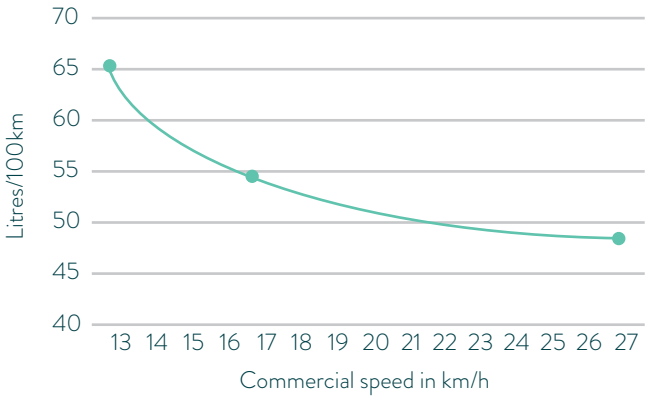


Figure 2. Evolution of fuel consumption over commercial speed. Source: UITP Report 'SORT: Standardised On-Road Test Cycles'

ACT!

Making meaningful change is difficult, but as the famous Nike campaign said, **just do it!** The first step is the hardest but most important. This section presents a general framework of key elements to consider that can be adjusted to fit the local context and resource availability.

1. MAKE A SOUND DIAGNOSIS

To enhance bus network efficiency and reduce congestion, a comprehensive diagnosis of key performance factors is essential. This assessment should focus on identifying public transport travel speed choke points through a speed and delay study. A speed and delay study measures different types of delays: running time (buses in motion), dwell time (when the bus is at a stop where passengers are boarding and alighting), and delay while not at public transport stops (traffic congestion, traffic lights, or poorly bus-oriented street design). Once these factors are measured, targeted solutions mentioned in this document can be applied.

It is not uncommon that, in studies like this, only one third of the time is spent with buses actually in motion, while another third is dedicated to commercial operations such as boarding and alighting, and the final third is lost to traffic congestion or waiting at traffic lights. This last third is essentially wasted time and money, creating unnecessary challenges for public transport users. Therein lies the **hidden treasure** — potential for significant improvements in bus performance.

Mitigation measures specific to intersection or corridor delays can then be identified to address the specific delay concern and unlock the hidden treasure.

In **Zaragoza**, Spain, through statistical procedures ensuring minimal error, the actual commercial speed was analysed for each line, direction, segment, day type, and time to assess its alignment with the city's real traffic conditions.

In **Budapest**, Hungary, BKK continuously identifies critical sections of the network where high passenger traffic and road congestion slow down or halt public transport vehicles. An example of such an initiative is the Hegyalja Road bus lane project, introduced in 2020. This 700m bus lane to the Elisabeth Bridge reduced travel time by allowing buses to bypass congestion, especially during rush hour. Line 8E's travel time, typically 19-21 minutes, was reduced to just over 14 minutes throughout the day, representing a 30% time reduction, by making the service independent of traffic.

2. ENGAGE WITH THE COMMUNITY AND COMMUNICATE

Policy makers, elected officials, and other stakeholders should be partners in identifying concerns and developing a plan to address specific issues.

However, aside from project-specific outreach, it is recommended that a broader marketing campaign be formally launched. Setting the expectation with the public that a structured, long-term approach to improving public transport reliability and enhancing service performance is a priority will make communications on specific projects much easier. Use branding and visibility measures — such as a distinct colour scheme for bus lanes — to reinforce the commitment and showcase flagship projects as leading examples.

The Metrobus system in **Buenos Aires**, Argentina, has established a strong brand identity through its distinctive design and colour scheme, making bus priority corridors easily recognisable. This consistent branding has helped integrate Metrobus into the urban landscape, increasing user confidence and system recognition. Despite the different colourful visual identities used by different routes and operators on individual buses, the Metrobus visual identity as bus priority or BRT corridors has remained clear and prominent.

