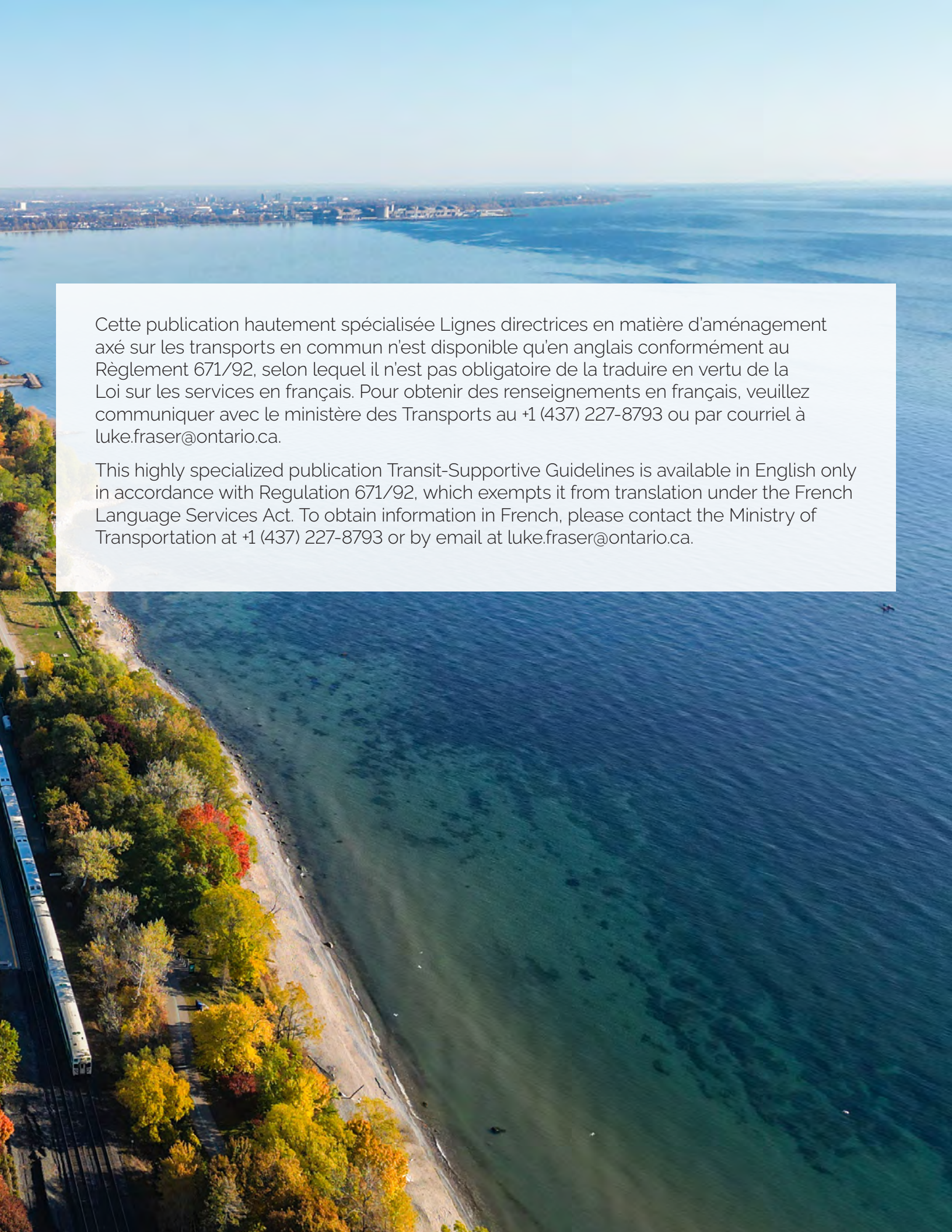


# Transit- Supportive Guidelines

April 2026  
Draft





An aerial photograph showing a wide expanse of blue water in the foreground and middle ground. In the distance, a city skyline is visible across the water. In the lower-left foreground, a train is visible on tracks, surrounded by trees with autumn foliage in shades of yellow, orange, and red. The sky is clear and blue.

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This highly specialized publication Transit-Supportive Guidelines is available in English only in accordance with Regulation 671/92, which exempts it from translation under the French Language Services Act. To obtain information in French, please contact the Ministry of Transportation at +1 (437) 227-8793 or by email at [luke.fraser@ontario.ca](mailto:luke.fraser@ontario.ca).

# Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>Introduction</b>   | <b>1</b>  |
| 1.1      | Executive Summary   | 3         |
| 1.1.1    | What are the Transit-Supportive Guidelines?                   | 3         |
| 1.1.2    | Who is the TSG for?   | 4         |
| 1.1.3    | Why is the TSG Being Updated?                                 | 5         |
| 1.2      | How the TSG supports the Future Mobility Landscape in Ontario | 7         |
| 1.2.1    | Provincial Land Use Policy & Transportation Plans             | 7         |
| 1.3      | How to Use the TSG  | 9         |
| 1.3.1    | Document Structure  | 9         |
| 1.3.2    | Document Categorization                                       | 10        |
| 1.3.3    | How to Read the Guidelines                                    | 11        |
| <b>2</b> | <b>Planning Around Transit</b>                                | <b>13</b> |
| 2.1      | Transit-Supportive Urban Form                                 | 16        |
| 2.1.1    | Land Use Planning Around Transit                              | 17        |
| 2.1.2    | Transit-Oriented Development                                  | 28        |
| 2.1.3    | Major Transit Station Areas                                   | 32        |
| 2.1.4    | Specialized Major Trip Generators                             | 39        |
| 2.1.5    | Fostering a Sense of 'Place'                                  | 52        |
| 2.1.6    | Open Space Networks   | 58        |
| <b>3</b> | <b>Transit &amp; Mobility - Design &amp; Planning</b>         | <b>61</b> |
| 3.1      | Regional Mobility Planning                                    | 64        |
| 3.1.1    | Layout, Spacing, & Design of Arterials & Collectors           | 65        |
| 3.1.2    | Local Street & Block Pattern                                  | 68        |
| 3.1.3    | Regional Mobility Corridors                                   | 73        |
| 3.1.4    | Transit Network Design and Planning                           | 77        |
| 3.1.5    | Creating and Expanding Transit Service Areas                  | 84        |
| 3.1.6    | Changing Demographics & Transportation Equity                 | 87        |

|        |  |     |
|--------|--|-----|
| 3.2    | Transit System & First-Mile Last-Mile Planning     | 98  |
| 3.2.1  | Location & Design of Transit Stations              | 99  |
| 3.2.2  | Location & Design of Transit Stops                 | 112 |
| 3.2.3  | Complete Streets                                   | 119 |
| 3.2.4  | Transit within the Public Right-of-Way             | 124 |
| 3.2.5  | Transit Access for Pedestrians                     | 130 |
| 3.2.6  | Transit Access for Cyclists                        | 138 |
| 3.2.7  | Transit Access for Shared Mobility Users           | 147 |
| 3.2.8  | Transferring between Systems                       | 151 |
| 3.2.9  | Pick Up & Drop Off Areas                           | 155 |
| 3.2.10 | Car Share / Shared Fleets                          | 158 |
| 3.3    | Trip Planning & Navigation                         | 161 |
| 3.3.1  | Static Trip Planning Information                   | 162 |
| 3.3.2  | Real-Time Trip Planning Information & Applications | 166 |
| 3.3.3  | Mobility-as-a-Service Applications                 | 172 |
| 3.3.4  | Wayfinding for Transit Facilities                  | 176 |
| 3.3.5  | Wayfinding for the Public Realm                    | 182 |

|          |  |            |
|----------|--|------------|
| <b>4</b> | <b>Transit Operations</b>                          | <b>187</b> |
| 4.1      | Transit System Service & Operations                | 190        |
| 4.1.1    | Transit Service Types                              | 191        |
| 4.1.2    | Heavy Rail & Passenger Rail                        | 196        |
| 4.1.3    | Subway   | 200        |
| 4.1.4    | Light Rail Transit (LRT) & Bus Rapid Transit (BRT) | 203        |
| 4.1.5    | Bus  | 208        |
| 4.1.6    | Zero Emission Buses                                | 211        |
| 4.1.7    | On-Demand / Demand-Responsive Transit              | 214        |
| 4.1.8    | Ferry Services                                     | 219        |
| 4.1.9    | Transit Travel Time                                | 223        |
| 4.1.10   | Winter Conditions Operations                       | 227        |
| 4.1.11   | Rural & Remote Transit Operations                  | 231        |
| 4.1.12   | First Nations Transit Operations                   | 235        |
| 4.2      | Transit Planning & Performance Monitoring          | 238        |
| 4.2.1    | Fleet Management & Transit Scheduling              | 239        |
| 4.2.2    | Performance Monitoring & Evaluation                | 243        |
| 4.2.3    | Data Collection & Analysis                         | 247        |
| 4.2.4    | Safety & Security                                  | 250        |
| 4.2.5    | New Technologies                                   | 256        |
| 4.2.6    | Asset Management                                   | 260        |
| 4.3      | Fare Collection & Ridership Strategies             | 263        |
| 4.3.1    | Fare Strategies                                    | 264        |
| 4.3.2    | Automatic Fare Collection (AFC)                    | 269        |
| 4.3.3    | Transportation Demand Management                   | 273        |

|                   |  |            |
|-------------------|--|------------|
| <b>5</b>          | <b>Partnerships</b> .....                        | <b>277</b> |
| 5.1               | Fostering Partnerships .....                     | 279        |
| 5.1.1             | Partnerships for Enhancing Transit Systems ..... | 280        |
| 5.1.2             | Indigenous Partnerships .....                    | 283        |
| <b>6</b>          | <b>Implementation</b> .....                      | <b>285</b> |
| 6.1               | The Planning Process .....                       | 287        |
| 6.2               | Innovative Planning Approaches.....              | 294        |
| 6.3               | Future Readiness .....                           | 297        |
| 6.4               | Funding and Investment .....                     | 302        |
| <b>Appendix A</b> | <b>Case Studies</b> .....                        | <b>307</b> |
| <b>Appendix B</b> | <b>Glossary of Terms &amp; Acronyms</b> .....    | <b>329</b> |
| <b>Appendix C</b> | <b>Ontario's Regulatory Framework</b> .....      | <b>359</b> |
| <b>Appendix D</b> | <b>Figure &amp; Photo Credits</b> .....          | <b>361</b> |



|                    |  |          |
|--------------------|--|----------|
| <b>Section 1.1</b> | <b>Executive Summary</b>   | <b>3</b> |
| <b>Section 1.2</b> | <b>How the TSG Supports the Future Mobility Landscape in Ontario</b> | <b>7</b> |
| <b>Section 1.3</b> | <b>How to Use the TSG</b>  | <b>9</b> |

# 1.1 Executive Summary

## 1.1.1 What are the Transit-Supportive Guidelines?

The Transit-Supportive Guidelines (TSG) is a provincial guidance document offering best practices, strategies, and tools to help municipal/community and transportation planners create transit-supportive environments and develop programs that increase transit ridership.

The TSG provides clear, scalable strategies for planning and designing transit-supportive communities. These strategies aim to improve transit access, facilitate multimodal connectivity, and foster sustainable, resilient, and future-ready places in response to Ontario's population and employment growth. As the province experiences significant growth, robust, efficient and affordable public transit systems are essential to building healthy, complete and resilient communities. The strategies, case studies, and resources in these guidelines serve as a reference for municipalities and planning authorities in their decision-making. They outline approaches for building transit-supportive communities aligned with provincial policies, supporting the Provincial Planning Statement (2024).

The TSG is organized by four key chapters:

- (i) Planning Around Transit
- (ii) Transit and Mobility - Design & Planning
- (iii) Transit Operations
- (iv) Partnerships

The guidance provided within this document is grounded in provincial policy directives, providing implementable strategies to support provincial direction related to transit-supportive planning in Ontario. However, this document is not a provincial policy document.

Municipalities are encouraged to adapt these strategies to local contexts while ensuring compliance with applicable legislation, policies, and standards.

## 1.1.2 Who is the Transit-Supportive Guidelines for?

This document is intended to provide guidance for all Ontario communities, from Indigenous communities and small towns that may or may not currently provide transit services, to mid-size cities and large urban centres with extensive existing and planned transit infrastructure.

While the key users of the TSG are municipalities and transit agencies that lead transit-supportive planning, design and operation of transit systems, the guidelines also provide strategies that recognize the role that private and shared mobility service providers play in enhancing transit access, integrating with transit systems and infrastructure.

- For **smaller centres**, this document will be most useful in providing tools and strategies to create more compact land use patterns, optimize the effectiveness of existing or future transit services, retain ridership, and better target transit service.
- In **mid-size** or **larger cities**, the guideline will help to better utilize existing infrastructure, grow ridership and manage urban growth in a more transit-supportive manner.

## 1.1.3 Why is the TSG Being Updated?

### Emerging Mobility Innovations

Mobility trends in Ontario continue to evolve in response to increasing population growth, transit and infrastructure demand and the modernization of transit-supportive planning and design. The updated TSG offers strategies to help stakeholders advance mobility innovations, respond to emerging trends, and transition toward Ontario's future mobility landscape. Below are key emerging mobility directions:

- **Encouraging transit usage:** through transit-supportive planning and design of transportation facilities, retrofitting public space for transit infrastructure, and integrating First-Mile Last-Mile (FMLM) options.
- **Expanding transit network catchment areas and ridership:** by improving transit frequency, service, reliability, availability, and accessibility, particularly in large urban areas with high population growth rates.
- **Increasing transportation safety, equity and access:** by ensuring that existing and future transit systems and infrastructure are reliable, safe, and equitable.
- **Supporting the integration of emerging transportation technologies:** by proactively integrating the use of emerging transportation technologies into regional and municipal transportation systems.
- **Focusing intensification and activity within key areas that are served by transit:** by integrating land use planning and transportation planning to ensure that transit is supported by a density of riders and areas of activity are serviced by transit.
- **Enhancing FMLM connectivity:** by designing an interconnected network of transit and mobility infrastructure that allows users to get to and from transit facilities easily.
- **Supporting the growth of on-demand microtransit:** by supporting and establishing partnerships to support the deployment of on-demand microtransit (ODMT). ODMT is an increasingly important alternative to fixed-route transit, particularly in communities where conventional transit service is challenging or too expensive to implement.
- **Implementing fare and service integration (FSI):** by working with municipal and regional agencies and other stakeholders to support FSI across jurisdictional boundaries, enabling more seamless, interconnected, convenient and affordable travel for commuters.
- **Increased resilience and future readiness:** by implementing strategies that ensure transit services respond to the needs of future generations and can adapt to changes in the environment, including support for the reduction of carbon emissions.



vivaNext Busway, York Region

## 1.2 How the TSG Supports the Future Mobility Landscape in Ontario

Understanding emerging mobility innovations is critical to creating a flexible, transit-supportive environment that enables seamless, convenient, and affordable travel through coordinated planning, land use integration, and FMLM connectivity. The TSG advances Provincial Policy Statement policies and provides strategies aligned with provincial transportation plans to increase ridership by improving access, safety, and service.

### 1.2.1 Provincial Land Use Policy and Transportation Plans

Land use and transportation planning in Ontario continues to adapt to accommodate the significant growth forecasted for the province. To accommodate increased demands on the transportation system and services, major transit investments are underway in the province, including subway expansion, light rail transit (LRT) creation and planning for transit-oriented development around key transit stations.

Keeping people and goods moving is vital to supporting Ontario's economy, health and prosperity. Provincial transportation plans provide the long-term vision across Ontario's regional transportation system and guides actions for future transportation infrastructure investments and servicing.

Ontario's transportation and land use planning landscape is shaped by key provincial documents and plans:

- **Provincial Planning Statement (2024):** The Provincial Planning Statement (PPS) provides land use policy direction for transit-supportive land use patterns, planning for complete communities and density around transit, and providing multimodal access to transit to support access to housing, employment, services and recreation for all Ontarians.

The PPS defines transit-supportive as: "development that makes transit viable, optimizes investments in transit infrastructure, and improves the quality of the experience of using transit. It often refers to compact, mixed-use development that has a high level of employment and residential densities, including air rights development, in proximity to transit stations, corridors and associated elements within the transportation system."

**Provincial transportation plans** guide regional mobility planning across 4 regional areas with the common vision to a safe, accessible, reliable transportation system that connects communities and contributes to the health, well-being and economic prosperity of each region across Ontario. There are 4 provincial transportation plans for each of the 4 regions in Ontario:

- **Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe (2022)** provides a 30-year vision for mobility across the Greater Golden Horseshoe (GGH) region up to the year 2051. The plan guides provincial transportation planning and investments in transit network and service improvements to reduce gridlock, improve transit connectivity and access, move goods efficiently, and be future ready. The plan sets a goal of frequent local transit service of 10 minutes or less during peak periods, in all urban areas of the GGH.
- **Connecting the North: A Draft Transportation Plan for Northern Ontario (2020)** guides the development of a modern and sustainable transportation system in Northern Ontario. The driving focus of the plan is to advance initiatives and forge partnerships that will see the growth of Northern Ontario's transportation network into one that is 'resilient to future changes and embraces innovation and technological change'.
- **Connecting the Southwest: A Draft Transportation Plan for Southwestern Ontario (2020)** includes goals and actions towards improvements for public transit, rail, highways across the region, improving freight vehicle safety, and preparing for future readiness through emerging transportation technology. One of the key actions for both southwest and northern regions is connecting communities underserved by passenger transportation services.
- **Connecting the East: A Draft Transportation Plan for Eastern Ontario (2022)** contains goals and actions towards rehabilitation and expansion of highways, improving transit and intercommunity bus options, support development opportunities and ensure that the region's transportation system is ready for the future.
- **2041 Regional Transportation Plan (RTP) for the Greater Toronto and Hamilton Area (2018)** provides guidance on developing the transit system in the Greater Toronto and Hamilton Area (GTHA). Consistent with the vision of the GGH Transportation Plan, the RTP focuses on integrated and multimodal initiatives, supportive strategies to improve access to transit network across the jurisdictional area.

## 1.3 How to Use the Transit-Supportive Guidelines (TSG)

### 1.3.1 Document Structure

The document is structured into five chapters. Chapters 2-5 provide guidance related to categories that underpin the success and health of transit-supportive communities. The last chapter focuses on steps to implementation.





- **Chapter 2: Planning Around Transit** provides guidance on a range of land use, urban design and development-oriented topics, from a higher-level planning scale down to the community-level and site-specific scale.
- **Chapter 3: Transit & Mobility- Design and Planning** provides guidance on planning, designing, managing and integrating public transit with private and shared mobility services, including strategies for FMLM mobility connections to expand transit catchments areas.
- **Chapter 4: Operations** provides guidance on the operation and management of public transit assets, including transit stations, stops, and transit-supportive physical and digital infrastructure.
- **Chapter 5: Partnerships** provides guidance on forming partnerships ranging from intermunicipal and regional collaborations to engagement with public groups and Indigenous communities, as well as partnerships with Mobility Service Providers and technology companies.
- **Chapter 6: Implementation** provides an overview of the planning, design and funding tools that can be used to implement the strategies within the document.

The TSG concludes with a series of best practice case studies, an overview of the existing legislative framework, a glossary of terms, and a summary of resources and references.

## 1.3.2 Document Categorization






### Planning Scale

Each strategy has been identified with a 'planning scale' that indicates the level at which it might be implemented.

-  **Regional Planning:** Typically requires coordination between municipalities. Policies and strategies may be embedded in regional official plans and/or regional transportation master plans.
-  **Municipal Planning:** May be implemented through municipal official plans and zoning by-laws.
-  **Community Planning:** May be implemented through plans of subdivision, community-level secondary plan processes or community-specific zoning by-laws.
-  **Site Planning:** May include issues such as site access and building design.

### Community Size

This document contains strategies applicable to all sizes of communities. A legend is provided with the different categories of community sizes (see Section 1.3.3. How to Read the Guidelines). Community sizes have been identified through five population ranges:

-  **Big City:** > 500,000 (Brampton, Hamilton, Mississauga, Ottawa, Toronto)
-  **Large:** 150,000 – 500,000 (Barrie, London, Markham, Sudbury)
-  **Mid-size:** 50,000 – 150,000 (Milton, North Bay, Waterloo, Whitby)
-  **Small:** 10,000 – 50,000 (Cornwall, Fort Erie, Six Nations of the Grand River, Tiny, Woodstock)
-  **Remote:** < 10,000 (Hanover, Minto, Smiths Falls, Tweed)

These population ranges are intended to apply to the current and future population sizes. The population ranges are approximate, and professional judgement should be used on if all strategies are relevant to the specific land use context (e.g. through consideration of population and employment density, type of transit services available, and land uses).

## 1.3.3 How to Read the Guidelines

Transit Supportive Guidelines 2026 [Draft - ERO Posting]

Subsection  
Number and Name

### 4.2.1 Fleet Management & Transit Scheduling

Subsection  
Objective

Schedule vehicles to provide frequent service that meets local demand, minimizes passenger transfer waiting times and reduces overcrowding.

Subsection  
Applicable Context

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |   |   |
|  Small    |   |   |
|  Remote   |   |   |

Context

Transit scheduling can have a significant impact on the level of convenience and comfort experienced by travellers, minimizing wait times and reducing crowding on local services.

Timely and comfortable service with minimal transfers is critical to attracting and retaining riders. Scheduling frequent service during periods of high demand and minimizing transfer waiting time are important strategies for increasing transit ridership. Higher-frequency service can also result in increased vehicle capacity, increasing passenger comfort on crowded routes.

Chapter 4 Transit Operations

Applicable Context

Service Review ←

Strategy Type & Applicable Context

Planning Scale

- Regional
- Municipal

- h) Develop a regular program of route reviews to evaluate a route's service quality and set targets for service levels, frequency, overcrowding and transfer wait times.
- i) Performance data and observations should be compared to established service levels. Connection wait time data may be obtained from electronic fare payment (EFP) systems, while ridership load data for routes and route segments may be obtained from:
  - manual or automated passenger counts;
  - EFP systems;
  - passenger surveys;
  - observations from operating staff; and
  - customer complaints and suggestions.

Reducing Service

Planning Scale

- Regional
- Municipal

- j) If demand does not support the minimum frequency, decrease frequency or vehicle capacity, and invest operating savings on other routes in need of service improvements. However, transit systems should be aware that reducing service frequency may further reduce ridership. To maintain ridership, operators should set a minimum frequency standard for routes regardless of demand.
- k) Evaluate service changes regularly to ensure there is customer benefit. Recognize that customers perceive each component of a transit trip differently, so not all improvements are equally beneficial. For example, time spent waiting at a stop is considered more onerous than time spent on a moving vehicle

Applicable Sections ←

Applicable Sections Within the TSG

4.1

Additional Resources ←

Resources Outside of the TSG

- Elements Needed to Create High Ridership Transit Systems – Chapter 5 (Transit Cooperative Research Program)
- [The Complete Guide to Fleet Management, Geotab \(2023\)](#)
- [Transit Fleet Management, USDOT](#)







# 2.1 Creating a Transit-Supportive Urban Form

A transit-supportive urban form can be created by coordinating urban design and planning elements such as built form, land uses, the public realm, open spaces, streetscapes and parking. Growth can be focused around existing and planned transit, with compact, high-quality spaces that encourage people to live, work and spend time nearby. Urban form can enhance both the transit experience and the journey to and from transit, making these areas attractive and well used.

This section provides guidance on the design and planning elements that should be considered in transit-supportive environments. These include:

- 2.1.1 Land Use Planning Around Transit** ..... 17
- 2.1.2 Transit-Oriented Development** ..... 28
- 2.1.3 Major Transit Station Areas** ..... 32
- 2.1.4 Specialized Major Trip Generators** ..... 39
- 2.1.5 Fostering a Sense of ‘Place’** ..... 52
- 2.1.6 Open Space Networks** ..... 58

Figure A  
**TTC Streetcar along  
 Queen Street West**

## 2.1.1 Land Use Planning Around Transit

Land uses and growth should be coordinated alongside transit investments to enable transit-supportive densities and a mix of uses in proximity to transit. Similarly, transit investments should aim to support existing and planned land use patterns by providing greater levels of service in areas with a higher concentration of residents and jobs.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Provincial Transportation Agencies, Local Transit Agencies, Land Use Planning & Urban Design / Architecture Professionals, Developers |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote |   |  |

The allocation of growth and development around transit optimizes infrastructure investments and provides enhanced access to transit, housing, employment opportunities and community services.

Figure B  
Hamilton GO Centre



## Strategies

### Applicable Context

### Planning Community Growth to Support Transit

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#### Planning Scale

---

 Regional

 Municipal

- a) Utilize official and secondary plans to focus growth and transit infrastructure within existing settlement areas, prioritizing strategic growth areas.
- b) Align official and secondary plans, and zoning by-laws, with regional and municipal transportation plans to develop a coordinated approach to transit-supportive development.
- c) Promote infill development, including brownfield and greyfield sites, located near existing or planned transit.
- d) Identify an urban structure of strategic growth areas that align with existing or planned transit routes and stops.
- e) Ensure there is regular communication and consistent coordination on matters related to transit planning between transit agencies, transportation service providers, and municipalities ([Section 6.1](#)). Transit planning activities may include: a review of proposed densities and road networks to ensure optimized transit routing; preliminary planning of future transit routes and stops; and requirements for developers to incorporate transit infrastructure into development plans.
- f) Implement minimum density targets for areas within a 5-10 minute walk of transit capable of supporting different types and levels of transit service.

Table A  
**Transit Service Types & Minimum Density**

| Transit service type  | Suggested minimum density                         |
|---|---|
| Bus Transit Service (One bus every 20-30 min)   | 22 units per ha / 50 residents and jobs           |
| Frequent Transit Service (One Bus every 10-15 min)  | 37 units per ha / 80 residents and jobs combined  |
| Very Frequent Bus Service (One bus every 5 minutes with potential for LRT or Bus Rapid Transit (BRT)) | 45 units per ha / 100 residents and jobs combined |
| LRT or BRT  | 72 units per ha / 160 residents and jobs combined |
| Commuter or Regional Rail   | 68 units per ha / 150 residents and jobs combined |
| Subway  | 90 units per ha / 200 residents and jobs combined |

Note: The thresholds presented are a guide and not to be applied as standards. Factors such as the design of streets and open spaces, building characteristics, levels of feeder service, travel time, range of densities across the network and mix of uses, can also have a significant impact on transit ridership.



Figure C  
**Ongoing Intensification  
 around ION Central  
 Station & Kitchener GO  
 Station**

This master planned community provides transit-supportive densities that stimulate ridership adjacent to higher order transit stations.



**Figure D**  
**Nodes & Corridors in Kitchener-Waterloo**

The development of a series of higher-density strategic growth areas, including major transit station areas, nodes, and corridors, concentrated primarily around higher order transit stations and major trip generators is a key factor in capturing greater levels of ridership along the ION light rail transit line in Waterloo Region.

**Legend**

- Node
- Corridor
- Downtown / Uptown
- MTSA
- LRT / Train Station
- LRT Route
- GO Train Route

**Applicable Context**

Managing Rural Community Growth to Support Transit

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- g) Utilize planning policy to cluster major trip generators such as schools, community centres, places of worship, health facilities, and shopping centres within a 500 to 800m walking distance of each other, where possible. Grouping these uses in one walkable area helps create a critical mass of potential transit users necessary to make service viable. This enables centre-to-centre transit services capable of facilitating convenient day trips between centres. When considering opportunities to implement this strategy, consider the local rural context and ensure that the proposed cluster of uses aligns with water and sewage services available in the area. Rural transit service strategies are identified in [Subsection 4.1.11](#).
- h) Coordinate land use planning to involve government agencies, transit operators, adjacent municipalities, and First Nations communities to optimize collaboration between land use and transit service planning and connect people to their destinations in rural settlement areas.
- i) Target active transportation strategies around transit in rural settlement areas to help reach a critical mass of transit users and foster FMLM connectivity, given lower densities and smaller populations. Generally, rural settlement areas can be understood as having two distinct characteristics:
  - i. A settlement core: the heart of the rural settlement area, containing the highest concentration of people. In the settlement core, create complete streets, strengthen pedestrian and cycling connections to key destinations and create a transit-supportive urban form.
  - ii. A transitional area: the area between a settlement core and other rural areas. In the transitional areas, implement traffic calming and streetscape enhancements in support of pedestrians ([Subsection 3.2.5](#)), cyclists, ([Subsection 3.2.6](#)) and their access to transit.

**Applicable Context**

**Planning New Communities to Support Transit**

Planning Scale

-  Regional
-  Municipal
-  Community

- j) Establish and expand settlement area boundaries only after existing settlement areas are approaching or have achieved transit-supportive density targets established within official plans.
- k) Plan, phase, and develop designated growth areas in coordination with existing and planned transit, and in proximity to existing built-up areas, allowing for gradual expansion of transit services to serve residents and businesses as growth areas develop.
- l) Structure new communities such that the majority of all people / jobs are within an approximately 500 to 800 metre radius of a transit station.

**Coordinating Land Use Around Transit Stations and Stops**

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- m) Define strategic growth areas within official plans to accommodate and support local and regional transit networks with the intent of focusing mixed-use development and planning for intensification.
- n) Encourage density and a mix of uses at strategic growth areas through official plans and zoning that are appropriate for the existing and planned level of transit service, including employment, retail, recreational, cultural, institutional, personal services, and other uses that will help support transit ridership. Incorporate residential uses within strategic growth areas, where applicable, to balance ridership levels at trip origins and destinations.
- o) Locate active, street-level uses such as shops and services at stops, in strategic growth areas or along paths leading to and from transit facilities to provide easier access to these services and promote higher levels of pedestrian activity.

**Coordinating Land Use Along Transit Corridors**

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- p) Utilize official plans to designate and develop corridors, particularly along higher order transit and frequent transit routes, and along streets connecting other strategic growth areas and major trip generators. Plan for and protect corridors and rights-of-way for transit infrastructure to meet current and future needs.
- q) Prepare detailed secondary plans for transit corridors to guide transit-supportive development. Plans should consider the interrelation of modes of transportation, the public realm, land use, and built form as it relates to transit-supportiveness.

**Figure E**  
**Active Street Frontage**  
**along Streetcar Route**

Active ground floor uses support transit ridership and promote pedestrian activity along the King Street streetcar route, leading to St. Patrick Station in Toronto.



- r) Develop policy and zoning that supports a full range of main street uses along corridors including retail, cultural, institutional, residential, personal services, offices, and other uses to support transit ridership.
- s) Provide an appropriate transition of use, intensity, and scale from higher-density lands adjacent to corridors to surrounding areas, understanding that adjacent lands contain a range of densities along their lengths.
- t) Ensure land uses adjacent to rail corridors protect the long-term operation and economic role of rail facilities.
- u) Provide sufficient setbacks and separation of sensitive land uses to allow for appropriate buffering along rail corridors to mitigate the impacts associated with a potential derailment, fire safety, noise, vibration, emissions, emergency access, and maintenance access.
- v) Mitigate adverse noise impacts by considering the location and orientation of buildings and their internal layout, and the use of acoustic shielding, windows, doors, ventilation and façade materials. As a part of the development application, prepare a noise impact study and vibration study to determine, in part, the impact of noise and vibration from the surrounding environment on the proposed development.
- w) Provide berms, safety barriers, fencing, noise barriers, and / or crash walls in consultation with the applicable railway company and municipality and based on site-specific conditions.
- x) Discourage site-specific amendments to permit reduced densities or non-transit-supportive uses within strategic growth areas.

**Applicable Context**

**Coordinated Destination and Transit Planning**

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Planning Scale



Municipal



Community



Site

- y) Situate major trip generators, particularly those frequented by transit-dependent individuals, close to existing or planned transit routes, particularly higher order transit and frequent transit, where possible, to increase route efficiency, promote vibrant station areas, and enhance user access. Uses that should be encouraged along transit routes and around stops or station areas include:
- institutional uses such as hospitals, seniors housing, and community facilities;
  - entertainment uses such as theatres, bars / nightclubs, and cultural facilities;
  - higher-density employment uses such as offices and hotels;
  - educational institutions such as local schools, high schools, colleges, and universities;
  - social services such as day care centres, doctors' offices, and clinics;
  - recreational facilities such as fitness centres, and arenas;
  - retail uses such as restaurants, shops, and services; and
  - medium to higher-density residential uses, particularly affordable / social housing.

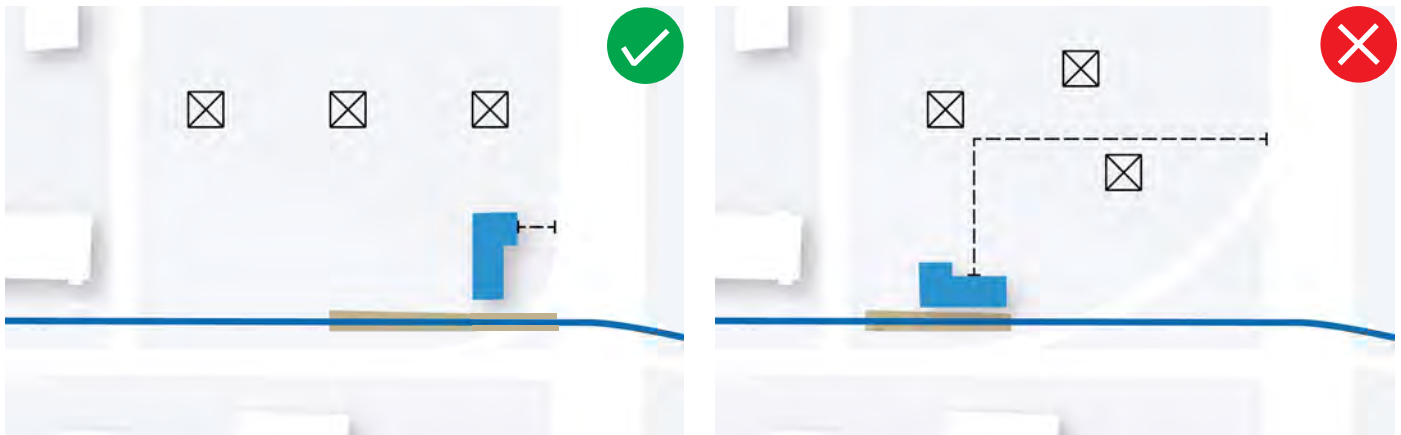


Figure F  
Infrastructure & Transit

The location and orientation of infrastructure and related elements can impact the design of transit facilities at a later date. Where necessary, proximity to major infrastructure should be discussed with the appropriate jurisdictional authority for streamlined transit station design and access.

**Legend**

- Transit Station
- Transit Platform
- X Hydro Tower
- Transit Route
- Access Route

**Applicable Context**

Planning Scale

- ↗ Regional
- ↗ Municipal
- ↗ Site

Protecting for Transit in Public / Civic Infrastructure

- z) Plan and coordinate public / civic infrastructure alongside long-term strategic planning for transit and transportation infrastructure.
- aa) Design public and civic infrastructure that aligns with planned, long-term transit networks to support future transit investments from the outset by:
  - preserving space on or below bridges or underpasses for transit vehicles and related uses;
  - providing sufficient structural overbuild to accommodate the weight of future transit vehicles or related uses; and
  - ensuring that the location and orientation of infrastructure and associated elements preserve opportunities for future transit uses and / or access to transit facilities.

- ab) Consider the potential to accommodate future transit corridors in planning for utility corridors and associated easements by:
  - preserving space within the easement for future transit uses; and
  - locating elements such as hydro towers, maintenance facilities, and systems facilities to optimize the potential for future uses within the easement. For example, situating hydro pylons where they will not inhibit future transit facilities beneath them.
- ac) Design public / civic infrastructure to integrate active transportation opportunities for walking, cycling, and other forms of mobility that support transit, where possible. This includes the incorporation of elements such as sidewalks and dedicated bike lanes on bridges or the provision of multi-use trails along utility easements and corridors that lead to transit stations or stops.
- ad) Incorporate transit-supportive enhancements to pedestrian and cycling infrastructure during the reconstruction of bridges and other public / civic infrastructure.

## Applicable Sections

3.2.3

4.1.11

6.1

## Additional Resources

- [Provincial Planning Statement \(2024\), Ontario Ministry of Municipal Affairs and Housing](#)
- [Adjacent Development Guidelines GO Transit Heavy Rail Corridors \(2023\), Metrolinx](#)
- [City of Ottawa Official Plan \(2022\), City of Ottawa](#)

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## Spotlight

### City of Ottawa Official Plan (2022)

The City of Ottawa's Official Plan (OP) contains a series of Strategic Directions. The OP provides a Growth Management Framework aimed at providing "sufficient development opportunities and an appropriate range of choices, locating and designing growth so as to increase sustainable transportation mode shares and use existing infrastructure efficiently, while reducing greenhouse gas emissions."

## 2.1.2 Transit-Oriented Development

Transit-oriented development should be planned and designed to enhance community and transit-user experience near transit stations to foster a vibrant transit-supportive environment and complete communities.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Local Transit Agencies, Transit Industry & Transit Consultants, Land Use Planning & Urban Design / Architecture Professionals, Developers |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  |  Site      |  |

Transit-oriented development aims to build vibrant, mixed-use communities that provide housing, employment, retail, community amenities, and public spaces adjacent to transit stations. Transit-oriented development requires a coordinated approach to planning and design in and around station areas, transit access for both the local community and visitors to support increased transit ridership.

## Strategies

### Building Layout and Design Near Transit

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#### Planning Scale

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Municipal



District



Site

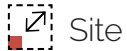
- a) Orient the building frontage to align with front property lines / setbacks to encourage ground-level pedestrian activity around transit, with a continuous street wall and direct connections to the public realm.
- b) Locate buildings along street frontages, enclosing the street block while maximizing courtyard space within the block.
  - The private space that extends from the building face to the public right-of-way should be designed to seamlessly blend with the public realm (e.g., through paving material and landscaping).
- c) Provide streetwall and building height to width ratios that create a scale on thoroughfares that is comfortable and encourages walking by ensuring adequate sunlight, sky view and ventilation. Appropriate heights are context specific, but may be equivalent to the width of the right-of-way (ROW).
- d) Extend the public realm with opportunities provided by new development within transit station areas. Accommodate new and upgraded transit and mobility infrastructure, pedestrian clearways, street furniture, landscaping, lighting, wayfinding, patio spaces, public art etc., where possible, to animate the public realm ([Subsection 2.1.5](#)).
- e) Orient primary building entrances and street-level uses to support higher levels of activity along key pedestrian routes, stop or station locations and at waiting areas. Buildings with active street-level uses should incorporate frequent entrances to increase permeability.
- f) Provide ground floor uses in coordination with the location of the station entrance to support the customer experience.
- g) Design building façades to actively address public streets and open spaces around transit through the use of transparent glazing, windows, doors, and other “active” architectural treatments.
- h) Avoid the reverse lotting of uses, long stretches of blank walls, berms, and high fences that limit street activity around transit and prevent natural surveillance adjacent to the street.

- i) Ensure the construction of development projects and the development itself does not compromise the structural integrity of major transit infrastructure, the safe operation of transit services and pedestrian access to transit.

**Applicable Context**

Parking & Access

Planning Scale



Site

- j) Provide access to parking, loading and servicing from a rear lane or side street. Access should be screened from public view and consolidated to minimize pedestrian conflicts and impacts on street level activity around transit.
- k) Coordinate new developments with existing and planned uses to consolidate vehicular access points, minimize curb cuts, and share servicing.
- l) Maximize access to larger development with internal roadways by establishing a interconnected network of streets and blocks [\(Subsection 3.1.2\)](#).
- m) Ensure mid-block connections and parking around transit are direct, well-lit, and fronted by or visible from adjacent uses to enhance pedestrian safety and comfort.

Value Capture

Planning Scale



Regional



Municipal



Site

- n) Utilize transit-oriented development to support positive value capture of transit infrastructure.

## Applicable Sections

2.1.5

3.1.2

## Additional Resources

- [Active Transportation and Transit-Oriented Development Design Guide \(2021\), British Columbia Ministry of Transportation and Infrastructure](#)
- [TOD Implementation Resources & Tools \(2021\), World Bank Group](#)
- [Transit-Oriented Communities: Design Guidelines for Subway Stations Integration within Development \(2021\), Infrastructure Ontario, Metrolinx](#)

Urban Design Guidelines (UDGs) provide a helpful foundation for the appropriate building layout and orientation within the built form and transit-focused environments. The following UDGs can be referenced as the guidance represents best practices, regardless of community scale or geography:

- [City of Vaughan – City Wide Urban Design Guidelines \[Section 5.0- Building and Site Design\] Transit-Oriented Communities Design Guidelines, Translink](#)
- [Urban Design Guidelines for Infill Development in Established Low-Rise Residential Neighbourhoods, City of Vaughan](#)
- [Urban Design Guidelines for Low-rise Infill Housing, City of Ottawa](#)
- [Mid-Rise Building Design Guidelines, City of Toronto, 2024](#)

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### Spotlight

#### **Ontario's Transit-Oriented Communities Program**

Ontario's Transit-Oriented Communities Program builds vibrant, mixed-use communities that bring more housing (including affordable housing options), jobs, retail, public amenities and entertainment within a short distance of transit stations.

### 2.1.3 Major Transit Station Areas

Intensification should be directed towards Major Transit Station Areas (MTSAs) to align residential and employment growth with existing, planned, and future transit servicing. MTSAs should be planned and designed to be transit-supportive and enhance multimodal access between transit and major trip generators.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Land Use Planning & Urban Design / Architecture Professionals |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |

The PPS (2024) defines MTSAs as “the area including and around any existing or planned higher order transit station or stop within a settlement area; or the area including and around a major bus depot in an urban core. Major transit station areas generally are defined as the area within an approximate 500 to 800-metre radius of a transit station.” MTSAs carry an associated set of additional planning requirements that are set out by the current PPS (2024), which support the achievement of complete communities.

The establishment of MTSAs provides the opportunity to plan for more dynamic, equitable, and complete communities around transit, which allow people to live by and easily access amenities, services, and the places they work, play, and learn. MTSAs also help focus transit investment, infrastructure, and public service facilities around development. Planning for intensification within MTSAs and nearby major trip generators allows station facilities and infrastructure to be designed and located in coordination with long-term growth.