Since opening its first corridor in 2011, Metrobus has expanded significantly and now comprises 10 dedicated corridors.[8] Continuous efforts to enhance service quality for both passengers and operators have led to tangible benefits, including reduced travel time, more predictable bus arrival, enhanced comfort and safety, and improved environmental conditions. Furthermore, the Metrobus brand has become strongly linked to the prioritisation of public transport in Buenos Aires city policy.

8 Metrobus — Buenos Aires

Public transport-oriented roundabout in Aalsmeer. Source: Aerovista

3. PRIORITISE LOCATIONS

There are many ways to prioritise where to allocate staff and political resources, and developing the plan for your region will entail picking the best option for you, but some of the ways to prioritise locations include consideration of the following:

- **Ridership.**
- **Operational needs** (in other words, target locations with slow speeds or low on-time performance).
- **Partnering with other projects** (for example, San Francisco prioritised locations based on Public Works repaving projects).
- **Policy.** Sort, rank, and categorise all bus routes based on their strategic importance. Introduce a bus network hierarchy, which will guide the prioritisation. This process was outlined in previous UITP publications, particularly the report 'Bus Network Planning from the Operators' Perspective'.[9] Establishing a clear hierarchy within the bus network enables the prioritisation of bus priority measures according to urgency and scope.

For example, in **Barcelona,** Spain, TMB's bus network redesign involved identifying a bus network hierarchy for transit service, followed by significant infrastructure improvements to enhance efficiency, reliability, and travel time. Key upgrades include:

- **Expanded bus lanes:** From 132km in 2012 to 221.8km January 2025.
- **Higher-quality lanes:** Wider and better-designed bus lanes for safer and more efficient operations.
- **Countdown timers at terminals linked to traffic signals:** Reducing idle time and ensuring more efficient departures.
- **Queue jump lanes for buses.**
- **Public transport signal priority.**

4. DEVELOP, FOLLOW, AND ENFORCE FAVOURABLE STREET DESIGN GUIDELINES FOR PUBLIC TRANSPORT

Bus priority can be implemented through various measures, and there are many examples of bus priority toolkits that different agencies and organisations have developed, including:

- SFMTA (San Francisco), TEP/Muni Forward, & 10 yr Muni Forward report.
- TransLink (Vancouver), Bus Speed & Reliability Program. Includes toolkit and 2023 report.
- STM (Montreal), Long-Term Bus Priority Programme. 2024 briefing on programme – French.
- TFL (London), Accessible Bus Stop Design Guidance.
- New Zealand Transport Agency, Public Transport Design Guidance.
- NACTO, Transit Street Design Guide.
- ITDP, BRT Planning Guide.
- CEREMA, Solutions for Bus Performance Improvement (in French).

These toolkits identify modifications to three aspects of the transport system: 1) dedicated space, such as bus lanes; 2) time, such as traffic signal adjustments that give buses a head start; and 3) regulations that enforce or prioritise priority measures. As per the stated purpose of this Action Points, aiming to inspire professionals and mobility champions, we will walk through specific examples in each category, without providing a complete guideline or toolkit.

PUBLIC TRANSPORT PRIORITY THROUGH DEDICATED SPACE

It is a fact that buses — and mass public transport in general — are an efficient way to move people. Buses utilise existing infrastructure while making far more efficient use of road space, as they can carry significantly more passengers than cars.

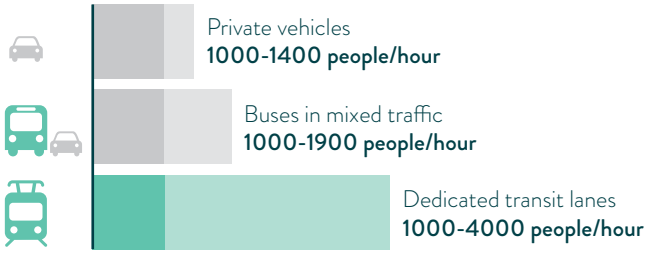


Figure 3. Capacity measured as people/hour-lane. Source: Translink[10]

9 2022 UITP Report 'Bus Network Planning From The Operators' Perspective'

10 Translink's calculation note: Based on typical capacities for vehicles and buses travelling in different types of travel lanes. Vehicles: Up to 800-1,100 vehicles/lane/h and 1.3 people per vehicle on average. Buses: 95 people per bus, at 75-100% capacity and up to 20 buses/h per direction in mixed traffic (every 3 minutes) and up to 40 buses/h per direction in a priority lane (every 1.5 minutes).

Bus Lanes

High-quality bus lanes are a key element of effective bus priority measures, and their design has a significant impact on operational performance. Kerbside bus lanes are often implemented, but they are frequently compromised by conflicts with turning vehicles, parking manoeuvres, loading zones, and pedestrian activity. In contrast, offset or median-aligned bus lanes — although more complex to design and implement — tend to deliver superior performance by minimising interference from general traffic, thereby improving the performance outcomes of speed, reliability, and service quality.

While dedicated, directional transit-only lanes are well documented in the different street design guidelines, **a growing trend** is to implement bi-directional single-lane bus corridors where buses can travel in both directions in the same lane. While this document supports the concept of traditional bus lanes and promotes their widespread adoption worldwide, bi-directional single-lane bus corridors represent an innovative solution for bus priority measures even where space is scarce and to overcome resistance and claims that "there is no space here".

These corridors are managed through various systems, such as visual control, signal control, and alternating time or space management, to ensure the safety and efficiency of bus operations.

Recommendations on the proper design, safety, and management of these lanes to maximise their effectiveness in various urban and interurban contexts are provided in the document (in French) 'Bidirectional single-lane bus lanes: optimising road sharing', published by Cerema with the support of UITP.

There are excellent examples of bi-directional single-lane corridors in various cities and regions. In **Zurich**, Switzerland, the Hohlstrasse bi-directional single bus lane optimises limited road space to enhance bus priority and reliability. Spanning 395m, this dynamic lane operates with a signalling system that alternates access between directions, ensuring efficient bi-directional bus movement. By eliminating unpredictable delays on VBZ's bus line 31, the solution has significantly improved travel time consistency and operational efficiency.

On another note, **shared bus and bicycle lanes** present challenges related to safety for cyclists and bus passengers, operational disruptions due to speed differences, and conflicts with other bus lane users such as taxis or motorcycles. As stated in the UITP Policy Brief 'Pathways to a Multimodal Lifestyle',[11] "it is important that each mode is able to run at its optimum level, so it is desirable to avoid competition between sustainable modes of transport".

Dedicated cycling infrastructure should be prioritised, but where sharing is necessary, it should be limited to sections with low bus and bicycle intensity and as a last resort. Furthermore, bus lanes should be widened (4–4.5m) to allow safe overtaking, while segregated BRT lanes should remain exclusive to buses. Time-based restrictions may help minimise conflicts during peak hours.

Efficient Bus Stops

Stops are the interface between buses and passengers and often present significant opportunities for improvement. While not directly related to priority measures or physical design, operational strategies such as all-door boarding and/or pre-boarding fare collection can substantially reduce dwell times. At the same time, thoughtful design can enhance the stop as a comfortable, accessible, and safe waiting environment by, for instance, ensuring level boarding.

Extending the sidewalk to the travel lane (bus bulb) minimises dwell time, facilitates smooth bus manoeuvres, and helps the bus avoid congestion-related delay, as it keeps buses within the traffic lane, reducing delay when re-entering traffic flow and improving overall operational efficiency. Other features like dedicated bays for passing or terminating buses and space for overtaking — particularly for express services — can contribute to increases in overall bus speed and decreased travel time.

When pilot projects or quick improvements are needed, bus bulbs or kerb extensions can also be implemented using prefabricated material. In **Elche,** Spain, prefabricated elements were installed, improving bus flow while simultaneously enhancing stop accessibility for people with reduced mobility.

Bus and tram exclusive lane in Edinburgh, UK

11 2023 Policy Brief 'Pathways to a Multimodal Lifestyle'

Nouakchott BRT. Source: La Société de Transport Public (STP) de la Mauritanie

Pedestrian Safety Improvements

In **Orebro,** Sweden, comprehensive upgrades to bus stops and their surrounding infrastructure aim to improve accessibility, safety, and sustainability. Pedestrian routes leading to bus stops are being adapted to ensure traffic safety and accessibility, and improved lighting has enhanced visibility and security for passengers.