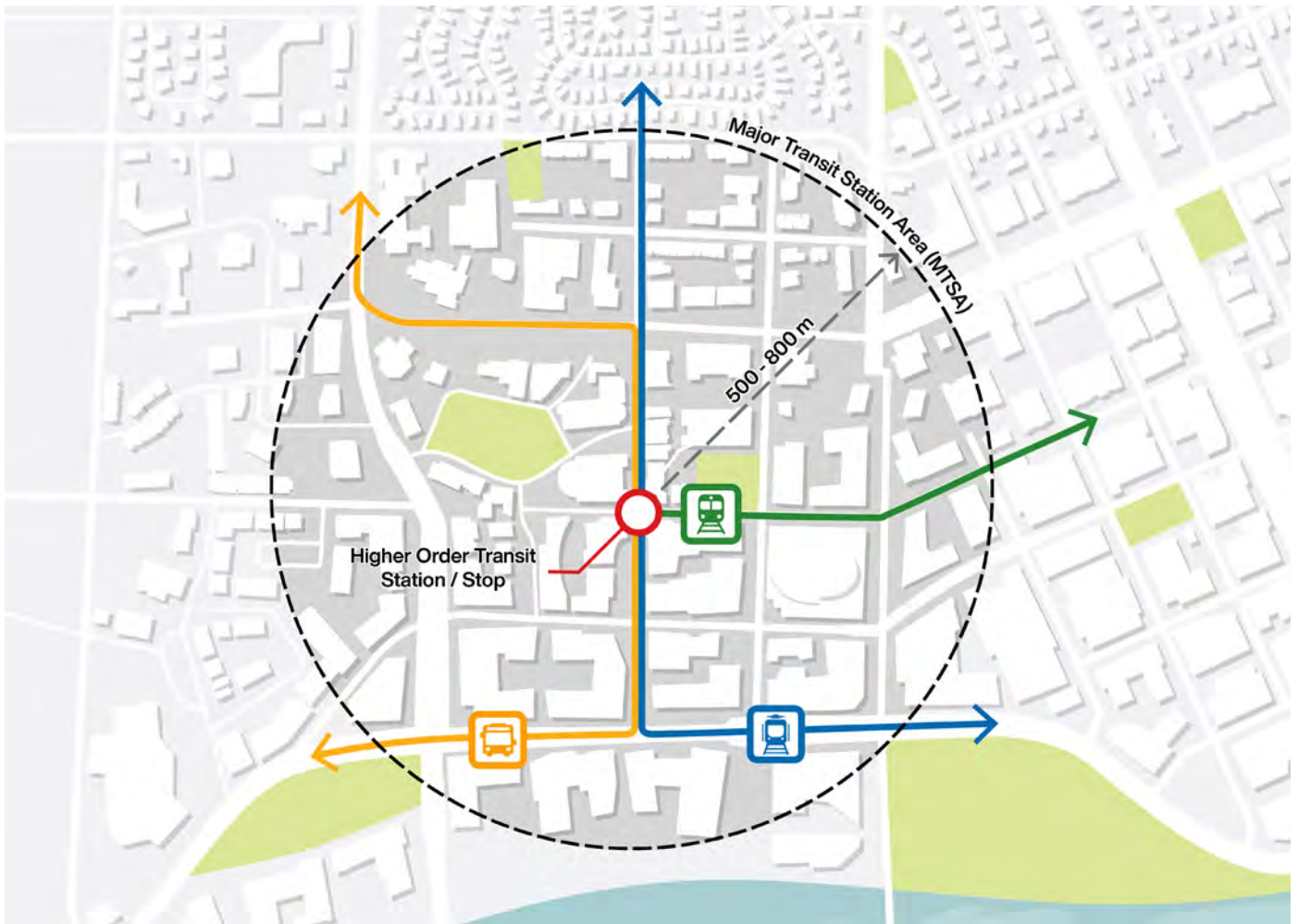







Figure G  
**Major Transit Station Areas**

An MTSA is the area within an approximate 500 to 800-metre radius of a transit station.

**Legend**

-  Higher order Transit Station / Stop
-  Major Transit Station Area
-  Subway Route
-  Light Rail Transit Route
-  Bus Route

## Strategies

### MTSA Delineated Boundary

#### Applicable Context

##### Planning Scale

 Regional

 Municipal

 District

- a) Delineate an MTSA boundary using property boundaries within a 500 to 800-metre radius around any existing or planned higher order transit station or stop within a settlement area or around a major bus depot in an urban core through a new official plan or official plan amendment.
  - Consider natural features, barriers, streets, the block network, and the pedestrian experience to ensure the MTSA boundary is reflective of practical walking routes and facilitates easy access to transit stations.
- b) Maximize the size of an MTSA and the number of potential transit users within walking distance of a transit station, while considering regional destinations, major trip generators, long-term growth, environmental features, major infrastructure, local planning policy, and practical walking routes.


### Growth & Intensification

##### Planning Scale

 Regional

 Municipal

 District

 Site





- c) Promote land uses and built form that support the achievement of transit-supportive density targets, identified in the PPS (2024).
- d) Ensure the construction of new development poses no significant impacts on transit access, operations, and infrastructure unless otherwise agreed upon.
- e) Identify and prioritize investments in transit routes with the potential to generate higher levels of transit ridership or where intensification would enhance the relationship of the station to its surroundings, strengthen connections, and provide enhanced amenities for transit users.
- f) Encourage redeveloping underutilized parcels, including surface and commuter parking lots, within MTSA's to be transit-supportive and support the achievement of complete communities ([Subsection 2.1.2](#)).
- g) Retain site elements that improve the pedestrian experience, such as pathways and trees, where possible and consider locating parking underground and permitting on-street parking.

- h) Use and amend existing planning tools to achieve the minimum densities in the PPS (2024) where applicable and meet the intensification targets. Examples include:
  - amending zoning by-laws to permit reduced minimum lot sizes and / or frontages, and / or higher floor space indexes in residential and non-residential areas to encourage higher densities;
  - introducing minimum heights to ensure development intensities surrounding stations are transit-supportive in the early phases of development; and
  - discouraging low-intensity, land-consumptive uses related to light or heavy industry such as outdoor storage or construction staging.
- i) Identify density and mode-share targets for all large-scale developments within MTSA, including non-auto mode splits. Targets should be connected to the implementation of transit infrastructure for each phase of development and considered within development application review.

### Planning Process

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#### Planning Scale

-  Regional
-  Municipal
-  District
-  Site




- j) Develop station area visioning documents as a transit-supportive planning tool, which serves to:
  - identify a long-term vision for the MTSA that is both compatible with the surrounding pattern of development and consistent with local planning guidance;
  - establish a framework for the gradual intensification of the MTSA while addressing and preserving for the needs of transit operations, including pick-up and drop-off areas, passenger amenities, and managed parking spaces;
  - identify focal areas in the MTSA for education, commercial, recreational, and cultural uses;
  - encourage public facilities, such as schools, libraries, government service centres, recreation centres, and police substations to be provided within the MTSA, along with residential uses;
  - support the provision of affordable, accessible, and equitable housing within the MTSA;

- incorporate a diversity of housing choices that includes a mixture of types, styles, price ranges and tenure to ensure a large and diverse number of residents have access to transit;
  - ensure equity and diversity within the range of types of housing stock and plan for a mix of dwelling sizes to accommodate families within the MTSA. Amend zoning by-laws to specify a percentage of residential units to have more than two bedrooms; and
  - outline an implementation strategy for achieving the vision that helps to guide both public and private investments within the station area.
- k) Maximize investment in MTSAs by ensuring infrastructure is organized in a manner that preserves the potential for transit-supportive development around the station. This can be achieved through:
- establishing station area visions, planning, design and development frameworks to outline intentions for that station area, guide investments in infrastructure, and preserve opportunities for new development;
  - assessing economic feasibility of project phasing by identifying funding mechanisms and developing short-, medium- and long-term economic realities related to future studies, municipal policy changes, infrastructure improvements, transitional parking areas, and public realm improvements;
  - developing funding strategies for local transit operations to improve municipalities' ability to match local transit service levels with expanded all day-two-way GO Expansion programs. Where applicable, provide seamless service integration between transit service providers and reduce dependence on surface parking within MTSAs ([Section 6.4](#)); and
  - conducting market analysis studies to assess the existing and future real estate market potential and understand the mix of uses that are most likely to be successful within the specific local context.

## Applicable Context

### Planning Scale

---

-  Municipal
-  District
-  Site

## Design

- l) Introduce a walkable network of public streets in larger land parcel that can help to support intensification and enhance community connectivity.
- m) Provide safe and efficient automobile parking and access, prioritizing carpooling, where appropriate.
- n) Design attractive and functional public gathering spaces, including parks, plazas, courtyards, and sidewalks to foster a sense of place and encourage riders to spend more time within MTSA's [\(Subsection 2.1.5\)](#).
- o) Adopt strategies to accommodate transit infrastructure while minimizing negative impacts on the streetscape. For example, design context-appropriate ancillary structures (e.g., emergency exit buildings, and traction power substations), and visually screen loading areas adjacent to streets with vegetation and decorative fencing.
- p) Concentrate the greatest densities and mix of uses at the centre of a MTSA, directly adjacent to the station to focus density where growth is appropriate and enhance transit access.
- q) Ensure an appropriate transition is provided from the centre of an MTSA to adjacent areas by stepping down the height of structures, reducing lot coverage, increasing open space, increasing architectural detailing, reducing permitted maximum densities, changes in use, or a combination of these methods.

## Land Use

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### Planning Scale

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-  Municipal
-  District
-  Site

- r) Encourage municipal zoning by-laws be amended to designate lands within MTSA's as "mixed-use zoning" to promote a mix of complementary and transit-supportive residential, employment and retail uses.
- s) Locate major offices and institutional uses in areas with frequent transit service and plan employment-focused MTSA lands to have transit-supportive, compact built form with reduced surface parking [\(Subsection 2.1.4\)](#).
- t) Encourage major trip generators to be located in close proximity to the transit station and connected with direct pedestrian links with feeder services [\(Section 3.2\)](#).
- u) Establish a retail 'high street' and / or employment centre near stations, where feasible (based on market analysis), to serve as a convenient transit amenity and to increase ridership.

## Applicable Sections

3.2

6.4

## Additional Resources

- [±15-Minute City: Human-centred planning in action - Mobility for more liveable urban spaces, EIT Urban Mobility](#)
- [Milton Mobility Hub Study Urban Design Guidelines](#)
- [Picture Mount Dennis Planning Framework Study, City of Toronto](#)
- [Transit-Oriented Communities Design Guidelines, Translink](#)



Figure H  
**Development Phasing**

The creation of a station area vision that establishes a framework for gradual intensification can help to ensure that short-term decisions do not preclude the long-term development potential of a station area. The above example highlights the phased intensification planned surrounding the Oakville GO transit station.

## 2.1.4 Specialized Major Trip Generators

Major trip generators should be planned as transit-supportive and highly connected destinations.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Municipalities, Indigenous Communities, Local Transit Agencies, Specialized Services / Major Trip Generators, Transit Industry & Transit Consultants, Transportation Service Providers, MaaS Companies / Providers, Land Use Planning & Urban Design / Architecture Professionals, Developers |
|  Large    |  Municipal |   |
|  Medium   |  Community |   |
|  Small    |  Site      |   |

Major trip generators are defined in the PPS as “origins and destinations with high population densities or concentrated activities which generate many trips (e.g., strategic growth areas, major office and office parks, major retail, employment areas, community hubs, large parks and recreational destinations, public service facilities, and other mixed-use areas).” Travelling to major trip generators should be transit-supportive, with strong FMLM connectivity that encourages transit access and land uses and design that supports transit ridership.

**Strategies**

**Applicable Context**

Land Use

Planning Scale

-  Municipal
-  Community
-  Site

- a) Locate major trip generators in mixed-use areas identified to accommodate intensification and where frequent transit service is available to minimize distances to services and support more balanced trip volumes throughout the day.
- b) Encourage the provision of a greater mix of uses within, and in proximity to existing and planned major trip generators (e.g., office parks and major complexes, venue spaces, employment areas) to maintain levels of activity throughout the day and enable more balanced transit service.
- c) Incorporate a mix of ground floor uses such as restaurants, retail or service uses that can activate the adjacent neighbourhood and provide amenities for community members.

Built Form

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- d) Locate major trip generators as close to the street and transit stations as possible to enhance pedestrian access and contribute to street-level pedestrian activity.
- e) Orient buildings in and around major trip generators to line key pedestrian routes and major streets leading to and from transit, enhancing access for pedestrians ([Subsection 2.1.2](#)).
- f) Place building entrances along the street, where possible, rather than adjacent to parking areas to support seamless access for transit users

**Applicable Context**

Access to Transit

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- g) Consider existing transit services when planning for new major trip generators to ensure developments are well-serviced and can support increased transit ridership ([Subsection 3.1.5](#)).
- h) Provide direct transit routes and / or physically integrated transit access to major trip generators where feasible.
- i) Provide direct, enhanced pedestrian connections leading from the stop to the facility ([Subsection 3.2.5](#)), where direct transit access to facilities is not feasible. Pedestrian connections should be supported by a range of amenities such as pedestrian-oriented lighting, seating, and wayfinding signage directing users to key destinations ([Subsections 2.1.5 and 3.3.5](#)).

- j) Consider establishing a transit station or stop near locations where a major trip generator is the primary source of transit trips within a community and multiple routes may converge ([Subsection 2.1.1](#)). Locate the station or stop close to major activity centres.

## Micromobility

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### Planning Scale

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Municipal



Site

- k) Provide amenities that support cycling and other micromobility options at transit stops in major trip generators with larger block sizes and longer travel distances (e.g., office parks, major complexes, and big-box retail areas) ([Subsections 3.2.2, 3.2.6, and 3.2.7](#)). Amenities may include:
  - bicycle parking, bike share docking stations, and shared mobility parking areas in proximity to common trip origins and transit stations; and
  - signed and marked active transportation routes throughout the area linking to transit stations and stops and local cycling networks.

## Shuttle Services

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### Planning Scale

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Municipal

- l) Encourage collaboration between transit agencies and employers to operate shuttle services or on-demand microtransit connecting transit lines to major trip generators that are located away from densely populated areas, particularly during off-peak periods and in lower-volume service areas

Spotlight

**Technology Square Development  
Cambridge, MA**



A series of three ten-storey 1960s-era office buildings north of the MIT campus were renovated into a more transit-supportive, pedestrian-friendly environment. Four new buildings were added to create a pedestrian corridor, ground related retail space and additional density.



Legend

- Transit Stop
- Transit Route
- ... Pedestrian Pathway

Figure 1  
**Pedestrian Routes to Transit**

Buildings oriented to key pedestrian routes and streets leading to and from transit stops can help improve ridership. Likewise, in planning service for existing office parks, transit route planning may need to consider existing building entrances and exits in order to reduce walking distances for transit users.

**Applicable Context**

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

**Office Parks and Major Complexes**

- m) Reduce large block size of office parks and major complexes, where feasible, and limit block length to foster walkability within major complexes and a permeable built form.
- n) Orient semi-public amenities, such as cafeterias or gym facilities, towards key pedestrian routes or stop / station areas to animate the public realm.

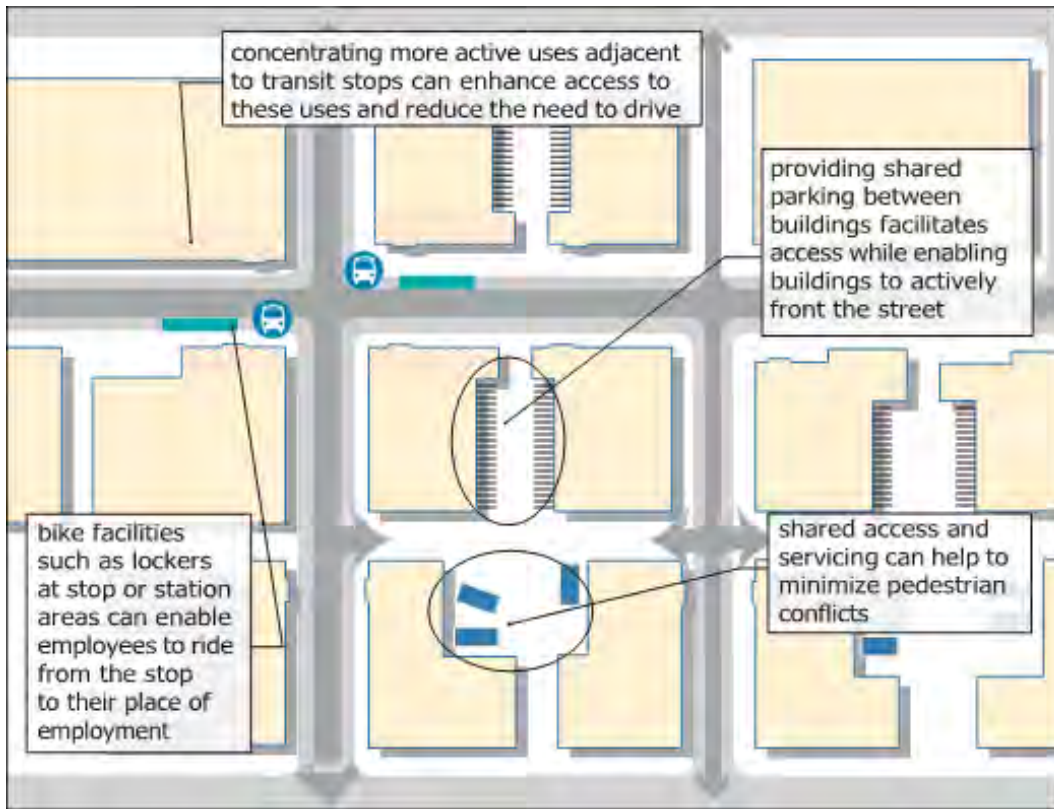






Figure J  
**Transit-Supportive Employment Areas**



Transit-supportive employment areas can be achieved through the placement and orientation of employment buildings and the coordination of access and servicing between developments.

| Applicable Context  | Employment Areas   |
|---|--|
| <p>Planning Scale</p> <ul style="list-style-type: none"> <li> Regional</li> <li> Municipal</li> <li> District</li> <li> Site</li> </ul> | <ul style="list-style-type: none"> <li>o) Coordinate access and servicing between uses to enable mid-block pedestrian connections. Provide vehicular access to buildings located in the interior of industrial and employment subdivisions through combined driveways and shared loading zones at the rear of buildings.</li> <li>p) Share and coordinate vehicular access and servicing between adjacent developments at the site planning stage to minimize driveways. This will reduce the potential for conflict between vehicles, pedestrians, and cyclists and improve the quality of the streetscape for people travelling to and from transit stations and stops.</li> </ul> |

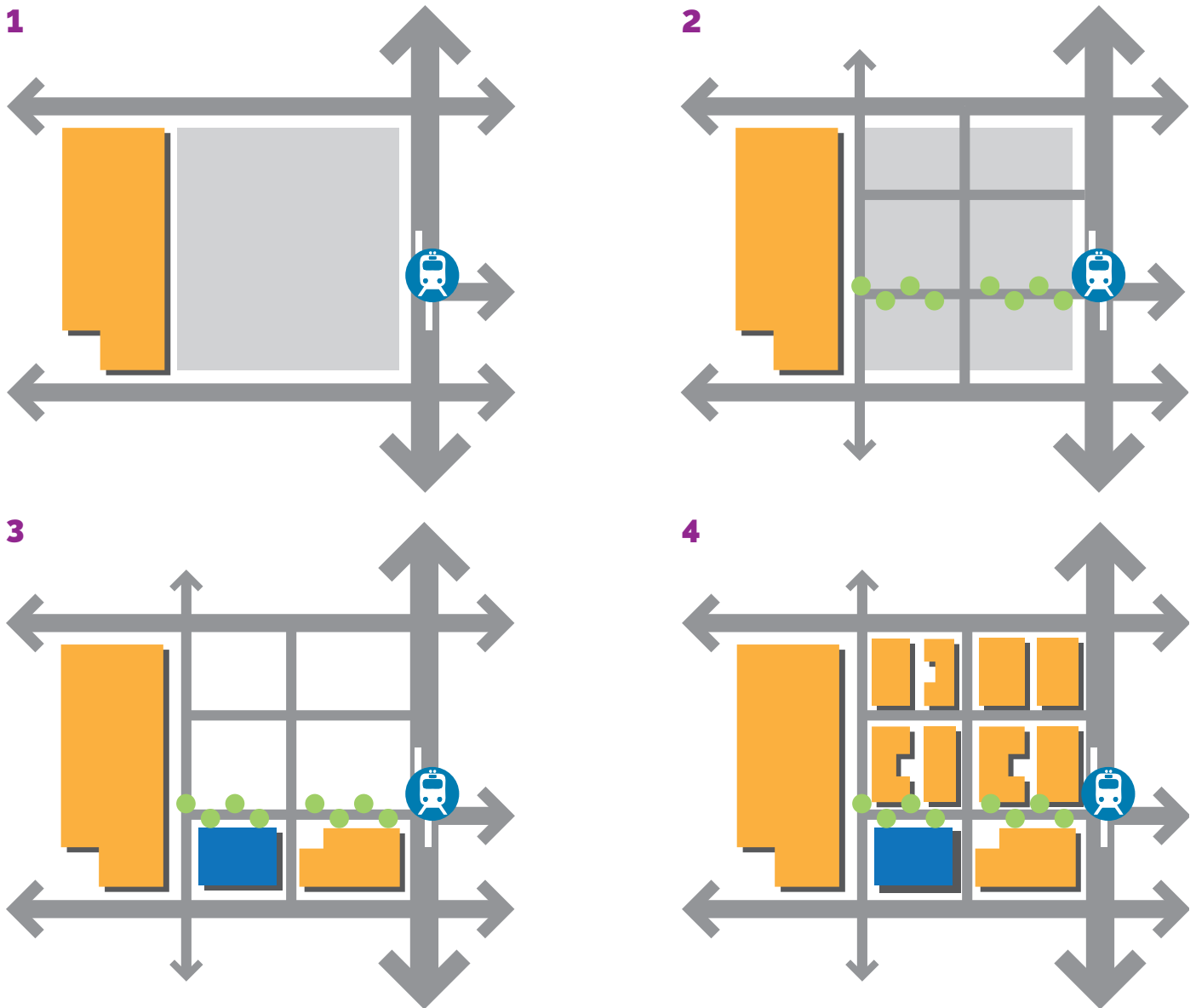
**Applicable Context**

Major Retail and Big Box Retail

Planning Scale

-  Community
-  Site

- q) Promote intensification and a greater mix of uses on underutilized lands adjacent to large shopping centres, including the redevelopment of surface parking lots.
- r) Reduce the effect of blank walls facing streets and key pedestrian routes through retail liners, composed of smaller stores that can enhance the pedestrian environment and street animation.
- s) Establish a pattern of secondary streets and blocks at large shopping centres and big box retail uses that are not sited against the street edge. In the short term, this will facilitate access for pedestrians, cyclists and transit users, and in the long-term, will enable intensification and a greater mix of uses. A transit-supportive block pattern can be achieved by:
  - treating access roads and driveways as new streets with sidewalks and streetscape treatments that connect the retail uses with adjacent streets and surrounding developments;
  - aligning access roads and driveways with adjacent parcels so they establish a continuous street and block network; and
  - ensuring that new streets and driveways align with existing streets in surrounding neighbourhoods and developments.
- t) Where large shopping centres and big box retail already exist, ensure new buildings preserve opportunities for the gradual extension of a street grid through the site over time.



**Figure K**  
**Transit-Supportive Major Retail**

Planning shopping centres with a secondary network of streets and blocks can set the stage for long-term intensification. The use of parking structures can help to free up large areas of surface parking for new development.

**Legend**

- Surface Parking
- Parking Structure
- Infill Development
- Pedestrian Connection



Figure L  
**UBC Bus Bay**

Bus bays at the north loop of UBC Exchange.

**Applicable Context**

**Institutional Campuses**

Planning Scale

- Municipal
- Community
- Site

- u) Provide transit service to major activity hubs such as libraries and student centres in the case of universities or out-patient wings in larger hospitals, where feasible.
- v) Coordinate institution schedules and transit system schedules to ensure the appropriate level of transit service is provided throughout the day. Schedules should be reviewed on an annual basis.
- w) Establish inter-agency partnerships between institutions and transit providers. These represent opportunities to coordinate transit service and develop innovative funding or service arrangements.
- x) Consider fare incentives and programs such as a universal transit pass system that provides all students and staff with access to unlimited transit service and provide the opportunity to increase transit ridership ([Subsection 4.3.1](#)).

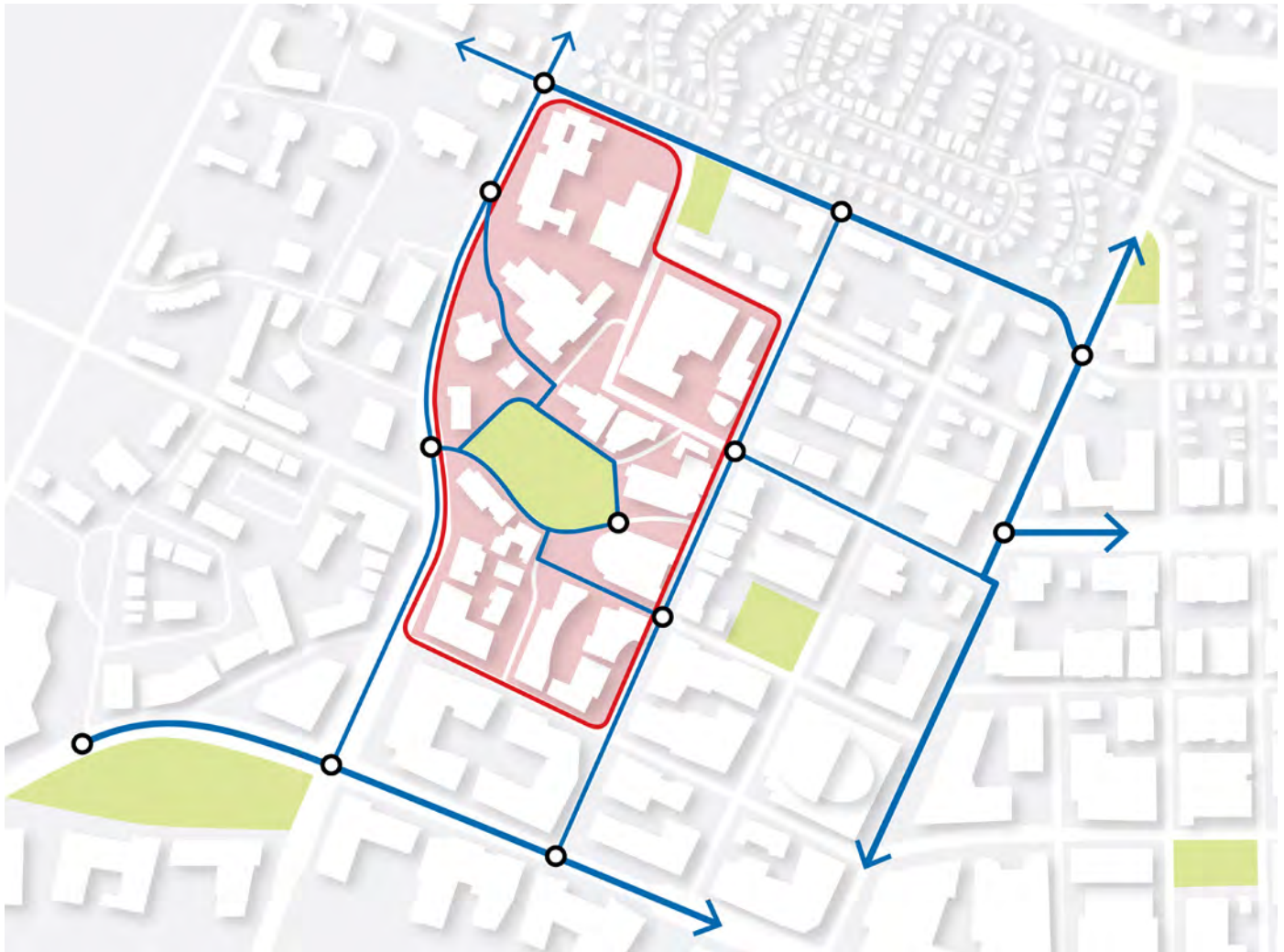





Figure M  
**Transit-Supportive Institutional Campus**

Integrating transit stops with major activity centres within campuses can boost ridership and limit the number of required stops.

**Legend**

-  Institutional Campus
-  Transit Station
-  Transit Route

### Applicable Context

### Recreational Destinations

#### Planning Scale

 Municipal

 Site

- y) Consider seasonality of travel patterns and ridership volumes associated with tourist and natural heritage destinations, including implementing transportation demand management strategies.
- z) Accommodate the needs of infrequent visitors and tourists, with regards to ease of use and payment of mobility options, wayfinding, and multilingual information, including accessibility in French.
  - aa) Protect and enhance key views to destinations, and between destinations and mobility options, where feasible.
  - ab) Consider integrating thematic branding within transportation infrastructure to celebrate and notify users of notable destinations.



Figure N  
**Transit Station at Sydney Town Hall**

LRT station at Sydney Town Hall.

**Applicable Context**

**Major Planned Events and Venues**

Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- ac) Coordinate transit services with travel patterns and volumes associated with major planned events to accommodate attendees while minimizing impacts to residents in the surrounding area. Consider adjusting transit service to provide more frequent service, extended hours, or temporary routes that directly serve event locations and car-free environments.
- ad) Connect major event destinations with higher order transit, where feasible, to cater to a wider net of users.
- ae) Utilize smart traffic signal priority systems to give buses and other transit vehicles preferential treatment at intersections when transporting people to or from a major planned event, reducing delays and improving overall transit efficiency.
- af) Ensure collaboration and partnership between transit agencies and municipalities to manage traffic and transit for major events.
- ag) Consider providing free or reduced fares on holidays, such as New Year’s Eve, to alleviate parking and congestion concerns, providing convenience to tourists and event-goers, and serving as a promotional tool for transit. Transit agencies should adjust schedules and boost service to meet increased demand at the opening and closing of special events, with the aim of providing seamless local transit connections to regional service.
- ah) Install temporary pop-up transit pick-up and drop-off locations near event venues to accommodate high ridership, facilitating seamless transfers between transit modes and minimizing congestion around event venues.
- ai) Leverage on-demand transit services to provide flexible and efficient last mile connectivity between major planned event venues and other key destinations, especially in areas with limited transit infrastructure.
- aj) Consider developing mobile apps with integrated mobility-as-a-service (MaaS) platforms to streamline ride booking, payments, and multimodal trip planning, allowing attendees to easily switch between transit, rideshare, and micromobility options.
- ak) Implement real-time data analytics to monitor and manage traffic flow, rider demand, and service disruptions during the event, enabling dynamic adjustments to transit schedules.



Figure O  
**Transit Station at an Arena in Poland**

Tram stop at Spodek Hall, a multipurpose arena complex in Katowice, Poland.

- a) Incorporate predictive analytics tools to forecast peak demand periods and adjust transit operations proactively, ensuring adequate service and reducing overcrowding.
- am) Establish clear communication channels through mobile apps, social media, and signage to provide real-time updates on transit schedules, service changes, and parking availability to event-goers.
- an) Pilot innovative fare payment methods, such as contactless or mobile payment systems, to simplify and speed up the fare collection process, reducing boarding times and improving transit flow.
- ao) Provide enhanced wayfinding to accommodate infrequent visitors, including access to multilingual information.

## Applicable Context

## Airports

### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- ap) Provide transit connectivity and frequent transit service to airports, positioning airports as places to interchange for onward journeys or exchange modes.
- aq) Provide direct and covered connections at higher order transit / special express connections to airports.
- ar) Plan for a variety of users (shift working airport staff, visitors / tourists / new or infrequent users) of different ages, and abilities. Consider the experience on foot, and with luggage, between pick-up and drop-off points, transit station, and parking.
- as) Consider the user experience of different airport visitors in the allocation of services and wayfinding guidance, including constraints of time and abilities.
- at) Consider users with foreign mobile data plans and provide extensive public Wi-Fi, also accessible in areas where mobile device enabled shared mobility (such as ride hail or car-share) can be accessed.
- au) Integrate physical and digital wayfinding into a comprehensive wayfinding system to and from the airport to provide a clear and consistent visual experience for all users. Interactive display boards, digital kiosks, and transit schedules of trains, buses, and other services can enhance the users' experience.
- av) Integrate multilingual information into wayfinding, in addition to English, French, and languages of frequent users to the airport

## Applicable Sections

3.2.1

3.3.4

## Additional Resources

- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Guidance for Planning Events, City of Toronto](#)
- [Mall Redevelopment Guide, City of Toronto](#)
- [Sustainable Tourism Toolkit Guide 6 - Managing the development of tourism infrastructure, UNESCO World Heritage Convention](#)
- [Transportation Demand Management for Site Plan Development, Arlington County Department of Environmental Services](#)
- [UBC Transportation Plan Vancouver Campus \(2019\), The University of British Columbia](#)
- [University of Toronto St. George Campus Draft Urban Design Guidelines, City of Toronto](#)

## 2.1.5 Fostering a Sense of ‘Place’

Human-centric spaces should be created within and around transit to position transit stations as destinations where community members can live, work and play in a place highly connected to mobility options. Placemaking should ensure that equity-deserving groups are represented within their communities’ public realm in and around transit stations to foster a sense of place and safety.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Municipal | Municipalities, Indigenous Communities, Community Groups, Local Transit Agencies, Land Use Planning & Urban Design / Architecture Professionals, Developers |
|  Large    |  Community |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote |   |   |

The public spaces near transit systems should facilitate transportation functions, and invite travellers to spend time and create equitable, safe environments for equity-deserving groups. A public realm that fosters a sense of ‘place’ is both attractive and functional.

Architectural variety and memorable features can position buildings as landmarks, creating an inviting pedestrian environment, shortening perceived walking distances, aiding navigation, and encouraging higher levels of pedestrian activity. Streetscape elements can provide visual cues indicating transit is nearby and guide pedestrians toward it.



Figure P  
**Placemaking at Pioneer Village Station**

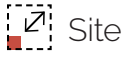
Exterior design attributes are carried to the interior of Pioneer Village Subway Station to maintain a recognizable visual brand.

**Strategies**

Pedestrian Experience

**Applicable Context**

Planning Scale



Site

- a) Enhance the pedestrian experience along transit corridors by providing ample pedestrian space, planting, lighting, and street furnishings.
- b) Ensure a consistent design language through materials, plantings, signage and wayfinding, public spaces and built form, to enhance the sense of place in station areas.
- c) Integrate unique paving and materials, such as coloured and stamped concrete, pavers, or coloured and stamped asphalt to identify high pedestrian traffic zones or community elements such as commercial areas, schools and parks. The choice of paving material and design should minimize uneven surfaces to ensure pedestrian comfort and safety and ease especially for people with physical disabilities.
- d) Reclaim the public space beneath raised transit routes by creating pedestrian-friendly areas that are welcoming and safe, using placemaking interventions such as public art (e.g., murals or sculptures), wayfinding, and the provision of community amenities.
- e) Provide planting to support the creation of pedestrian-friendly spaces that are attractive, shaded, environmentally beneficial, and soften hard landscapes.
- f) Implement public realm amenities, such as street furniture and planting, purposefully and thoughtfully to avoid the creation of visual and physical barriers and reflect needs of the local community.

Visibility

Planning Scale



Municipal



Community



Site

- g) Ensure sightlines towards transit facilities are clear through public realm design and master planning.
- h) Enhance the presence of transit stations that have been integrated underground or within a development to improve street-level visibility.
- i) Establish a consistent and recognizable visual identity for transit branding, signage and wayfinding and facility design and the public realm.



**Figure Q**  
**Széll Kálmán Square by Széll Kálmán tér Station**

Public realm elements, including a water feature, seating, and landscaping, foster a sense of place outside a subway station in Budapest, Hungary.



**Figure R**  
**Broadgate Plaza by Liverpool Street Station**

Iconic architectural and landscape design elements establish a strong sense of place and aid in wayfinding near transit stations in London, England.

## Applicable Context

### Planning Scale

- Municipal
- Community
- Site

## Public Realm and Built Form

- j) Ensure that the initial phases of development do not compromise the passenger experience and that a distinct sense of place is established at every phase through staged placemaking. Staged placemaking can be established through public realm elements, interim uses and open spaces, as well as passenger amenities like public art and wayfinding, through each phase of development.
- k) Promote civic life surrounding transit stations by establishing open spaces, such as parks, plazas, and flexible programming spaces, within transit facilities and adjacent to station entrances. This can reinforce the position of transit stations as a community gateway and provide travellers and local community members with a place to gather.
- l) Establish safe and welcoming open spaces by implementing amenities that invite pedestrian activity throughout the day, including seating, lighting, plantings, ground murals, bulletin boards, wayfinding beacons, library treehouses, etc.

- m) Foster a sense of belonging and celebrate the history and culture of the surrounding neighbourhood. This can be established by:
- implementing educational signage detailing the history of the community around transit facilities;
  - integrating historically and culturally significant community features and individuals into the naming of stations;
  - organizing design competitions to platform local artists and invite community members to participate in the design of their community spaces;
  - providing information and signage in multiple languages or graphics;
  - partner with Indigenous communities and organizations to ensure local placemaking reflects Indigenous cultures and histories, including through elements like public art, signage, language inclusion, and station naming; and
  - partner with equity-deserving groups to ensure local placemaking reflects their communities, including elements like public art, signage, language inclusion, and station naming.
- n) Ensure buildings and the public realm embody design excellence, fulfill sustainability standards and promote the use of transit through the use of:
- durable and high-quality building materials;
  - effective resource management;
  - leading edge construction methods;
  - design that is compatible with the surrounding built form context; and
  - design that is sensitive towards shadowing, wind impacts, and views from open spaces and adjacent neighbourhoods.

## Applicable Sections

3.2.1

3.2.2

3.3.4

## Additional Resources

- [Case Study: Transport for London](#)
- [Case Study: Berliner Verkehrsbetriebe](#)
- [Case Study: Société de transport de Montréal](#)
- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Case Study: Victoria Regional Transit Commission](#)
- [A Guide to Placemaking for Mobility \(2016\), City of Boston](#)
- [City of Toronto Official Plan Chapter 3 \(2023\), City of Toronto](#)
- [Multimodal Transport Hubs Good Practice Guidelines, Agence française de développement](#)
- [Station public realm design guidance \(2015\), Transport for London](#)
- [The Bentway, City of Toronto](#)

Figure S  
**Placemaking at Pioneer Village Station**

Exterior design attributes are carried to the interior of Pioneer Village Subway Station to maintain a recognizable visual brand.



## 2.1.6 Open Space Networks

Transit systems should be planned with consideration for the open space network.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Municipalities, Indigenous Communities, Local Transit Agencies, MaaS Companies / Providers, Land Use Planning & Urban Design / Architecture Professionals, Developers |
|  Large    |  Municipal |   |
|  Medium   |  Community |   |
|  Small    |  Site      |   |
|  Remote   |   |   |

Open space elements improve transit access and make high-density, transit-supportive areas more active, attractive, and livable. A mix of passive, interactive, and temporary open spaces should be prioritized near transit, especially those with community significance—such as gardens and large parks—to strengthen transit appeal. Open space systems along routes or corridors can boost transit-supportive densities by generating activity and providing convenient, multi-modal access to recreation.



Figure T  
**Laurel Trail, Waterloo Public Square & ION Light Rail**

Where transit results in a grade-separated rights-of-way, the creation of a transit-side trail system is an excellent way to enhance connections for pedestrians and cyclists leading to and from stations. The Laurel Trail in Waterloo connects urban and regional open spaces along the ION light rail transit line.



**Figure U**  
**Open Space Networks Supporting Transit**

Extending park and open space networks to connect with station areas can help to extend station catchment areas by strengthening connections between surrounding neighbourhoods and the transit system.

Networks can be extended over time through targeted streetscape improvements, the extension of pathways through existing public easements or through the development approvals process in negotiation with area developers.

### Strategies

#### Layout

#### Applicable Context

##### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- a) Extend existing park and open space networks to connect to transit, where possible.
- b) Explore the potential for the transit corridors to be integrated into the open space network, where planned transit investments occur off-street, along green corridors or in utility rights-of-way. Examples may include:
  - creating a transit-side multi-use trail connected to trails and open spaces along the route;
  - establishing landscape transit corridors with planted greenways or green tracks to soften hardscapes, improve stormwater management, reduce heat-island effects, and dampen street noise. Incorporate low-maintenance, durable native plants with strong water absorption; and
  - exploring the opportunity to incorporate swales into integrated green transit corridors to reduce the number of impermeable surfaces.

## Transit Plazas

### Planning Scale

 Community

 Site

- c) Explore the creation of station-related open space, such as parks, plazas, and flexible programming spaces, at regional destinations and high-capacity stations that:
- enhance connections between the surrounding neighbourhood and the station;
  - promote civic life by providing travellers and local community members with a place to gather;
  - establish safe and welcoming spaces by implementing amenities that invite pedestrian activity throughout the day, including seating, lighting, planting, ground murals, bulletin boards, wayfinding beacons, etc.; and
  - strengthen the identity of the station by positioning it as a destination and gateway.

## Planning Strategies

### Planning Scale

 Regional

 Municipal

- d) Coordinate the planning of parks and open spaces alongside new transit infrastructure to maximize mutual benefit, pursuing co-location where feasible.
- e) Include information on local open spaces and amenities such as recreational facilities in transit websites and other resources to help residents plan their outings.
- f) Locate amenities in large destination open spaces, such as washrooms and restaurants, in proximity to transit facilities.
- g) Account for seasonal variations and planned events in open space usage and service scheduling so peak travel volumes may be accommodated by transit.
- h) Ensure clear paths of travel and wayfinding between transit and nearby open space.
- i) Incorporate natural features into open spaces, where they exist, such as rivers and creeks or other sensitive environmental features.

## Additional Resources

- [A Guide to Placemaking for Mobility, City of Boston](#)
- [Station public realm design guidance, Transport for London](#)



Section **3.1** **Regional Mobility Planning** . . . . . 79

Section **3.2** **Transit System and First-Mile Last-Mile Planning** . . . . . 98

Section **3.3** **Trip Planning & Navigation** . . . . . 161



Figure V  
Etobicoke Creek Miway Station, Mississauga

# 3.1 Regional Mobility Planning

A successful regional transportation system integrates multiple modes for seamless connectivity across municipalities. This can be achieved through the numerous strategies discussed in this chapter, including:

|  |    |
|--|----|
| <b>3.1.1 Layout, Spacing, and Design of Arterials &amp; Collectors</b> ..... | 65 |
| <b>3.1.2 Local Street &amp; Block Pattern</b> .....                          | 68 |
| <b>3.1.3 Regional Mobility Corridors</b> .....                               | 73 |
| <b>3.1.4 Transit Network Design &amp; Planning</b> .....                     | 77 |
| <b>3.1.5 Creating &amp; Expanding Transit Service Areas</b> .....            | 84 |
| <b>3.1.6 Changing Demographics &amp; Transportation Equity</b> .....         | 87 |

## 3.1.1 Layout, Spacing, and Design of Arterials & Collectors

Arterial and collector streets should form a fine-grained, interconnected network that supports efficient transit service and improves connections for users.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Land Use Planners, Architects / Landscape Architects |
|  Large    |  Municipal |   |
|  Medium   |  Community |   |
|  Small    |  Site      |   |
|  Remote   |   |   |

In Ontario, arterial roads typically follow the historic 1¼-mile (2 km) concession grid, with collector roads adding a second layer of connectivity. As primary transit corridors in many communities, the layout, spacing, and design of arterials and collectors strongly influence a community's ability to support transit and the efficiency of the overall network. When arterial and collector networks are spaced too far apart it affects the efficiency and accessibility of transit networks and can decrease transit ridership.