A common issue raised to the Region Örebro län team is the placement of bus lanes and stops in the middle of the road, which requires passengers to cross a driving lane in both directions. However, this design choice actually represents an improvement in accessibility compared to the previous layout, where passengers had to cross four lanes of traffic in total to reach a stop on the opposite side of the road. Moreover, it enhances BRT flow by reducing disruptions from turning vehicles.

Despite not being fully implemented in 2024, the BRT project has already shown a 9% ridership increase in the corridor compared to 2023. In contrast, overall ridership in other corridors has decreased by 4% over the same period, similar to the trend observed in the abovementioned Mission Street case in San Francisco.

Kerb/Traffic Management

Kerb management is the strategic allocation and regulation of kerbside space. Public transport vehicles should receive the highest priority to reach the kerb, as they move the most passengers per hour in limited space, followed by pedestrian infrastructure to ensure safe and accessible pathways. Freight and delivery zones should be regulated to prevent conflicts and reduce double parking while maintaining business operations, and micromobility and shared mobility services should be integrated to support sustainable transport. This section builds upon the 2020 UITP Policy Brief 'New Mobility And Urban Space – How Can Cities Adapt?',[12] in which the reader can learn more about how all these elements come together.

PUBLIC TRANSPORT PRIORITY THROUGH TIME

The Prague Integrated Transport Authority (ROPID) has implemented TSP in public transport at 310 intersections, covering 58.4% of all signalised intersections in the city's bus network. This system grants buses green light priority, reducing delays and improving travel time. Moving forward, Prague is exploring Connected Intelligent Transport Systems (C-ITS) to further enhance the TSP system and integrate real-time data.

Montreal's advanced traffic light management system, which includes green light extensions, red light shortening, and real-time bus detection, has ensured that 92% of bus priority requests are granted, further enhancing public transport efficiency and sustainability.

In the United Kingdom (UK), **North East Combined Authority's** Bus Service Improvement Plan (BSIP), with a total capital cost of £35 million, includes significant advancements in bus priority measures, leveraging intelligent transport systems (ITS) and targeted infrastructure improvements. Through TSP and automatic vehicle location (AVL) technology, late-running buses are granted priority at traffic signals. This initiative has improved reliability in the region's busiest corridors, helping buses avoid delays and maintain more consistent travel times.

Since 2021, the Trans-Val-de-Marne (TVM) corridor in **Paris,** France has implemented a traffic light priority system using short-wave radio technology managed by the Val-de-Marne administration. This system enables buses to receive green light priority at intersections, reducing delays and improving overall travel times along the corridor. When the TVM was completed, 6% savings in fuel consumption were reported.[13]

In **Pamplona,** Spain, a TSP system was introduced to facilitate the safe and efficient navigation of 18m articulated buses through a challenging junction with complex geometry. The solution involved equipping buses with tag cards that communicate with antennas installed at traffic lights near the intersection. When a bus equipped with a TAG card approaches, the system detects its presence and activates the traffic lights, halting other vehicles to grant the bus priority.

The introduction of this system has optimised bus flow on one of the busiest routes in the region and has reduced delays by up to one minute per direction for each bus using the system. By reducing idling time at traffic signals, the initiative has also contributed to improved fuel efficiency and reduced emissions.

12 2020 UITP Policy Brief New Mobility And Urban Space – How Can Cities Adapt?
13 Buses with High Level of Service – COST Action Report

PUBLIC TRANSPORT PRIORITY THROUGH REGULATION OR POLICY

In the US, **Washington, D.C.'s** Clear Lanes initiative uses artificial intelligence (AI)-powered bus-mounted cameras to automatically detect and report lane violators. The cameras capture images of unauthorised vehicles in bus lanes, transmitting the data directly to enforcement agencies. This has significantly improved compliance with bus lane regulations.

Guangzhou Bus Group in China has introduced a 'responding to stops' policy, allowing buses to skip stops unless passengers signal their intent to board or alight. This has resulted in a 21% increase in average bus speeds, reducing both travel time and fuel consumption. The system has also contributed to decreasing emissions and operational cost savings by minimising unnecessary stops. However, while this practice is common in many regions — Europe and North America, for instance — requesting the stop by pushing the 'stop' button onboard remains a challenge in Asia, as it requires a cultural shift in public transport use.

Barcelona has implemented double stops, allowing passengers to board and alight two buses at one stop simultaneously. This system consists of a central shelter with two designated stopping points (1 and 2), ensuring that buses arriving consecutively do not block each other and thus minimising dwell time. A key benefit of this system is its operational flexibility, particularly in high-demand corridors where frequent bus arrivals could otherwise cause congestion.

Ensuring buses have priority when egressing bus stops is another measure that may result in increased commercial speed and increased safety in traffic. A report by the **New Zealand Transport Agency** found that implementing 'give way to bus' legislation could significantly improve bus efficiency by reducing delays when merging back into traffic, with evidence-based economic and operational benefits supporting it as a viable investment opportunity.[14]

Exclusive bus lanes in Curitiba, Brazil, with electronic enforcement. Source: Manel Rivera Bennassar

5. IMPLEMENT BUS PRIORITY MEASURES

In general, **bus priority is needed at locations where it is often the most difficult to implement.** Where there is no traffic congestion, infrastructure investments are just a 'nice to have'. Bus priority is most beneficial where reliability and speed drops dramatically.

Perceived negative outcomes of a project can keep a project in the planning stage forever. One framework for moving from planning to implementation is 'Partner, Pilot, and Persist'.

Partner

The M5 corridor in the **Barcelona Metropolitan Area** serves 350,000 residents. Operating every 10 minutes on weekdays and every 15 minutes on weekends and using articulated hybrid buses, the service has reduced travel time by up to 40 minutes while increasing commercial speed by almost 10%.

Since the corridor's launch, daily ridership reached 9,000 passengers, contributing to a 30% increase in C-245 corridor demand (from 27,000 to 37,000 users/day). The M5 is fully integrated with metro, tram, and suburban rail; features dedicated bus lanes to bypass congestion; and connects to a segregated cycling route. By partnering with other public transport providers and sustainable modes, the project has attracted more riders and a diverse set of supporters.

Pilot

During a **Washington, D.C.** Metrorail Red Line shutdown in the summer of 2024, Maryland's Department of Transportation (MDOT) and Montgomery County Department of Transportation (MCDOT) introduced temporary bus-only lanes on Georgia Avenue. This intervention aimed to improve bus speeds and service reliability amidst increased demand for alternative transport options. The results were remarkable, with bus travel times improving by up to 32%, despite minimal infrastructure modifications and enforcement measures. Due to its success, the project was extended as a pilot for the remainder of 2024 and later made permanent. The success of this project highlights how small-scale interventions — such as temporary or pilot bus lanes — can significantly impact bus efficiency and ultimately long-term policy decisions related to public transport.

Persist

The implementation of reserved bus lanes and TSP systems in public transport across multiple corridors in **Montreal** has led to significant travel time savings, increased reliability, and environmental benefits. The Saint-Michel Corridor, which introduced bus-taxi reserved lanes in 2009 and real-time traffic light detection in 2010, has provided over 30,000 daily trips. The project resulted in time savings of 15-18%, reducing travel time by 6-8 minutes per trip and achieving an on-time performance of 94.6%. The efficiency gains also enabled STM to save two buses per day in a fleet of 30 and reduce greenhouse gas emissions by 45 tonnes annually, making the corridor a model for sustainable mobility.

14 Quantifying the economic and other benefits of enabling priority bus egress from bus stops, NZ Transport Agency Research Report 609, 2017

6. KEEP UP WITH INNOVATION

The bus prioritisation systems are supported by a combination of advanced technologies that give public transport preference at intersections and improve its efficiency. Variable signs, ITS, and AI can enable smoother bus trips at reasonable investment costs and high potential savings.