Figure W  
Bus in  
Downtown  
Peterborough

## Strategies

### Applicable Context

### Planning Strategies

#### Planning Scale



Regional



Municipal



Site

- a) Plan arterial and collector road networks on a municipal scale to ensure that adjacent developments, people and jobs are effectively linked with direct, transit-compatible roads.
- b) Encourage the adaptation of traditional arterial and collector right-of-way cross sections to better support transit within a municipality.
- c) Plan arterial and collector roads to facilitate multi- and intermodal travel to and from the transit network, and to provide users with a range of mobility options to support the FMLM of their journeys.

### Layout

#### Planning Scale



Regional



Municipal



Community

- d) Layout arterials and collectors to provide as direct a route as possible to minimize trip lengths and travel times and avoid backtracking. Layout of road networks should be coordinated between subdivisions and neighbourhoods to eliminate unnecessary jogs or breaks in the network.
- e) Maximize connections by establishing a fine grain composition of streets and blocks capable of dispersing traffic and reducing traffic volumes on primary streets.
- f) Space transit routes and supporting roads to avoid duplication while ensuring full coverage.

### Spacing

#### Planning Scale

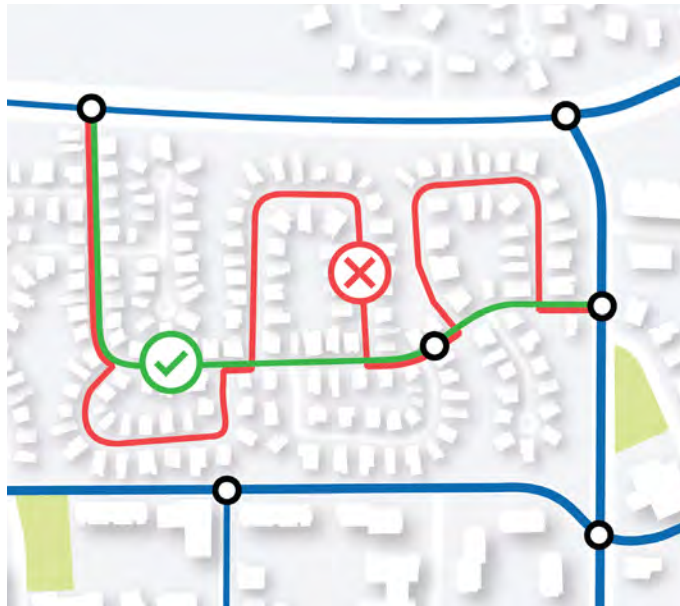


Municipal



Community

- g) Space arterials and collectors to provide a maximum 400 metre (5-minute) walk from the interior of a block to a local bus stop. For example, assuming that bus stops are spaced 200m apart along a set of parallel collectors, the collectors should be no more than 600m apart to satisfy this maximum walking distance.
- h) Space collectors at intervals of 400 m or less in strategic growth areas to facilitate higher levels of walking and cycling.
- i) Design access routes to transit stops, such as pedestrian pathways or local roads, to be spaced no greater than 200m apart to minimize walking distances to local transit stops.



**Legend**

- Preferable Transit Route
- Unfavourable Transit Route
- Transit Station / Stop
- Existing Transit Route

**Figure X**  
**Preferable Road Layout for Transit**

Layout of road networks should be coordinated between subdivisions and neighbourhoods to eliminate backtracking or jogs and provide as direct a route as possible for transit vehicles.

**Applicable Context**

**Design**

**Planning Scale**

- ↗ Regional
- ↗ Municipal
- ↗ Community

j) Design arterials and collectors to consider and balance a range of factors including the existing and planned urban form, the movement of goods and user needs. Guidelines for supporting a range of mobility options can be found in [Section 3.2.3](#).

**Applicable Sections**

**3.2.3**






**Additional Resources**

- [Geometric Design Standards for Ontario Highways, Ontario Ministry of Transportation](#)
- [Geometric Design Guide for Canadian Roads \(2023\), Ontario Ministry of Transportation](#)
- [Ontario Traffic Manual \(various dates\), Ministry of Transportation of Ontario](#)
- [Geometric Design for Canadian Roads \(2020\), Transportation Association of Canada](#)
- [MTO Design Supplement for TAC GDG for Canadian Roads \(2023\), Ministry of Transportation of Ontario](#)
- [Roadway Connectivity: Creating More Connected Roadway and Pathway Networks \(2017\), Victoria Transportation Policy Institute](#)

### 3.1.2 Local Street & Block Pattern

Local streets and blocks should form an interconnected grid that maximizes connectivity for all travel modes and minimizes distances to surrounding streets, uses, and open spaces.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Municipal | Province, Regions, Municipalities, Land Use Planners, Architects / Landscape Architects |
|  Large    |  Community |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote   |   |   |

A well-connected street system is essential for transit-supportive environments, accommodating walking, cycling, micromobility, public transit, and shared or private vehicles.



**Figure Y**  
**Intersection Density in Ontario Municipalities**

Walkable neighbourhoods typically have a higher number of intersections per hectare (iph). Achieving an intersection density of 0.6 iph or higher in nodes and corridors will help create multiple options for moving between destinations, enhancing connections between transit services and nearby uses.

## Strategies

### Layout

#### Applicable Context

#### Planning Scale

-  Municipal
-  Community
-  Site

- a) Establish an interconnected network of streets in new developments and retrofit existing areas to maximize routing options between destinations ([Subsection 3.1.1](#)).
- b) Extend new streets and block connections across property lines and design networks to link with existing and proposed streets within the community.
- c) Design or retrofit street networks so that a significant majority of residents or jobs (e.g., 90%) are located within a 400 m (approximately 5 minutes) or less walk from a transit stop.
- d) Achieve a street intersection density of greater than 0.3 intersections per hectare (iph), with higher street intersection densities of over 0.6 intersections per hectare in mixed-use strategic growth areas.
- e) Locate stations so that they can be highly visible along primary pedestrian corridors, avoiding obstacles (such as walls or landscaping) that block view corridors, to support multimodal access to transit and improved pedestrian connectivity.

Figure Z  
**Clear View Toward Union Station**

View corridor along Front Street in Toronto remains visually clear so that Union Station is highly visible from a distance.



## Applicable Context

## Physical Design

## Planning Scale



Community



Site

- f) Improve the transition between station buildings and surrounding lands, incorporating new thinking and technology that improves the user experience through the implementation of wayfinding, signage, retail, efficiency and placemaking efforts.
- g) Minimize block lengths to promote greater connectivity and enhance the walkability of neighbourhoods. Generally, residential blocks should be less than 250 m along their longest side, with maximum block lengths of 120m in mixed-use strategic growth areas.
- h) Design blocks with straight streets that intersect frequently to support higher intersection densities with more frequent crossing points, improving pedestrian mobility and access to amenities.
- i) Introduce new streets or pedestrian pathways to create more connections in areas with low intersection density. This can be achieved by cutting through large blocks or repurposing underutilized land such as parking lots or alleys into new streets.
- j) Consider reopening or reintegrating side streets and alleyways as a means of supporting higher pedestrian and / or bicycle connections, boosting overall street network connectivity and increase the number of functional intersections. Design local streets to minimize the need for backtracking and provide direct pedestrian access to primary streets, transit stops and stations, where possible.
- k) Avoid the creation of dead-end streets or cul-de-sacs to maximize street connectivity.
- l) Avoid the creation of lay-by lanes which result in increased street widths and decreased pedestrian space within the sidewalk and boulevard area of the street. While generally not desired, there may be circumstances such as at elementary schools or daycares where high numbers of drop-offs and legitimate passenger safety concerns may require the use of lay-by lanes to facilitate passenger drop-off and pick up.

## Applicable Context

## Pedestrian Access and Connections

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### Planning Scale

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Municipal



Site

- m) Avoid the use of window streets, which double up road infrastructure and pull uses away from the street. Where limited access is required, buildings facing onto streets should be accessed via a rear drive or lane.
- n) Introduce a mid-block connection or pedestrian pathway, where it is not possible for the layout of streets and blocks to achieve the walking distance criteria, to minimize walking distances. These should be:
  - constructed of durable, non-slip materials;
  - direct and visible from adjacent uses and illuminated at night to enhance personal safety; and
  - maintained year-round and cleared of snow and ice during winter months.

## Applicable Sections

**3.1.1**

## Additional Resources

- [Completing Sidewalk Networks: Benefits and Costs \(2024\), Victoria Transportation Policy Institute](#)
- [Intersection Design Strategies, Global Designing Cities Initiative](#)
- [Urban Village Planning for Community Livability \(2024\), Victoria Transport Policy Institute](#)



Figure AA  
**Buildings with Rear Access Lanes**

A rear access laneway facilitates housing in Markham to face onto and focus activity along an arterial road.

---

**Spotlight**

**Street Intersection Density**

One measure of a local street and block network is its street intersection density. The street intersection density considers the number of intersections within a given area and is a useful way of comparing the walkability of one area against another.










Generally, the higher the street intersection density the greater potential the area has to become a walkable environment.

Source: Travel and the Built Environment: A Meta-Analysis (Ewing and Cervero)

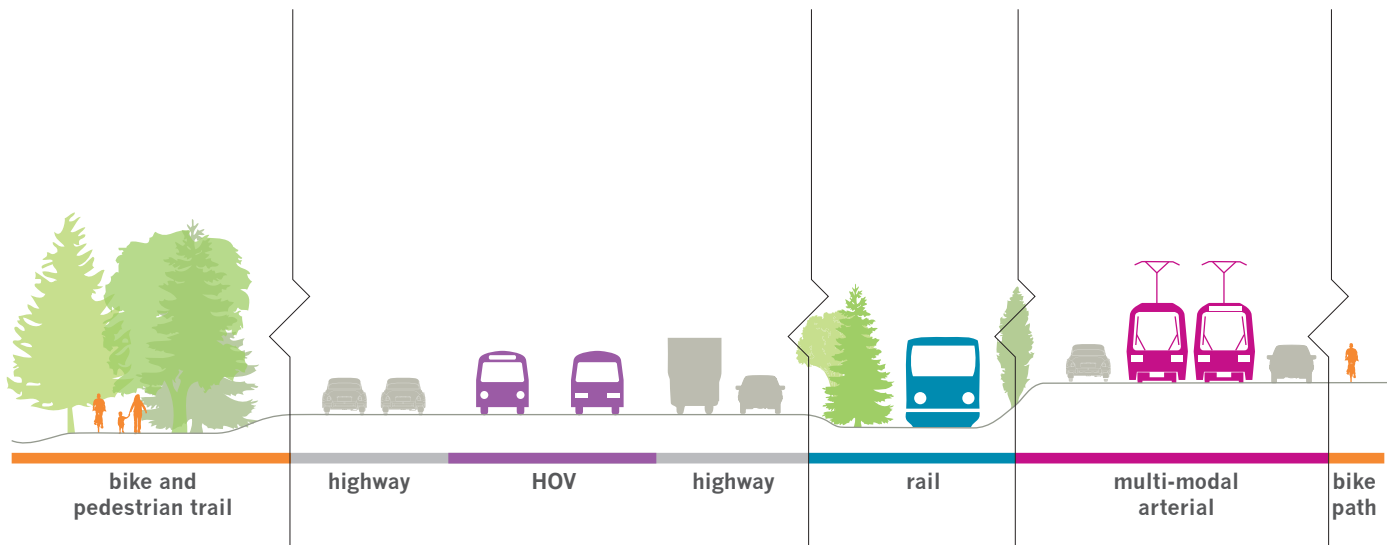
### 3.1.3 Regional Mobility Corridors

Regional mobility corridors should be identified and coordinated across jurisdictions to facilitate transportation choices between regions and throughout the province.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Land Use Planners, Developers, Architects / Landscape Architects |
|  Large    |  Municipal |   |
|  Medium   |  District  |   |
|  Small    |  Site      |   |
|  Remote   |   |   |

Identifying a network of regional mobility corridors enables planners to optimize the movement of people and goods between regional destinations. Planning for regional mobility corridors also enables planners to evaluate how easily transfers can be made between local transit networks and can highlight gaps and deficiencies that may need to be addressed at both a regional and local level. Considering the potential for fare and service integration between regional transit systems, there may be an increase in regional transit demand and travel in the future. Coordination ensures corridors align across jurisdictions and that local strategies support regional systems and the movement of people and goods.



**Figure AB**  
**Regional Mobility Corridor Cross-Section**  
**Example**

A regional mobility corridor can be established to coordinate parallel movement systems between regions and municipalities, enabling planners to optimize the movement of people and goods between regional destinations across a range of modes.

## Strategies

### Applicable Context

#### General

#### Planning Scale

-  Regional
-  Municipal
-  Community

- a) Coordinate planning for regional mobility corridors between regional jurisdictions and municipalities to facilitate the creation of a seamless regional mobility network. In some cases, planning for a regional mobility corridor may also involve provincial, federal and/ or private transportation facilities and services. It is important to consult with all parties to ensure appropriate coordination between modes and across jurisdictions.
- b) Plan regional mobility corridors to connect with key regional destinations to increase ridership and reduce the need for transfers between regional and municipal transit systems.
- c) Consider all modes of transportation in the planning and allocation of space within a corridor, including walking, cycling, transit and the private vehicle.
- d) Consider existing and planned surrounding land uses when identifying the function of regional mobility corridors and the appropriate allocation of space for various modes of transportation. For instance, if a specific regional mobility corridor serves a largely industrial area, goods movement will be a primary consideration. Alternatively, if there are multiple higher-density employment or residential nodes, the movement of people by transit and cycling connections within the corridor may take precedence.
- e) Ensure that stops and stations are easily available and accessible in locations where the rate of equity-deserving populations are higher ([Subsection 3.2.1](#)).

#### Intercommunity Transit Services

#### Planning Scale

-  Regional
-  Municipal

- f) Integrate consideration of planned regional mobility corridors with municipal and intercommunity transit planning to ensure that local networks and strategies support larger inter-regional transportation systems.
- g) Ensure that an appropriate level of access to essential destinations is provided by intercommunity transit services, particularly in northern regions of the Province and other rural locations where access to such destinations may be otherwise limited.
- h) Intercommunity transit systems should provide fast and direct travel between urban and rural areas. Stations or stops outside of designated settlement areas should be minimized to discourage

development at intermediate locations between settlement areas ([Subsection 2.1.1](#)).

- i) Consider the safety features of passenger pick-up and drop-off areas ([Subsection 3.2.9](#)) in cases where intercommunity transit vehicles need to stop along a main highway (e.g., to provide transportation options to First Nations communities or other residents that live off a main highway) ([Subsection 4.1.12](#)).

**Applicable Context**

**First-Mile Last-Mile (FMLM)**

**Planning Scale**

-  Regional
-  Municipal
-  Community
-  Site

- j) Plan and implement multimodal connection points along regional mobility corridors in conjunction with higher order and intercommunity transit services, providing access to additional mobility modes and services that help support regional and intercommunity connections.
- k) Design transit facilities situated along regional mobility corridors to include ([Subsection 3.2.1](#)):
  - accessibility features for universal design to ensure they are fully accessible to all users, including those with disabilities, the elderly, families with young children, and other equity-deserving population groups;
  - physical and digital display elements that provide real-time updates on transit arrivals, departures, and other information to remain an attractive option for users; and
  - safety and security measures including surveillance cameras, emergency call stations and visible security personnel where possible, to ensure the safety of all passengers and staff.

**Applicable Sections**



**Additional Resources**

- [Oregon Regional Transportation Plan \(Oregon Department of Transportation\)](#)

### 3.1.4 Transit Network Design & Planning

Planning an effective regional transit network should align with existing and future land use patterns. It must balance efficient movement between established destinations with fostering transportation patterns that support planned and emerging growth areas.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Land Use Planners, Urban Designers |
|  Large    |  Municipal |   |
|  Medium   |  Community |   |
|  Small    |  Site      |   |
|  Remote   |   |   |

Transit network design focuses on linking people to destinations. Regional network planning varies by area characteristics, such as activity centres and grid patterns. While direct routes are not always possible, people are more likely to use transit if the system is easy to understand and offers direct access to key destinations. Regional planning must be grounded in a strong understanding of existing and future mobility and land use patterns.



Figure AC  
**Transit Routes Connecting Strategic Growth Areas and Major Trip Generators**

Transit routes should provide direct links between strategic growth areas and other major trip generators and seek to harmonize patterns of land use and mobility so that areas with a higher intensity of uses receive higher levels of transit service.

**Legend**

- Transit Station / Stop
- Transit Route
- Strategic Growth Area

## Strategies

### Applicable Context

### Planning Strategies

#### Planning Scale

-  Regional
-  Municipal
-  Community

- a) Harmonize existing and proposed land use patterns with the provision of transit service, allowing areas with a higher intensity and mix of uses to receive higher levels of transit service and accessibility to other areas [\(Subsection 2.1.1\)](#).
- b) Develop comprehensive transit network service models for a family of services that cater to different patterns of land use and commuting needs. This could include a range of route configurations, different levels of service between routes, variations in transit mode and vehicular sizes. For example, communities should consider:
  - Fixed-route and rapid transit services for high-frequency routes intended to transport high volumes of people to key destinations in a community;
  - On-demand transit for rural and sparsely populated suburban areas;
  - Smaller vehicles for narrower suburban streets.
- c) Coordinate the location of transit routes and major trip generators, particularly MTSA's, between municipal and regional planning agencies and transit service providers to ensure that land use patterns and levels of transit service are supportive of each other [\(Subsection 2.1.3\)](#).
- d) Review local transit networks to provide regular feeder transit service during rapid transit operating hours in more urbanized communities, where demand for transit ridership is higher. Ensure feeder service is coordinated with rapid transit service.
- e) Provide direct transit routes between major trip generators in larger urban areas, particularly those connected to MTSA's, to balance the number of riders travelling in each direction and expand the range of activities accessible along a transit route [\(Subsections 2.1.3 and 2.1.4\)](#).
- f) Include the provision of transit to new subdivisions early in their development to promote transit use.
- g) Plan regional-scale transit networks with a frequency of stations or stops that is appropriate to the context. For example, within strategic growth areas, stops should be more frequent than in lower density contexts.

- h) Leverage available rights-of-way such as rail or utility corridors ([Subsection 2.1.1](#)) for transit networks, but also consider whether these rights-of-way provide effective alignments to connect people to destinations.
- i) Maximize access and convenience for transit riders through extending transit routes into the interior of the areas they are serving. Transfer points between transit routes should be concentrated near the centre of nodes. Higher order transit stations should also be located near the centre of nodes and be designed as major transit station areas to facilitate intensification over time ([Subsection 2.1.3](#)).
- j) Review transit networks periodically to assess their efficiency and effectiveness at serving transit users, as well as their ability to serve and influence changing patterns of land use. Optimize existing transit routes prior to introducing new transit infrastructure.
- k) Prioritize transfers from airports to other mobility modes, including for non-airport passengers connecting regionally ([Subsection 2.1.4](#)).
- l) Align and design transit routes to minimize the number of transfers required and facilitate transfers between systems.
- m) Undertake consultation with transit users and major employers to ensure that services are meeting the needs of users who are transit dependent or who work non-traditional hours, to ensure alignment with user needs.
- n) Schedule timing points and layovers at rapid transit stations when connecting services are infrequent, so that trip times are timed with train arrivals and departures.

**Applicable Context**

**Planning Scale**

-  Regional
-  Municipal
-  Community
-  Site

**Transit Stations**

- o) Consider facilitating large volumes of transit riders and transfers between systems at stations where multiple routes converge. This can be accomplished through the design of the station areas ([Subsection 2.1.2 and 2.1.3](#)), coordination of scheduling ([Subsection 4.2.1](#)), the co-location of other transit-supportive mobility modes and services ([Subsection 3.2.8](#)) and techniques to enhance trip planning and navigation ([Section 3.3](#)).

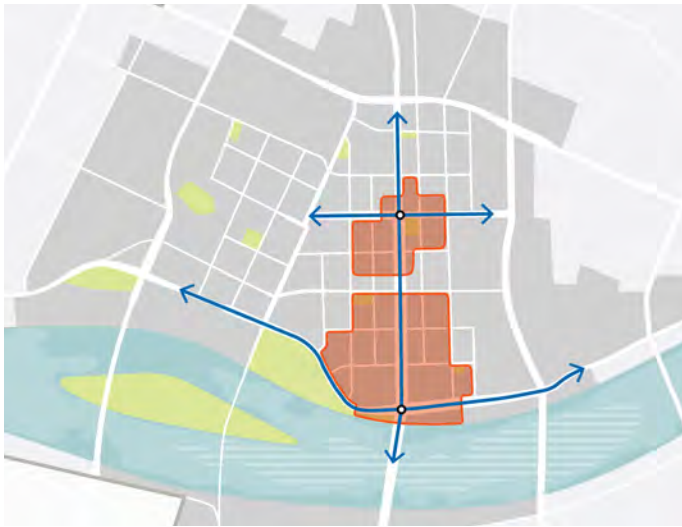


Figure AD  
**Radial Transit Network**

Radial transit networks are most efficient where there is a concentration of activity in one node such as a downtown.



Figure AE  
**Cross-Town Transit Routes**

Cross-town routes can be added as communities grow to enable efficient cross-town service and better serve emerging nodes



Figure AF  
**Grid Transit Network**

Grid transit networks are effective in larger municipalities where there is a multi-nodal land use pattern.



Figure AG  
**Feeder Transit Routes**

Feeder routes can be used to support higher order transit corridors and provide transit service to lower density dispersed areas within the municipality.

**Applicable Context****Network Design****Planning Scale**

Regional



Municipal

- p) Ensure radial transit network design considers communities or regions where activity is concentrated in one major node, such as a downtown. In a radial network, most transit routes converge on the downtown core.
- q) Consider the creation of a supporting network of cross-town routes as communities with radial transit networks grow. The network should facilitate non-downtown transit trips and enhanced multimodal connectivity to and from the network.
- r) Design the grid transit network to consider communities or regions where there is a dispersal of activity or a multi-nodal land use pattern. This grid network, in many cases, will be oriented on arterial and collector road networks ([Subsection 3.1.1](#)).
- s) Separate transit routes from established truck routes where feasible to avoid conflict.
- t) Provide a direct transit route from a central strategic growth area to the airport, using higher order transit where possible.
- u) Provide direct and covered connections between higher order transit / special express connections and terminals at airports ([Subsection 2.1.4](#)).

**Planning for Network-Wide Accessibility****Planning Scale**

Regional



Municipal

- v) Establish an accessibility plan that addresses all aspects of the transit system that will be used by the public. The accessibility plan should develop and document policies and procedures that address the following components of the transit system:
- accessible transit vehicles including specialized transit;
  - accessible routes and transfers between systems ([Subsection 3.2.8](#));
  - transit facilities, including stops, shelters, stations and platforms;
  - transit information, including emergency procedures;
  - staff training; and
  - requirements for the plan to be updated (e.g., every 5 years).

- w) Include accessible communication features throughout the transit network, including visual and auditory information, French and multilingual support, and digital accessibility. This helps to ensure that all passengers, including those with disabilities, can independently navigate the transit system, promoting confidence and inclusivity for all.
- x) Provide accessible service by offering support for passengers with disabilities, such as assistance for boarding and alighting, personal guidance at stations, and ensuring fare machines and systems are designed to be accessible to all users.
- y) Implement universal design features early on to be future-ready and innovative by accommodating a wide range of users, including elderly passengers, parents with strollers, and people with temporary impairments. This will allow transit systems to be more adaptable and flexible over time, while reducing the need for costly retrofits and promoting equitable access for everyone.

## Applicable Sections



## Additional Resources

- [Case Study: Southern California Association of Governments](#)
- [Case Study: British Columbia Transit](#)
- [Freight-Supportive Guidelines \(2022\), Ministry of Transportation Ontario](#)
- [Transit Service Guidelines \(2018\), Translink](#)

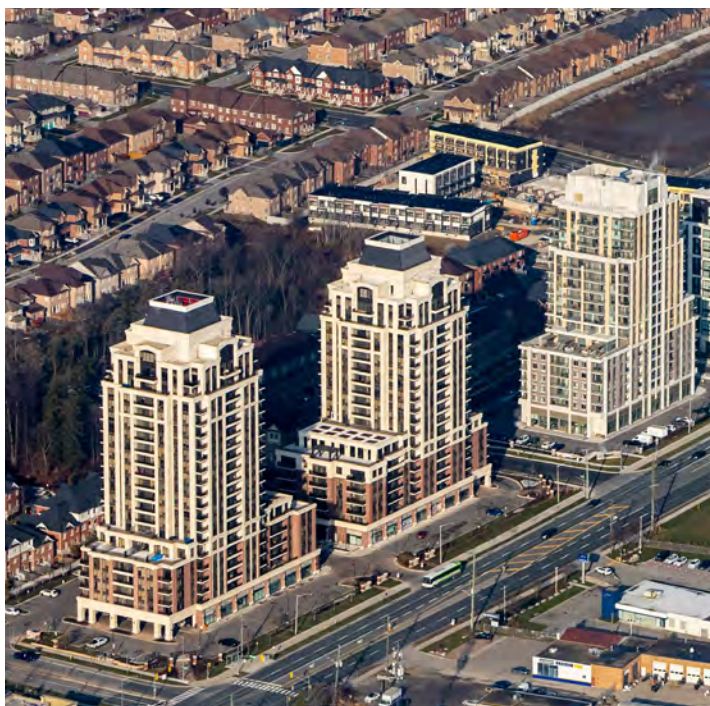
### 3.1.5 Creating & Expanding Transit Service Areas

Transit service expansion should be coordinated alongside planning and implementation of new developments to ensure that new communities are transit-supportive, and residents and businesses have early access to transit services.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Transit Agencies, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Intercommunity Bus Companies |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |   |  |
|  Remote   |   |  |

Expanding transit to new, rural, remote, and First Nation communities increases ridership potential over time. While expansion offers opportunities, serving areas with low ridership must be weighed against costs. Flexible options like on-demand microtransit can efficiently serve dispersed populations and adapt to changing demand.



**Figure AH**  
**New Communities Coordinated with Transit in Markham**

The design of new subdivisions should be informed by the existing and proposed transit service. The layout and design of streets and open spaces as well as the density and mix of uses should help to support the expansion of existing transit service, with the highest densities located along transit corridors and lowest densities moving further away from transit corridors.

## Strategies

### Applicable Context

### Planning

#### Planning Scale



Regional



Municipal



District

- a) Factor the costs of providing transit services into the evaluation process. Consider requiring developers to fund transportation demand management initiatives. Municipal councils could adopt such policies as part of the community's official plan.
- b) Consider implementing a multimodal transportation impact assessment process to assess transit costs and requirements related to new development.
- c) Aim to connect local transit routes with local destinations when designing new or reviewing existing transit routes,
- d) Designate roads that will serve as transit routes in the design phase of new communities. This will assist in the structuring of higher-density developments and ensure that they are developed to support transit and transit users from the outset.
- e) Plan new transit routes or route expansions to support fleet electrification objectives and the infrastructural needs of zero-emissions buses and other transit vehicles powered by alternative fuel sources. Include consideration for the location of charging or refuelling infrastructure, electrical grid needs and other infrastructural requirements as these vehicles become more mainstream.
- f) Define mode share targets and other transportation performance measures to inform the development and expansion of transit within existing land use and transportation planning and policy frameworks.
- g) Develop transportation performance measures and mode share targets based on existing and future land use and transportation network contexts.
- h) Include a range of transportation performance targets, such as mode share targets, trips per capita, vehicle-kilometre (VKM) trip lengths, auto occupancy, transit service levels, among others.
- i) Base transportation targets directly on goals and objectives. Clearly establish how and when targets will be achieved and identify how targets will be measured and tracked.

**Applicable Context****Phasing****Planning Scale**

-  Regional
-  Municipal
-  Community

- j) Build roads designated as transit routes in advance of other roads to enable bus service early in the development process. The front-end costs of achieving this may be justified by less need for subsequent expansion of road capacity, and lower land development costs.
- k) Introduce transit service as early as possible during the development of new communities, for example at the early stage of occupancy, to encourage early uptake of expanded systems. Factors to be considered in the early provision of transit service include:
  - planned densities and timing of new development within a 5- to 10-minute walk of the proposed service;
  - partnership opportunities with developers to provide incentives for new riders where residential densities are not yet high enough to provide transit service;
  - distance that new routes will need to be extended by to serve new areas and the impacts this will have on existing service levels; and,
  - costs of providing additional vehicles to maintain existing levels of service to existing routes.
- l) Identify locations for multimodal transit stops in new or expanded transit service areas to serve as both transit stops, as well as locations to co-locate a variety of transit-supportive mobility modes and services.
- m) Consider targeted partnerships, more flexible routes, on-demand microtransit, or other demand-responsive transit services in smaller communities that may not have sufficient population to accommodate regular transit service ([Subsection 4.1.7](#)).

**Applicable Sections**

2.1.6

4.1.1

4.1.7

6

**Additional Resources**

- [Case Study: British Columbia Transit](#)
- [Move That Bus: Tactics for Transforming Transit in Two Years, NACTO \(2021\)](#)
- [A Business Case for Improving Interregional Bus Services, Victoria Transportation Policy Institute \(2024\)](#)

### 3.1.6 Changing Demographics & Transportation Equity

Recognize demographic trends and plan to adapt transit services to meet the lifestyle and travel needs of a changing and / or vulnerable populations.

#### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote   |   |  |

Ontario communities face ongoing demographic changes, some becoming long-term trends. For example, rural and remote areas are aging as younger generations move to urban centres, increasing urban populations. These shifts affect travel patterns and demand. By analyzing and planning for these trends, transit operators can maintain or grow ridership while providing valuable service. This also helps communities address transportation barriers and create safe, accessible, and inclusive transit for equity-deserving groups across Ontario.

### Equity-Deserving Groups

Recognizing that all communities in Ontario include individuals of diverse socio-economic backgrounds, additional effort is needed to better understand barriers that individuals or groups may face when utilizing the transportation system. These experiences can influence their daily lives and opportunities and barriers may be further exacerbated through a combination or intersection of equity characteristics (e.g., a low-income individual who is a recent immigrant).

Equity-deserving groups are those that have historically experienced significant disadvantage and discrimination due to systemic barriers. The socio-economic characteristics identified that affect one's experience of the transportation system may include (but are not necessarily limited to):

- Age
- Disability
- Gender and sexual orientation
- Housing status
- Immigration status
- Indigenous identity
- Language
- Means
- Race
- Religious affiliation

Indigenous peoples have distinct constitutional and treaty rights that should be acknowledged and recognized, separate from other equity-deserving groups ([Subsection 4.1.12](#)).

**Table B**  
**Demographic Variables & Impact on**  
**Travel Behavior**

| <b>Demographic Variables</b> | <b>User Examples</b>  | <b>Impact on Travel Behaviour</b>  |
|------------------------------|---|--|
| Age                          | Child 1-14 years old, youth and seniors 65 years or over                                    | <ul style="list-style-type: none"> <li>• Children and youth are unable to drive and may be more reliant on transit, walking or cycling. Inadequate active transportation infrastructure may prevent children and youth from independently accessing recreation or services such as school, library, community centre, and shopping centres.</li> <li>• Seniors may be unable to drive and may be more dependent on public transit or specialized transit services to meet basic needs such as buying food or accessing health care.</li> </ul> |
| Disability                   | Persons with disabilities – physical or cognitive disabilities, mental health related, etc. | <ul style="list-style-type: none"> <li>• Limited accessible transportation options may restrict independence and mobility of people with physical and cognitive disabilities leading to social isolation, reduced employment opportunities, and hindered access to essential services.</li> <li>• Persons with disabilities may encounter barriers due to limited access to necessary accommodations such as ramps, elevators, low-floor vehicles, tactile paving, audible traffic signals, websites with screen readers, etc.</li> </ul>      |
| Gender / Sexual Orientation  | Women, girls, young females, LGBTQIA2S+ individuals   | <ul style="list-style-type: none"> <li>• Women and people identifying as female may experience security risks. For example, they may feel unsafe travelling alone, at night on foot / bicycle or on public transit based on experiences or awareness of violence against women.</li> <li>• Members of LGBTQIA2S+ communities may feel unsafe travelling alone, at night, or on foot / bicycle or public transit based on experiences or awareness of violence against women and LGBTQIA2S+ individuals.</li> </ul>                             |

| Demographic Variables  | User Examples   | Impact on Travel Behaviour  |
|------------------------|---|---|
| Housing                | Tenant living in subsidised housing, spending 30% or more of income on shelter) | <ul style="list-style-type: none"> <li>Individuals who spend more of their income on shelter may have less money available to support their transportation costs. Additionally, low-income high-density neighbourhoods tend to experience higher traffic volumes, collisions, and exposure to vehicle related pollution.</li> </ul>     |
| Immigration            | Recent immigrants, refugees & undocumented individuals                          | <ul style="list-style-type: none"> <li>Immigrants may face difficulties navigating the transportation system due to language barriers. For example, they may face challenges in validating existing driver's licences or navigating the licensing system in Ontario.</li> </ul>   |
| Indigenous Peoples     | Persons living in Indigenous communities or urban area                          | <ul style="list-style-type: none"> <li>Limited pedestrian and road infrastructure on and outside of Indigenous communities may exacerbate barriers to accessing public services, such as healthcare.</li> <li>Indigenous peoples living in urban areas may face discrimination and harassment when using the transit system.</li> </ul> |
| Language               | Francophones & non-English-speaking individuals                                 | <ul style="list-style-type: none"> <li>Limited English proficiency may make it challenging to get a driver's licence, navigate route maps, or understand transit announcements and signage.</li> </ul>  |
| Means                  | Persons with low-income, unemployed persons, single parent families             | <ul style="list-style-type: none"> <li>Single-parent families or low-income individuals may be more likely to face financial constraints that limit their ability to afford a car and or make spontaneous trips to essential destinations such as employment, education, or health care services.</li> </ul>                            |
| Race                   | Visible Minorities  | <ul style="list-style-type: none"> <li>Black and other racialized groups face systemic racism and may be more likely to experience security risks (e.g., harassment, violence, human trafficking) while using public transit.</li> </ul>  |
| Religious Affiliations | Muslim, Jewish, Christian   | <ul style="list-style-type: none"> <li>Individuals wearing religious garments may feel more vulnerable to harassment or discrimination in public spaces, including on public transportation.</li> </ul>   |

| Demographic Variables | User Examples  | Impact on Travel Behaviour  |
|-----------------------|--|---|
| Transportation Access | Persons with low rates of car ownership, access to destinations, areas with high rates of collisions, etc. | <ul style="list-style-type: none"> <li>• Limited access to key destinations such as work, education, social events, and healthcare appointments, etc.</li> <li>• Many neighbourhoods or communities with high populations of equity-deserving groups are underserved by transit and may have limited active transportation infrastructure. These areas may also have low rates of car ownership, significantly limiting an individual's ability to participate in society.</li> </ul> |
| Vulnerable Road Users | Cyclists, micromobility users, pedestrians   | <ul style="list-style-type: none"> <li>• People walking and cycling may be more likely to be killed or injured in a collision on roadways.</li> <li>• The perceived safety of active transportation can also limit mobility choices as individuals may choose not to cycle due to real, or perceived safety concerns. This can limit access to the affordable and flexible transportation option that active transportation can provide.</li> </ul>                                   |

Consider the demographic characteristics of a community and its people in terms of their influence or impact on transit and transportation demand. This can help to anticipate changing cultural and community expectations and enable transit systems to target prospective transit users for marketing or education purposes.



Figure A1  
Züm Bus Stop, Brampton

## Strategies

### Applicable Context

### Planning & Assessing Trends

#### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- a) Analyze demographic groups and local cultural, residential, employment, and activity patterns to plan for better meeting travel needs. Developing programs for changing and equity-deserving populations requires understanding barriers, anticipating current and future needs, and long-range planning of transit assets and resources
- b) Use a theme-based planning approach to capture diverse user perspectives and the needs of equity-deserving groups. Evaluating the greatest barriers through policy and services ensures both general and equity-deserving populations are served. However, user contexts and mindsets are fluid, shifting with temporal, environmental, social, or situational changes. Below is an example of a theme-based approach to address barriers equity-deserving groups may face when accessing transit:
  - i. Accessibility and Inclusion
    - Plan system-wide accessibility improvements which are outlined in an organization's multi-year accessibility plan.
    - Comply with the requirements set out by the *Accessibility for Ontarians with Disabilities Act, 2005 (AODA)* for developing, implementing, and enforcing accessibility standards within transit and mobility projects / stations.
    - Assess the ease of navigation and accessibility of the transit system from the perspective of an equity-deserving user's barriers and needs can help implement transit improvements that advance equity. Inaccessible infrastructure and lack of reliable specialized transportation services can severely limit the participation of persons with disabilities. For example, understanding the perspective of a parent with a stroller trying to access transit services.
    - Assess ways to maintain transit services to community members who do not have access to other means of transportation.
  - ii. Infrastructure and Maintenance
    - Locate and maintain accessible services at transit facilities and stations for user convenience.

- Design transit system information to be legible by all users.
- iii. Health and Safety
- Assess whether transit services, facilities and amenities are comfortable and safe for all users under different conditions and weather patterns ([Subsection 4.2.4](#)).
  - Provide targeted services to those who require, such as shuttles from seniors housing to shopping and medical centres.
- iv. Convenience and Reliability
- Assess whether transit routes and stops are serving destinations frequented by users, and whether schedules are meeting their demand.
  - Plan for more efficient and convenient specialized transit services with appropriate timed connections and access to major trip generators can improve the independence and mobility for users. Lack of control over commute times, schedules and unpredictable delays are common barriers experienced particularly for equity-deserving individuals.
- v. Affordability and Access
- Offer timed transfers to enable multiple stops on one fare to enhance connectivity and account for transit delays.
  - Provide lower off-peak fares to user groups, for example seniors from low-income households
  - Provide family passes that enable a family to travel for the cost of a single pass during evenings or weekends.
- vi. Evidence-Based and Collaborative Decision
- Monitor demographic changes through study of travel surveys such as MTO's Transportation Tomorrow Survey and Statistic Canada's Canadian Census.
  - Work with social agencies and health networks to determine transportation needs of their clients and investigating opportunities for community transportation.

**Applicable Context**

**Meaningful Engagement and Strong Partnerships**

**Planning Scale**

-  Regional
-  Municipal
-  Community
-  Site

- c) Leverage available resources and undertake engagement with diverse groups to better understand barriers faced by different equity-deserving groups and Indigenous population in accessing the transportation system and the services they need.
- d) Update communities regularly on initiatives taken to address barriers different equity-deserving groups encounter to encourage ongoing public consultation.
- e) Create or use existing accessible systems, i.e., online platforms, townhall meetings, to facilitate continuous feedback from community members and equity-deserving groups. This will help ensuring transit services, amenities are distributed equitably, and rather than equally.
- f) Establish partnerships with different stakeholders and equity-deserving groups to help inform the planning, design and implementation of transit services that meet the needs and evolution of all users. [Section 5.1](#) provides more details on how engagement and partnership can create a transit-supportive environment.

**Reflect Equity in Decision-Making and Measuring Success**

**Planning Scale**

-  Regional
-  Municipal

- g) Create opportunities and processes for transit users of equity-deserving groups most affected by transit agency changes and actions to express their interests and exert meaningful influence over organizational decisions.
- h) Align transportation plans and initiatives with existing municipal equity goals and objectives to develop analyses that can help identify gaps and needs on an on-going basis.
- i) Leverage equity-focused data to shape transit policies and initiatives; as well as develop performance evaluation framework that incorporates equity metrics to assess the success of a transportation initiative ([Subsection 4.2.2](#)).
- j) Encourage representation of diverse groups, including equity-deserving groups and Indigenous population within decision-making entities.

- k) Offer equity trainings, seminars, or relevant tools to the First Nation Communities, Indigenous population and equity-deserving groups involve in the decision-making process to help identify community needs to ensure equitable transit system. More information about ensuring equity in decision making can be found in [Section 6.1](#).

### Applicable Sections

4.2.2

4.2.4

5.1

6.1

### Additional Resources

- [Age-Friendly Rural and Remote Communities: A Guide \(Public Health Agency of Canada\)](#)
- [Canadian Transit Ridership Trends Study, CUTA \(2018\)](#)
- [Community Initiatives, Mobilizing Justice](#)
- [Data Sets and Catalogues, Mobilizing Justice](#)
- [Ontario Demographics \(Ontario Ministry of Finance\)](#)
- [Transit Equity Dashboard, Transit Center](#)



Figure AJ  
Tahoe BRT Station, Mississauga

## 3.2 Transit System & First-Mile Last-Mile Planning

Reducing barriers to reach transit, while ensuring seamless and convenient access to both transit stops and stations, is essential to the creation of transit-supportive environments, and to support future ridership. First-mile last-mile (FMLM) connectivity is a critical consideration to the provision of transit and can extend the reach of transit to users and vulnerable populations that may not have access otherwise. The location of transit stops and stations, as well as planned access by pedestrians, cyclists and shared mobility users, can encourage transit use and ensure all users can reap the benefits of transit use. The following section aims to provide guidance on how to enable transit access with transit-supportive environments, with topics including:

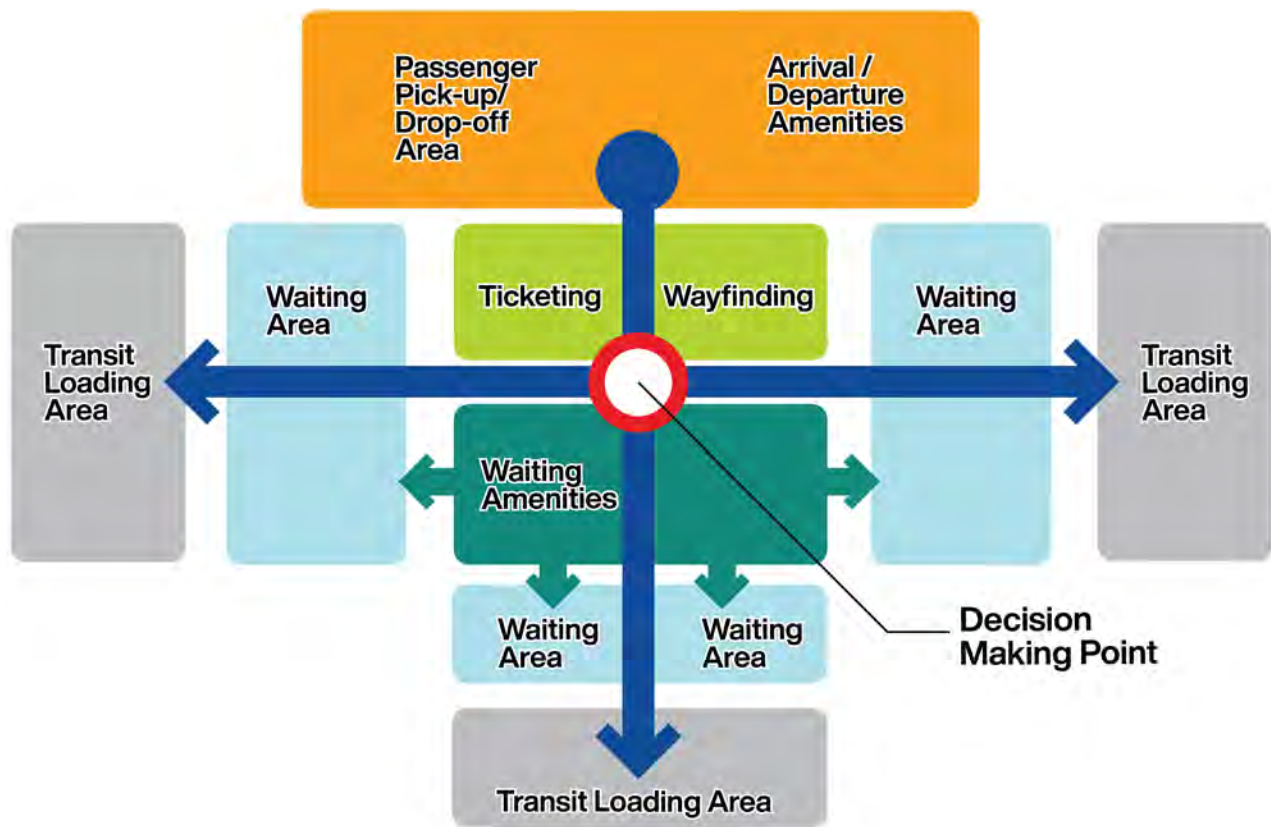
|  |     |
|--|-----|
| <b>3.2.1 Location &amp; Design of Transit Stations</b> ..... | 99  |
| <b>3.2.2 Location &amp; Design of Transit Stops</b> .....    | 112 |
| <b>3.2.3 Complete Streets</b> .....                          | 119 |
| <b>3.2.4 Transit within the Public Right-of-Way</b> .....    | 124 |
| <b>3.2.5 Transit Access for Pedestrians</b> .....            | 130 |
| <b>3.2.6 Transit Access for Cyclists</b> .....               | 138 |
| <b>3.2.7 Transit Access for Shared Mobility Users</b> .....  | 147 |
| <b>3.2.8 Transferring between Systems</b> .....              | 151 |
| <b>3.2.9 Pick-Up &amp; Drop-Off Areas</b> .....              | 155 |
| <b>3.2.10 Car Share / Shared Fleets</b> .....                | 158 |

### 3.2.1 Location & Design of Transit Stations

Design transit stations to improve connectivity between modes and enhance user experience. As community mobility hubs, they should strengthen neighborhood identity and integrate with their surroundings.

#### Applicable Context

| Community Size   | Planning Scale   | Key Stakeholders   |
|--|--|--|
|  Big City<br> Large<br> Medium<br> Small |  Municipal<br> Community<br> Site | Province, Regions, Municipalities, Land Use Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, Transit Agencies, Intercommunity Bus Companies, Urban Designers, Architects / Landscape Architects |



**Figure AK  
Station Layout Logic**

A progression of facilities with clear and direct routes will help people to find their way around the station quickly and easily.

## Applicable Context

## Planning Scale



Municipal



Community



Site

**Strategies**

## Location &amp; Access

- a) Locate transit stations at key locations with visibility from main roads, ensuring enhanced access to the transit networks.
- b) Integrate transit infrastructure, such as station platforms, as seamlessly as possible with sufficient space for pedestrian movements.
- c) Work with local landowners to secure pedestrian and cycling connections to and through adjacent developments for users going to and from the transit station.
- d) Pursue opportunities to integrate at-grade station entrances into the base of existing buildings and new development where appropriate. Work to provide entrances at all corners of an intersection.
- e) Ensure the entrance is accessible and in operation during all hours that transit service is in operation.
- f) Balance spacing between stations by providing stops at desirable locations for riders while considering the impact of additional stops on journey times.
- g) Plan and design or retrofit transit stations and the station area immediately surrounding the station building to support multimodality and a sense of place by co-locating a variety of mobility modes, services and amenities as appropriate. The combination of different mobility and placemaking elements should vary according to context-specific conditions and station size.
  - At larger transit stations that are served by higher order, frequent transit, the amount and configuration of additional modes and services should be designed to support higher volumes and densities of people in the station area.
  - At smaller transit stations with a lower volume of users, such as a neighbourhood subway station, a commuter rail station or a ferry terminal, amenities should be included to support potentially longer wait times between transfers or less frequent transit service(s).



**Figure AL**  
**Enhanced Visibility and Access to Underground LRT Station**

Chaplin station entrance is highly recognizable and located to facilitate efficient multimodal access.





**Figure AM**  
**Integrated Subway Station Entrance Connection in Shopping Centre**

CF Toronto Eaton Centre entrance connection provides direct and accessible access to Dundas Station.

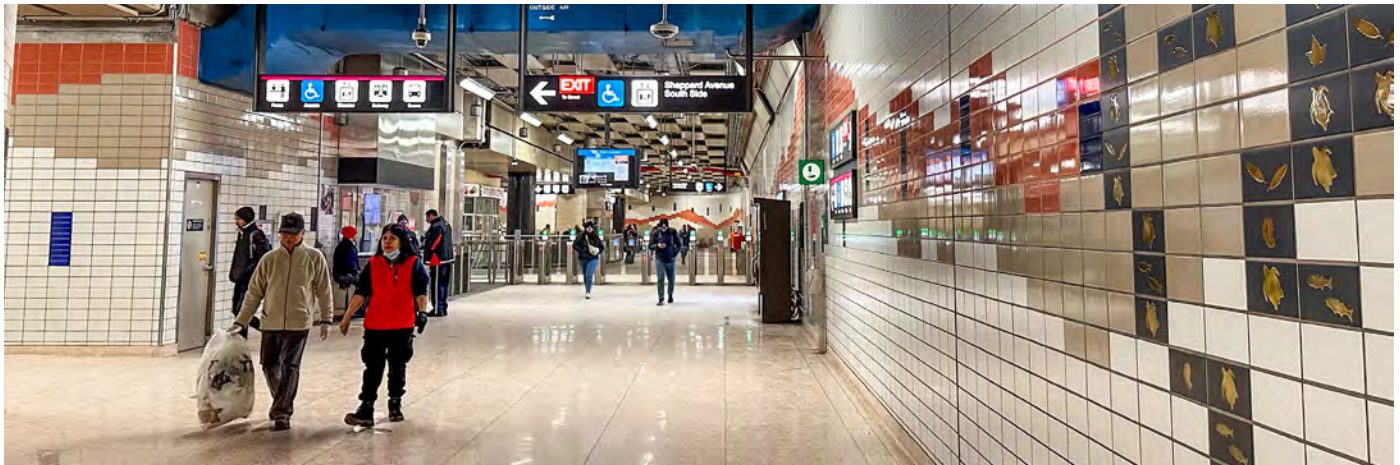
**Applicable Context**

**Planning Scale**

-  Community
-  Site

**Design Treatments**

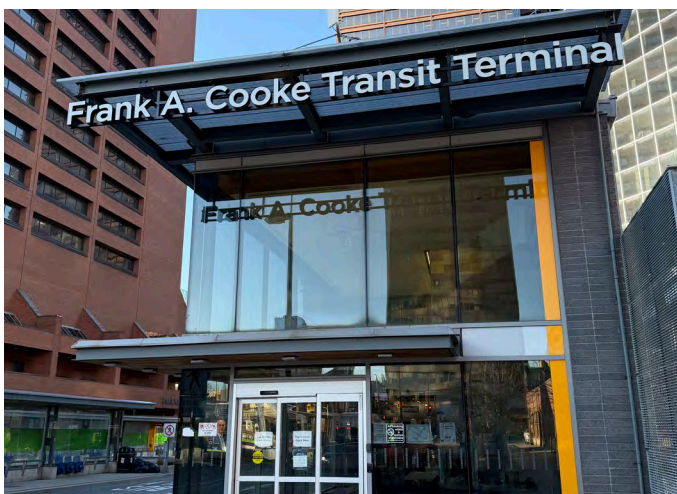
- h) Coordinate the design of larger transit stations with the planning horizons associated with the MTSA, secondary plan or area plan in which it is situated, to support long-term intensification. Establish development parcels and preserve land for the creation of new streets and open spaces that strengthen connections to surrounding areas.
- i) Promote design excellence at transit stations to position stations as a landmark and amplify the visibility of transit services.
- j) Position transit stations and facilities at the forefront of emerging consumer and sustainability trends in station design by implementing innovations in information services, energy efficiency, and consumer preferences.
- k) Ensure sufficient space is provided around entrances, fare gates, ticketing / information booths, etc. to accommodate peak passenger volumes.



**Figure AN**  
**Station Design & Layout Facilitating Passenger Activities**

The layout and design of Don Mills Station in Toronto provides sufficient space to facilitate passenger movement, admire public art, use fare vending machines, interact with station attendant booths, read signage, and use fare gates.

Every station on the Line 4 subway including Don Mills Station incorporates public art into the station design through the use of tilework, representing geologic strata and bronze tiles depicting fossils of fish, turtles, leaves, shells, and feathers.



**Figure AO**  
**Strong Station Identity**

Frank A Cooke transit terminal in Hamilton showcases clear wayfinding through station building design.



**Figure AP**  
**Overhead Canopy Structure Provides Sense of Entrance and Weather Protection**

An overhead canopy structure provides weather protection and frames the entrance to Tunney's Pasture station in Ottawa.

- l) Design transit stations and allocate space on lands owned by transit agencies to accommodate change as transit networks expand.
- m) Support flexible transit station design by considering features such as knock-out panels for future property acquisition and ensuring station buildings and forecourt areas can be easily retrofitted for expansion.
- n) Design temporary facilities to meet the needs of early phases, while ensuring built facilities can be re-used or easily redeveloped.
- o) Coordinate external pathways and transit routes with the internal layout of the station, rather than just entrances while also considering transparency, perceived safety and Crime Prevention Through Environmental Design (CPTED) principles along the customer journey from the public sidewalk to boarding transit vehicles in a station.
- p) Design station layouts to enable efficient passenger movement by:
  - Reducing the distance between entrances and platforms,
  - Minimizing obstacles and the number of levels,
  - Avoiding interactions between transit vehicles and pedestrians.
- q) Utilize high-quality and sustainable materials for the construction and retrofit of transit stations.
- r) Design transit stations to accommodate adaptive reuse, retrofit or disassembly to suit the needs of evolving uses over time and mitigate obsolescence.
- s) Ensure the design of transit stations exhibit a unique identity, while reflecting the character and history of the surrounding area.
- t) Protect and leverage heritage features in the construction and retrofit of transit stations.
- u) Extend transit station design beyond the platform and waiting areas to encompass the wider public realm of the station area and its surroundings, while considering station identify, standards and operational needs.

## Applicable Context

## Low-Impact Development

---

### Planning Scale

 Municipal

 Site

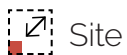
- v) Implement rain gardens, bioswales, and permeable pavements in transit stations and stops to manage stormwater naturally, reducing runoff and improving water quality to help minimize infrastructure strain.

- w) Increase tree canopies and shade by incorporating native trees and green roofs at transit stations, and along transit corridors to reduce heat islands, improves air quality, and boost passenger comfort, encouraging more sustainable, year-round transit use.
- x) Utilize recycled, low-carbon, and locally sourced materials in construction to reduce environmental footprint, prioritizing modular and flexible designs for facilities where appropriate, that can adapt to future needs, lowering lifecycle impacts and contributing to circular economy principles.
- y) Install energy-efficient LED lighting and incorporate solar panels at stations and along transit routes where feasible. This not only reduces operational costs but also supports sustainability targets and helps build resiliency in the transit infrastructure.

**Applicable Context**

Accessibility

Planning Scale



Site

- z) Ensure all new transit stations are fully barrier-free and accessible, demonstrating best practices in universal design.
- aa) Design transit stations to be inclusionary spaces, exceeding AODA requirements by ensuring that station buildings, station areas, and station forecourts are designed to address a variety of physical, economic and technological abilities.
- ab) Ensure station areas and amenities are laid out consistently and logically through a consistent hierarchy of station spaces with clear and barrier-free "movement areas" linking these zones. This includes:
  - **Interface and entry areas:** should be visible from the street and pedestrian paths and clearly marked. Signage, such as entry pillars, must be provided where entrances are hidden from view. Ensure specialized transit service areas are located adjacent to barrier-free entrances and movement spaces.
  - **Customer service areas:** should be located centrally to be accessed by users on both sides of the fare-paid line.
  - **Retail/amenity areas:** should be located along the main movement areas of the station to increase accessibility and visibility. Retail areas should not conflict with the main circulation areas.
  - **Waiting areas:** should not conflict with the main circulation areas and should offer clear views of boarding areas.
  - **Boarding areas:** should be clearly marked and provide areas for alighting and queuing.



Figure AQ  
**Accessible Platform at GO Train Station**

Accessibility platform raises passengers using mobility devices to the same level as the train entrance.



Figure AR  
**Braille at the Bottom of Stair Railings**

Braille located on stair railings communicates directions to people with visually impairments at a decision point in Innsbruck Central Train Station, Austria.



Figure AS  
**Inclusionary Design at Zurich Main Station**

Zurich Main Station in Switzerland has been designed to be accessible and easily navigable. Step-free access is provided into a largely barrier-free concourse, where ramps and elevators provide access to other levels and train platforms. Station amenities and signage are consistent and highly perceptible across the train station.



Figure AT  
**Accessible Platform Elements**


Tactile walking surface indicators and high-contrast markings support accessibility by signalling proximity to the platform edge and indicating entrances to accessible seating, alighting and queuing areas in Bloor-Yonge Station, Toronto.

- ac) Identify 'decision points': locations where conscious choices in navigation are made, in station areas where additional directional signage and visual cues are needed to assist in this navigation.
- ad) Minimize the length of and barriers along travel paths in transit stations for persons with disabilities by:
  - implementing street to platform level elevators where possible;
  - grouping accessibility features together including barrier-free pathways between modes, elevators, accessible fare gates, automatic doors, upgraded signage, and pick up and drop off areas;
  - reducing the use of steps; and
  - providing seating at appropriate intervals to allow people to wait and rest.
- ae) Align and prioritize the implementation of multiple elevators based on the estimated demand for specialized transportation services.
- af) Install accessible public washrooms at key locations.
- ag) Develop plans to retrofit existing, non-accessible transit stations and stops in a timely and cost-effective manner. This may include prioritizing station retrofits based on ridership, destinations and customer needs.
- ah) Provide clear access for emergency services.

**Applicable Context**

**Legibility**

**Planning Scale**

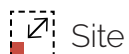
 Site

- ai) Design transit stations to be easily navigable, or "legible" to users with clearly defined areas related to station functions. Provide clear and direct routes between station facilities and the various converging transportation modes. Provide clear separation between transit rider travel paths and areas not accessible to the public.
- aj) Develop a level of design consistency at larger transit stations to increase user familiarity with station facilities and enhance station legibility ([Subsection 3.3.4](#)).

**Applicable Context**

*Amenity*

**Planning Scale**



a) Enhance the passenger experience by providing transit-supportive amenities that minimize perceived wait and transfer times, making the transit journey more comfortable, including:

- Seating at waiting areas and between transit facility entrances and waiting areas. Outdoor seating should be covered to provide weather protection and should include a variety of comfortable seating types and locations;
- Waste and recycling receptacles to support the maintenance of clean transit facilities;
- Public washrooms with emergency call buttons to ensure safety and security. Locate washrooms near service counters or kiosks to improve safety and security;
- Publicly accessible Wi-Fi;
- Parcel lockers, charging stations, and automated teller machines (ATMs) to support passengers in accomplishing practical activities at transit facilities, where feasible, acknowledging that these may require third-party partnerships;
- Meeting areas and public spaces that allow passengers to meet, interact, and rest.;
- Retail shops, food courts, supermarkets, vending machines, and water fountains that allow commuters to rest along extended journeys and potentially eliminate a stop in their trip by allowing them to accomplish tasks within a transit facility;
- Community amenities, such as libraries, community centres, Service Ontario, etc. to enhance access to important public service facilities and strengthen transit facilities as a key community focal point;
- Childcare services to allow parents to conveniently drop off and pick up their children along their commute to / from work;
- Local public art that reflects the character and / or history of the surrounding neighbourhood, where possible. Public art can showcase local talent, be passive (e.g., murals and sculptures) and be interactive (e.g., musical exhibits); and
- Educational plaques, signs, and panels that celebrate the neighbourhood's identity and commemorate its natural and cultural heritage features.



Figure AU  
**Station Amenities Located in Waiting Area**

Paddington Station in London, UK provides a range of amenities to support waiting passengers including cafe, information totem, benches with arm rests, and real-time information.



Figure AV  
**Temporary Storage Lockers in Station**

with written and visual instructions in Hakone, Japan.





Figure AW  
**Retail Overlooking Station Waiting Area**

Retail stores, restaurants, and cafeteria seating with direct view of transit gates, waiting area, and real-time information allow passengers on the second floor to keep track of their commute while completing other activities in West Kowloon Station, Hong Kong.

**Applicable Context**

**Surface Parking**

**Planning Scale**

-  Community
-  Site

- a) Measure the benefits of new ridership against the associated costs of the creation or expansion of parking areas, including construction and maintenance, neighbourhood impacts and impacts on more local transit services. Note that minimum parking requirements are not applicable to lands located within PMTSAs and MTSAAs ([Subsection 2.1.3](#)).
- am) Provide parking to encourage longer distance and inter-regional transit ridership where densities are low and the ability to provide feeder bus service is limited. Once parking is in place, patterns of use should be monitored to determine rider catchment areas and identify opportunities for new feeder service or pedestrian and/or cycling infrastructure as demand increases over time.
- an) Allocate priority spaces, where parking is provided, and establish free or preferential pricing for carpool vehicles, scooters and motorcycles.
- ao) Structure surface parking lots to create a clear pattern of circulation that can minimize pedestrian, cyclist and vehicular conflicts, support safe pedestrian access from parking areas and enable the intensification of station areas over time. Strategies include:
  - creating a primary central access route between the public rights-of-way and the station entrance that can act as the principle vehicular point of access and accommodate pedestrian and cycling infrastructure such as sidewalks and bike lanes leading to and from the station; and
  - aligning parking aisles in the direction of the station to reduce the need for pedestrians to cross parking aisles or between rows of parked cars.
- ap) Explore opportunities for reduced parking size dimensions and parking aisle requirements that can help to minimize land requirements while remaining compliant with Accessibility for Ontarians with Disabilities Act (AODA) design standards.

**Applicable Context****Pick-Up / Drop-Off****Planning Scale**

Site

- aq) Provide dedicated passenger drop/off and pick up (PUDO) areas for both taxis and rideshare vehicles adjacent to the station building or in a dedicated zone near to the station entrance ([Subsection 3.2.9](#)). These passenger PUDO areas should be accessible and designed for one way traffic flow with room for waiting cars to queue.
- ar) Design passenger PUDO areas to support frequent vehicle turnover and minimize conflicts between pedestrians and vehicles. Include anti-idling provisions. Safety can be enhanced through the provision of a curbed sidewalk adjacent to the passenger door. Where dedicated curb side drop off is not feasible, these areas should be designed as “shared” pedestrian / vehicular spaces through special paving or markings designed to enhance driver awareness.

**Parking Structures****Planning Scale**

Community



Site

- as) Situate parking structures where they will not impede the long-term redevelopment and intensification potential of the station area.

**Applicable Sections**

2.1.3

3.2.9

3.3.4

**Additional Resources**

- [Tomorrow's Living Station, ARUP \(2019\)](#)
- [Future of Stations, ARUP \(2020\)](#)
- [Transit Universal Design Guidelines Principles and Best Practices for Implementing Universal Design in Transit, APTA \(2020\)](#)
- [Transit Station Improvements: Improving Public Transit Waiting Conditions, VPTI \(2019\)](#)
- [Identifying Best Practices for Mobility Hubs, Saki Aono for TransLink \(2019\)](#)
- [Mobility Hubs Guidance, CoMo UK \(2019\)](#)
- [Public Transit Station Design to Support Micromobility, Ferguson, B and Sanguinetti, A. \(2023\)](#)

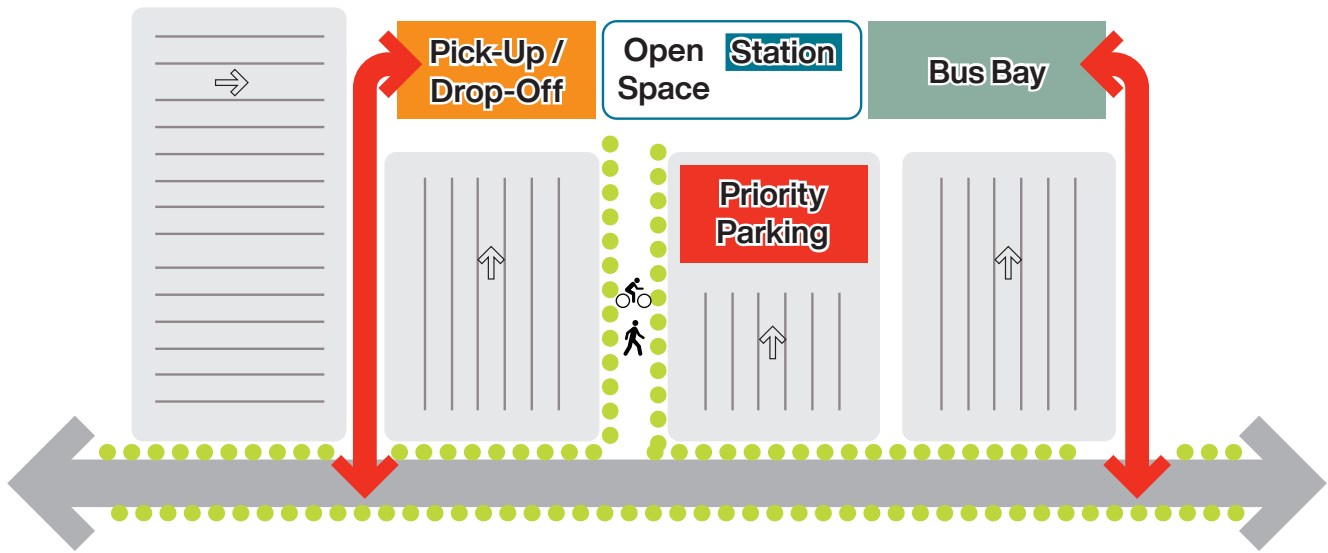


Figure AX  
**Surface Parking & Transit-Supportiveness**

Organizing large areas of surface parking into smaller modules can facilitate access for all users while establishing future development parcels for intensification over time. In this diagram, taxi and drop off and pick up areas have been located to

feed directly onto the station plaza while accessible parking and parking for smaller vehicles and/or shared vehicles has been given priority immediately adjacent to the station.

## 3.2.2 Location and Design of Transit Stops

Design and locate transit stops to enhance accessibility, multimodal connections and user comfort, while balancing the requirements of an efficient transit service.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Province, Regions, Municipalities, Land Use Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, Transit Agencies, Intercommunity Bus Companies, Urban Designers, Architects / Landscape Architects |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote   |   |  |

The location and design of transit stops is an important factor in determining how far pedestrians must walk to reach transit services and the quality of the wait once they get there. A transit stop is the most consistently visible image of a town or city's transit system.

Since transit cannot usually provide universal door-to-door access, ensuring that stops are easily accessible to a large percentage of the public is important to enhancing ridership. Within a system there may be several different types of stops related to the existing and planned level of passenger activity or the location of the stop within the system. There could include minor stops, which exist along the length of a transit route, major stops at the junction of two connecting routes and interchange stops at major transfer points within the system. The design and comfort provided by transit stops to users of all ages and abilities is essential to user satisfaction and the reduction of perceived waiting times.

## Strategies

### Applicable Context

### Location

#### Planning Scale

-  Regional
-  Municipal
-  Community

- a) Locate transit stops in highly visible locations along well-travelled routes and support their function through the design of adjacent development, being careful to minimize instances where there are competing demands for frontage access.
- b) Locate transit stops next to uses that generate high transit use such as seniors' residences, hospitals, social services, large employers, retail uses and entertainment venues ([Subsection 2.1.4](#)).
- c) Locate stops on the near or far side of intersections as appropriate for the circumstances:
  - Locate stops on the near side of the intersection to accommodate pedestrians near a crosswalk and provide the driver more control of the bus as they make the stop and then proceed through the intersection. Design the stop to allow for pedestrian visibility and discourage right-turning vehicles from merging in front of the transit vehicle; and
  - Locate stops on the far side of the intersection to reduce interference where there is a high volume of turning vehicles and/or freight movement, and bus service is frequent. Far side stops allow the bus to proceed through a green signal and make it easier for buses to re-enter traffic.
- d) Avoid locating transit stops at points where transit vehicles will need to re-enter the stream of traffic.
- e) Identify and implement different types of transit stops to best suit the route and stop location based on the environment for application, while aiming to locate stops that serve different directions on the same route, as close to one another as possible.
- f) Balance spacing between stops by providing stops at desirable locations for riders, while considering the impact of additional stops on journey times.
- g) Provide temporary transit stops when permanent stops are out of service.
  - Locate temporary stops as close to the permanent stops as possible; and
  - Prioritize safety and ensure boarding areas remain clear when locating temporary stops.

- h) Provide clear signage identifying the location of the temporary stop at the out of service permanent stop. Ensure boarding / deboarding areas are not obstructed by street furniture for people using mobility devices.
- i) Allow persons with disabilities to board and deboard transit vehicles at the closest available safe location, as determined by a transit operator in instances where an official transit stop is not accessible and a safe location for boarding and deboarding is accessible along the same transit route.

**Applicable Context**

Design

**Planning Scale**

-  Regional
-  Municipal
-  Community

- j) Design and retrofit transit stops with universal design principles, and to support multiple modes of transportation, providing amenities that enhance the customer experience and improve FMLM connections.
- k) Design transit stops as inviting, accessible public spaces that strengthen connections with surrounding areas and serve as focal points for neighbourhood activity.
- l) Position transit stops at the forefront of emerging consumer and sustainability trends in station design by implementing innovations in information services, energy efficiency, and consumer preferences.
- m) Design transit stops to strengthen community identity using of high-quality architecture and public realm treatments such as public art, streetscaping, street furnishings and landscaping.

Waiting Area Design

**Planning Scale**

-  Municipal
-  Site

- n) Design waiting areas at a transit stop so they:
  - connect to the sidewalk and provide direct access to all transit vehicle doors;
  - are well lit and highly visible from the street with clear sightlines to both approaching and parked transit vehicles and surrounding uses;
  - are constructed of high-quality weatherproof materials that resist slipping and drain well;
  - avoid changes in grade and obstructions that can hinder people with mobility issues, carts or baby carriages;
  - accommodate passenger volumes at peak times; and

- alert the visually impaired of their presence and, if appropriate, the location of various elements within the waiting area, through tactile strips or paving.
- o) Establish a regular maintenance schedule that includes snow clearance during winter months ([Subsection 4.1.10](#)).
- p) Incorporate direct, level connections leading from the sidewalk to the edge of the curb at transit stops adjacent to ditches or swales.

## Applicable Context

## User Amenities

### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- q) Consider all transit stops as locations to co-locate a variety of additional mobility modes, services and amenities that enhance user comfort and support FMLM connections to and from the stop.
- r) Prioritize the provision of a higher level of passenger amenity such as a transit shelter, pre-payment facilities and real-time trip planning information at bus stops where two routes intersect or in areas with a high number of boardings. Provide basic user amenities at stops with lower passenger volumes and reduced transit service to improve the perception of wait times and passenger comfort.
- s) Accommodate cyclists with bike racks and, where appropriate, sheltered racks and/or bike lockers, in locations where the demand exists, such as along cycling routes or where distances between stops and local destinations are long.
- t) Incorporate landscape treatments that preserve views but improve the environment for waiting passengers by providing shade from the sun and shelter from the wind. This can enhance the user experience, environmental performance and the image of the system.
- u) Encourage the integration of transit shelters / waiting areas into the design of buildings adjacent to the street. These can be achieved through community benefits charges or site plan agreements and can take the form of:
  - overhangs that provide shelter for waiting passengers;
  - highly visible internal waiting areas that provide shelter and warmth during winter months; and
  - front lobbies and ground floor circulation areas located adjacent to stops.

- v) Ensure boarding / deboarding areas are not obstructed by street furniture for people with carriages and mobility devices, with coordination between transit service providers and municipal partners.
- w) Design transit shelters to be comfortable and highly visible with transparent sides, seating with armrests to support passengers with disabilities, and lighting.
- x) Consider the location and design of transit shelters in relation to transit stop posts, the pedestrian clearway, the curb, and surrounding buildings. The arrangement of transit shelters in relation to these elements influences passenger boarding, visibility of approaching transit vehicles, passenger comfort, and access to adjacent buildings.
- y) Provide garbage and recycling receptacles for waiting users at all transit stops.
- z) Design shelters to accommodate a range of users, including people with carriages or accessibility needs.
- aa) Include a range of amenities including shelters, benches and waste receptacles in transit stops where service is infrequent.
- ab) Incorporate passenger-activated radiant heating at remote stations or when headways between vehicles are long. This can help to improve user comfort during colder winter months.



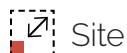
Figure AY  
**Transit Stop Configurations**

The diagrams above illustrate two potential transit stop configurations demonstrating a range of strategies in this guideline. The stop on the left creates a waiting area away from the street. Stops should be located adjacent to a street only where there is low traffic volume.

## Applicable Context

## Public Art

### Planning Scale

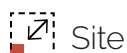


Site

ac) Consider incorporating public art at transit stops to enhance the user experience and foster a positive image of the system. Artwork can be used to reflect local characteristics or commemorate the unique history of an area.

## Design and Accessibility

### Planning Scale



Site

ad) Design transit stops to be welcoming, hospitable and vibrant public places that strengthen connections to and between surrounding areas and act as focal points of neighbourhood activity.

ae) Position transit stops at the forefront of emerging consumer and sustainability trends in station design by implementing innovations in information services, energy efficiency, and consumer preferences.

af) Design transit stops to strengthen community identity through high-quality architecture and public realm treatments such as public art, streetscaping, street furnishings and landscaping.

## Applicable Sections

2.1.2

2.1.4

## Additional Resources

- [Case Study: Régie autonome des transports parisiens](#)
- [Case Study: Transport for London](#)
- [Case Study: Berliner Verkehrsbetriebe](#)
- [Case Study: Société de transport de Montréal](#)
- [Bus Terminals, City of Toronto \(2022\)](#)
- [From Sorry to Superb: Everything You Need to Know about Great Bus Stops, Transit Centre \(2018\)](#)
- [Transit Bus Stop Accessibility Criteria & Guidelines, City of Hamilton](#)
- [Transit Bus Stops: Accessibility Criteria & Guidelines, Niagara Region Transit \(2020\)](#)
- [Bus Infrastructure Design Guidelines, TransLink \(2020\)](#)
- [Mobility Hubs Guidance, CoMo UK \(2019\)](#)
- [Accessible Bus Stop Design Guidance, Transport for London \(2017\)](#)



Figure AZ  
**Transit Stop Design**

This transit stop in York Region is composed of high-quality materials that provide clear sightlines to surrounding areas. The shelter provides real-time trip planning information and incorporates a ticket vending machine for pre-paid boarding. Users are supported through amenities such as seating, waste receptacles and bike racks.










Figure BA  
**Bus Platform in Bike Lane**

A bus platform with clear markings indicates a change in grade for cyclists and the alighting / boarding area for passengers. Cyclist movement is maintained while access to buses for individuals using mobility devices is provided.

### 3.2.3 Complete Streets

The design of streets should involve a comprehensive planning process that identifies the needs and balances the requirements of the full range of potential road users within a community including users of all ages and abilities, and vulnerable populations.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Municipal | Regions, Municipalities, Land Use Planners, Municipal Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, Developers |
|  Large    |  Community |  |
|  Medium   |  Site      |  |
|  Small    |   |  |

A transit-supportive environment enhances mobility not just for transit riders but for the full range of users within the catchment area of the transit system. The development and retrofit of streets should comprise a network of complete streets which incorporate road design standards that ensure the safe movement of all road users. Planning for complete streets is an important part of creating more transit-supportive environments.

Complete streets improve the efficiency of road space by moving more people in the same amount of space, and improving street safety for all road users. They are also important in enhancing access to transit and helping to improve connections for transit users between transit facilities, transit stops and local destinations. This is particularly relevant for those who may be unable to drive but still need to travel within and across their communities.



**Figure BB  
Complete Streets Road Configuration**

Dedicated bus lanes, bike lanes, two stage bicycle box, on street parking are delineated with coloured markings in Pawtucket, United States, accommodating the safe and effective movement of all users on a street.



Figure BC  
Cycle Track, Toronto

## Strategies

### Applicable Context

### Planning

#### Planning Scale

 Municipal

 Site


- a) Build or retrofit a network of complete streets to create a balance between the movement of all modes, adopting road design standards that ensure safe movement . In doing so, consider the following key points:
  - creating a network of complete streets that are designed to accommodate more people; adopting pedestrian-friendly vehicular geometry and design standards, such as smaller corner radii to reduce pedestrian crossing distances;
  - planning for safe travel for all users throughout the network, particularly where high volumes of freight share the road with cyclists/pedestrians; and,
  - improving pedestrian safety when crossing at intersections and mid-blocks, through median refuge islands, clear crossings, shorter crossing lengths, midblock crossings, scramble crossings and others.
- b) Embed complete street planning policies within official plans and establish a planning process that ensures all users are considered in the design, refurbishment, or reconstruction of existing and planned streets ([Chapter 2](#)).
- c) Coordinate street improvements between various city departments to expand the network of complete streets over time

### Process Strategies

#### Planning Scale

 Municipal

 Community

 Site

- d) Work with local stakeholders and engage the public to identify level of service criteria for all modes of transportation, including walking and cycling.
- e) Identify and document the benefits and trade-offs of different design approaches in relation to the impacts on various users to assist in decision making. This should include an evaluation of the level of service impacts on all modes.
- f) Review existing street planning processes and revise as necessary to integrate routine consideration of a full range of users.

**Applicable Context**

**Design Strategies**

**Planning Scale**



Municipal



Site

- g) Balance the needs and speeds of a full range of users, by providing exclusive spaces for walking, cycling, transit, and driving, where possible.
- h) Design complete streets to reflect both the existing and planned land use, urban form, and transportation contexts. Not all streets will be the same. Trade-offs between features should reflect the long-term objectives for the street and surrounding areas.
- i) Plan complete streets to consider the needs of new and emerging transportation modes and services, including the use of electric vehicles (EVs), the location of public electric vehicle charging infrastructure (EVCI), connected and automated vehicles (CAVs), shared mobility modes, ride-hail and ride-share vehicles, among others.
- j) Consider goods movement needs within the municipality, including both designated routes and access for local deliveries, along with passenger transportation needs where appropriate.
- k) Design sidewalk widths to relate to their function (i.e., main retail street vs. residential) and to accommodate the anticipated amount of pedestrian traffic. For more information on sidewalk widths, refer to [Subsection 3.2.5](#).
- l) Consider the needs of those with vision loss or colour deficiencies where textures and/or physical barriers may be better suited to assist in denoting individual dedicated zones to various modes of transit than coordinated paving patterns or colours.
- m) Use colour and materials to identify zones dedicated to various modes, for example red for transit lanes and green for active transportation facilities.
  - Accent lines/edges of materials and/or colors should be used to define the edge of the sidewalk.
  - Coordinate paving materials and paving patterns with that of the adjoining public right-of-way.

**Applicable Context**

**Evaluation**

**Planning Scale**



Municipal



Site

- n) Evaluate design elements and street treatments regularly against performance standards related to factors such as safety, comfort or ease of use to ensure the achievement of complete streets.

## Applicable Sections

2

3.2.5

## Additional Resources

- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Complete Streets Design Manual \(2023\), City of Hamilton](#)
- [Complete Streets Elements Toolbox \(2018\), Caltrans](#)
- [Complete Streets for Niagara Handbook, Niagara Region](#)
- [Complete Streets Resources, Smart Growth America](#)
- [London Complete Streets Design Manual, City of London](#)
- [Ontario Demographics \(Ontario Ministry of Finance\)](#)
- [Rural Complete Streets: Backgrounder \(2016\), TCAT](#)
- [Urban Village Planning for Community Livability \(2024\), Victoria Transport Policy Institute](#)
- [Whose Roads? Evaluating Bicyclists' and Pedestrians' Right to Use Public Roadways \(2021\), Victoria Transport Policy Institute](#)

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### Spotlight

#### **City of Hamilton Complete Streets Design Guidelines, 2022**

The City of Hamilton, Ontario developed their Complete Streets Design Guidelines in 2022, outlining the complete streets planning and design process from planning and conceptualization, to design, implementation

and monitoring. The Guidelines identify a wide range of different elements to be considered in the complete streets planning process and how these can be combined in different scenarios to contribute to the health and function of a Complete Street

### 3.2.4 Transit within the Public Right-of-Way

Working within an understanding of the planned local and regional transit network, arterials and collectors should be designed to accommodate transit vehicles in a manner that enhances efficiency and ease of use, while balancing the needs of all users.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Province, Regions, Municipalities, Land Use Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, Intercommunity Bus Companies |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote   |   |  |

For the majority of regions and municipalities, transit is accommodated on the streets, within limited rights-of-way that are shared by other road users and pedestrians. The way in which these streets are designed can have a significant impact on the operation of vehicles, enabling efficient travel, enhancing boarding conditions for passengers, minimizing conflicts with other users, and enabling the provision of higher order transit in dedicated corridors over time.

Supporting transit vehicles, including conventional buses, midi- and mini-buses, microtransit vans and others, encompasses a wide range of physical and operational interventions. Transit priority measures can be implemented as infrastructural and systematic techniques or interventions that can be made to improve transit travel time and enable the delivery of a more consistent level of transit service.

## Strategies

### Applicable Context

### Physical Design

#### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- a) Design designated transit routes to accommodate transit by providing limited grade changes, adequate lane widths and turning radii. Design standards should balance the needs of other users such as pedestrians and cyclists, for example by incorporating minimum turning radii at intersections and adequate space for cyclists within the rights-of-way.
- b) Ensure roads being used as bus routes conform to design standards for local collector roads, which govern surface and subsurface materials and depths.
- c) Avoid one-way street systems that result in looped transit service to reduce confusion and inconvenience for transit users. Consider the conversion of the street from a one-way to two-way street or the provision of a contraflow lane. Contraflow lanes can be effective for express buses with no stops in the contraflow lane, short distances without stops used to connect route gaps, or on roads with traffic islands to accommodate stops.
- d) Optimize transit service by using in-lane stops that eliminate entry and re-entry times. The use of bus bays should be carefully considered depending on the circumstances. Bus bays can interfere with cyclists, result in increased street widths, which affects pedestrian crossings, and can make it difficult for buses to re-enter traffic in congested conditions. Installation of bus bays may be appropriate under the following circumstances:
  - Locations that are major trip generators where the bus could be stopped for a significant amount of time to load and unload passengers making local or cross-boundary service connections. Consideration should also be given to future-proofing bus bays by expanding the space to accommodate additional buses from local transit agencies and other carriers.
  - Locations where there are specific safety and capacity concerns with the bus being stopped in a traffic lane.
  - At large scale arterials considering BRT service. Far side stops at intersections are preferred, supported by queue jump lanes for transit vehicles and signal priority, where possible.



Figure BE  
**Queue Jump Lanes**

Queue jump lanes with signal priority can speed up transit vehicle flow at congested intersections.

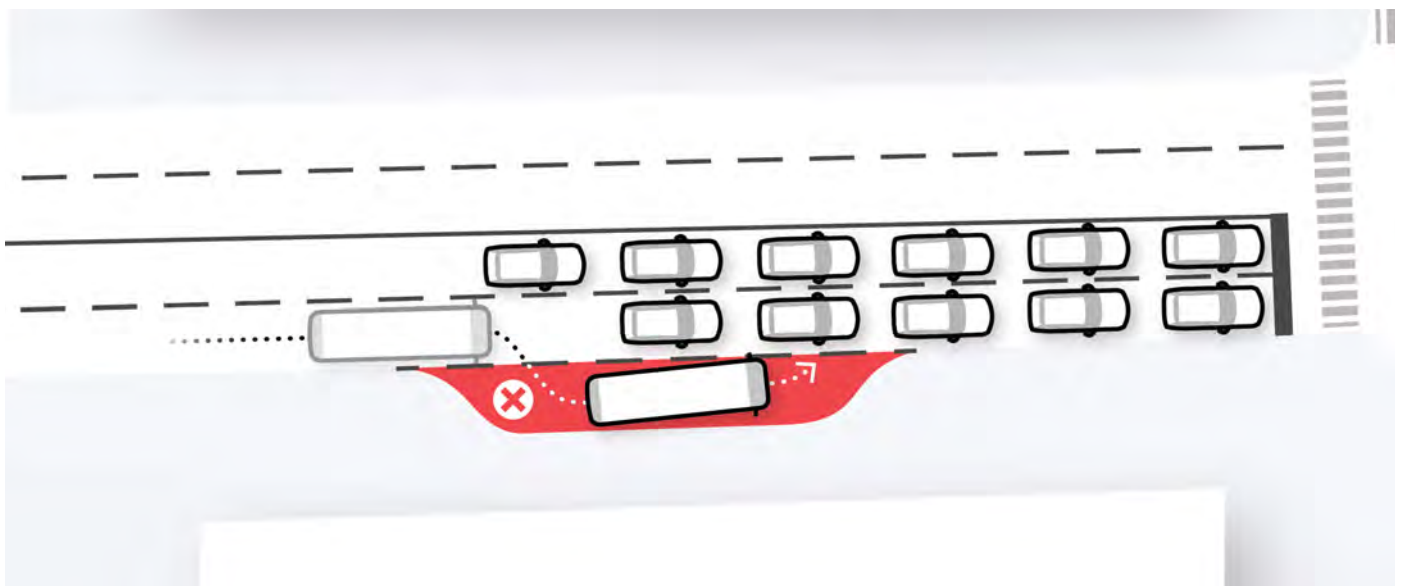


Figure BD  
**Bus Bays**

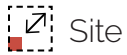
While drivers are required to yield to buses leaving bus bays, buses can experience difficulty merging when traffic is backed up.