ITS IN BUS AND TRAFFIC MANAGEMENT

Bus operations control centres (OCC) oversee fleet movement, ensuring buses operate efficiently across the network. Separately, traffic management centres regulate signal timings and monitor road conditions. By linking these systems, cities can actively optimise traffic signals to increase bus speeds, not just for delayed buses but for all services, particularly those operating in dedicated bus lanes.

With real-time coordination, traffic signals can be adjusted to minimise stops for buses, creating smoother, faster journeys along key corridors. This integration allows buses to move more efficiently through intersections, reducing overall travel time and improving service reliability. As part of the European Union (EU)-funded and UITP-coordinated eBRT2030 innovation project,[15] one of the innovation use cases in **Barcelona** is the improvement of headway adherence on TMB's Route H12. Adaptive regulatory measures were applied to ensure service uniformity and optimise bus frequency.

V2X FOR TRANSIT SIGNAL PRIORITY

Vehicle-to-everything (V2X) technology facilitates TSP by enabling real-time, two-way communication between buses and traffic signals, unlike traditional TSP's one-way, pre-set rules. It dynamically adjusts signals based on live traffic, congestion, and passenger loads rather than fixed global positioning system (GPS) coordinates, loop detectors, or radio-frequency identification (RFID) requests. With 5G, buses communicate instantly with intersections, which ensures faster, more precise priority decisions, while simultaneously minimising disruptions. V2X also optimises multimodal transport, seamlessly coordinating buses, trams, and emergency vehicles.

Extending TSP beyond individual intersections, V2X enables city-wide optimisation through cloud-based AI and digital twins, dynamically adjusting real-time traffic flow based on variables such as traffic conditions, weather, passenger loads, and vehicle conditions — battery state of charge, etc. Unlike fixed-priority TSP, it prioritises buses based on real-time needs, favouring high-occupancy or delayed vehicles for efficiency.

15 eBRT2030 Project

Bus lanes with electronic enforcement in Santiago de Chile. Source: DTPM

DYNAMIC STREET MARKING

Dynamic light-emitting diode (LED) road markings enhance bus priority by improving visibility, compliance, and traffic flow at key intersections. These high-visibility LEDs create adaptable signals that guide road users more effectively than static signage. They adjust in real time to bus detection and congestion, which reinforces priority and ensures better compliance without costly infrastructure changes. AI-driven TSP and smart enforcement further improve efficiency and reliability in bus networks.

A pilot project in **Nantes,** France implemented by PTO SEMITAN and PTA Nantes Metropole improved bus priority compliance and reduced conflicts with other vehicles. Visibility enhancements increased compliance from 76-83%, with 62% of bus drivers reporting better cooperation from car drivers. Stress levels decreased, and anticipation improved, making operations smoother. Despite its positive results, the project had to be decommissioned for regulatory reasons, as the special permission granted for the pilot was not extended.

AI AND PREDICTIVE ALGORITHMS

State-of-the-art prioritisation systems use AI algorithms to analyse historical and real-time data. These algorithms process large volumes of data related to traffic, mobility patterns, and road conditions in order to improve efficiency in traffic management.

AI acts as the core intelligence behind these systems, continuously storing and analysing data to identify trends, behavioural patterns, and potential congestion hotspots. With its learning capabilities, AI not only reduces the need for manual monitoring but also optimises decision-making automation, allowing for dynamic adjustments in traffic regulation.

The primary goal of this technology is to optimise wait time at traffic signals, reduce congestion, and improve road safety.

7. INSTITUTIONALISE BUS PERFORMANCE IMPROVEMENT

Formalise bus route performance improvement as an ongoing structural mission within the public transport ecosystem (PTO/PTA), so that it becomes a permanent strategic initiative rather than a one-time project. This can be done by making it part of the reporting structure and/or having the Board adopt it as an organisational priority.

A good practice shared by **PMPD** — a PTO in **Pilsen,** Czech Republic — is to align the implementation of bus priority measures with a city-wide strategy on public resource expenditure. For example, a car-free zone was created along the busiest trolleybus line (Line 16) in the city (500 bus trips/day with 24,000+ daily passengers). As a result, overall traffic improved significantly, public transport travel time was considerably reduced, and operating requirements were reduced by two buses, thanks to faster route cycles.

Pilsen is effectively prioritising public transport expenditure to streamline operations and avoid unnecessary losses like those due to traffic congestion. According to PMPD, "investments in the Public Transport Corridor Line 16 [...] will lead to higher efficiency in spending public funds and at the same time have a number of other benefits and lead to the fulfilment of the city's strategic goals."[16]

8. OPERATIONALISE BUS NETWORK UPGRADES

Mandate, delegate, or contractually assign bus network improvement as either (A) a dedicated project or (B) a structural department with dedicated staff and operational and capital budget components to ensure long-term implementation. Examples like SEMITAN in Nantes demonstrate how this responsibility can be transferred from the city to the PTO to streamline execution.

Public transport in Nantes is governed by Nantes Métropole and supported by SEMITAN, a mixed-economy company with both public and private shareholders, though primarily public. Nantes Métropole is its sole public shareholder, but SEMITAN operates as a private company.

SEMITAN has two main roles:

- Acting as the PTO of the entire integrated public transport network (tram, bus, and waterborne transport).
- Driving mobility project deployment.

This scheme has been in place since 1979 and has allowed SEMITAN to act with a long-term view to developing efficient and cost-effective public transport. As part of its PTO role, SEMITAN monitors the network performance and advises the PTA on improvements.

16 https://www.koridor16.cz/cz/prinosy-projektu
17 UPPER project

9. BENCHMARKING & PEER LEARNING

Leverage UITP's community to identify and benchmark best practices, establish partnerships with leading cities, and request peer reviews. UITP's toolkits on bus route performance, infrastructural measures, quick wins, and specialised interventions (for example, queue jumpers, bidirectional single-lane bus lanes, etc.) can be used to implement proven solutions effectively. Organisations can tap into UITP recommendations, the literature available in the UITP MyLibrary, and the UITP network to further refine strategies, exchange insights, and collectively advance bus and public transport performance.

10. PERFORMANCE MONITORING & FEEDBACK LOOP

Monitor progress through performance reviews 3-6 months after implementation. Revisiting the project to see if it is meeting expectations is critical to building trust with stakeholders, as well as delivering project results that maximise functionality. A bus-priority project is never 'completed'; continual monitoring and adjustments are crucial, and reporting back to stakeholders will build trust for future projects.

EU-funded project and UITP-coordinated project UPPER[17] is working on developing a methodological approach for analysing and evaluating the effectiveness of priority measures, a task led by UPPER partner and UITP member BKK. More details can be found here.

New York, 14th Street bus lanes. Source: Manel Rivera Bennassar

RECOMMENDATIONS FOR SUCCESS

- Identify where delays take place in the public transport network and the cause of any delay.
- Develop mitigation measures with community stakeholders.
- Apply a combination of measures to improve a route or corridor, as a single measure is often not sufficient.
- Align implementation with other projects or initiatives to reduce implementation cost and get larger stakeholder buy-in — roadway repaving or water/sewer works are great projects for public transport priority scope.
- If no partnering opportunities are available, pilot controversial ideas to get the project on the ground, so stakeholders can 'touch and feel' the impacts of implementation. Be willing to undo the pilot or make changes to the project if it is not working as anticipated.
- It is easier to ensure community buy-in when people see visible changes and improvements. However, large-scale projects that disrupt urban space and daily movements require time for mindset shifts to occur. Continuous review and monitoring should take place over several years to assess progress and adapt strategies accordingly.
- Engaging drivers and field staff is crucial to ensuring smooth implementation and operational buy-in. This involvement can also boost employee motivation, especially during times of staff shortages.
- Continue reviewing impacts and making adjustments. Agencies may need to start small due to funding or political constraints, but taking the first step is crucial. Incremental changes help build support, and even small improvements contribute to progress.