- e) Utilize high occupancy vehicle (HOV) or reserved transit lanes to enhance the efficiency and reliability of transit in congested urban settings. Implement High Occupancy Vehicles (HOV) or reserved transit lanes:
  - on a paved widened median along a highway;
  - as either full-time or restricted to only peak traffic periods;
  - as a reversible median lane that changes direction according to peak traffic flow;
  - as reserved bus lanes or as mixed transit, cycling and multiple occupant vehicle lanes in downtown urban settings; or
  - through special signage and markings in existing curb lanes. HOV lane implementation requires careful study to demonstrate sufficient demand, particularly if lane conversion is being considered.
- f) Effective enforcement is critical to the success of maintaining HOV and reserved bus lane priority and can be accomplished on a spot check basis or through camera technologies.
- g) Consider the separation of transit from mixed traffic to optimize transit performance by creating significant time savings and accommodating high passenger volumes. Reserved bus lanes can provide a higher level of priority and more predictable traffic flow for transit buses than HOV lanes, and accommodate transit stops if located in the right-hand lane.
  - Consider designing reserved bus lanes and accompanying infrastructure with the ability to be retrofit into LRT.
  - Where dedicated transit lanes cannot fit in a right-of-way, other street design measures should be utilized to optimize transit service, such as transit signal priority and bus bulbs.
- h) Physical street adaptations, such as 'transit bulb outs' that extend portions of the sidewalk near transit stops out into the street, should be implemented where appropriate to support safer passenger boarding and alighting.
- i) Where HOV lanes are intended for use by multiple occupant vehicles and cyclists, provide a curb lane wide enough to allow buses to pass cyclists safely. Suggested widths are identified within the Ontario Traffic Manual, Book 18 – Cycling Facilities.

**Applicable Context**

Safety for Cyclists

Planning Scale



Site

- j) When transit vehicles will be sharing the street with cyclists, provide a curb lane wide enough to allow buses to pass cyclists safely. The appropriate lane width will vary depending on truck and general traffic volumes and speeds. Suggested widths are identified within the Ontario Traffic Manual, Book 18 – Cycling Facilities.
- k) Implement boarding islands that direct bicycle lanes between the island and the curb to reduce conflicts between transit vehicles and cyclists. Provide transit-supportive amenities on boarding islands, such as transit stop posts, transit shelters, seating, etc.
- l) Provide bicycle boxes and two-stage turn queue boxes to promote safe cyclist movements along streetcar routes.
- m) Where passengers must cross a bicycle lane only to reach a transit vehicle operating at the centre of the right-of-way, raise bicycle lanes at the boarding area of a transit stop to align with the height of the transit vehicle and sidewalk.
  - Provide markings which indicate a grade change along the bicycle lane approaching the boarding area.

Signal Priority

Planning Scale



Municipal

- n) Where appropriate, prioritize buses that are turning left or right at intersections through bus only turn lanes mixed with signal priority interventions to mitigate or minimize delays at intersections.
- o) Adapt and provide priority traffic signals so they are responsive to transit vehicles and can speed up travel times on routes where congestion is anticipated and minimize delays ([Subsection 3.1.4](#)).
- p) Identify intersections where transit vehicle delays are anticipated. The integration of queue jump lanes with signal priority at these locations can help to speed up travel times.

**Applicable Context**

Dedicated Transitways

Planning Scale



Municipal



Site

- q) Design dedicated transit ways as integral streetscape elements that contribute to the image and character of the street.
- r) Encourage the integration of landscaping within dedicated rights-of-way to enhance the character and quality of the street for pedestrians, cyclists and transit users.

- s) Provide both formalized and informal street crossings along dedicated transit-ways. Restricting crossings in mixed-use settings can disrupt local businesses and lead to dangerous situations as people attempt to bypass barriers.

### Planning Strategies

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#### Planning Scale

 Regional

 Municipal

- t) When protecting rights-of-way for future arterials, consider the eventuality of incorporating transit/HOV lanes.
- u) Municipalities should prepare by considering the different types of physical and technological infrastructure that may be required to support their operation and safe interaction with other vehicles and road users within the complete streets.

### Applicable Sections

**3.1.4**







#### Additional Resources

- [Bus Speed and Reliability, TransLink](#)
- [Transit Priority Toolkit, TransLink](#)
- [Transit Priority Toolkit: Key Messages and Evaluation Methods \(2021\), American Cities Climate Challenge](#)
- [Transit Technology Toolkit \(2023\), Ministry of Transportation of Ontario](#)
- [When are Bus Lanes Warranted? Considering Economic Efficiency, Social Equity and Strategic Planning Goals \(2016\), Victoria Transportation Policy Institute](#)

## 3.2.5 Transit Access for Pedestrians

Transit stations and station areas should be designed to prioritize pedestrian access while accommodating the needs of other users such as cyclists, transit and motor vehicles.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Municipal | Regions, Municipalities, Land Use Planners, Municipal Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, Developers |
|  Large    |  Site      |  |
|  Medium   |   |  |
|  Small    |   |  |

Supporting the movement of people in and around stations or in the transfer process between different transportation modes requires an emphasis on design of the pedestrian realm. Walkability is a core element of transit-oriented development, meaning enhancements to the built environment in, around and beyond transit areas that support pedestrian activity is critical. Station areas should have adequate capacity to accommodate peak pedestrian volumes safely and comfortably and should include areas and amenities that support the ability for pedestrians to rest, wait and socialize.

Efforts to support pedestrian movement on the way to a transit station or transit stop should consider the design, quality and layout of sidewalks, crossings, wayfinding and open spaces in proximity to the site. Pedestrian-oriented design must be factored into the unique environments of a transit station or stop to enhance customer satisfaction, attract ridership and encourage walking or rolling as a comfortable and desirable mode choice.

## Strategies

### Applicable Context

### Planning Pedestrian Connections

#### Planning Scale

 Municipal

 Site

- a) Design and plan pedestrian networks with a high level of priority, safety and amenities that provide attractive, direct routes between transit stations, station facilities and surrounding destinations.
- b) Provide clearly marked and protected access for pedestrians in station areas to minimize conflicts, particularly at passenger PUDOs, bus facilities and parking access points.
- c) Review and evaluate existing pedestrian and accessible connections between adjacent communities to transit stations to determine needs for improved connections.
- d) Provide sidewalks on both sides of all streets within a 400 m radius from transit stops and an 800 m radius from express stops or rapid transit stations. Evaluate pedestrian capacity on sidewalks with significant volumes using level of service metrics. Measures can be used to determine when to make improvements or reallocate space from other uses.
- e) Provide a broad pedestrian through zone with a suggested minimum width of 1.8m or more to comfortably accommodate two people walking side by side on all principal pedestrian routes in strategic growth areas. In areas with high volumes of pedestrian traffic, a width of 2.4m or more is suggested. Appropriate widths and other features will vary and should be determined in consultation with relevant geometric standards and guidelines.
- f) Coordinate the provision of pedestrian amenities with patterns of usage, concentrating amenities along key streets leading to and from stop or station areas or between key destinations. Routes adjacent to a transit station should contain a higher level of pedestrian amenity than surrounding areas, including:
  - signage and wayfinding to inform users where they need to go to reach the station and area destinations;
  - pedestrian-oriented lighting for enhanced visibility and safety;
  - seating and waste receptacles for convenience; and
  - landscaping for pedestrian comfort and enjoyment.
- g) Organize sidewalks and pathways within station areas so they provide continuous, direct connections to area destinations and pathways outside the station area.

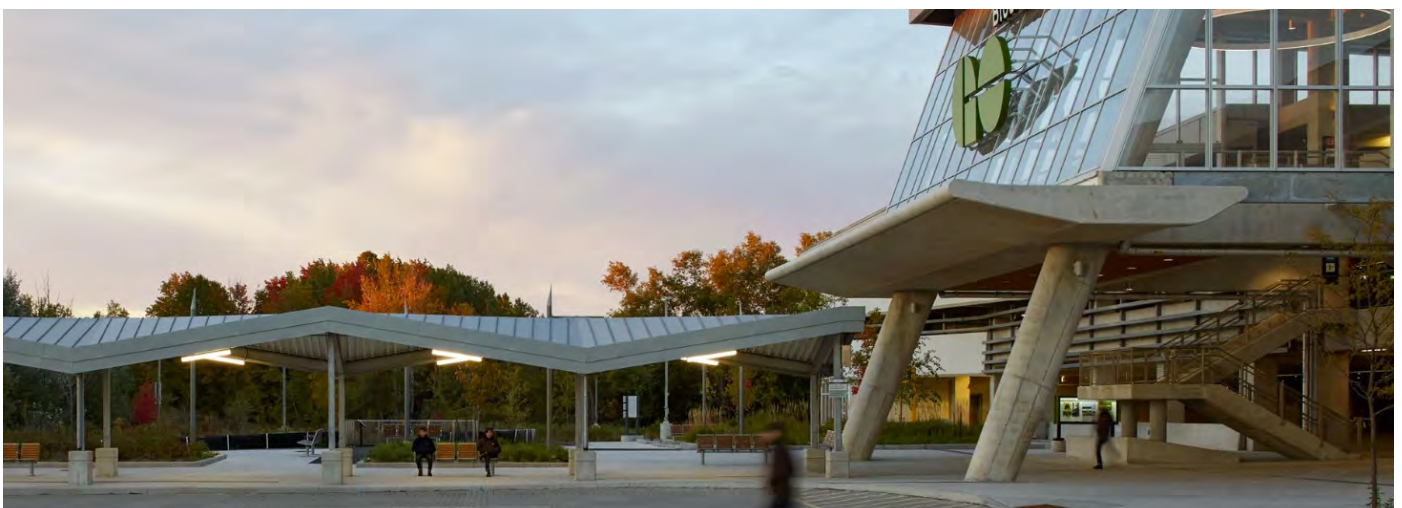


**Figure BF**  
**Transit-Supportive Pedestrian Realm**

Exchange Square facilitates a range of pedestrian activities by Liverpool Street Station in London, UK. A grass lawn, seating, water bottle refill station, restaurant, tables and chairs sheltered by trees and an interactive water feature create an engaging pedestrian environment for passengers.

**Figure BG**  
**Continuous Covered Walkway**

Covered walkway and waiting area, landscaping, and distinctive design elements at a Bloomington GO station in Richmond Hill enhances the pedestrian experience for GO users.



- h) Declutter routes and enhance sightlines to amplify the visibility of transit stations / destinations and make streets intuitive to navigate. A regular maintenance schedule, including snow removal, should ensure that sidewalks are clear of obstructions or significant debris year-round. Where appropriate, limit the installation of street furnishings, landscaping or any other physical obstructions in the direct path between transit and major circulation routes.
- i) Locate private driveways from rear laneways or side streets, whenever feasible, to minimize interruptions to pedestrian circulation routes.
- j) Prioritize snow removal on major pedestrian thoroughfares beyond those immediately adjacent to transit stations or stops.
- k) Consider the specific accessibility needs of different pedestrians in station areas and in accessing transit generally, including the use of braille for those with visual impairments, surface types for pedestrians that use wheelchairs, other visual or aural aids for pedestrians with hearing impairments, increased choice of vertical access and circulation as station depth increases, and other context-based considerations.
- l) Incorporate well designed, intuitive, and safe transfer paths at transit stations to connect different modes by foot or using a mobility aid. The connections vary from short distances (for example from platform to platform within a station or terminal), to longer distances (for example a reserved car-share space a block away from the station).
- m) In rural areas where the provision of sidewalks may not be feasible, consider providing a paved shoulder linking major destinations in and around the stop/station area.

**Applicable Context**

**Pedestrian Crossings and Intersections**

**Planning Scale**

-  Municipal
-  Site

- n) Ensure that safe and easily accessible pedestrian crossings are available every 80 - 100m and at each section of an intersection to create a cohesive and pedestrian-friendly network. Incorporate curb cuts to assist people with strollers, carts or mobility issues.
- o) Design intersections to balance the needs of pedestrians and vehicles by:
  - avoiding using right-turn channels and turning lanes that enable higher vehicle speeds and increase crossing points;

- incorporating unique pavement treatments, traffic calming features, or markings that can alert drivers and indicate pedestrian priority;
  - providing pedestrian refuge points when crossings exceed 15m in length; and
  - maintaining the minimum curb radii required to accommodate turning vehicles, in order to reduce their speed and minimize crossing distances for pedestrians;
- p) Ensure there are clearly marked crosswalks with high visibility markings and signage for mid-block pedestrian crossings, that may also include features such as raised crosswalks, pedestrian-activated flashing beacons, refuge islands and zebra crossings.
- q) At signalized intersections with high pedestrian traffic, consider the use of a pedestrian priority phase to enable pedestrian first crossing periods, or simultaneous pedestrian crossings in all directions.

**Applicable Context**

Station Buildings

Planning Scale



Site

- r) Situate station buildings as close as possible to surrounding developments and areas of pedestrian activity to minimize walking distances. For example, at GO Transit stations, higher pedestrian activity areas are near train platform entrances. A pedestrian flow analysis can ensure that adequate room at station entrances is provided.

Open Space

Planning Scale



Municipal



Site

- s) Utilize pedestrian plazas or open spaces as important organizing elements within a station area. They help facilitate transfers between modes, act as receiving points for pedestrians and contain a range of amenities for users ([Subsection 2.1.6](#)).
- t) Provide pedestrian amenities, including places for people to sit, socialize and be sheltered (from rain and sunshine), tables where people can work or eat, green spaces and landscaped areas, and places to display public art, all of which help contribute to pedestrian realm activation and build a sense of place near transit.
- u) Implement pedestrian pathways or multi-use trails to shorten walking distances between destinations or provide access through natural areas, infrastructure easements or open spaces.

## Waiting Areas

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### Planning Scale

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Site

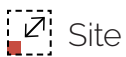
- v) To avoid pedestrian conflict and promote station navigability, ensure pedestrian waiting areas are clearly identifiable and delineated from areas of pedestrian circulation.
- w) Design waiting areas to include amenities and services, including multilingual wayfinding and signage elements, to support people waiting for their transit connections.
- x) User comfort in outdoor pedestrian waiting areas can be enhanced through the use of year-round plantings that provide shelter from the wind in winter months and shade during hot summer months.
- y) Ensure that waiting areas are designed to a high level of accessibility to support users with physical impairments between transit transfers and to pick-up and drop-off areas.
- z) Design outdoor waiting areas to increase passenger safety and comfort with clear sightlines to the station building and surrounding areas, and ensure areas are well-lit, clean and cleared of snow in winter.

## Wayfinding and Technology

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### Planning Scale

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Site

- aa) Locate wayfinding maps at all major entrances indicating where the user is within the station area and the location of major station destinations. Consider the use of digital wayfinding elements that provide real-time information for users. Supplement these signs with a wider context map directing pedestrians to important local destinations. Wayfinding strategies for station facilities can be found in [Subsection 3.3.4](#) of this document.
- ab) Provide free public Wi-Fi in station areas to allow pedestrians to access the internet without the need for mobile data, supporting their access to online transit network information, real-time network updates, and to support their ability to book and pay transit fares online, reload transit cards and to book rides on other mobility modes and services at the station area.

## Applicable Sections

2.1.5

2.1.6

3.2.1

3.2.9

3.3.4

## Additional Resources

- [Case Study: Régie autonome des transports parisiens](#)
- [Case Study: Transport for London](#)
- [Case Study: Berliner Verkehrsbetriebe](#)
- [Case Study: Société de transport de Montréal](#)
- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Completing Sidewalk Networks: Benefits and Costs \(2024\), Victoria Transportation Policy Institute](#)
- [Geometric Design Guide for Canadian Roads, Transportation Association of Canada](#)
- [Mobility Hubs Guidance \(2019\), CoMo UK](#)
- [Ontario Traffic Manual, Book 15: Pedestrian Crossing Treatments \(2023\), Government of Ontario](#)
- [Pedestrian Crossings, Global Designing Cities Initiative](#)
- [Walk and Roll Peel, Peel Region](#)



Figure BH  
**Wayfinding Maps**

Maps are located in a wide area, prior to fare gates and by entrances / exits to situate passengers within the transit system and neighbourhood.

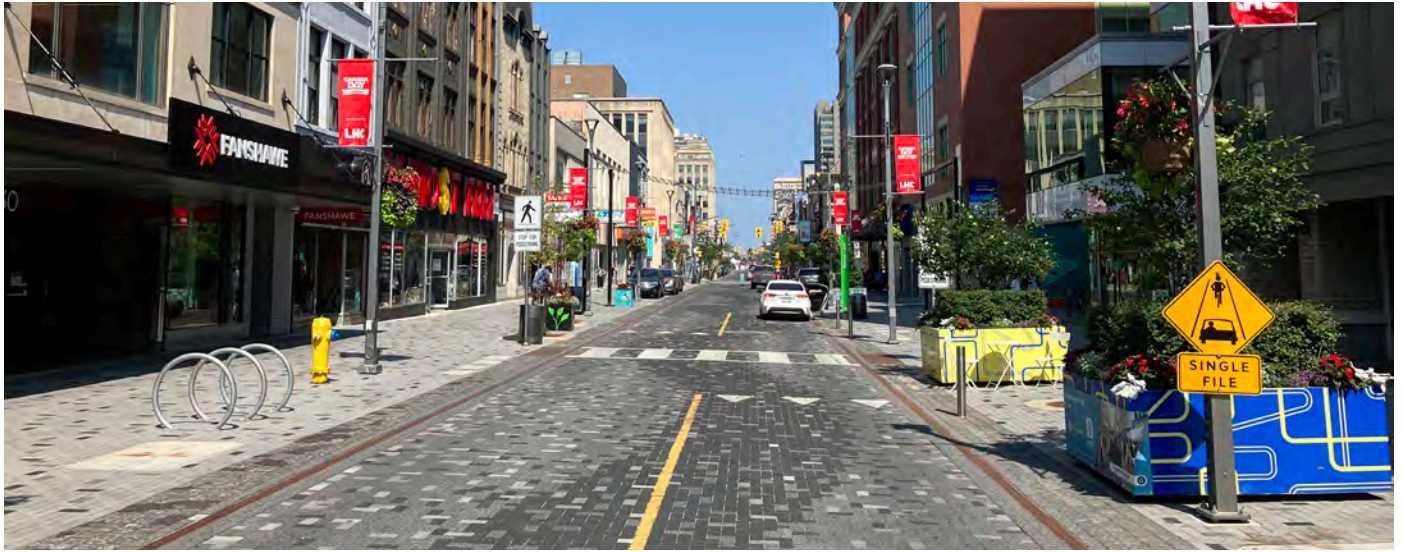


Figure BI  
**Flexible Streetscape**

In constrained ROWs in key locations close to transit, municipalities may implement a shared/flexible street or woonerf to increase the pedestrian realm, as illustrated through Dundas Place flexible street in London Ontario.











Figure BJ  
**Flexible Street with Bollards**

Market Street in St. Lawrence Market in Toronto showcases a flexible street with bollards separating the roadway from the sidewalk.

## 3.2.6 Transit Access for Cyclists

Transit planning and design should promote the use of cycling as a component of a wider transportation system by providing accommodations for cyclists entering station areas, safe and convenient bike storage and amenities to support riders on their journey.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Land Use Planners, Municipal Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote  |   |  |



Accommodating cyclists in station areas, when accessing a station facility, or when travelling to transit facilities, through the provision of short- and long-term bike storage and other facilities, is an important consideration within a wider multimodal transit strategy. Cyclists' ability to travel distances that might be too long to walk but are too short to be convenient for transit makes cycling an important mode of transportation; one that is able to connect transit users comfortably to a whole range of destinations within a 3 to 5 km radius of a station area.

## Strategies

### Applicable Context

### Access & Design

#### Planning Scale

-  Community
-  Site

- a) Create safe and direct cycling routes to rapid transit stations from major destinations and regional cycling networks.
- b) Avoid gaps or jogs in routes and connect existing gaps between routes over time to support bike and ride. Using contraflow bike lanes on one-way streets, indicated by pavement markings and clear signs, can be an effective strategy to connect gaps in the bike network.
- c) Keep pedestrian pathways within the station area separate to minimize conflicts. Where cycling routes to and from bicycle parking are adjacent to pedestrian areas or transit zones, such as a bus loop, PUDO, or parking access points, they should be clearly marked through the use of distinct paving treatments and signage, and be separated by curbs or landscaping as appropriate.
- d) Cycling access points and routes should be clearly identified, signed and located to minimize conflicts with transit and private vehicle users. Where cyclists share access points with private vehicles, they should be provided in the form of dedicated or painted curb-side lanes to minimize conflicts.
- e) Avoid barriers to cyclists such as curbs or stairs, where possible. Where they exist, stairways leading to and from station areas should be outfitted with bike ramps or elevators.
- f) In areas where there are high levels of vehicular traffic or speed limits, for example, over 60 km/hr, the provision of segregated cycling facilities should be considered that do not reduce the number of motor vehicle lanes. Segregation can be achieved in several different ways, using bollards, concrete islands, boulevards with medians or other methods to separate and protect cyclists.
- g) Consider the spatial requirements and widths required to support new types of active transportation devices, including adapted cycles, e-bikes, cargo e-bikes, and e-mopeds to inform the development of new cycling infrastructure, or the retrofit of existing cycling infrastructure, to ensure safety and compatibility.
- h) In rural settlement areas, bike lanes can be created by modifying a paved shoulder to provide a signed bike lane along concession roads leading to and from stops and/or station areas. Appropriate widths and other features of the bike lane will vary with truck and general traffic volumes and speeds.



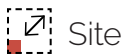
Figure BK  
West Toronto Railpath, Toronto

- i) Provide secondary routes through multi-use trails that are wide enough to accommodate segregated pedestrian and cyclist traffic and extend them to connect with transit facilities. Recommended widths and other design features are provided in the Ontario Traffic Manual, Book 18 – Cycling Facilities.

**Applicable Context**

Crossings & Intersections

**Planning Scale**



Site

- j) Plan and design grade separated crossings to support cycling connectivity and safety where cycle routes leading to or from a transit station bypass a major barrier, such as a major highway (especially off-ramps of controlled access highway, or a railway corridor). Ontario Traffic Manual Book 18 provides guidance on the installation of grade separated crossings to support cycling.
- k) The use of bike boxes at intersections, where appropriate, may help to alert drivers and minimize conflicts between turning vehicles and cyclists continuing through the intersection.
- l) The use of cyclist-activated crossing signals can enhance crossing points for cyclists by reducing rights-of-way confusion.

Wayfinding

**Planning Scale**



Community



Site

- m) Create or utilize a standardized palette of street signage indicating the location of cycling facilities and routes and distances to key destinations to promote safety, wayfinding and legibility.
- n) Post cycling directions to and from major destinations within a 3 to 5 km radius of transit stations to raise awareness of cycling as a means of FMLM connectivity.
- o) Locate clear wayfinding signage around the perimeter of station areas and at the terminus of primary cycling routes, directing cyclists to the appropriate station access points and cycling facilities.
- p) Install signage as appropriate indicating where cyclists should disembark (likely where dedicated cycling routes end) to mitigate conflict between cyclists and pedestrians.

### Parking

**Planning Scale**

---

-  Municipal
-  Site

- q) Provide long-term secure bicycle parking at station entrances and at transit stops with additional cycling amenities at high volume locations.
- r) When high volumes of bicycle access to the transit station exists or is expected (such as in the case of large events or times of higher seasonal demand), provide enhanced bicycle parking and amenities.
- s) Locate bicycle parking in highly visible, weather protected, well-lit, or security monitored areas to discourage vandalism, in proximity to cycling facilities and in places that minimize conflicts between pedestrians, cyclists and transit vehicles.
- t) Firmly secured bicycle racks and support the bicycle in two places to promote stability.
- u) Provide sufficient bicycle lockers in station areas to enable commuters to store their bicycles and complete their commute. Transit providers should undertake a periodic review of usage to gauge demand for additional lockers. Planning documents such as the GO Rail Station Access Plan provide guidance to meet bicycle parking requirements.

**Applicable Context**

### Amenities

**Planning Scale**

---

-  Municipal
-  Community
-  Site

- v) Consider implementing bicycle amenities at transit stops and terminals such as drinking fountains, air pumps, and repair stands to support cyclist's journey.
- w) Consider providing bike rental or bike share facilities within station areas. Bike share or rental facilities can act as an extension of the transit system, enabling transit to reach local destinations without having users bring their own bicycles on transit vehicles or leave them parked overnight at a station or stop.

### Maintenance

**Planning Scale**

---

-  Municipal
-  Site

- x) Maintain bicycle facilities during winter months, including snow clearing and other maintenance protocols, to support year-round cycling.

## Planning

### Planning Scale

-  Municipal
-  Community
-  Site

- y) Provide minimum bicycle parking requirements in zoning bylaws.
- z) When planning bicycle services to meet the needs of the community, consider the following factors:
  - transit ridership characteristics, including age and demographics of transit riders;
  - local topography and land-use patterns around transit stops and station areas and whether or not the land use pattern is supportive of cyclists;
  - areas of existing high bicycle use or with future potential (work with local cycling groups to identify these areas);
  - the number and extent of existing bike friendly routes leading to and from transit stops and stations;
  - regional and municipal support for cycling initiatives;
  - the authority and ability of the transit agency to implement measures, such as designated lanes and paths; and
  - the costs of accommodating bicycle services and benefits from decreased parking and congestion.
- aa) Develop a program to improve bicycle access by considering all stages of the bicycle commute, including routes to and from the stop or station area the design of the station, bicycle parking and storage as well as the ability to load onto transit vehicles.
- ab) Consider transit staff training to overcome any initial concerns with bike racks on buses or onboard loading, including:
  - instructions on use of bike racks;
  - safety and liability issues;
  - operation of the bus with loaded bike rack – wider turns, overhang; and
  - customer service issues.
- ac) Ensure bus garages can accommodate extra bus length due to bike racks and plan maintenance of bike racks as part of routine bus maintenance



Figure BL  
**Bike Ramps Integrated into Stairs**

The Wallace Avenue pedestrian bridge extends over the rail corridor, connecting to the West Toronto Rail Path.



Figure BM  
**Bike Racks on Buses**

Providing bike racks on buses such as in this example from Brampton can enable cyclists to travel longer distances and journey from the stop to their destination.



Figure BN  
**Bicycle Rental Facilities in Transit Centres**

Bicycle rental facilities and repair shops integrated into larger transit centres, such as this one in Millennium Park, Chicago, help encourage passengers commuting to transit stations to cycle and departing passengers reach local destinations.



Figure BO  
**Bicycle Boxes**

The use of bicycle boxes at intersections, indicated by clear pavement markings, can help to minimize conflicts between turning vehicles and cyclists. Bicycle boxes should be implemented where no right turns on red are allowed and supported by public education.

**Applicable Context**

Promotion and Partnerships

**Planning Scale**

-  Regional
-  Municipal
-  Community
-  Site

- ad) Establish partnerships between transit agencies and bike share agencies to coordinate bike share docking stations, notably at and near transit stations and key stops.
- ae) Promote and market new services through transit websites, brochures, bicycle events, community outreach and the demonstration of loading racks. Be sure to reach beyond the transit community to the bicycle community.
- af) Develop community support by engaging local bicycle groups, students, public health organizations and environmental groups. Build support by partnering with other community efforts to increase active transportation and development of transportation demand management (TDM) programs.
- ag) Where appropriate or in the absence of an official bike sharing program, consider establishing bike lending programs or lending libraries in partnership with local transportation departments, local organizations and community groups to enable greater access to bicycles, particularly in underserved communities or areas with less transit coverage.

**Applicable Context**

Monitoring

**Planning Scale**

-  Municipal

- ah) Require and regularly request data on bike share ridership to monitor services in a data sharing relationship, to establish and work towards addressing needs between transit agencies and bike share organizations.
- ai) Once implemented, monitor usage of bicycle services and modify to meet demand or to promote services in case of low usage.

**Additional Resources**

- [Case Study: Régie autonome des transports parisiens](#)
- [Case Study: Transport for London](#)
- [Case Study: Berliner Verkehrsbetriebe](#)
- [Case Study: Société de transport de Montréal](#)
- [Case Study: Victoria Regional Transit Commission](#)
- [Complete Connections: Building Equitable Bike Networks, NACTO \(2023\)](#)

- [Improving Active Transportation and Public Transit Integration: A Guidebook for Policy and Planning, TCAT \(2019\)](#)
- [Mobility Hubs Guidance, CoMo UK \(2019\)](#)
- [Mobility Hubs: A Reader's Guide - Chapter 2, City of Los Angeles \(2016\)](#)
- [On-Street Bikeway Design Guidelines, City of Toronto \(2024\)](#)
- [OTM Book 18 – Cycling Facilities, Government of Ontario \(2021\)](#)
- [Rapid Implementation Design Guide for Bikeways in Metro Vancouver, TransLink](#)
- [Urban Bikeway Design Guide, NACTO](#)



Figure BP  
**Bike Parking at GO Station**

Sheltered bike facilities located in highly visible locations, such as in Oakville, help discourage vandalism and theft. Closed rings provides two points of contact for parked bicycles providing greater stability ease to lock the bicycle.



Figure BQ  
**Two-Stage Bike Box**

An on-street two-stage queue box in Montreal enables through cyclists to pass while turning cyclists are provided a place to wait for the appropriate signal. Consult OTM Book 18 for more detailed guidance.











Figure BR  
**Bicycle Repair Station**

A bicycle repair station at the University of Texas in Dallas supports FMLM trips.

### 3.2.7 Transit Access for Shared Mobility Users

As the use of shared mobility modes and services become more common, transit stations and station areas should support shared mobility users through the design and location of spaces to access shared devices, pick up and drop off areas for shared fleet vehicles, and other types of infrastructure to support riders.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Province, Regions, Municipalities, Land Use Planners, Municipal Planners, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |

Shared mobility modes and services encompass a range of vehicle types, devices and technologies that are becoming increasingly common elements of urban transportation systems in cities across Canada. These include shared micromobility modes, which include shared bikes, e-bikes, e-scooters, and in some cases, cargo e-bikes and e-mopeds, as well as rideshare vehicles. Considerations for how the design and placement of infrastructure to enhance people’s access to these different types of shared mobility services in transit station areas are important to facilitate intermodal connections from a shared mode to a transit service, and vice versa.



Figure BS  
**Bicycle Share Docking Station**

Bicycle sharing stations located near transit stops and stations enhance FMLM connectivity.

## Strategies

### Planning

#### Applicable Context


#### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

- a) Conduct a site plan review of individual transit stations to identify suitable locations for the installation of different types of shared mobility modes and infrastructure.
- b) Work with local stakeholders, transportation network companies, and the public to understand gaps in the immediate vicinity surrounding a transit station and to assess the viability of and desire for different types of shared mobility modes and services.
- c) Establish partnerships between transit agencies, shared micromobility providers and local communities to provide shared micromobility docking stations at or near transit stations, at key stops and along transit routes.
- d) Plan, design or retrofit dedicated lanes for active mobility modes that are supportive of shared micromobility vehicles, such as shared bikes, e-bikes, cargo e-bikes, e-scooters, e-mopeds and other adaptive devices.
- e) Consider the requirements to integrate electric charging into curbside spaces, when designing complete street initiatives and retrofits, to support electrified forms of shared mobility.
- f) Undertake a review of key destinations and local major trip generators in the neighbourhoods surrounding different transit stations to identify suitable potential locations for the installation of shared micromobility docking areas, where different shared mobility modes and services can be deployed to facilitate transit-supportive, FMLM connections to the nearby transit station.

### Shared Micromobility

#### Planning Scale

-  Site

- g) Provide shared micromobility options in logical locations in the public realm, parking or curbside areas surrounding a transit facility, that provide clear connections to dedicated active transportation infrastructure leading from or to the facility.
- h) If deploying 'docked' shared micromobility services, micromobility corrals should be located to not obstruct pedestrian rights-of-way or waiting areas within or beyond a station area, and designed in a manner that contributes to the look and feel of the public realm.
- i) Dockless shared micromobility areas should be planned in a manner that ensures people's access to and drop-off of micromobility devices is achieved in a way that minimizes the

potential for 'street clutter' and prevents barriers to accessibility. This can be achieved by establishing clearly signed and marked locations in a station area for devices to be picked up or dropped off, or through establishing 'geofenced' locations.

**Applicable Context**

**Shared Fleets**

**Planning Scale**



Regional



Municipal



Site

- j) Provide dedicated car share spaces in curbside areas in close proximity to transit facilities, or in the transit facility's parking lot, enabling transit riders to access a shared vehicle by transit.
- k) Establish partnerships with car sharing companies and include permanent spaces for their vehicles at or near a transit facility and aim to have a range of vehicle types to provide transit users with options to complete various tasks.
- l) Ensure that partnered shared micromobility providers have dedicated enforcement to correct improperly parked vehicles and other mechanisms in place to ensure customers can only end a trip in dedicated zones and without obstructing pedestrian circulation.

**Maps and Wayfinding**

**Planning Scale**



Community



Site

- m) Provide display maps and wayfinding elements within transit facilities and in the public realm with the locations of nearby transit stops and shared micromobility docking stations. More detailed wayfinding strategies to support shared mobility users can be found in [Subsections 3.3.4 and 3.3.5](#) of this document.

**Promotion and Partnerships**

**Planning Scale**



Regional



Municipal

- n) Work with partnered transportation network companies to establish incentive programs or incentive structures, wherein transit riders can access discounts, credits or subsidized trips for becoming a member or frequently connecting to shared modes to get to or from transit.
- o) Explore opportunities to include partnered shared mobility services within integrated transit fare and service programs and aim to include all transit and shared mobility services in future MaaS systems. See [Subsections 3.2.7](#) for more information.
- p) Where possible, require or incentivize new development to include infrastructure for shared mobility, such as pick-up and drop-off areas for shared vehicle fleets, and docking stations or designated areas for shared micromobility devices.

- q) In the future, shared car fleets may include automated vehicle technologies, such as automated car share vehicles, or automated ride hailing services, commonly known as 'robotaxis'. In anticipation of these future innovations, communities should consider and establish proactive and pre-emptive policies to support and safely manage the impact of these future shared mobility modes within complete street planning processes.

## Applicable Context

## Monitoring

### Planning Scale

 Municipal

- r) Establish data sharing agreements with shared mobility vendors to garner insights and understandings on usage with the aim of continually evaluating demand for each shared mode and improving the supply, design and location of each service.

## Applicable Sections

3.2.5

3.3.4

3.3.5

## Additional Resources

- [Case Study: Transport for London](#)
- [Case Study: Berliner Verkehrsbetriebe](#)
- [Case Study: Société de transport de Montréal](#)
- [Case Study: Victoria Regional Transit Commission](#)
- [Integrated Mobility: Implementation Toolbox - Chapter 6, CUTA \(2017\)](#)
- [Integrating Shared Mobility with Public Transportation can Beget Sustainable Cities, The Secretariat \(2024\)](#)
- [Mobility Hubs: A Reader's Guide - Chapter 2, City of Los Angeles \(2016\)](#)
- [Mobility Hubs Guidance, CoMo UK \(2019\)](#)
- [Public Transit Station Design to Support Micromobility, Ferguson, B and Sanguinetti, A. \(2023\)](#)
- [Ride-Hailing Services: Opportunities and Challenges for Cities, NACTO \(2016\)](#)
- [Reimagining public Spaces: New Shared Mobility Solutions - A Practitioners Toolkit, Evergreen \(2022\)](#)
- [NACTO Guidelines for Regulating Shared Micromobility](#)

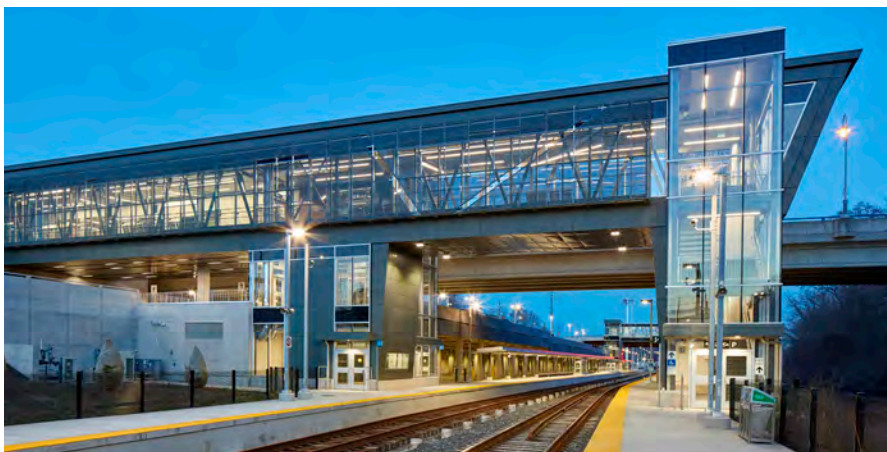
### 3.2.8 Transferring between Systems

Transit stops and stations should be designed to facilitate the efficient transfer of passengers between different modes of transportation and across jurisdictions, with the aim of supporting multimodal and intermodal travel.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Regions, Municipalities, Land Use Planners, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote   |   |   |

As cities and towns move towards more integrated, inter-regional transportation, ensuring that transferring between systems is as seamless and efficient as possible will become increasingly important. As such enabling users to efficiently transfer between systems is key to the creation of a more user-friendly transit network. The design, location or retrofit of existing transit facilities should facilitate clear, direct and short transfers between transit modes and routes, including accessible conventional and specialized transit, while supporting access to a range of other transit-supportive mobility modes at the station or within the station area. Inconvenient transfer points and poorly integrated systems can add substantial time to multi-transfer journeys discouraging transit use and encouraging the use of private motor vehicles.



**Figure BT**  
**Transfers between Trains and Buses**

West Harbour GO station platform and pedestrian bridge connection.

## Applicable Context

## Planning Scale



Regional



Municipal



Site

**Strategies:**

## Minimizing Transfer Times

- a) Create clear, direct and short transfers between transit modes and routes, including accessible, conventional and specialized transit.
- b) Where possible, provide pedestrian transfers and pedestrian connections on the same level.
- c) At rapid transit stations, provide safe, convenient and efficient connections to regional and local transit services.
- d) When long corridors are required to facilitate transfers, maintain a high-quality customer experience by providing weather protection, visual interest and moving walkways.
- e) Co-locate the transit facilities associated with different systems and modes where feasible to enable quick transfers. This should include the co-location of public and private service providers such as coach services and specialized transit services.
- f) Where the co-location of facilities is not feasible, provide direct, dedicated connections with accessible, pedestrian-friendly walkways, and paved walkways if outdoors, between the two systems or modes regardless of the authority responsible for the location.
- g) Situate bus platforms and passenger drop-off and pick-up locations associated with rapid transit or rail stations where they can provide passengers with direct access to the station. The creation of a transit plaza / pedestrian plaza is one strategy for integrating transfer points within a station area.
- h) Design platforms at stations to minimize walking distances for connecting passengers and avoid grade changes between platforms and local transit connections. Where feasible, all modes should share the same platform to eliminate the need to change platforms.
- i) Ensure barrier-free paths of travel are clearly indicated within a transit station or station area to ensure the transfer experience for those with impairments is seamless and efficient.
- j) Prioritize bus traffic over other motorized vehicles at regional rail or rapid transit stations to facilitate faster transfer times and speed up bus services.

**Applicable Context**

Coordination

**Planning Scale**



Regional



Municipal

- k) Coordinate transit routes and schedules to provide seamless connections between local, regional and rapid transit services with the aim of minimizing waiting times for passengers. If possible, establish local feeder services to rapid transit stations.
- l) Transit systems serving different jurisdictions should coordinate routes and schedules to fill service gaps in each others' systems.
- m) Where a station is located at the edge of two jurisdictions, the respective transit systems should collaborate in the design and retrofit of the stations to ensure the seamless integration of facilities.

Integration

**Planning Scale**



Regional



Municipal



Site

- n) Consider and implement fare and service integration programs that facilitate more seamless intercity or interregional travel.
- o) Where fares are not integrated, eliminate or reduce transfer costs for riders making trips involving multiple local or regional transit systems
- p) Continue to improve the enablers for MaaS solutions that present multimodal and/or intermodal trips onto a single platform to support users' ease of access to trip planning to reach final destinations using multiple transit and mobility modes conveniently
- q) Consider opportunities to make any transit stop a connection point for shared transportation coordination, and leverage MaaS to coordinate trips to and from transit for more seamless connections and congestion avoidance

Wayfinding and Amenities

**Planning Scale**



Site

- r) Clearly indicate routes that serve rapid transit stations on destination signage and wayfinding elements, such as prefixing route numbers or placing a logo on destination signs to show that it serves a rapid transit station.
- s) Ensure visual consistency in transit system signage in terms of common fonts, colours and symbology, and adhere to a common

signage placement rationale to support customer ease in locating visual information when transferring. More detailed wayfinding strategies to enhance transfers between systems can be found in [Subsections 3.3.4 and 3.3.5](#) of this document.

- t) Provide amenities that support and enhance rider comfort when transferring between systems or modes, such as seating, landscaping, retail and washrooms.
- u) In large, regional transit stations, the installation of moving walkways can help riders to transfer between transit zones quickly, while the provision of sheltered areas, seating, lighting and other security elements can enhance customer comfort in the transfer process generally.

### Applicable Sections

3.3.4 3.3.5

### Additional Resources

- [Interchange Best Practice Guidelines, Transport for London \(n.d.\)](#)
- [Improving Transit Connections via Transfer Optimization and On-Demand Services, University of Toronto Transportation Research Institute \(2020\)](#)
- [Mobility Hubs: A Reader's Guide - Chapters 5-7, City of Los Angeles \(2016\)](#)
- [Transfers Design Guide Improving Connections for a Seamless Trip, LA METRO \(2018\)](#)

### 3.2.9 Pick Up & Drop Off Areas

Provide passenger pick up and drop off areas at transit stations that have design continuity, prioritize passenger safety, have clear lines of sight from station entrances, and that consider the user experience of both passengers and drivers.

#### Applicable Context

##### Community Size

 Big City

 Large

 Medium

 Small

 Remote

##### Planning Scale

 Site

##### Key Stakeholders

Regions, Municipalities, Land Use Planners, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs)

Passenger pick up and drop off (PUDO) areas or facilities refer to the area and the infrastructure at a transit station that is dedicated to supporting passenger pick-up and drop-off. The planning, design and orientation of these areas are important to facilitate safe passenger connections from different types of vehicles, including ride hail and taxi services, microtransit vehicles and others, to transit stations, stops or other transit services.



Figure BU  
**Bus Lanes**

Bus only lanes in York Region reducing travel delays.

## Strategies

### Applicable Context

### Planning and Design

#### Planning Scale

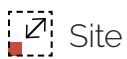


Site

- a) Wherever possible, provide dedicated access to passenger PUDO and taxi areas to avoid conflict with park and ride and feeder transit. Provide priority access to PUDO for users to the local road network over 'drive and park' traffic.
- b) Provide one-way traffic movement in passenger PUDO and taxi areas with opportunity for recirculation to reduce vehicle conflicts and maximize efficiency of traffic flow.
- c) Provide passenger PUDO and taxi areas as close to the station entrance as possible with direct sightlines to station entrances while maintaining access mode priority for walking, cycling and local transit.
- d) Separate queuing areas with pedestrian island, connected by clearly marked crosswalks and walkways.
- e) Ensure passenger PUDO and taxi area location include appropriate signage, markings, and information regarding maximum stopping or waiting times in the area.
- f) If multiple transit services are accommodated in the same area, locate the passenger loading area and the passenger waiting area strategically to ensure both areas jointly serve passenger movements to and from each of the transit services.
- g) Ensure the space between the passenger loading area and the passenger waiting area is barrier-free, accessible and includes curb cuts designed to the requirements of the Universal Design Standard.