Bus priority corridor in Pilsen, Czech Republic. Source: PMDP

CONCLUSION

SPEED UP BUSES

Can we afford (as a society) not to do it?

This document is not meant to be a complete technical catalogue of bus priority measures but is rather designed to serve as inspiration for operators, authorities, policy makers, advocacy groups, planners, and engineers to implement sustainable improvements in their cities and bus networks.

There is a need for courageous leaders at all levels who are prepared to implement the measures outlined in sustainable mobility plans and policies. By drawing inspiration from cities that have successfully prioritised public transport, local champions can push for the bold steps needed to transform urban mobility, ensuring that buses — and the people who rely on them — receive the priority they deserve on the streets of our cities.

By being innovative and fearless and drawing on inspiring examples of public transport priority implementation around the world, your region can obtain similar benefits. Take action by partnering with other stakeholders, piloting controversial projects, and above all, persisting. Start small and continue to iterate until major improvements are realised. The future is in your hands.

ACKNOWLEDGEMENTS

We sincerely thank the UITP Bus Committee members for their dedication, especially Sean Kennedy (SFMTA) for leading and uniting the efforts behind this milestone and Antonio García Pastor who was the Bus Committee Chair during the term 2023-2025 and initiator of this Action Points.

We would like to express our gratitude to the UITP Bus Division members who contributed their use cases, as well as the Transport and Urban Life Committee and Authorities Committee for their collaboration in identifying best practices.

Special thanks to Guido Bruggeman, lead trainer at UITP Academy, for his valuable guidance.

This report is the consolidation of many ideas and expertise shared in various UITP forums:

- Bus System Planning workstream discussion within the UITP Bus Committee.

  Future eBRT Cities, eBRT2030 User Group meetings in Barcelona (4 June 2023), Lund (13-14 February 2024), Nantes (13-14 November 2024).

- UITP Summit Barcelona – Bus Network Planning in Our Cities Today parallel session, 5 June 2023.

- UITP Bus Committee Meeting in Nantes, 6-8 November 2023 – With contributions from Michelle Poyourow (JWA+) and an extensive technical visit programme highlighting Nantes as a leading example of BRT in Europe, network hierarchy, and bus priority infrastructure, hosted by SEMITAN and Nantes Métropole. Of special interest were the technical visits to explore the Busway and priority measures for Chronobus lines.

- UITP Bus Committee Meeting in Los Angeles, 16-20 April 2024 – Hosted by LA Metro, featuring insights from Jarrett Walker and a dedicated workshop on this publication. The extended technical visit in San Francisco included a visit to the trolleybus BRT line, sparking ideas and encouraging members to further research and innovate in this area.

- UITP Bus Committee Meeting in Prague, 21-23 October 2024 – Hosted by DPP, featuring a highly insightful technical visit to Prague's recently opened trolleybus BRT and a demonstration of the eBRT2030 project. Parallel discussions with the Bus System Planning members also provided key contributions to this work.

- UITP BRT Seminar, celebrating 50 years of BRT in Curitiba, 28 November 2024.

- UITP Prescom meeting, 11 March 2025, in which this report was presented and invaluable comments were gathered and incorporated into the final version of the document.

- UITP Policy Board meeting, 25 April 2025, in which this report was presented and approved by the Policy Board.

- UITP Webinar, 5 June 2025, 'Regions Thrive with Congestion-Free Public Transport', co-hosted by the UITP Bus and Transport and Urban Life Committees. Presentations and recording available at UITP (for UITP members only).

Trolleybus in Low Emission Zone in Pilsen. Source: PMDP

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Figure 4. R6-31A Give Way to Bus. Source: National Safety Signs

This is an official Action Point of UITP, the International Association of Public Transport. UITP has more than 1,800 member companies in 100 countries throughout the world and represents the interests of key players in this sector. Its membership includes transport authorities, operators, both private and public, in all modes of collective passenger transport, and the industry. UITP addresses the economic, technical, organisation and management aspects of passenger transport, as well as the development of policy for mobility and public transport worldwide.

This Action Points document was prepared by the UITP Bus Committee.

AUGUST | 2025

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