### Signage

#### Planning Scale

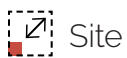


Site

- h) Clearly identify the location of passenger PUDO areas with dedicated signage and markings, identifying which mode the passenger PUDO area is for and information regarding maximum stopping or waiting times at the area.

### Pedestrian Thoroughfare

#### Planning Scale



Site

- i) Design and configure passenger PUDO facilities to ensure the most direct and shortest pedestrian route to the accessible station building entrance and designated accessible boarding areas of the platforms.

- j) Locate the pedestrian thoroughfare away from any traffic flow and avoid conflicts with any other access modes, including primary pedestrian walkways, bikeways and other transit vehicles.
- k) Provide wide buffers, significant visual and tactile contrasts between passenger waiting and loading areas to prevent any encroachment from pedestrians or cyclists from adjacent walkways or bikeways.

### **Additional Resources**

- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Integrated Mobility: Implementation Toolbox - Chapter 6, CUTA \(2017\)](#)
- [Mobility Hubs: A Reader's Guide - Chapter 3.1, City of Los Angeles \(2016\)](#)
- [On-Demand Transit Toolkit: A Resource Guide for Service Implementation, CUTA \(2022\)](#)

## 3.2.10 Car Share / Shared Fleets

Provide spaces for car share vehicles in proximity to transit facilities to support intermodal connections to and from the transit network and to reduce the need for private vehicle ownership.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Regions, Municipalities, Land Use Planners, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote   |   |   |

Car sharing programs have become increasingly common in cities and among users across Ontario as a convenient and cost-effective alternative to car ownership. When planned in coordination with public transit systems, the car sharing can complement transit by providing access to vehicles for utilitarian trips and for supporting the FMLM connectivity of users' journeys.

Within urban communities, the provision of car share spaces in transit facility parking areas, near transit stops, or along curbsides in station areas, can help to reduce the need for private car ownership, while providing access to vehicles near public transit for when users need them. At regional rail stations, providing access to car share can help to strengthen the transportation system, while supporting tourism by encouraging more people to take rail transit to a destination before continuing their journeys in a shared car.

## Strategies

### Applicable Context

### Planning

#### Planning Scale

-  Regional
-  Municipal
-  Site

- a) Collaborate with local stakeholders, community / urban planners and local transportation authorities to consider and integrate the use of car share into long-term transit planning efforts.
- b) Strategically allocate dedicated space for car share vehicles in immediate proximity to transit facilities, or in transit station areas, to provide transit riders with easy access to car share when exiting a transit facility.
- c) Locate car share parking in highly visible locations that are easily accessible from the entrance / exit of a transit facility. Where direct line of visual sight is not possible, digital and physical wayfinding and signage can be used to direct users and enhance connectivity.

### Enhanced Connectivity

#### Planning Scale

-  Regional
-  Municipal
-  Site

- d) Expand car sharing services to under-served areas with limited public transit access to improve mobility options for residents in those areas.
- e) Leverage transportation planning data to identify gaps in transit service or latent demand where car share could be deployed to fill gaps or provide new connections.
- f) Collect and utilize user feedback and car share service usage patterns to optimize the placement of car share vehicles within and along the transit network to maximize both convenience and access to car share along the transit network.

### Applicable Context

### Integrations and Partnerships

#### Planning Scale

-  Regional
-  Municipal

- g) Include car share services in trip planning applications, including Mobility-as-a-Service platforms, to enable seamless access to car share services in combination with public transit and other mobility modes and services.
- h) Consider enabling access to car share services by linking memberships to transit cards or other forms of identification, making it easier for users to become members of car share services, while supporting integration with public transit.
- i) Establish partnerships with car share companies to offer subsidized memberships, discounts or subscriptions for users that utilize public transit and car sharing services regularly.

- j) Promote the use of car share and other multimodal modes and services in combination with public transit as a means of raising awareness of the benefits of inter- and multimodality.

### **Additional Resources**

- [Case Study: Berliner Verkehrsbetriebe](#)
- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Case Study: Victoria Regional Transit Commission](#)
- [Identifying Best Practices for Mobility Hubs, Saki Aono for TransLink \(2019\)](#)
- [Integrated Mobility: Implementation Toolbox - Chapter 6.1, CUTA \(2017\)](#)
- [Mobility Hubs: A Reader's Guide - Chapter 3.2, City of Los Angeles \(2016\)](#)
- [Mobility Hubs Guidance, CoMo UK \(2019\)](#)

## 3.3 Trip Planning and Navigation

The provision of route, schedule and fare information in a clear and intuitive manner is a key consideration in the creation of an effective transit system. Ensuring clear and concise trip planning and navigation to riders ensures the transit experience is simple and efficient for all users, regardless of their familiarity with the network. Comfortable, safe and easy to navigate transit environments are an important part of encouraging transit as a preferred mode of transportation and that the ridership experience is as seamless as possible. The following section will detail the many ways in which trip information can be communicated to users and the strategies required to ensure efficient trip planning and navigation. Topics include:

- 3.3.1 Static Trip Planning Information ..... 191
- 3.3.2 Real-time Trip Planning Information & Applications ..... 195
- 3.3.3 Mobility-as-a-Service Applications ..... 201
- 3.3.4 Wayfinding for Transit Facilities ..... 205
- 3.3.5 Wayfinding for the Public Realm ..... 211



Figure BV  
Transit Network Map

### 3.3.1 Static Trip Planning Information

Provide route, schedule and fare information in a clear and intuitive manner through different streams of easily accessible media.

#### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Regions, Municipalities, Land Use Planners, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), MaaS Companies, Indigenous Communities |
|  Large    |  Municipal |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote   |   |   |

Clear and reliable static trip planning information allows travellers to determine the most convenient and comfortable path to their destination. A lack of static trip planning information can make transit frustrating, particularly for new or casual users, and may inhibit ridership growth. Making transit service information available to the public in accessible, easy to use formats enables current and new riders to learn about the transit system and understand how to use it.

## Strategies


### Applicable Context

#### General

#### Planning Scale

 Regional


 Municipal

 Site

- a) Ensure that static trip planning information elements, including maps, signage, fixed and temporary notices, have design consistency with other transit facility wayfinding and signage elements to support recognition and legibility.

#### System Maps

#### Planning Scale

 Site

- b) Provide a system map showing all routes, stations, transfer points and major stops. The routes should be overlaid on a road map with street names and numbers at regular intervals.
- c) Ensure that font sizes are large enough in size to be legible from a reasonable distance (not less than 8-point), with different fonts, colours and sizes used to identify different types of information.
- d) Different routes should be indicated using contrasting colours, and an enlarged inset should be used if an area with many converging routes is unclear. Where service connects to other transit systems or regional service, indicate connecting routes and transfer points, and provide contact information for connecting systems.

#### Route Maps & Schedules

#### Planning Scale

 Regional

 Municipal

 Site

- e) Provide route maps showing major street names, locations of surrounding major bus stops, transfer locations and points of interest. A route schedule should indicate inbound and outbound trips, as well as landmarks to indicate travel direction. Travel direction may also be shown through labelling or separation into different tables.
- f) Separate schedules for different travel days into different tables that are clearly labeled to support easy and quick comprehension of daily schedules.
- g) Ensure that all printed transportation information (system and route maps, along with route schedules) are available at terminals, in vehicles, at transit-accessible shopping malls, at municipal buildings, and in electronic format on the transit agency's website.

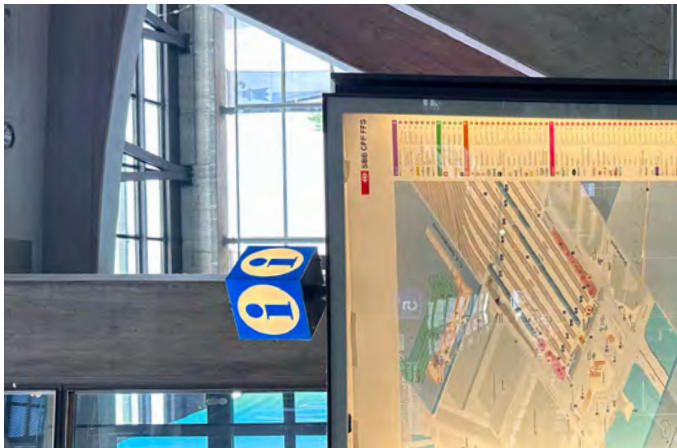


Figure BW  
**Train Station Map**

Customer services, combined mobility points, restaurants, shopping, offices, and access points listed and mapped in a multi-level station map in Lucerne, Switzerland.



Figure BX  
**Mapping Above Train Entrance**

Map of stations along a transit line indicating current station, direction of travel, connecting transit lines positioned above train entrances in Guangzhou, China.

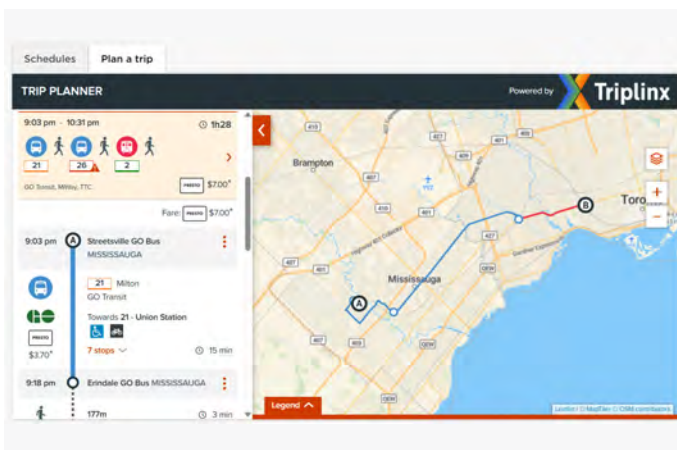


Figure BY  
**Online Trip Planner**

Mississauga's MiWay trip planner provides multiple route options, estimated journey times, maps if needed and a range of travel options such as accessible, fewest transfers or shortest walk.

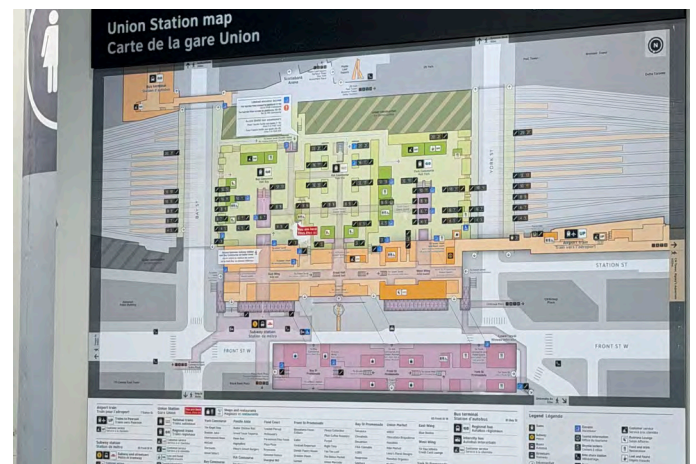


Figure BZ  
**Mapping of Station Area**

Mapping at Union Station in Toronto to aid passengers in their journey.

## Applicable Context

## Facility Mapping

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### Planning Scale

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 Site

- h) Provide maps of stations and major transfer stops showing platform locations, accessibility features (ramps, elevators and escalators etc.) customer service counters, emergency call facilities, bathrooms, station retail services, bicycle parking and other shared modes at the station.
- i) Transit system information should include information on multimodal access, such as connections to other transit systems and other transportation modes such as ferries, airports, bike routes, and pedestrian paths.

## Legibility

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### Planning Scale

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 Regional

 Municipal

 Site

- j) Transit information should be made more accessible by providing information in multiple languages, as well as in large print, Braille and audible formats.

## Additional Resources

- [World Wide Web Consortium's Web Content Accessibility Guidelines 2.0 \(WCAG\)](#)
- [Elements Needed to Create High Ridership Transit Systems, Chapter 7: Marketing and Information Initiatives, Transit Cooperative Research Program \(2007\)](#)
- [Guidelines for Producing GTFS Static Data for Transit](#)

## 3.3.2 Real-Time Trip Planning Information & Applications

Provide real-time trip planning information to inform riders of vehicle arrival times, as well as incidents causing delays.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Regions, Municipalities, Land Use Planners, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), MaaS Companies, Transportation Network Companies (TNCs) |
|  Large    |  Municipal |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote   |   |   |

Providing real-time information to support riders in transit facilities and stops, on transit vehicles and through mobile applications can help to eliminate some of the uncertainties users have when taking public transit. Real-time information consists of automatic vehicle location (AVL) and real-time passenger information provide by fixed sensors located throughout transit systems, user data generated through fares and smartphone connectivity, and other technologies that are used to monitor and report on the operation of the system. The provision of real-time information helps to assure riders when travelling, and assists them in the decision to make alternate plans to get to their next destination, such as walking, calling home for a ride or taking a shared mode.

Some real-time trip planning tools and applications enable customers to plan transit trips by indicating transit routes, the locations of stops, route numbers, transfer points and sections of a trip that will require walking or alternate forms of transportation. The use of general transit feed specification (GTFS) data makes trip planning possible when using third-party trip planning services such as Google Maps. Real-time trip planning services can be offered in the form of self-service kiosks and some ticket vending machines (TVM). The trip planning functionality may need to be specified and integrated into the kiosk or TVM in consultation with vendors but can serve as an important and effective customer service offering, particularly for riders without the cellular devices, data or digital fluency required to access and use mobile applications.

## Strategies

### Applicable Context

### Real-Time Systems

#### Planning Scale



Regional



Municipal

- a) Real-time vehicle tracking requires a variety of elements including:
- a positioning system, such as GPS or a signpost-based system, with receivers and transmitters on each vehicle;
  - a data processing centre to coordinate receiver and transmitter data collection and dissemination;
  - a communication system consisting of a wide-area wireless; network based on radio frequency technology; and
  - a prediction model or algorithm to forecast arrival times based on vehicle location information, vehicle speed, traffic conditions, weather and real-time operating data (such as automatic vehicle location and automatic passenger counting) from several buses on the same route. See [Subsection 4.2.5](#) for information on implementing new technologies.
- b) Encourage the use of general transit feed specification (GTFS) for all providers and support the development of resources and training modules to establish GTFS capabilities for providers to support trip planning and data collection that can be used for evidence-based decision-making.

### Relaying Information

#### Planning Scale



Regional



Municipal



Site

- c) Provide wayside next transit signage that displays information related to real-time transit schedules and services by points of departure at transit shelters, on stop poles, etc.
- d) Develop mobile applications, or provide open, real-time data to support third-parties in developing mobility applications that provide passengers with real-time information on vehicle locations, arrival times, service alerts and route changes, among other updates.
- e) Provide digital signage and other digital displays in transit facilities, and other buildings, to display real-time passenger information at a highly visible central point.
- f) To enhance access to information, make real-time arrival times as well as information on delays and alternative routing options available through a variety of media, such as:

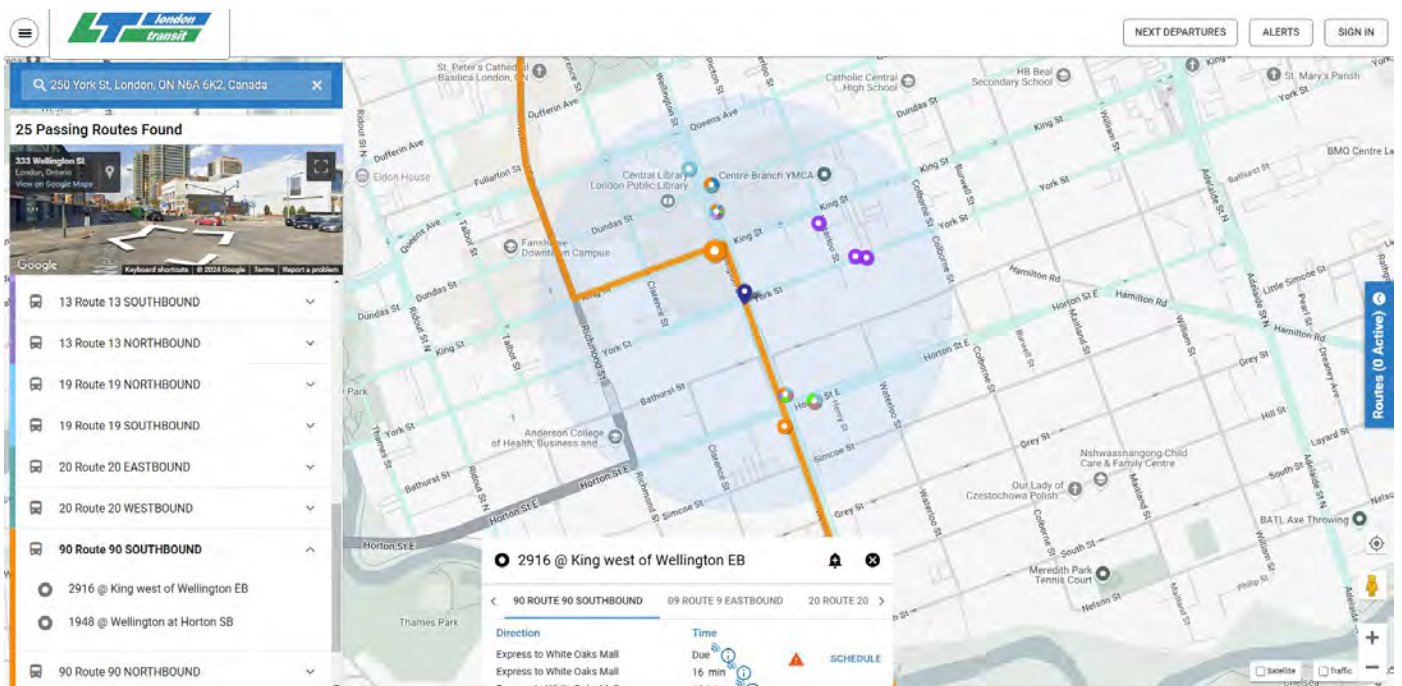


Figure CA  
Real-Time Trip Planner

London Transit's website offers real-time trip planning information, showing the arrival times of buses at a user selected bus stop.



Figure CB  
System Map Indicating Upcoming Stations

System map on a subway car indicating upcoming, passed, and interchange stations in real time using different coloured lights.

- internet websites and social media;
  - mobile applications;
  - telephones and cellular phone text messages;
  - e-mail;
  - interactive kiosks at transit stations;
  - dynamic message signs on rail platforms, and at transit stops and stations;
  - in-vehicle displays; and
  - audio announcements.
- g) Make transit information more accessible by providing information in multiple languages, including French as well as in large print, Braille and audible formats.
- h) Make available and routinely update information on accessibility equipment and features of transit facilities and stations.

## Applicable Context

### Planning Scale

 Regional

 Municipal

## System Compatibility and Interoperability

- i) Require interoperability among procured software and technology services provided by different vendors, allowing for different systems to communicate with other intelligent transportation systems (ITS) hardware and software that the agency may use for data collection, operations or other purposes, including the following:
- Open and fully documented architecture and interfaces;
  - Open and standard data protocols, including standardized and documented data feeds i.e., application programming interfaces (APIs) from which to extract data;
  - Permission to query and extract data from the database; and,
  - Authorization to reuse that data for other purposes.
- j) Ensure that the automatic vehicle location (AVL) technology is compatible with other systems, such as the computer aided dispatch (CAD) technology.

## Trip Planners

### Planning Scale

 Regional

 Municipal

- k) Provide an interactive, internet-based trip planner to recommend itineraries based on travellers' origins, destinations and departure/arrival times. The trip planner should:
- propose door-to-door itineraries for the requested trip, providing details on time required to walk to and from stops,
  - journey times on transit vehicles,
  - transfer waiting times,
  - arrival and departure platforms at transfer stations,
  - transfer vehicle arrival and departure times, and
  - fare and transfer payment information.
  - The itinerary should provide optional maps of the overall travel path, as well as neighbourhood close-ups and include options to email or print the itinerary, and to create an itinerary for the return trip.
- l) Smaller agencies can start with interactive system maps, routes maps and schedules on their websites.
- m) Consider including information within real-time trip planning interfaces about the impact of trip choices on the environment and congestion that could provide users with incentives to choose more socially conscious options, leveraging accessible sources of data that can be integrated into trip planning systems.

### Applicable Context

#### Planning Scale

 Regional

 Municipal

## Partnerships and Third Parties

- n) Where possible, partner with third-party developers, technology companies or other software providers, to develop high-quality trip planning applications and tools to assist customers in planning transit and multimodal trips across both public and private mobility offerings.
- o) Provide open data application programming interface (APIs) to enable third-party developers to access and integrate transit data in the development of third-party trip planning applications and tools.

## Usability

---

### Planning Scale

---



Regional



Municipal



Site

p) Provide or require that mobile trip planning applications are user-friendly, accessible to users with disabilities and are available on multiple platforms, such as iOS, Android and others.

q) Consider integrating digital trip planning services into existing transit facility trip planning elements, such as digital self-service kiosks and ticket vending machines, enabling access to digital trip planning services for users who may not have cellular devices, mobile data or who are not confident using mobile applications.

## Applicable Sections

4.2.5

## Additional Resources

- [Real-Time Bus Info Guide, London Transit Commission \(n.d.\)](#)
- [Transit Technology Toolkit, Ministry of Transportation of Ontario \(2023\)](#)
- [GTFS: Making Public Transit Data Universally Accessible, GTFS \(n.d.\)](#)
- [Digital Tools to Facilitate Complete Trip Planning: Complete Trip Best Practices, National Center for Applied Transit Technology, 2023](#)

### 3.3.3 Mobility-as-a-Service Applications

Support the development, growth, and use of Mobility-as-a-Service applications to enable greater multimodal access to the entire transportation network across public and private mobility offerings.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Regions, Municipalities, Land Use Planners, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |  Site      |   |
|  Small    |   |   |
|  Remote   |   |   |

Mobility-as-a-Service (MaaS) applications are real-time trip planning platforms that allow users to plan, book and pay for multimodal trips on a single platform. Mobility practitioners can support public- and / or private-sector MaaS solutions by ensuring key enablers are in place, such as data sharing standards, modern and interfaceable technologies, cross-sectoral and cross-government agreements and improved fare and service integration policies.


Though still evolving as a concept and product, MaaS integrates transportation services from public and private providers through a unified platform, typically a mobile app. These apps help users plan trips by showing multiple ways to reach their destination, including options like passenger vehicles, transit, biking, and walking. Trips may involve multiple modes, and MaaS displays the best combinations. Often seen as a 'one-stop shop,' MaaS provides travelers with all possible mobility alternatives, supported by real-time system updates to make journeys easier.

## Strategies

### Applicable Context

#### Physical Integration

#### Planning Scale

 Site

- a) Consider operationalizing MaaS at transit stops and stations, where different mobility modes and services are co-located.
- b) Provide publicly accessible, free Wi-Fi in Transit Stations to allow users to use MaaS applications and subsequently plan, book and pay for trips, without the need for cellular data.

#### Business Models

#### Planning Scale

 Regional

 Municipal

- c) Develop flexibility and contingencies into plans and business models surrounding MaaS procurement, acknowledging the evolving nature of MaaS technologies.
- d) Develop business models and feasibility assessments for MaaS platforms that are appropriate in scale, function and cost for the community and the availability of public and private transportation.
- e) Undertake research in collaboration with other regions, municipalities, agencies and partners to look for scalable MaaS models that support expansion across the province, potentially including intercommunity bus, rail, marine and air transportation services.
- f) Encourage other service providers to support customers by providing Wi-Fi in public spaces along or near to transit networks, through incentives or other revenue opportunities.

#### Optimization

#### Planning Scale

 Regional

 Municipal

- g) Investigate the availability and deployment of MaaS platforms with some background optimization tools that can process large network data sources in real-time and suggest schedule and operational changes for ongoing optimization.
- h) Look at opportunities for MaaS traffic management systems to help support significant service disruptions like subway closures, enabling the overall response by service providers to be most efficient and effective.
- i) Encourage or require that service providers be open and transparent with their ridership data, along with reporting mechanisms, including costs, complaints and on-time performance, to optimize a MaaS system's ability to be improved.

**Applicable Context**

## Equity and Access

**Planning Scale**
 Regional

 Municipal

- j) Ensure levels of service provisions are in place that reward service providers that provide accessible services and deters those that do not.
- k) Explore ways to embed affordability into a MaaS system, including by exploring ways to offer incentives or subsidies through the system for qualifying groups through the application.
- l) Consider initiatives that can provide underserved people with access to MaaS, including through the provision of 'mobility wallets', which are preloaded multimodal transit cards that enable access to transit and other modes, or by Universal Basic Mobility programs.
- m) Consider approaches in the delivery of MaaS that allow potential users without mobile phones or cellular data to access the MaaS platform. These may include plans to integrate the MaaS system into online trip planning services, as part of ticket vending machines, or other programs.

## Encouraging Use

**Planning Scale**
 Regional

 Municipal

- n) Integrate gamification where possible to optimize the transportation network and the use of all modes and vehicles the network.
- o) Enable different levels of customization within the MaaS application, so that users can tailor different trips according to their personal transportation preferences. This may include allowing users to choose the most environmentally sustainable option, the most affordable option, options that do not involve underground modes among others.
- p) Mitigate against any barriers of entry and access to the MaaS system by ensuring affordability is built into the app. This can include providing trip planning options that provide the most affordable option for a given trip, among other filtering options that can help to ensure the MaaS application is equally relevant to users of different economic backgrounds.
- q) Work with MaaS providers and other partners to develop incentive programs that reward customers for different levels of ridership and/or general use of the MaaS application, potentially rewarding customers for higher levels of transit ridership, or for multimodal connections to transit.

## Applicable Sections

3.2.7

## Additional Resources

- [Transit Technology Toolkit, Ministry of Transportation of Ontario \(2023\)](#)
- [Mobility-as-a-Service: The Value Proposition for the Public and our Urban Systems, MaRS and ARUP. \(2018\)](#)

### 3.3.4 Wayfinding for Transit Facilities

A consistent, intuitive, and accessible wayfinding system should be implemented across the transportation network to help riders navigate transit facilities. Signage should complement the logical design of facilities, directing users to key points of interest. It must be thoughtfully designed, strategically placed, and extend throughout transit and supportive networks.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Indigenous Communities |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote  |   |  |

Comprehensive wayfinding improves customer experience, safety, service delivery, and accessibility by reducing navigational and physical barriers. An effective system can transform what feels like a complex, intimidating network into one that is clear, convenient, and appealing.

## Strategies


### Applicable Context

### Planning

#### Planning Scale

 Regional

 Municipal

 Site

- a) Develop wayfinding and signage to support the efficient navigation of the transit station and station area.
- b) Align the design language for signage with the branding of the transit provider to support the recognizability of transit elements (e.g., maps, bus stands, transit vehicles, bicycle parking, etc.) for riders across the transit network.
- c) Implement a minimum standard of wayfinding signage in transit stations, including Station Identification Signage, Directional Signage and Accessible Wayfinding Features.
- d) Maintain standardized identification and terminology throughout transit systems, modes and routes, including a common, tested signage standard.
- e) Include signage in wayfinding programs that highlight sustainable and innovative programs and features.
- f) Include wayfinding signage that shows the location and approximate walking distance to key destinations in the transit station area.
- g) Transit agencies or facility operators should keep and maintain a repository or map of the wayfinding elements in use that shows the type, location and contents of different wayfinding elements in the facility.
- h) Digital wayfinding elements should be consistently checked and maintained to ensure they are in good working order.

### Symbols & Cues

#### Planning Scale

 Regional

 Municipal

 Site

- i) Develop a coordinated system-wide wayfinding plan so that logos, symbols and cues used on vehicles, at stops and in stations are consistent and complementary.
- j) Each sign should indicate, at a minimum, the transit route number and name, direction of travel, map and timetable. Additional information can be accommodated by providing telephone numbers and websites where more information can be accessed.
- k) Include mode-specific wayfinding elements, designs and symbology to support the ability for users of different modes to reach and navigate the facility.



Figure CC  
**Wayfinding Along Station Platform**

A clock and highly visible directional signage, indicating exits, platform numbers, and real time trip planning information in Zurich, Switzerland assists travellers in making quick decisions.



Figure CE  
**Directional Signage at Decision Making Point**

Signage indicating the direction toward station facilities and multimodal connections in West Kowloon Station, Hong Kong.



Figure CD  
**Elevated Subway Entrance Marker**

Subway entrance market is elevated above the crowd to enhance visibility from a distance.

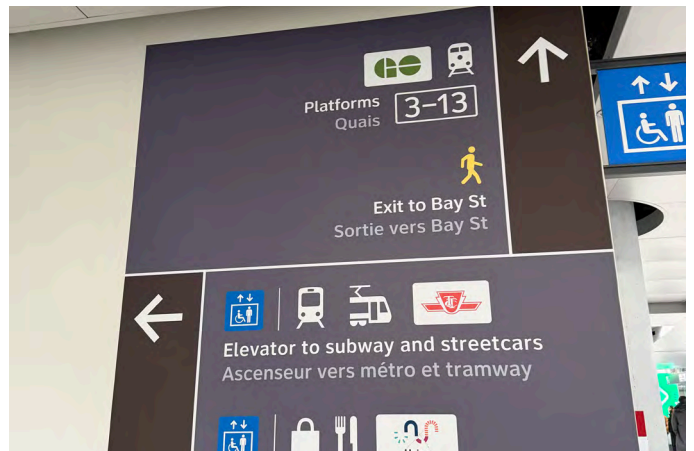


Figure CF  
**Directional Signage at Decision Making Point**

Directional signage at Union Station in Toronto for transfers between GO and TTC.

**Applicable Context**

**Vehicle Exteriors**

**Planning Scale**



Regional



Municipal

l) The exterior of the transit vehicle should identify the route name, number and the direction of travel. Identifiers should be placed, at minimum, at the boarding point. If a person with a disability, a newcomer or a tourist cannot properly interpret the signage, the operator should be prepared to offer information to passengers upon request.

**Legibility & Accessible Formats**

**Planning Scale**



Regional



Municipal



Site

- m) In transit stations and on vehicles and surrounding transit stations, signs should be designed to be highly legible with accessible displays.
- Signs should be consistently located, have a glare-free surface and be positioned to avoid shadow areas and glare;
  - Use text and graphics together on signs consistently;
  - If signs contain more than one word, use upper and lower case for legibility;
  - Text should be flush to the left and ragged to the right;
  - Reserve red, yellow and green fonts for public safety colours;
  - Maintain consistent font size and use font weight to emphasize importance of information;
  - Signage should be high colour contrast with its background; and
  - Avoid more than five lines in a single directional sign.
- n) Install tactile guidance to assist in wayfinding and support safety along platforms, passageways, on and at the top and bottom of stairs, ramps, curb ramps at designated paratransit bays at and within transit stations.
- o) Provide visual and tactical guidance to indicate where higher order transit doors and priority seating areas will be located at a platform, provided they do not pose a potential safety hazard.

**Building Maps & Directories**

**Planning Scale**



Municipal



Site


p) For larger transit systems with complex stations, building maps, floor plans and directories should be provided to help orient users to their immediate surroundings. Wayfinding signage should:

- place site and building plans in the direction corresponding with the setting and the orientation of the user;
  - ensure site and building plans are placed at a height and angle that can be seen by people of all statures and physical abilities;
  - include a "you are here" indicator on site and building plans;
  - display enlarged maps of the area immediately outside of the transit station with the location of the station or terminal indicated so transit users can familiarize themselves with the immediate surroundings and determine how to reach final destination;
  - display a transit system map which can help users familiarize themselves with the whole transit system;
  - include Braille on building plans; and
  - display maps and directories that can be replaced to ensure information can be kept up-to-date.
- q) Use pedestrian flow modelling to plan retrofits of stations and to improve effectiveness of entrances, exits and connections to the street.
- r) Place signs at decision points in a facility using only the information necessary for a user to make a decision. Use maps at key decision points to supplement directional information and place signs such that they may be seen from all directions at intersections.

**Applicable Context**

**Planning Scale**

 Community

 Site

**Community Wayfinding & Placemaking**

- s) Provide information and maps indicating walking and cycling trails, transit routes and local destinations in proximity to the transit station.
- t) Provide wayfinding elements that highlight areas of Indigenous cultural, ecological and spiritual significance in proximity to the facility.
- u) Wayfinding signage should be placed on streets around station areas to assist people travelling to the station. Orient wayfinding maps so that the top of the map is in the direction the pedestrian is facing. They should be placed, at a minimum, every other block on all major streets or arterials within a six-block radius from the station. Information should include:

- the transit system logo;
- the direction of the station;
- the transit route name(s) and number(s) and transit station name;
- the distance to the station.

## Applicable Context

## Technology

### Planning Scale


 Regional

 Municipal

- v) Consider developing smartphone applications which provide information on the location of transit stations or stops or provide open application program interfaces (APIs) to allow third-party technology companies to develop digital wayfinding applications that can provide stop and station locations and real-time network navigation assistance.

## Audio Information


### Planning Scale

 Site

- w) Visual wayfinding information should be complemented with audio information, and vice versa to assist people with visual and hearing impairments. Ensure audio announcements are clear and concise and follow a standardized format.

## Customer Service Attendants

### Planning Scale

 Site

- x) Place transit personnel strategically throughout the system to answer questions and provide guidance (e.g., GO Transit's "transit ambassadors").

## Additional Resources

- [Case Study: Transport for London](#)
- [Toronto 360 Wayfinding: 2023 Project Handbook, City of Toronto \(2023\)](#)
- [Transit Universal Design Guidelines. Principles and Best Practices for Implementing Universal Design in Transit, APTA \(2020\)](#)
- [Wayfinding Design Standard, Metrolinx \(2019\)](#)
- [Inclusive and Accessible Design Guidelines: Wayfinding, Canadian Museum for Human Rights. \(n.d.\)](#)
- [Connecting the East: a Draft Transportation Plan for Eastern Ontario - Action 46, MTO. \(2022\).](#)

### 3.3.5 Wayfinding for the Public Realm

Provide wayfinding in transit station areas and networks to support multimodal connections to and from transit facilities that are informational and directional.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Municipal | Regions, Municipalities, Municipal Planners, Transit Agencies, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Indigenous Communities |
|  Large    |  Community |  |
|  Medium   |  Site      |  |
|  Small    |   |  |
|  Remote   |   |  |

Wayfinding throughout the public realm—especially near stations, along key routes, and within community transit networks—is as important as at transit facilities. Design and placement should address the needs of all users, including vulnerable populations.

Public realm wayfinding elements should mirror those at transit facilities, with added durability for outdoor conditions and information to support multimodal travel, walksheds, and local destinations. Opportunities exist to integrate these elements with other transit-supportive features, such as bus stops, shared-mobility docks, curbside parking, or EV charging stations.

## Strategies

### Applicable Context

### Community Wayfinding

#### Planning Scale

-  Municipal
-  Community
-  Site

- a) Provide information and maps indicating walking and cycling trails, transit routes and local destinations in the general vicinity of the zone or neighbourhood in which the element is located ([Subsection 3.2.6](#)).
- b) Provide wayfinding elements that highlight areas of Indigenous cultural, ecological and spiritual significance in proximity to the area.
- c) Partner with and contract Indigenous communities and artists to incorporate Indigenous languages and enhance wayfinding elements with Indigenous art and designs to enhance a sense of place in the public realm ([Subsection 2.1.5](#)).
- d) Wayfinding signage should be placed on streets in the public realm to assist people travelling to the station.
- e) Position wayfinding maps so that the top of the map is in the direction the pedestrian is facing. They should be placed, at a minimum, every other block on all major streets or arterials within a six- block radius from the station. Information should include:
  - the transit system logo;
  - the direction of the station;
  - the transit route name(s) and number(s) and transit station name; and
  - the distance to the station.
- f) Integrate wayfinding into the multimodal network of transit stations and stops providing information on the location and availability of different shared mobility modes, services, and the location of other stations and stops nearby where other modes (shared micromobility docking stations, electric vehicle charging infrastructure, car share, etc.) may be co-located ([Subsection 3.2.7](#)).
- g) Consider opening transit stations to service providers that are willing to include navigation services indoors in public facilities.

### Legibility & Accessible Formats

#### Planning Scale



Site

- h) Locate and position signage so information is at eye level wherever possible, ensuring it is visible along the path of travel, consistently located at decision points and avoiding shadowed areas and glare.
- i) Provide tactile cues such as tactile maps, braille signs and tactile walking surface indicators (TWSI) for users with visual impairments.

#### Applicable Context

### Backend Monitoring

#### Planning Scale



Municipal

- j) Transit agencies or the relevant municipal department should keep and maintain a repository or map of the wayfinding elements in use throughout the public realm that shows the type, location and contents of different wayfinding elements in the facility.
- k) Digital wayfinding elements should be consistently checked and maintained to ensure they are in good working order.

### Symbols & Cues

#### Planning Scale



Municipal



Community



Site

- l) Consider establishing symbology for key points of interest in the public realm that generate transit and/or pedestrian traffic, including average walksheds / distances for reaching them on foot, by bike and other modes, if appropriate.
- m) Include directions to, and the modal offerings of, transportation options in public realm wayfinding elements, as well as walksheds to reach adjacent destinations, as applicable.
- n) Ensure that wayfinding elements along transit routes in the public realm indicate key information such transit route numbers and names, network maps, service timetables and directions to key destinations or points of interest. Additional information can be accommodated by providing telephone numbers and websites where more information can be accessed.

### Technology

#### Planning Scale



Municipal

- o) Consider developing smartphone applications which provide information on the location of transit stations or stops or provide open application program interfaces (APIs) to allow third-party technology companies to develop digital wayfinding applications that can provide stop and station locations and real-time network navigation assistance [\(Subsection 3.3.2\)](#).
- p) Supplement visual wayfinding information with audio information to assist users with visual and hearing impairments navigate. 184

## Applicable Sections

2.1.2

2.1.5

3.2.1

3.2.6

3.2.7

5.1.1

## Additional Resources

- [Expanding London's Public Realm Design Guide, Mayor of London](#)
- [Inclusive and Accessible Design Guidelines: Wayfinding, Canadian Museum for Human Rights](#)
- [Passenger Information and Wayfinding, NACTO](#)
- [Wayfinding: Tying Transit into the Community, Mpace – Mobility \(2018\)](#)



Figure CG

### Wayfinding Totem by Transit Stop

Wayfinding signage beside a streetcar stop in Toronto helps to direct transit users to local destinations.



Figure CH  
Wayfinding, Union Station

# Chapter 4

## Transit Operations

**Transit Operations** refers to strategies and systems related to operational planning for transit service. This includes systems and operations for various modes of transit (e.g., subway, bus, ferry, etc.), transit planning and performance monitoring, mobility services and operations (including shared and micromobility), and fare collection and ridership strategies. All the components of transit operations work together to create integrated and seamless transit service.

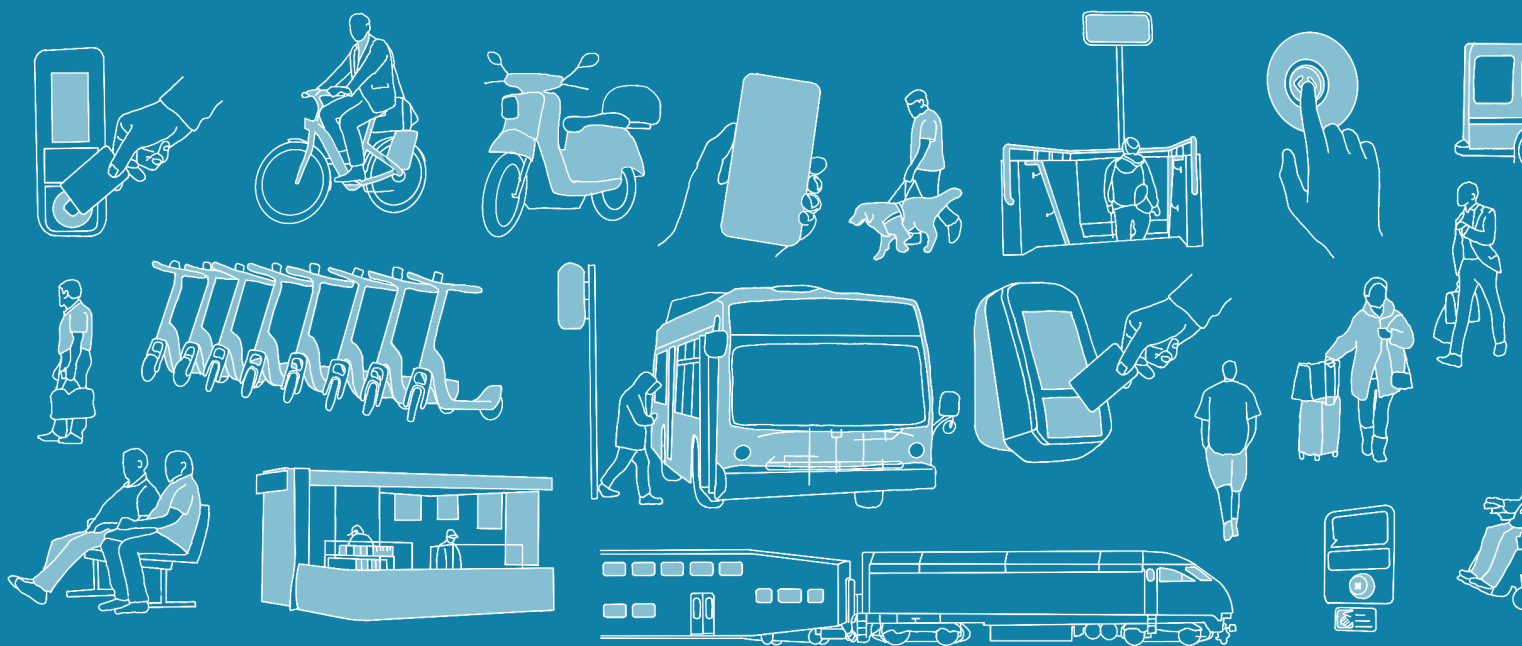






Figure C1  
**Mount Pleasant GO Station**

# 4.1 Transit System Service & Operations

Transit service types should be carefully selected to reflect their local context appropriately. Service types should be designed to support the function and character of the environments and land uses they serve, to provide context-appropriate, efficient, and effective transit service and operations. The transit type selected should support the population and employment density of their location to ensure the demand exists to justify their implementation.

The transit types and operational factors to consider when planning for transit include:

|   |     |
|---|-----|
| <b>4.1.1 Transit Service Types</b>                                  | 191 |
| <b>4.1.2 Heavy Rail &amp; Passenger Rail</b>                        | 196 |
| <b>4.1.3 Subway</b>   | 200 |
| <b>4.1.4 Light Rail Transit (LRT) &amp; Bus Rapid Transit (BRT)</b> | 203 |
| <b>4.1.5 Bus</b>  | 208 |
| <b>4.1.6 Zero Emission Buses</b>                                    | 211 |
| <b>4.1.7 On-Demand / Demand- Responsive Transit</b>                 | 214 |
| <b>4.1.8 Ferry Services</b>   | 219 |
| <b>4.1.9 Transit Travel Time</b>                                    | 223 |
| <b>4.1.10 Winter Conditions Operations</b>                          | 227 |
| <b>4.1.11 Rural &amp; Remote Transit Operations</b>                 | 231 |
| <b>4.1.12 First Nations Transit Operations</b>                      | 235 |

## 4.1.1 Transit Service Types

Select a transit service type that provides the capacity and service quality appropriate to local population and employment densities. Service types should be designed to support the function and character of the environments and land uses they serve.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |   |   |
|  Small    |   |   |
|  Remote   |   |   |

The type of transit service selected is a primary determinant of system capacity, quality of service and attractiveness to transit riders. The selection of a transit service type will have a significant impact on community structure, the movement of pedestrians and vehicles, as well as the potential for new transit-supportive development.

Transit providers may select from an array of service types. These range from on-demand or demand-responsive transit services to conventional buses in mixed traffic with fixed-routes and schedules, to vehicles on dedicated lanes or guideways, such as BRT, LRT, subways and/or commuter trains. Moreover, different service types may complement each other, such as the combination of conventional bus and BRT services or the use of feeder services along LRT routes.

Each service type differs in its appropriateness, capital costs, permanence, and route flexibility, as well as its influence on the character of a community.

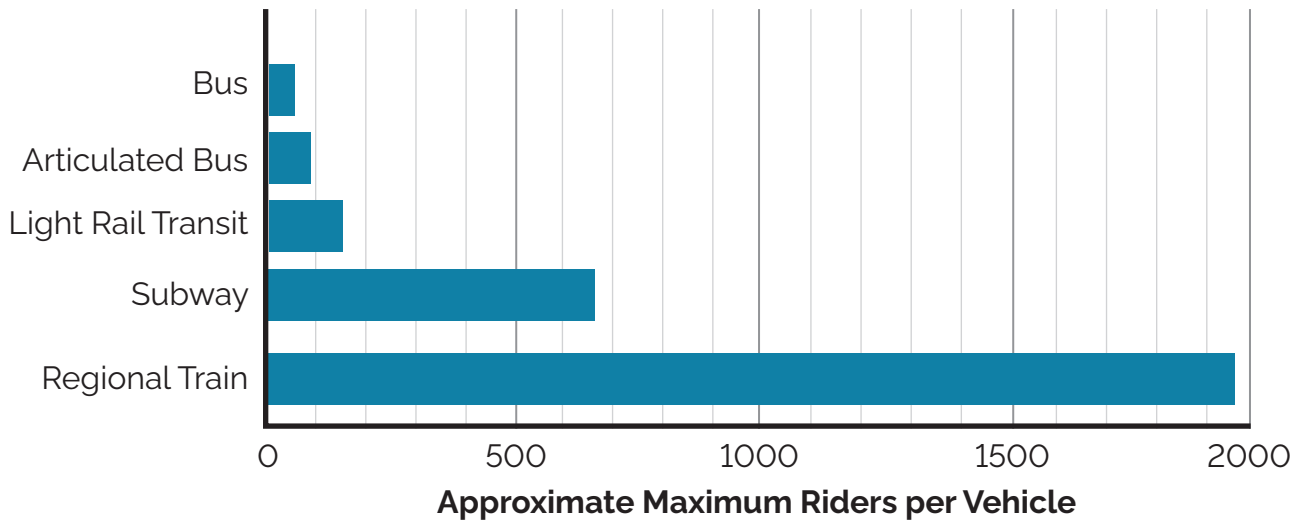


Figure CJ  
**Capacity for Transit Services Types**

The graph above illustrates the approximate maximum riders that can be accommodated by various modes of transit. Data sourced from Metrolinx and TTC.

**Strategies**

**Applicable Context**

Selection of Service Type

Planning Scale

 Regional

 Municipal

a) When exploring the introduction or expansion of transit service, agencies should consider a range of factors including:

- population and demographic trends;
- economic forecasts, future land use and travel patterns;
- ridership forecasts;
- funding availability;
- parking management practices;
- the potential impact of the new service type on community;
- character and design; and
- the impact of the transit service on the movement of other transportation modes.

b) Develop and implement interim transit service plans that support and ultimately will be replaced by the regional rapid transit network.

## Large Urban Centres

### Planning Scale



Regional



Municipal

- c) For large urban centres with varying urban forms and densities, consider providing a range of transit services appropriate to the land use and travel patterns of individual communities. This may range from BRT systems to community buses, which should be augmented with higher levels of service and/or service types over time in response to increased ridership.

## Rural Settlement Areas

### Planning Scale



Regional



Municipal

- d) In rural settlement areas, where population densities are low and activity locations dispersed, a range of bus service options should be considered, including:
- running shuttles, a limited bus service to key markets, such as areas with student or employee concentrations, in order to increase ridership and to keep costs low;
  - adding capacity through use of taxis, vans and other micro-transit service options, to provide shared rides, as a feeder service in outlying and low-density areas;
  - forming inter-municipal partnerships with neighbouring municipalities or larger municipalities / regions to provide more integrated service, or to purchase transit services;
  - offering community bus service with flexible routes, where customers can make a requested stop or request a scheduled pick-up. Vehicles may travel along defined routes or to defined stops, while making limited deviations to provide more customized service without incurring excessive schedule delays;
  - using fully demand-responsive services, such as dial-a-ride, that provide curb to curb service. This may be used in sparsely populated areas where trip patterns are unpredictable, or to serve the disabled community ([Subsection 4.1.7](#)).

### Applicable Context

### Planning Scale



Regional



Municipal

### Community Context

- e) Tailor different segments of a service to the community context of each segment. BRT services can move from mixed traffic in areas of low congestion, to priority lanes and dedicated BRT facilities in areas where high congestion could impair transit travel time and reliability. LRT services can be tailored to different community contexts by running alignments below grade through

busy downtown cores, in mixed streets through residential or commercial areas, and on dedicated lanes along busy arterials.

- f) Base routing decisions on the potential to attract and grow new ridership.
- g) Plan transit in a way that complements or enhances the existing community form. Provide connections across dedicated transit rights-of-way, where appropriate, to prevent transit infrastructure from acting as a barrier within the community.



Figure CK  
**Transit Serving Different Contexts**

The Eglinton Crosstown LRT in Toronto operates within a variety of urban contexts across the city.



Figure CL  
**Bus Connecting to Rapid Transit**

A GO feeder bus, such as the above example in Niagara Falls, picks up and delivers passengers to higher order rapid transit stations and stops.



Figure CM  
**Development Adjacent to LRT Station**

Implementation of the ION light rail in Kitchener-Waterloo has spurred new residential development in neighbourhoods along the length of the route.

## Applicable Sections

### 4.1.7

## Additional Resources

- [Case Study: British Columbia Transit](#)
- [Transit Price Elasticities and Cross-Elasticities, Victoria Transport Policy Institute \(2024\)](#)
- [Transit Capacity and Quality of Service Manual, Third Edition, Transit Cooperative Research Program \(2013\)](#)
- [Types of Transit Systems, Rural Health Information Hub](#)

## 4.1.2 Heavy Rail & Passenger Rail

Heavy rail and passenger rail services are key elements of the regional transit system which connect regions and communities across the province.

### Applicable Context

| Community Size   | Planning Scale   | Key Stakeholders  |
|--|--|---|
|  Big City |  Regional | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Site     |   |
|  Medium   |  |   |
|  Small    |  |   |
|  Remote   |  |   |

The operation of passenger rail services in Ontario such as VIA Rail, GO Transit and the Northlander Passenger Train, requires significant collaboration and coordination between rail operators, regional and municipal governments and agencies, local communities and Indigenous communities.

As a key element of the transit system, passenger rail services carry passengers from the lower-density suburbs or smaller municipalities to and from urban centres, typically in a radial network. Passengers will generally travel longer distances, making passenger rail service viable due to its ability to transport large volumes of people at high speeds.

In the future, the adoption of alternative propulsion technologies will be a key step in supporting decarbonization efforts in the passenger (and freight) rail sector. This transition may also lead to operational and energy efficiencies. Similarly, the Government of Canada is leading work to plan for a high frequency rail initiative, providing electrified passenger rail service between Quebec City and Toronto. This initiative will require significant upgrades to typical passenger rail operational procedures and workforce development.

## Strategies

### Applicable Context

### Planning and Maintenance

---

#### Planning Scale

---

 Regional

- a) Undertake planning, design and feasibility studies, as well as environmental assessments and engagement, to evaluate the possibility of high-speed passenger rail services that connect major destinations across Ontario. Include an assessment of the associated operational and procedural updates required to support reliable high-speed rail.
- b) Implement advanced fare collection systems, including mobile and contactless payment functionality to enhance the fare payment process for passenger rail customers.
- c) Work with regional transit agencies, governments and other partners to enable mobility-as-a-service (MaaS), allowing customers to plan, book and pay for passenger rail services in combination with other transit and mobility modes in a single fare.
- d) Consider offering discounted tickets for off-peak travel or seasonally to entice more riders to use rail-services.
- e) Consider establishing separate tracks for passenger rail services to mitigate against capacity limitations in growing urban areas where populations are already high, or on rail networks between key trip generators.
- f) Continually review and maintain rail infrastructure to ensure safe and reliable operations, including regular maintenance of tracks, signals, station infrastructure, bridges and other assets. Maintenance should include regular inspection, repairs and upgrades.
- g) Consider impacts to freight rail operations when planning for transit-supportive connections, including safety measures at intersections between freight railway systems, road users (e.g., truck, bus, cyclist), and transit railway systems.

### Scheduling

---

#### Planning Scale

---

 Regional

- h) Consider peak travel times, frequency of service, and connections with other transit modes in the delivery and operation of passenger rail services to optimize ridership and minimize wait times.

- i) Adjust train schedules to respond to demand as well as peak and off-peak hours.
- j) Coordinate passenger rail services with other rail services, such as freight rail, to minimize or mitigate against potential delays, unplanned stops or general slowdown in cases where track rights-of-way are shared.

**Applicable Context**

Technology


Planning Scale

 Regional

- k) Adopt and implement alternative propulsion technologies, including battery-electric power, hydrogen fuel cell technologies and wireless power transfer systems along high-density rail corridors. Alternative propulsion types will aim to reduce costs, increase reliability and contribute to greenhouse gas (GHG) reduction goals.
- l) Apply highly developed rail technologies, including electric power systems, diesel-electric hybrid systems, aerodynamics and various Energy Storage System technologies, to increase energy efficiency in the passenger rail sector and produce long-term operational and cost savings.
- m) Leverage real-time fleet management, monitoring, and predictive maintenance technologies to improve the efficiency, reliability and user experience of passenger rail.
- n) Consider the use of workforce management technologies, such as automated planning systems to allocate operator shifts and tasks for maintenance workers.
- o) Invest in alternative propulsion, energy efficiency, operational optimization and alternative-material technologies in the passenger rail sector.

Customer Experience

Planning Scale

 Site

- p) Improve the customer experience by providing and maintaining passenger rail facilities and amenities, including public Wi-Fi, enhanced passenger waiting areas and shelters, furniture and retail options at rail stations.
- q) Consider ways to enhance the onboard experience for passenger rail users by improving onboard services, including in-vehicle Wi-Fi and connectivity, food and drink options and luggage assistance, among others.

- r) Improve accessibility of signage and train departure and platform information and ensure ample signage is installed in stations. Consider the placement of all signage to minimize conflicts and optimize pedestrian legibility and flow through stations.

## Additional Resources

- [Freight-Supportive Guidelines \(Ministry of Transportation Ontario\) \(2016\)](#)
- [Land Use Planning, Rail Proximity and Public Safety, Railway Association of Canada \(2017\)](#)
- [Railway Reform: Toolkit for Improving Rail Sector Performance, World Bank Group \(2017\)](#)
- [Transportation Policy Research: Heavy Rail, Texas A&M Transportation Institute \(n.d.\)](#)
- [Relocation of Railway Lines in Urban Areas: A Resource Tool, Canadian Transportation Agency \(n.d.\)](#)
- [Railway Crossings of Other Railways: A Resource Tool, Canadian Transportation Agency \(n.d.\)](#)
- [Railway Rules & Standards, Railway Association of Canada \(n.d.\)](#)

Figure CN  
GO Train & VIA Rail Line



### 4.1.3 Subway

Improve subway operations by undertaking clear and proven strategies to increase frequency and network capacity, improve the customer experience, and enhance safety.

#### Applicable Context

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| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Municipal<br> Site | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies, Developers |

Subways are suitable for communities with multiple major activity centres or high current and future transit ridership. Subways may also be viable where there is significant redevelopment opportunity along the route, spurred by subway investment.

Improving subway operations encompasses strategies that can include optimizing maintenance schedules, enhancing safety infrastructure, enhancements to improve in-station passenger flow, or the deployment of technologies that reduce travel times, among others.

## Strategies

### Applicable Context

### Planning and Scheduling

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Planning Scale

 Municipal


- a) Develop schedules based on travel demand patterns and ridership, factoring peak hours, weekends and special events, to increase the frequency, capacity and reliability.
- b) Assess subway speed limits and acceleration standards and adopt advanced technologies to enable higher speeds and improved signal timing.
- c) Install and maintain digital displays on all platforms to provide accurate, real-time travel information.

### Infrastructure and Technology

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Planning Scale

 Municipal

 Site

- d) Procure, implement or upgrade advanced monitoring systems and other technologies to track train locations, passenger flow, disruptions and emergency closures in real-time to support rapid incident response, schedule adjustments and real-time updates.
- e) Install platform screen doors to improve customer safety and improve boarding efficiency.
- f) Assess and procure technologies such as automated train control systems, digital signage, and real-time communication systems to improve operations and customer experience.
- g) Use digital signage and announcements to share delays and closures, enabling users to plan alternate routes and reduce crowding.

### Applicable Context

### Maintenance

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Planning Scale

 Municipal

 Site

- h) Conduct regular maintenance checks and leverage technologies to prevent equipment failures and service disruptions.
- i) Schedule maintenance during off-peak hours or nightly shutdowns to minimize impact on riders.

### Facility Management

#### Planning Scale

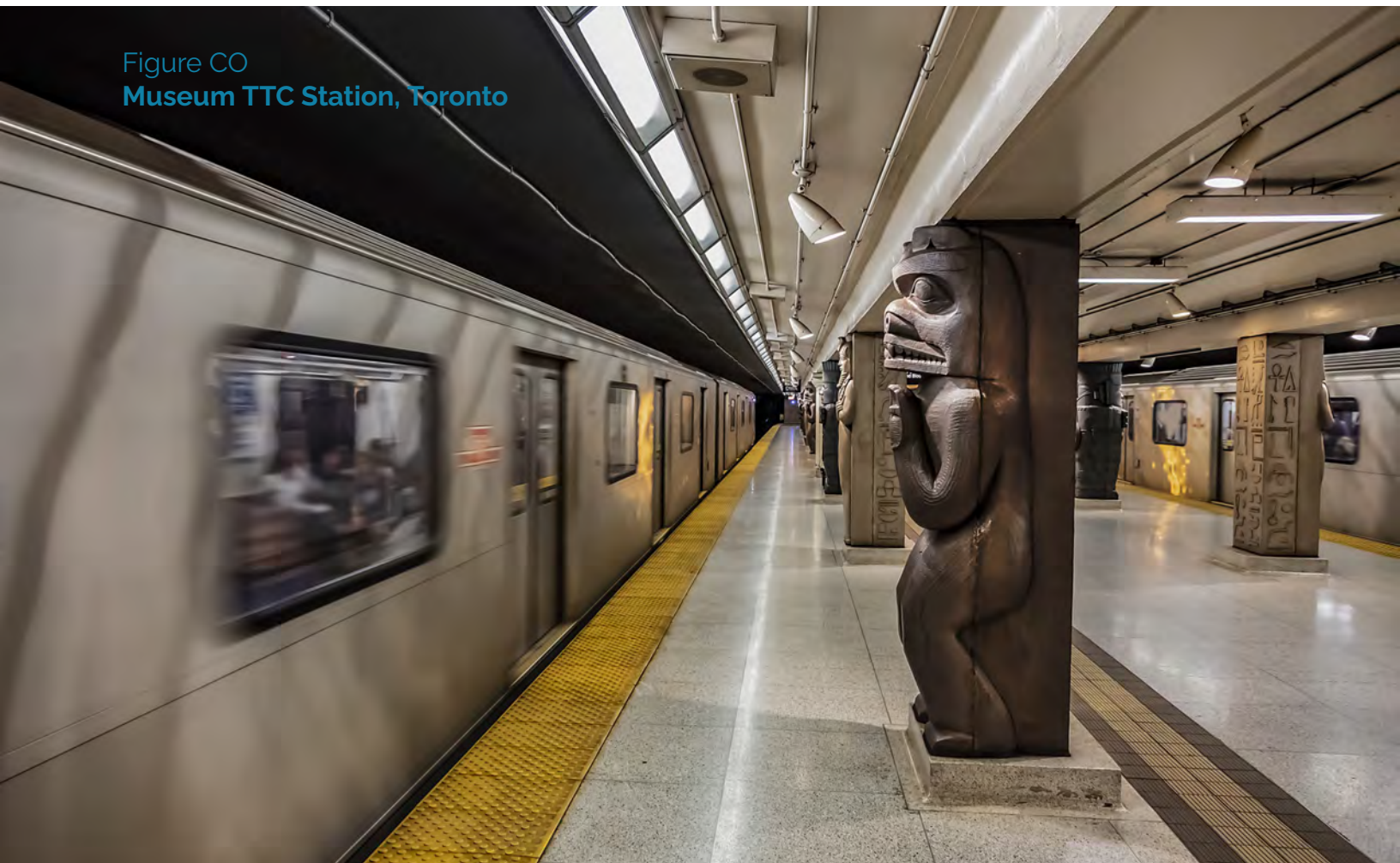
- Municipal
- Site

- j) Retrofit subway facilities to reduce overcrowding, including creating designated waiting areas during delays.
- k) Upgrade stations for full accessibility with features like elevators, ramps, tactile surfaces, and audio signals.

### Additional Resources

- [Transit Technology Toolkit, Ministry of Transportation of Ontario \(2023\)](#)
- [Five Cheap Ways to Improve NYC Subway Operations, Manhattan Institute \(2020\)](#)
- [Transit Expansion, City of Toronto](#)
- [Transit Planning, Toronto Transit Commission](#)

Figure CO  
Museum TTC Station, Toronto



## 4.1.4 Light Rail Transit (LRT) & Bus Rapid Transit (BRT)

In growing communities, investing in rapid transit systems can support changing development patterns and promote higher-density, transit-supportive environments. LRT or BRT systems may be appropriate for communities where there are higher densities and a concentration of uses along a corridor capable of supporting bi-directional service. LRT or BRT systems are viable where there are a number of major activity centres that could benefit from a more efficient transit service that connects them, and where levels of ridership suggest that a multi-unit operation would result in higher service and labour productivity over running multiple individual buses.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Municipal | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies, Developers |
|  Large   |  Site     |   |
|  Medium |   |   |

Transit network design and planning is about effectively linking people to destinations. The design and planning of the transit network on a regional scale will vary depending on the characteristics of the area, such as the number of local activity centres and the existing grid pattern. While it may not always be possible to provide direct routes, people are more likely to use transit if the network is easy to understand and provides direct, optimized access from where they are to where they want to go. Planning of transit systems at the regional scale needs to be grounded in a strong understanding of existing and planned patterns of mobility and land use.



Figure CP  
301 ION Light Rail to Conestoga Station

## Strategies

### Applicable Context

### LRT and BRT Service

#### Planning

 Municipal

- a) LRT and BRT systems may be appropriate for communities where:
- there is a built-up downtown core that facilitates concentrated service from outlying areas;
  - there are several developed downtown areas that require rapid transit connections between them;
  - there is an established reliance on existing transit and demonstrated new demand that will support high service frequencies of between 8 and 10 minutes during peak hours;
  - there are lower-density neighbourhoods with existing bus routes on either side of a corridor that could feed into the busway to reach community destinations;
  - current and projected levels of ridership may not support higher expenses associated with fixed rail service; and
  - route flexibility is required as BRT systems can operate without fixed rights-of-way.

### Operational Staffing and Training

#### Planning Scale

 Municipal

- b) Establish whether LRT or BRT operators will be dedicated rapid transit staff who sign up for shifts as per their individual preferences, or whether normal bus operators will also be able to sign up for rapid transit shifts. In both scenarios, consider the training requirements necessary to equip multiple operators with the skills to operate a rapid transit vehicle.
- c) In addition to standard training provided to equip operators with the skills to operate an LRT or BRT vehicle, also consider the need to provide training on the use and limitations of RT-specific tools and technologies, such as transit signal priority.
- d) Provide specific training for BRT operators on the principles and safe use of block signaling, queue jump lanes, driving in narrow rights-of-way, turning radii and merging into mixed traffic (in cases where the RT infrastructure is not continuous and must share the ROW with other vehicles).

**Applicable Context**

Operations and Operating Rules

Planning



Municipal



Site

- e) Implement Intelligent Transportation Systems (ITS) and technologies to support the operation of LRT and BRT vehicles, including the following key systems:
  - Communications systems to enable communication between vehicle operators and central dispatchers, supporting the communication of issues, emergencies and general information updates;
  - Automated vehicle location, which allows transit vehicle locations to be identified on a coordinate system and enables service control to assess vehicle location in relation to schedules and routes;
  - Closed-circuit monitoring to review and video record onboard events and incidents that impact passenger and operator safety; and
  - Emergency response, typically in the form of a button, that allows a driver or passenger to trigger an alarm that alerts service control personnel of an onboard emergency.
- f) Clearly define terms of lane usage, particularly in contexts with different types of lanes that may be used by different rapid transit systems. For instance, some LRT systems operate in mixed traffic environments, while others operate in exclusive centre-median or curb lanes. Similarly, some BRT systems operate in mixed traffic segments, curb, centre-median or shoulder lanes.

Route Planning and Frequency

Planning Scale



Municipal

- g) Establish headway frequencies that provide customers with fast, reliable and frequent service that minimizes their need to plan their trips according to a schedule. In general, headways no longer than 10 minutes during peak periods is a common standard in communities where transit demand is high, with more frequent headways (every three to five minutes) being preferable.
- h) Ensure RT dispatchers are sufficiently equipped to monitor increased headway frequencies and consider the hiring of additional staff or employ headway control techniques, such as enhanced vehicle location technologies and communications systems.



Figure CQ  
**Dedicated Bus Lane in ROW**

VivaNext BRT station in York Region.



Figure CR  
**Grade-Separated Transitway**

Etobicoke Creek Station on the Mississauga Transitway in Mississauga.

### Applicable Context

### Fare Enforcement

#### Planning

 Municipal

- i) Consider the need to deploy additional service control staff or install monitoring equipment and technologies to minimize fare evasion, given that many LRT vehicles and some BRT vehicles allow all-door boarding.

### Additional Resources

- [Bus Rapid Transit Design Guidelines, NACTO \(2007\)](#)
- [Light Rail Transit Service Guidelines, NACTO \(2007\)](#)
- [Operating a Bus Rapid Transit System, American Public Transit Association \(2010\)](#)
- [Light Rail Transit Design Criteria Manual, Metrolinx \(2016\)](#)
- [The BRT Planning Guide: Chapter 2 - Operations, Institute for Transportation & Development Policy \(2017\)](#)

## 4.1.5 Bus

Provide bus services at a level of frequency and efficiency to ensure the needs of local riders are sufficiently met, while balancing operating costs, maintenance requirements and staffing needs.

### Applicable Context

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| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies, Developers |
|  Large    |  Municipal |   |
|  Medium   |   |   |
|  Small    |   |   |

Performing bus operations effectively encompasses a wide range of strategies from planning, execution, maintenance and continuous improvement. Specific operational requirements will vary significantly across communities of different sizes. In large and medium sized cities, many riders may depend on efficient and reliable bus services as their primary means of transport.

Bus routes should be planned and closely monitored over time to ensure travel routes are optimized to deliver efficient and reliable service to riders, considering factors such as regular and forecasted travel patterns, community input and other metrics that can help to inform and refine bus services and operations.

## Strategies

### Applicable Context

### Bus Service

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#### Planning Scale

 Regional

 Municipal

- a) Confirm that expanded bus coverage is supported by sufficient ridership potential to keep service affordable when establishing or extending a bus route.
- b) Use density thresholds in new developments to determine when new service should be introduced. Geographic information system (GIS) data may be used for spatial analysis of population and employment densities, as well as distribution of services and activities.
- c) Consider running a pilot test of a new or expanded route to test ridership potential and ridership needs before committing to new service. The pilot test should last 1-3 years since it often takes time for new routes to achieve full ridership potential. Pilot tests should be monitored closely, for example, every 3 months to identify issues early and measure progress.
- d) Monitor ridership along routes and route segments and re-allocate service from low-demand routes to those with higher potential ridership.
- e) Restructure routes to accommodate new travel patterns or to improve efficiency by:
  - avoiding circuitous routes;
  - consolidating routes; and
  - eliminating transfers.

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### Scheduling and Frequency

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#### Planning Scale

 Municipal

- f) Develop bus schedules that correspond to ridership trends, considering peak hours and off-peak times, to ensure riders can access bus services when they need them most.
- g) Ensure that buses are scheduled to a level of frequency that can meet ridership demand, while balancing operational and staffing costs sufficiently, to minimize elongated wait times for riders between scheduled services.



Figure CS  
Regional Bus Service

GO Transit bus at Richmond Hill Centre Terminal.



Figure CT  
Articulated Bus

Articulated OC Transpo bus increases service capacity.

**Applicable Context**

Innovation and Accessibility

Planning Scale

-  Regional
-  Municipal

- h) Consider testing potential route shifts from bus to BRT, LRT or other higher order transit by using a platoon operation of buses with connected vehicle technologies. Platoon buses in diamond lanes could provide significant capacity increases without high labour and infrastructure costs.
- i) Equip buses with Vehicle-to-Vehicle (V2V) communication systems that enable real-time data sharing between platooning buses. This will allow the lead bus to control acceleration, deceleration, and braking for the following buses, ensuring safe and synchronized movement.
- j) Equip buses with colour-coded or reactive lighting that matches route information in printed materials and signage at stops. This allows visually impaired or inexperienced riders to easily identify the correct bus. Reactive smart lighting processes can also be implemented to support boarding and alighting, stop requests and priority seating, among others.





**Additional Resources**

- [Bus Innovation Playbook for City Leaders, National League of Cities \(2022\)](#)
- [The Official Ministry of Transportation Bus Handbook, Ministry of Transportation of Ontario \(2021\)](#)

## 4.1.6 Zero Emission Buses

The adoption of Zero Emission Buses (ZEBs) is growing among many transit systems across Ontario. Significant support from the government in the form of capital funding, as well as net zero emission mandates have accelerated this growth, requiring transit agencies and organizations to consider the range of operational requirements associated with these technologies.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City<br> Large<br> Medium<br> Small |  Municipal | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |

The growing adoption of ZEBs has resulted in a number of significant operational changes that must be considered beyond those involved in the operation of conventional buses.

ZEBs require regular charging or refuelling to ensure continued service and optimal battery life. Different vehicle types can have significantly different ranges, meaning vehicle charging may have to occur more or less frequently depending on their use and route lengths.

Hydrogen Fuel Cell (HFC) propulsion is also an emerging zero emissions vehicle technology used in Fuel Cell Buses (FCBs). Although FCBs do not require charging technology like battery electric vehicles, FCBs do require fueling stations and hydrogen to be transported and stored on-site.

ZEB vehicles have different capacity needs. As such, charging, refuelling, and maintenance plans require technology-specific procedures that operators and agencies must include in fleet transition plans.

Other operational considerations include potential adjustments to bus routes to account for range and charging / refuelling needs, infrastructural and facility requirements, electrical requirements, operational procedures for vehicle operators, maintenance and staffing, among others.



Figure CU  
Zero Emission Buses

Fully electric, zero emission OC Transpo & Kingston Transit buses.

### Strategies

#### Planning

#### Applicable Context

#### Planning Scale

 Municipal

- a) Work with municipalities, manufacturers, and utility providers, and engage the public, to establish plans and investments for bus depot upgrades. Ensure these plans consider energy storage equipment, facility energy management systems, data collection tools, workforce development, and charging or refuelling infrastructure needed to enable fleet transitions.
- b) Ensure that transit operators are provided with a high level of vehicle training to understand differences in driving styles, efficient acceleration and driving techniques to support charge optimization, and assessments of battery capacity relative to route distances and runs.
- c) Conduct thorough operational assessments to understand battery charge in different operating temperatures and build these considerations into service plans accordingly to ensure transit service is not negatively impacted during winter months or in adverse weather conditions.
- d) Procure or update scheduling software that include an electrification module as a tool to assist schedulers to run various scenarios to determine the optimal charging strategy.

## Route Analysis and Adjustments

### Planning Scale

 Municipal

- e) Conduct route analysis to understand energy requirements, develop charging schedules and invest in additional charging infrastructure, as needed, along each route.
- f) Undertake analyses of routes that consider service schedules, traffic patterns, topography, typical peak and off-peak traffic conditions and other factors to understanding charging needs for different routes.
- g) Consider and account for how regular transit service may need to be adjusted to reflect charge / refuelling times and schedules for ZEBs, potentially by adjusting the number or frequency of buses that serve a particular route or adjusting layover times as needed to support regular service.

### Applicable Context

### Infrastructure / Facility Requirements

### Planning Scale

 Municipal

- h) Work with utility companies to ensure that demand changes and time of use rates are designed to reflect transit battery electric bus requirements.
- i) Work with ZEB manufacturers to determine the best charging / refuelling solution to meet current and forecasted fleet requirements, including assessments of required facility upgrades necessary to support fleet transition objectives.
- j) Invest in prewarming battery systems to increase battery ranges and use other heating or air conditioning systems, where available. Consider catenary charging infrastructure to offset heat or air conditioning-related range reductions.





## Additional Resources

- [Final Guidebook for Deploying Zero-Emission Transit Buses, TRP \(2020\)](#)
- [Electrical Utility Strategies for Transportation Electrification: Canadian Market Scan and North American Case Studies, CUTRIC \(2021\)](#)
- [Best Practices and Key Considerations for Transit Electrification, CUTRIC \(2022\)](#)
- [Canada's Zero-Emission Bus Landscape and Electrification Readiness, CUTRIC \(2022\)](#)
- [Transitioning to Zero-Emission Bus Operations: Considerations for Greening Transit, Momentum \(2023\)](#)
- [Guidebook for Deploying Battery Electric Buses, Federal Transit Administration \(2023\)](#)
- [Charging Forward: Urban Electric Mobility Toolkit, USDOT \(2023\)](#)

## 4.1.7 On-Demand / Demand-Responsive Transit Service

Provide demand-responsive transit services for people who cannot use conventional fixed-route, fixed-schedule transit or to serve areas where conventional transit cannot be efficiently provided.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |  Community |   |
|  Small    |   |   |
|  Remote   |   |   |

Demand-responsive transit refers to transit services with no formal designated routes or schedules. Instead, customers are picked up and dropped off at locations and times that are agreed upon by the customer and the transit agency. Transit providers may provide advance reservation for pick-ups and drop-offs (PUDO), regular pre-arranged trips (subscription service) or same-day requests for service. Flexible transit systems are a variation of demand-responsive systems, where a main route or series of stops is designated, but deviations are permitted to respond to customers' specific requests.

Demand-responsive and flexible transit may be more efficient alternatives where low population densities exist, or where trip-making is low during certain times. Demand-responsive service with fully accessible vehicles is essential to providing specialized transit for persons with disabilities and others who are not able to use conventional transit.

## Strategies

### Applicable Context

### Assessing Demand

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#### Planning Scale

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- Municipal
- Community

- a) Examine demographic and population characteristics, along with patterns of land use, to determine whether flexible or demand-responsive transit could be implemented to serve areas (or periods) with few trips, or riders with special mobility needs.
- b) Collect and monitor usage data and strategically adjust on-demand and point-to-point services towards scheduled services. Choose services that maintain use without over-providing services that create resistance to move to scheduled services.

### Enhancing Access

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#### Planning Scale

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- Municipal

- c) Integrate booking and payment of on-demand transit services with existing on-demand transit mobility applications, including mobility-as-a-service (MaaS) applications ([Subsection 3.3.3](#)).
- d) Consider launching subscription services such as vanpools or shuttle services for riders making trips on a regular schedule.
- e) Utilize advanced reservation systems to organize and cluster trips at certain times for cost efficiency.
- f) Improve the usability of flexible and demand-responsive transit services by considering:
  - expanding reservation hours, reducing required pre-booking time or allowing reservations for multiple trips;
  - introducing same-day service;
  - introducing online trip booking or improving telephone booking, (e.g., decrease call hold time);
  - developing an interactive telephone system; and
  - working with employers to match services with schedules.

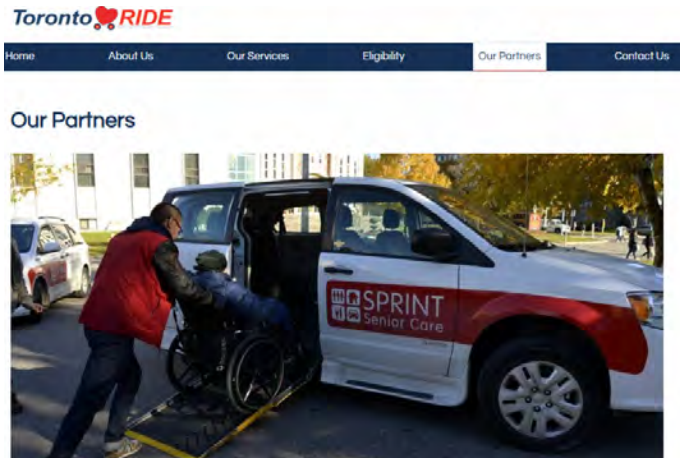


Figure CW  
**Toronto Ride Program Website**

Door-to-door transportation to seniors 55+ and adults with disabilities in the City of Toronto.



Figure CV  
**Regional On-Demand Transit Vehicle**

On-demand transit service provided by Oakville Transit.

**Applicable Context**

Planning Scale

 Municipal

**Community Outreach**

- g) Improve community access to information regarding on-demand / demand-responsive services by:
  - providing user-friendly online, telephone or newspaper information that provide general information, booking information, other service policies, etc;
  - providing real-time trip planning information and arrival times to customers and informing users of delays;
  - offering information and education programs in collaboration with health care providers, senior citizen facilities, social services agencies, shopping centres, etc.; and
  - posting information on Dial-a-Ride and contact phone numbers on bus stop signs and at transit stations.
- h) Enhance community outreach by providing forums for dialogue with the community and advocacy groups.

## Coordinating Service

### Planning Scale



Regional



Municipal

- i) Consider expanding the service area by improving inter-municipal trips and coordinating a common service policy, including harmonized hours, routes, transfer points and timing.
- j) Coordinate all public transportation services within a community to expand or provide more efficient transit service. This can include coordination between conventional or specialized transit systems; long-term care agencies; social service agencies; hospitals, ambulance and patient transfer operators; school boards and school bus companies; intercity bus companies; taxi operators; and volunteer groups.
- k) Tailor the level of coordination between agencies to local conditions. Coordination may include sharing public information or referrals, joint acquisition and sharing of supplies and services, use of excess capacity, joint use of resources, and centralized services for intake and dispatch.

### Applicable Context

## Accessible On-Demand Transit

### Planning Scale



Municipal

- l) Provide on-demand paratransit service for persons with disabilities that are unable to use conventional transit. On-demand transit services can be provided to individuals with disabilities by:
  - establishing a program where persons with disabilities can register for paratransit services;
  - providing a customer service platform for paratransit services with options that allow persons with a range of abilities to book, cancel, and track trips in advance;
  - allowing account-based fare systems to link registration for paratransit services to a rider's account; and
  - ensuring adequate time is allotted for the coordination of specialized transportation services between adjacent municipalities to facilitate transfers at stops and drop off locations, with consideration for the transit providers' hours of service.

## Applicable Sections

3.3.3

## Additional Resources







- [On-Demand Transit Toolkit: A Resource Guide for Service Implementation, Metrolinx & CUTA. \(2022\).](#)
- [Toolkit for Integrating Non-Dedicated Vehicles in Paratransit Service, Transit Cooperative Research Program](#)
- [Guidebook for Rural Demand-Response Transportation: Measuring, Assessing, and Improving Performance, Transit Cooperative Research Program](#)
- [A Guide for Planning and Operating Flexible Public Transportation Services, Transit Cooperative Research Program](#)

## 4.1.8 Ferry Service

Provide frequent and reliable ferry services as a critical transit service for island communities and to support regional tourism, transit efficiency and economic viability and promoting multimodal connections at ferry terminals.

### Applicable Context

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| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Municipal | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |   |   |
|  Medium   |   |   |
|  Small    |   |   |
|  Remote   |   |   |

Passenger ferry services are a critical transportation service for numerous communities in Ontario. Ferry service levels are impacted by seasonality, the frequency of service and the capacity of the vessels. This can affect the reliability of ferry service as a viable transit option for many who depend on these services.

Ferry terminals are a unique type of public transit station that are designed to enable passengers and vehicles to board and proceed from the ferry vessel. Ferry terminal layouts can vary based on the size of the ferry vessels that service it. However, terminal layouts should be designed to support convenience and ease of travel for both passengers and vehicles, adopting many of the same design principles that would be employed in a typical public transit facility.

**Strategies**

Planning & Operational Processes

**Applicable Context**

Planning Scale

 Municipal

- a) Develop operational processes that advance transit-supportive objectives, such as transit integration, increasing multimodality and integrated fare systems for uses at ferry terminals and when accessing ferry services.
- b) Coordinate ferry schedules with buses, trains, and other transit services to create seamless, multimodal connections. This helps reduce transfer times and improves the overall passenger experience.
- c) Adopt flexible or dynamic ferry scheduling that adjusts based on real-time conditions, such as weather, demand, or seasonal variations. This allows transit agencies to scale operations up or down as needed.
- d) Real time monitoring systems, such as global positioning systems (GPS), automated tracking, and passenger apps can be used to get live update on ferry operations. Providing passengers with real-time updates on ferry arrivals and departures can improve their experience and manage expectations.
- e) Involve local communities, stakeholders, and passengers in the operational planning process through surveys or focus groups. Their feedback can guide improvements to service schedules, routes, and facilities.
- f) Create operational efficiencies for passenger loading and unloading by implementing automated fare collection, prioritizing boarding and alighting for non-auto and transit passengers, and designing infrastructure that separates auto and non-auto passenger flows.
- g) Implement dedicated docking slots, priority lanes, and signal priority to reduce ferry delays and streamline access to terminals and congested waterways.
- h) Optimize scheduling, boarding, and coordination with other transit modes to enhance the efficiency of ferry operations and minimize passenger wait times.

- i) Consider the use of demand-based approaches or using smaller alternate vessels during times of reduced demand.

### Mode Shift

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#### Planning Scale

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Municipal

- j) Support multimodal connections at ferry terminals to enable passengers to travel to and from ferries on public transit or by active modes.
- k) Partner with municipalities, transit agencies and community organizations to improve first-mile last-mile connections to and from ferry terminals.
- l) Synchronize ferry schedules with transit schedules to increase transit connections to and from ferry terminals.

#### Applicable Context

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#### Planning Scale

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Municipal

### Technology

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- m) Install real-time equipment on ferry vessels and at ferry terminals to improve real-time data monitoring and updates for connecting passengers and transit schedule updates.
- n) Replace existing fare systems for ferries with cloud-based, mobile ticketing solutions and / or integrate ferry fare payment with the regional public transit fare payment system.
- o) Include ferries in customer mobile apps, validating mobile apps (for staff to validate tickets), and a back-office system (hosted environment or as a Software-as-a-Service (SaaS)).

### Additional Resources

- [Ferry Services, Province of Ontario](#)
- [BC Ferries Performance and Sustainability Report, 2022-2023, BC Ferries \(2023\)](#)
- [BC Ferries' Journey Towards Sustainability, BC Ferries](#)
- [Best Practices for the Transport of Electric Vehicles on Board Vessels, American Bureau of Shipping \(2022\)](#)










Figure CX  
Kingston Ferry Terminal

## 4.1.9 Transit Travel Time

Minimize the impacts of travel delays by implementing transit priority measures, more efficient boarding procedures, and computer-aided dispatching.

### Applicable Context

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| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), MaaS Companies |
|  Large    |  Municipal |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

Efficient and reliable transit service and travel times are key determinant to the attractiveness of transit and the ridership experience. Congestion, variable dwell times and unexpected incidents can cause transit travel times to be slow and unpredictable, making transit less attractive to travellers. Vehicles that travel in (or cross through) mixed traffic, such as buses, BRT, LRT or streetcars, are susceptible to these delays. Strategies should be implemented to ensure transit travel times are optimized and common issues such as delayed vehicle dwell times, bunching of vehicles and delays related to payment do not impact the overall rider experience.

## Strategies

### Planning

#### Applicable Context

##### Planning Scale

 Regional

 Municipal

- a) Adopt or implement transit priority measures, such as transit signal priority, queue jump priority for transit vehicles, dedicated or flexible bus lanes, among others, to support the efficient movement of surface transit to and from the station area.
- b) Develop a transit priority program within transit station and mobility hub master plans, outlining locations for physical and/ or signal priority.
- c) Require developments with significant traffic impacts to contribute funds to transit agencies or municipalities for transit priority improvements.
- d) When determining new road rights-of-way, reserve space for future dedicated transit lanes along identified corridors within road rights-of-way or through easements on front properties.

### Transit Priority in Mixed Traffic

##### Planning Scale

 Regional

 Municipal

- e) Install transit priority signals along main transit corridors that extend green times or reduce red times at intersections where transit is often delayed by vehicle congestion.
- f) Construct queue jump lanes with signal priority at major intersections with significant congestion and at station access points to speed up access into and out of stations.
- g) Provide dedicated transit lanes when warranted by passenger volumes or traffic conditions.
- h) Implement dedicated lanes and high occupancy vehicle (HOV) lanes to give transit vehicles a clear route to bypass congestion. If a continuous dedicated lane is not available, right-turn lanes may be used as queue jump lanes for buses, so that they may reach intersections or bus stops more quickly. Buses in queue jump lanes should be provided a priority signal to proceed ahead of the regular traffic stream.
- i) Consider setting signal timing plans to suit transit schedules and travel speeds. This strategy is referred to as "passive signal priority".
- j) Consider the implementation of active signal priority, where traffic signals are activated by a street-located sensor or by an in-vehicle transmitter. Priority logic may consider transit vehicle schedule adherence, for example, providing priority only for transit vehicles that are behind schedule. It may also be implemented only at

certain times or for certain routes, such as express routes. Signal timing plans may also be optimized to consider real-time general traffic conditions.

**Applicable Context**

**Boarding Efficiency**

Planning Scale



Regional



Municipal

- k) Enable passengers to board and alight through multiple doors to shorten passenger boarding times. To enable this, a proof-of-payment system must be in place so that the driver is not required to collect and inspect fares, transfers and passes for users that enter through rear doors.
- l) Improve boarding efficiency by implementing electronic fare payment (EFP) systems, which reduce fare handling requirements of the driver. EFP can also reduce opportunities for fare evasion by providing automated payment verification and alerting drivers (typically through aural indicators) if fare has not been paid.
- m) Consider using low-floor vehicles to reduce dwell and travel times by enabling passengers to board more quickly.
- n) Consider implementing precision docking technology to enable vehicles to align themselves in the correct position at stops and stations. The vehicle doors will open at the same place every time, so passengers can align themselves correctly and thus speed up boarding. At stations with platforms, a level, gap-free alignment will allow for direct wheelchair access from the loading platform (without a ramp).
- o) Increase the distance between stops by consolidating stops or providing limited-stop or express service to increase bus travel speeds, where appropriate. Stop consolidation may also improve passenger comfort by reducing the amount of acceleration and deceleration required. This strategy should be balanced against longer travel distances to stops, as well as longer dwell times resulting from more passengers boarding and alighting at each stop. Locating bus stops at the far side of the intersection allows buses to move through a green signal, speeding up travel time.

**Applicable Context**

**Responding to Delays**

Planning Scale



Regional



Municipal

- p) Consider using a computer-aided dispatch (CAD) system with automatic vehicle location (AVL) to enable dispatchers and supervisors to monitor and respond to delays, improving schedule adherence, and protecting transit connections.



Figure CY  
**Multiple-Door Boarding**

Multiple-door boarding found in proof-of-payment systems allows for quicker boarding times.



Figure CZ  
**Pre-pay Boarding Facilities**

Pre-pay boarding facilities at the Beckenham Junction tramstop in London can greatly shorten boarding time for passengers.



Figure DA  
**Tap on Fare Payment & Transfer**

Tap on fare payment and transfer on TTC streetcar, including Presto, credit and debit payment.

### Applicable Sections

3.1

3.2

### Additional Resources





- Traveler Response to System Changes – Chapter 2, Transit Cooperative Research Program
- [Transit Priority Toolkit, TransLink](#)

## 4.1.10 Winter Conditions Operations

Adjust regular transit operations during winter months to focus on how best to enhance safety, customer comfort, transit travel time and reliability in response to winter weather conditions.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Municipal | Regions, Municipalities, Indigenous Communities, Land Use Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs) |
|  Large    |  Community |  |
|  Medium   |  Site      |  |
|  Small    |   |  |
|  Remote   |   |  |

Providing transit services, and bus service in particular, safely, and efficiently for all users during the winter months requires careful planning, proactive scheduling and maintenance, and flexibility to adapt to changing and often unpredictable weather conditions. Winter conditions present challenges for regular transit service, particularly in the face of large snowfalls or icy road conditions, slower than usual traffic flow due to increased driving caution among other road users, and the need to provide places for transit riders to keep warm while they wait for their bus. Many riders depend on transit service despite the weather, meaning operating transit services in ways that are adaptable to harsh weather is critical.

## Strategies

### Applicable Context

#### Planning and Scheduling

Planning Scale

-  Municipal
-  Community

- a) Implement flexible scheduling during severe weather events to accommodate changing conditions. Where appropriate, adjust service frequencies and routes based on demand and road conditions.
- b) Consider deploying smaller shuttle services in areas where larger transit vehicles, such as buses, may struggle with severe road conditions caused by winter weather.

#### Passenger Waiting Areas

Planning Scale

-  Site

- c) Where possible, provide heated sheltered areas for passengers waiting for transit vehicles.

#### Preventative Maintenance

Planning Scale

-  Municipal

- d) Develop a comprehensive snow removal plan for transit routes, stops and stations, prioritizing high-traffic areas and critical transit corridors to ensure buses can operate safely.
- e) Run overnight storm trains and streetcars to keep the power rail and tracks clear of snow and ice.
- f) Store transit vehicles in sheltered areas (bus depots, subway tunnels, transit stations) to avoid potential snow blockages at rail yards.
- g) Spray anti-icing on the overheard LRT networks, and on the ground at all bus, LRT and subway divisions, to ensure safe operation of transit vehicles.

#### Communications

Planning Scale

-  Municipal
-  Site

- h) Provide physical winter weather information signage at transit stations and transit stops where heavy snow, freezing weather or ice are known to impact bus services. Include additional information, where applicable, on alternate transit services or route alternations.
- i) Consider the use of QR codes that can be printed on physical signage at transit stops, allowing customers to scan them and receive service updates, route alterations or cancellations, and/or the location(s) of the nearest in-service bus stop.

- j) Issue web updates, mobile application notifications, or other digital information updates on anticipated route closures or adjustments to accommodate adverse weather conditions.
- k) Communicate with specialized transit customers to alert them of a severe weather advisory and permit them to cancel trips, if necessary, without any deductions / fees for trip cancellations.


**Applicable Context**

Facility Management

---

Planning Scale

---

 Site

- l) Ensure transit station entrances, transit stops and other areas where passengers may wait for a transit vehicle are shovelled following a heavy snowfall. Spread salt and other anti-icing products in the entrances of transit stations and stops to support safe customer entry.

**Additional Resources**

- [Case Study: Leduc Transit](#)
- [OC Explained: Winter Operations, OC Transpo.](#)
- [Public Works Winter Maintenance Policy, City of Kingston.](#)



Figure DB  
TTC 510 Spadina Streetcar

## 4.1.11 Rural & Remote Transit Operations

Operate efficient and cost-effective rural transit services that enable users to access key local destinations, while exploring new transit service delivery models to address operational constraints.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Remote |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Indigenous Communities, Community Groups |
|  |  Municipal |  |
|  |  Site      |  |

Operating rural and remote transit systems presents unique challenges, broadly revolving around issues related to operational costs, infrastructure, staffing and low, and often dispersed population densities across large transit service areas.

Sparse population densities that are typical of rural and remote communities can make it difficult to justify the cost-effectiveness of transit service, particularly when coupled with low levels of ridership. As a result, finding ways to optimize routes and schedules to serve the most people while minimizing costs becomes crucial. In light of this challenge, many rural and remote communities have begun to explore microtransit alternatives to the conventional transit model, which involves the deployment of demand-responsive buses or vans that provide transit services that are more flexible, efficient and responsive to demand.

A key challenge for rural and remote transit operations is finding the right balance in the delivery of transit service and the operational costs required to provide it, as lower revenue generated and limited government funding are issues faced in sustaining rural transit operations. A number of key strategies can be considered to strike this balance, and to effectively and sustainably operate transit services on which many rural and remote communities are dependent.

## Strategies

### Applicable Context

### Planning

#### Planning Scale

 Regional

 Municipal


- a) Undertake a review of rural and remote transit routes, ridership levels, key trip generators and current and emerging key destinations within service areas. Leverage this analysis and data to support transit route optimization and operational efficiencies.
- b) Undertake an analysis of current rural and remote transit operations to identify operational issues and subsequent needs of the system for improvement. Focus on broad operational factors such as route planning, scheduling and dispatch, administrative processes, and fleet management.
- c) Assess ridership demand to support operational planning and ensure that equitable access to transit becomes a priority. This is particularly important for vulnerable populations such as the elderly, disabled, or low-income individuals who may rely heavily on these services for essential trips like medical appointments or grocery shopping ([Subsection 3.1.6](#)).
- d) Undertake promotional and educational campaigns to inform residents about available rural and remote transit services. Campaigns should aim to increase transit ridership, solicit feedback to improve service quality, and foster a sense of ownership and pride in the transit system to support continued investment in rural transportation infrastructure.
- e) Assess partnerships with neighbouring communities to share or contract transit operations and vehicles. Explore opportunities to coordinate community transportation assets such as services offered by hospitals, social agencies and volunteer organizations to provide more integrated and cost-effective services.

### Technology & Infrastructure

#### Planning Scale

 Regional

 Municipal

 Site

- f) Consider the procurement or upgrading of existing ITS and other transit operations software products to optimize transit operations, such as the scheduling and dispatching of trips. While the upfront costs of procuring new transit operations software may be high, consider the long-term benefits and cost savings that new technologies may generate.

- g) Consider exploring opportunities to convert rural transit stations and stops into connection points for other shared mobility options, including rideshare, shared micromobility, on-demand and microtransit. Additionally, include secure bicycle parking and amenities such as charging infrastructure (for personal devices and vehicles), seating and sheltered areas, as appropriate.

## Applicable Context

### Planning Scale

 Regional

 Municipal

## Alternative Transit Service Delivery Models

- h) Consider the use of varying vehicle sizes to better align with ridership and demand for services in rural or remote areas.
- i) Explore ways to implement microtransit services in place of, or in addition to, conventional transit services, that use varying vehicle sizes to better align with ridership and demand for services. This can serve as a more flexible and adaptive on-demand option for rural and remote transit riders that may optimize service and facilitate operational cost savings.
- j) Consider forging partnerships to enable the operation of alternative transit vehicles, such as school buses outside of school hours, vans, minibuses and taxis, to deliver transit services in place of conventional bus vehicles.
- k) Coordinate transit services with other transportation network companies or service providers, such as ridesharing companies or regional transit agencies, to fill gaps in coverage and improve connectivity for riders

## Partnerships & Funding

### Planning Scale

 Regional

 Municipal

- l) Work with local governments, community organizations, businesses, and other stakeholders to help identify needs, leverage resources, and develop innovative solutions to address transportation challenges in rural and remote areas.
- m) Work with local governments, community organizations, local transportation planners and councilors to identify and pursue municipal, provincial and federal funding sources and grants to support rural and remote transit initiatives.

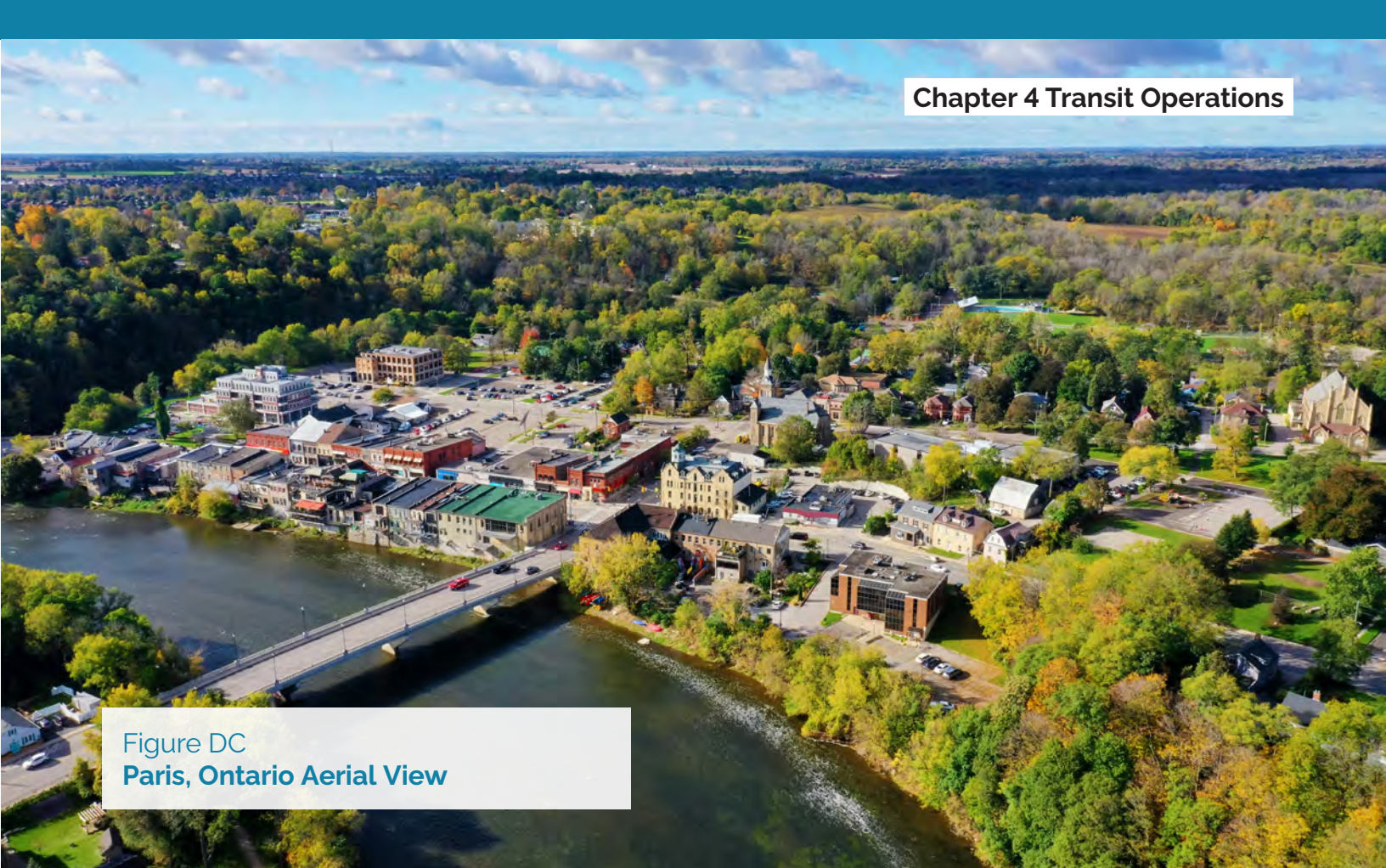


Figure DC  
Paris, Ontario Aerial View

## Applicable Sections

2.1.1 3.1.6




## Additional Resources

- [Transit Manager's Toolkit, National Rural Transit Assistance Program](#)
- [Transit Asset Management, National Rural Transit Assistance Program](#)
- [Rural Recognition: Affordable and Safe Transportation Options for Remote Communities, Institute for Research on Public Policy, \(2024\)](#)
- [Rural Transit, Rural Ontario Institute](#)
- [Rural Transportation Issues and Strategies, Monieson Centre](#)
- [Rural Transportation Management: Improving Transportation Efficiency and Diversity in Rural Areas, Victoria Transportation Policy Institute \(2019\)](#)
- [Rural Transit Solutions Fund: Overview, Government of Canada](#)

## 4.1.12 First Nations Transit Operations

Guide the development and operation of transit services that enhance mobility and connectivity considering the specific needs of First Nations communities.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Indigenous Communities, Community Groups |
|  Large    |  Municipal |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

Many First Nations communities in Ontario are in rural, northern and remote areas with limited transportation options to get to nearby cities and towns. First Nations communities often depend on private vehicles for transportation and lack access to transit options. Those without access to private vehicles or who are unable to drive are isolated from essential services, unable to travel with ease within their own community or visit nearby communities.

First Nations communities can plan and implement strategies to develop transit services appropriate to the scale of their community and the needs of their members. This can include partnering with local municipalities and transit agencies to share services or pursue funding and other mechanisms to develop Indigenous transit services and enhance mobility options for community members.

Transit operators who are looking to provide support and connectivity with First Nations transit operations should seek opportunities to provide operational and financial support to enhance transit access to and from communities. Collaboration and ongoing dialogue are essential to understand the true needs of communities ([Subsection 5.1.2](#)).

In addition to the guidelines and strategies provided in [Subsection 4.1.11](#) Rural & Remote Transit Operations, the following strategies may be utilized within First Nations communities.

## Strategies

### Applicable Context

### Community Engagement & Workforce Development

#### Planning Scale

 Regional

 Municipal

- a) Engage with community members in the planning process for public transit initiatives to identify preferences and opportunities related to public transit offerings, including type of service, frequency of service and routes. Consider the use of community meetings, surveys or workshops to collaborate on a transit vision or ways to improve existing services.
- b) Support workforce and skills development and training for the operation and maintenance of transit vehicles, including buses, shuttles and vans, the use of transit-related software and route planning, and fuel handling.

### Funding & Program Development

#### Planning Scale

 Regional

 Municipal

- c) Work with local governments to facilitate access to municipal, provincial and federal government funding opportunities.
- d) Consider and explore funding opportunities and community-owned or cooperative models to purchase vehicles or finance transportation initiatives to help community members (both on and off-reserve) to access programs and services.
- e) Explore partnerships with private companies or not-for-profit organizations that have experience working with First Nations communities. These partnerships may support the development of transit and mobility programs for community members, or the development of transportation programs/plans.
- f) Develop community-oriented transit programs, such as coupon-based programs, on-demand transit services, or seniors and paratransit services. Deliver these programs through available funding sources and/or through partnerships with other First Nations communities, existing transportation providers, or other rural transit systems in adjacent communities.

## Applicable Context

## Monitoring & Reviewing Service

---

### Planning Scale

 Regional

 Municipal

- g) Conduct travel analyses of the typical transportation trips, gaps, barriers and opportunities experienced by community members that live on reserve.
- h) Establish a regular maintenance program for vehicles and undertake a review of existing transportation assets within the community, such as bus stops, shelters and street lighting. Leverage funding avenues to make repairs and refurbishments, as needed.

## Applicable Sections

4.1.11

5.1.2

## Additional Resources

- [Available Funding Opportunities From the Ontario Government, Government of Ontario \(2025\)](#)
- [Ontario Transit Investment Fund \(OTIF\), Government of Ontario \(2024\)](#)
- [Indigenous Transportation Initiatives Fund, 2024-2025, Government of Ontario \(2024\)](#)
- [Indigenous Community Infrastructure Fund, Government of Canada](#)

## 4.2 Transit Planning & Performance Monitoring

The efficient operation and planning of transit are essential to influencing user behaviour and ensuring the ridership exists to support new routes. Transit planning can be supported by several emerging technologies that can assist in monitoring performance to uphold the efficiency and service quality of transit, The following topics will provide strategies for effective transit planning and monitoring:

- 4.2.1 Fleet Management & Transit Scheduling ..... 239
- 4.2.2 Performance Monitoring & Evaluation ..... 243
- 4.2.3 Data Collection & Analysis ..... 247
- 4.2.4 Safety & Security ..... 250
- 4.2.5 New Technologies ..... 256
- 4.2.6 Asset Management ..... 260

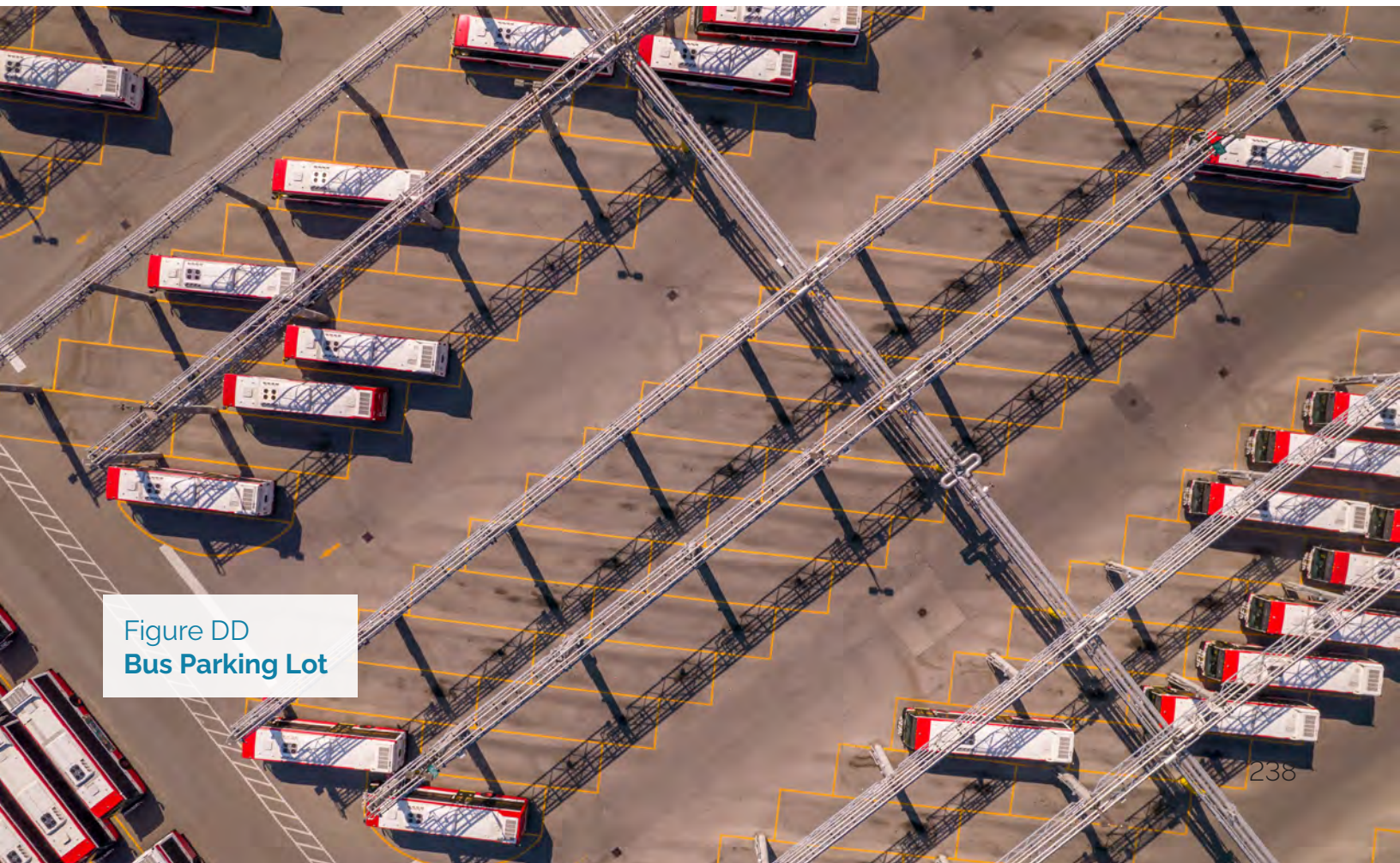


Figure DD  
Bus Parking Lot

## 4.2.1 Fleet Management & Transit Scheduling

Schedule vehicles to provide frequent service that meets local demand, minimizes passenger transfer waiting times and reduces overcrowding.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Province, Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Urban Designers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Community Groups, MaaS Companies |
|  Large    |  Municipal |   |
|  Medium   |   |   |
|  Small    |   |   |
|  Remote   |   |   |

Transit scheduling can have a significant impact on the level of convenience and comfort experienced by travellers, minimizing wait times and reducing crowding on local services.

Timely and comfortable service with minimal transfers is critical to attracting and retaining riders. Scheduling frequent service during periods of high demand and minimizing transfer waiting time are important strategies for increasing transit ridership. Higher-frequency service can also result in increased vehicle capacity, increasing passenger comfort on crowded routes.



Figure DE  
Union Station GO Trains

## Strategies

### Applicable Context

### Service Level Targets

---

#### Planning Scale

 Regional

 Municipal

- a) Establish service level targets to define maximum vehicle ridership loads, wait times and transfer wait times. Different targets may be set for different vehicle types, geographic areas, seasons or times of day (peak or off-peak). They should reflect the transit agency's ridership growth plan, as well as the service goals outlined in regional and municipal transportation master plans.

---

### Expanding Service

---

#### Planning Scale

 Regional

 Municipal

- b) Increase service frequency or vehicle capacity (30-foot to 40-foot or articulated vehicles) if passenger counts exceed the transit agency's established maximum acceptable capacity. Capacity may be measured in terms of average number of customers on-board or percentage of seated capacity at the busiest period.
- c) Avoid bus bunching by considering the implementation of automatic vehicle location or conditional signal control and other transit priority measures [\(Section 4.1\)](#), especially when increasing service frequencies on routes with congestion or poor road conditions.
- d) Extend or increase service in the evenings to boost ridership during the daytime by capturing trips that start during the day, but return late in the evening.

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### Facilitating Transfers

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#### Planning Scale

 Regional

 Municipal

- e) Coordinate services and timetables between operators' connecting routes when regular service changes are planned.
- f) Focus coordination efforts on routes that are most heavily used and where transfers are common, when coordinating multiple services at a transit station or mobility hub. Arrival of the first service should occur within 10 minutes or less of the departure of the connecting service, while still allowing enough time for passengers to transfer and accommodating late-running vehicles.
- g) Schedule connections for services with high regular demand and that serve a key destination with wait times of 5 minutes or less between the first service and the connecting service.

**Applicable Context**

Service Review

Planning Scale

 Regional

 Municipal

- h) Develop a regular program of route reviews to evaluate a route's service quality and set targets for service levels, frequency, overcrowding and transfer wait times.
- i) Compare performance data and observations to established service levels. Connection wait time data may be obtained from electronic fare payment (EFP) systems, while ridership load data for routes and route segments may be obtained from:
  - manual or automated passenger counts;
  - EFP systems;
  - passenger surveys;
  - observations from operating staff; and
  - customer complaints and suggestions.

Reducing Service

Planning Scale

 Regional

 Municipal

- j) Decrease frequency or vehicle capacity, and invest operating savings on other routes in need of service improvements if demand does not support the minimum frequency. However, transit systems should be aware that reducing service frequency may further reduce ridership. To maintain ridership, operators should set a minimum frequency standard for routes, regardless of demand.
- k) Evaluate service changes regularly to ensure there is customer benefit. Recognize that customers perceive each component of a transit trip differently, so not all improvements are equally beneficial. For example, time spent waiting at a stop is considered more onerous than time spent on a moving vehicle

**Applicable Sections**

4.1

**Additional Resources**


- [The Complete Guide to Fleet Management, Geotab \(2023\)](#)
- [Transit Fleet Management, USDOT](#)

## 4.2.2 Performance Monitoring & Evaluation

Implement a performance monitoring plan to review trends and progress in achieving ridership and service targets and develop a plan for meeting new targets.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), Indigenous Communities, Community Groups |
|  Large    |  Municipal |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

A performance monitoring plan establishes the measures for assessing achievement of ridership and service quality targets and is essential for creating service plans that guide transit systems toward achieving their goals.

Performance monitoring allows transit systems to determine whether they are meeting their targets, allowing them to improve service efficiency, availability, comfort and convenience. The vision and goals of transit projects are transformed into specific performance measures, followed by a systematic data collection program to support these measures, aiding in both planning and monitoring efforts. Planning and design through analytical tools will define transit investment programming and trade-off analyses in alignment with the vision and goals. Finally, the system is continuously monitored to assess whether the targets are being met, providing valuable feedback for ongoing improvements. This comprehensive approach ensures that transit systems can effectively track their progress, identify areas for improvement, and develop strategies to enhance service quality and ridership.

## Strategies

### Applicable Context

### Performance and Monitoring Plan Development

#### Planning Scale

 Regional

 Municipal

- a) Use performance measures to assist in decision-making. Based on the trends revealed by the measures, the effectiveness of different strategies in meeting ridership and service targets can be evaluated and new strategies can be designed.
- b) Select performance measures or indicators that will demonstrate progress in meeting the defined targets and are adapted to the needs of different users. The Ontario Guide to Preparing a Ridership Growth Plan and the Canadian Urban Transit Association (CUTA) provide lists of possible performance indicators for both conventional and specialized transit services. Quantifiable measures are desirable, if possible, but should be supplemented with qualitative or descriptive measures to get a deeper understanding of rider (and non-rider) sentiment and travel needs.
- c) Identify who will use the performance measures and the users' needs to better understand how performance data will be used. For example, measures may be used by financial management to determine budgets and expenditures, by operational staff to monitor and improve service, or by transit marketing staff to establish promotional materials and campaigns.

### Planning and Goal Setting

#### Planning Scale

 Regional

 Municipal

- d) Develop performance measures to evaluate and monitor implementation processes for transit and transit-supportive projects that are connected to pre-established phasing strategies.
- e) Adopt road and transit network performance measures to evaluate the progress and quality of transportation network investments.
- f) Introduce and evaluate the performance of pedestrian and cycling networks based on different performance indicators, such as mode share, pedestrian infrastructure, cycling infrastructure, safety, security, equity and access.
- g) Set agency goals for the transit system, defining what the agency wants to achieve over a specific time period. Goals may be related to ridership growth, modal share, system capacity, service reliability, service comfort, universal access or farebox revenues. Goals should be based on the agency's ridership growth plan, as well as other relevant plans, such as official plans, transportation master plans or plans to achieve universal accessibility.

- h) Establish annual plans and targets and a program of improvements that will help the transit agency realize its long-term goals.

**Applicable Context**

Data Collection

Planning Scale

 Regional

 Municipal

- i) Select performance measures aligned with the agency's capacity to collect and analyze data, using SMART criteria (Simple, Measurable, Achievable, Relevant, Time-bound) to ensure realistic, useful measures that can be tracked regularly.

Performance Measures

Planning Scale

 Regional

 Municipal

- j) Use performance measures to assist in decision-making. Based on the trends revealed by the measures, the effectiveness of different strategies in meeting ridership and service targets can be evaluated and new strategies can be designed.
- k) Select performance measures or key performance indicators (KPIs) that will demonstrate progress in meeting the defined targets and are adapted to the needs of different users including marginalized communities ([Subsection 3.1.6](#)). Some examples performance indicators for both conventional and specialized transit services include:
  - ridership and service targets;
  - quality of service;
  - user satisfaction;
  - operational efficiency;
  - safety and security;
  - on-time performance;
  - environmental impact; and
  - infrastructure condition for service comfort and safety.

Quantifiable measures are desirable, but should be supplemented with qualitative or descriptive measures to get a deeper understanding of rider (and non-rider) sentiment and travel needs.

- l) Identify who will use the performance measures and the users' needs to better understand how performance data will be used.
- m) Consider aligning performance measures with other providers in the province to facilitate broader regional and provincial analysis.

**Additional Resources**

- [Performance Monitoring and Evaluation Framework, TransLink](#)
- [Management and Use of Data for Transportation Performance Management: Guide for Practitioners, National Academies Press \(2019\)](#)

| And...                  | Quality of Service |      |       |      |        |       |      |       |      |        |
|-------------------------|--------------------|------|-------|------|--------|-------|------|-------|------|--------|
|                         | 2005               |      |       |      |        | 2007  |      |       |      |        |
|                         | HOURS              | FREQ | SPEED | LOAD | RELIAB | HOURS | FREQ | SPEED | LOAD | RELIAB |
| Northgate LRT           | 1                  | 2    | 2     | -3   | -9     | 1     | 2    | -3    | -9   | -9     |
| 45th St                 | 1                  | 1    | 1     | 3    | -6     | -6    | 1    | 2     | -9   | 1      |
| 85th St                 | 1                  | 1    | 1     | 3    | 1      | -9    | 1    | -9    | 1    | 2      |
| 145th St                | 1                  | 1    | 1     | -3   | 1      | 1     | 1    | -3    | 1    | -9     |
| Roosevelt LRT           | -3                 | 1    | -3    | -3   | -6     | -3    | 1    | -6    | -9   | -9     |
| 145th St                | -6                 | -6   | 1     | 2    | -3     | -6    | -6   | -6    | -3   | -9     |
| Fremont Bridge          | -3                 | 1    | 1     | 3    | -6     | -9    | 1    | -6    | -3   | -9     |
| Nickerson               | 1                  | 2    | 1     | -3   | -3     | 2     | 2    | 2     | -3   | 1      |
| University Dist.        | 1                  | 1    | -6    | -9   | -9     | 2     | 1    | -9    | 1    | -9     |
| University Dist.        |                    |      |       |      |        | -9    | -9   | -9    | 2    | -9     |
| Northgate Wy            | -6                 | -3   | 2     | 3    | 2      | -6    | -3   | 2     | 1    | 2      |
| Meridian & Northgate Wy | 1                  | 1    | 2     | 3    | 3      | -9    | 1    | -3    | 3    | 3      |
| University Dist.        | -3                 | 1    | 1     | -9   | -9     | -3    | 1    | 1     | -9   | -9     |
| NE 40th                 |                    |      |       |      |        | -9    | 2    | -9    | -3   | 1      |
| 1st Ave NE              | -6                 | -6   | 1     | 1    | 1      | -9    | -6   | 1     | 1    | -9     |
| Northgate LRT           | 1                  | 1    | 2     | 1    | -9     | -9    | 1    | 2     | -6   | -9     |
| Roosevelt LRT           | 1                  | 1    | 1     | -6   | -9     | 1     | 1    | 1     | -6   | -6     |
| 145th St                | 1                  | 1    | 1     | 1    | 1      | 1     | 1    | -6    | -6   | -9     |
| NE 65th St              | 1                  | 1    | 1     | -9   | 3      | 1     | 1    | 1     | -9   | 2      |
| 145th St                | -3                 | -3   | 1     | -9   | -3     | -3    | -3   | 1     | -9   | -9     |
| Northgate Wy            | -3                 | 1    | 1     | -9   | 2      | -3    | 1    | 1     | -9   | -3     |
| NE 45th St              | -6                 | -3   | -6    | -9   | -9     | -9    | 1    | 1     | 3    | 1      |

**Figure DF**  
**Transit Service Performance Data**

Seattle’s Urban Village Transit Network (UVTN) Report Card contains performance data on all classifications of UVTN corridors. The Report Card is updated every few years in order to see how they are achieving their goals. In this table highlighting levels of transit service, +3 represents “best performance” -9 represents “worst performance”.










**Figure DG**  
**Oakville Transit Annual Plans**

Oakville Transit develops Annual Plans that guide work for key projects and initiatives for the coming year. Key components of the plan are system review components (for example net cost per passenger, and demand capacity) and customer and stakeholder feedback

## 4.2.3 Data Collection & Analysis

Implement a data collection and analysis program to support planning and promotional activities.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), MaaS Companies |
|  Large    |  Municipal |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

A data collection and analysis program provides quantitative and qualitative measures needed for a transit agency's performance monitoring program. This information supports performance evaluation and the development of service improvement and promotional plans. Data can be collected through various means, with ITS being a valuable source. While ITS is often implemented for operations or fare payment, it can also support planning and performance monitoring. Another key resource is the Ontario Urban Transit Fact Book, which compiles operating data from across Ontario and can serve as the foundation for a performance monitoring program.

Where ITS is unavailable, ridership data can be obtained through manual counts or fare revenue analysis. Service quality information can be obtained through surveys, interviews, focus groups, consumer panels, operator observations, service audits or customer feedback.

## Strategies

### Applicable Context

### Determining Data Needs

#### Planning Scale

 Regional

 Municipal

- a) Determine agency data and analysis needs based on the applicable performance monitoring plan ([Subsection 4.2.2](#)), and the agency's ability and resources to collect and analyze the required data. Subsequently, determine technologies and methods to collect data. If the technology is not available, the costs and benefits of procurement should be weighed.
- b) Survey riders and the public to collect data and information on ridership demand, attitudes and quality of service. Attitude surveys determine the transit's service quality as experienced by riders. Ridership surveys can help determine trip characteristics, on time performance, or service delays.
- c) Utilize ITS data to enhance traditional market research methods, such as customer surveys, market surveys and focus groups. Passenger data from ITS technologies can be used to define sampling plans, establish sampling weights or expansion factors, determine the best time to sample, and identify times and locations for recruiting focus group participants.

### Ridership

#### Planning Scale

 Regional

 Municipal

- d) Determine a definition for ridership based on your agency's needs. Ridership can be the number of boardings on a transit vehicle, the number of paying passengers or number of completed transit trips. Consult with such organizations as CUTA or other transit systems for methodologies.
- e) Consider developing a standardized process that accounts for transit pass use, farebox revenue, transfers and tickets used, when calculating ridership for conventional transit,

### Demand-Responsive Transit

#### Planning Scale

 Regional

 Municipal

- f) Verify ridership reports with driver manifests during review processes to account for add-ons, late cancellations and no shows.

## Applicable Context

## Data Management

### Planning Scale

 Regional

 Municipal

- g) Establish a system for data management to maximize the usefulness of the data across the entire transit agency. In addition to storing archived ITS data, also include customer survey and interview data, parking lot usage surveys, geographic information system (GIS) visualizations, aerial photography, census boundary information, census data, zoning data, buildings, and geographic features.
- h) Establish a plan for agency data validation and management. Manual surveys and ITS technologies produce a large amount of information, and each new data set must conform to an established data model and be validated before being incorporated into the data warehouse.

## Data Collection and Sharing

### Planning Scale

 Regional

 Municipal

- i) Leverage transit smart card data to analyze ridership patterns and optimize service schedules, ensuring efficient resource allocation and improved system performance.
- j) Use smart card data for demand forecasting and long-term planning, enabling more informed decisions about route adjustments, capacity needs, and overall transit network enhancements.
- k) Involve data users early in the data collection and analysis process to ensure the results are more useful to market researchers, operations planners and other ultimate users.

## Applicable Sections

### 4.2.2


## Additional Resources

- [Data Sharing in Transit / Shared Mobility Partnerships, Federal Transit Administration \(2019\)](#)
- [Leveraging ITS Data for Transit Market Research, Transit Cooperative Research Program](#)
- [Leveraging Big Data in the Public Transportation Industry, APTA](#)
- [The New Mobility Era: Leveraging Digital Technologies for More Equitable, Efficient and Effective Public Transportation, Institute for Research on Public Policy \(2024\)](#)

## 4.2.4 Safety & Security

Implement design elements, patrol programs and technologies to enhance safety and the sense of safety in the transit system.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Municipal | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs) |
|  Large    |  Site      |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

Actual and perceived lack of safety at transit stops, stations and platforms can result in lost ridership, stigmatization and lower revenue. Vandalism and crime damage equipment, cause lost workdays, increase compensation costs, and harm employee health and morale. Transit systems must minimize crime risk to ensure operators and travellers feel secure in transit vehicles and facilities.

Safety for all users, including Indigenous people and equity-deserving groups, should be a priority throughout transit planning, design and operations. Focus should be directed to the protection of at-risk and marginalized groups, as highlighted by the National Inquiry's final report on Missing and Murdered Indigenous Women and Girls.

Risk and fear can be reduced through vehicle and facility design that improves sightlines and visibility. Patrols and educational programs further mitigate crime and traveller concerns. These measures can deter criminals, lower financial and operational costs, and enhance security, preventing ridership loss. Increased system use throughout the day also provides natural surveillance and improves safety.

## Strategies

### Applicable Context

### Planning

#### Planning Scale



Municipal



Site

- a) Ensure pedestrian and cycling facilities are designed to a high standard of safety, security and comfort for all users, including persons with disabilities and persons using mobility devices.
- b) Conduct a review of security in the transit system to determine where system practices, policies and physical features could be modified to improve safety. As part of this effort, an inventory of potential hiding areas should be conducted, and strategies should be developed to correct them, where possible. Evaluate the expected benefit and cost of each potential security improvement and develop a prioritized plan.
- c) Incorporate Crime Prevention Through Environmental Design (CPTED) principles and techniques in the design of pedestrian corridors at all stages of a given transit station, station area, or transit-supportive project to optimize natural surveillance.
- d) Develop a process for continuously monitoring and recording problems and receiving and responding to feedback regarding security concerns. Specific actions should be defined to respond to different kinds of complaints. Information about the feedback process should be available to the public.
- e) Form partnerships with shelter and community support programs to allow frontline staff to connect vulnerable people to shelter locations off transit property.

### Improving Sightlines

#### Planning Scale



Site

- f) Enhance sight lines and visibility by:
  - maximizing the use of glass in shelters to enhance natural surveillance and lighting;
  - incorporating glazing on exterior walls, stairways and elevators to permit natural surveillance;
  - designing landscaping so that it does not block views or lighting; and
  - using mirrors to enable people to view around corners where blind corners are unavoidable.

**Applicable Context**

Enhancing Safety

Planning Scale



Municipal



Site

- g) Design station and terminal designated waiting areas (DWA) with higher levels of lighting and an emergency phone or intercom systems to enhance user safety during quieter hours or evening service.
- h) Ensure all-season safety features for stations and stops including indoor access, sufficient lighting, security cameras, telephone access, and staff presence, particularly during evening and early mornings.
- i) Support mental health awareness training for employees and deploy trained mental health professionals to assist in de-escalation and avoiding the criminalization of vulnerable persons.
- j) Implement a range of security-related policies and programs that transit systems could consider to enhance user safety or perceived safety. These may include:
  - allowing passengers to get off the bus between stops at nighttime. The driver must be able to stop safely to accommodate the request. The passenger must leave the bus by the front doors, and the rear doors remain closed so that no one can follow the passenger from the bus;
  - deploying transit security officers in and around stations, on trains and buses, and at bus stops at times and locations where security problems are common or expected;
  - training transit employees, such as vehicle operators, in conflict resolution, robbery / assault prevention, gang awareness, customer service and self-defence;
  - providing public education and information in the form of pamphlets, posters, wall cards, stickers, magnets and films to publicize crime prevention initiatives and safety tips;
  - setting up crime prevention booths at events and exhibitions to address public crime and safety issues with citizens and employees;
  - establishing reward programs to solicit information from employees and the public to identify criminal offenders; and
  - establishing an Adopt-a-Shelter program to link citizens and police to deter vandalism and criminal activity at bus shelters. Citizens are encouraged to commit to bus shelter "ownership", resulting in immediate reporting of criminal activity to police.

**Applicable Context**

**Technology**

**Planning Scale**



- k) Leverage technology to enhance visibility and enable communication between passengers and staff, where physical sightlines may be difficult to achieve. Examples include:
  - deploying closed-circuit television (CCTV) camera surveillance systems in and around transit stations, stops, vehicles and depots. They may be mounted, for example, at restroom entrances, fare collection areas, and elevator/escalators. Cameras may be fixed or remotely controlled to allow for panning, tilting and zooming. Real-time monitoring can be labour-intensive; however, pairing CCTV with motion-detection systems can provide event-triggered surveillance;
  - implementing telephone and radio communication devices in stations, at stops and on vehicles to allow passengers to seek assistance from transit personnel or local police;
  - implementing AVL and GIS to facilitate vehicle tracking in case of incidents;
  - providing incident management information and directions to passengers on dynamic message systems which might typically be used to show vehicle arrival times;
  - improving lighting along all parts of a passenger's transit journey, including transit facilities, mobility hubs/points, and transit vehicles, to improve visibility and deter crime. Provide an even distribution of white lighting at and in proximity to transit facilities to promote a feeling of safety; and
  - using alarms to deter criminal activity and summon police and security assistance.
- l) Use automated ticketing machines and EFP to make cash handling more secure and reduce exposure of transit employees to crime and threats.



Figure DH  
**Lighting in Waiting Areas**

Designated waiting areas provide well lit locations supported by emergency phone or intercom systems and video surveillance for people to wait during quieter hours of operation. This can contribute to increased passenger safety.



Figure DK  
**Mirrors & Blind Corners**

When blind corners are unavoidable, a mirror like the one used at this GO Station allows visibility around corners.



Figure DI  
**Information & Emergency Intercoms**

Safety devices such as information and emergency intercoms should be easy to locate and brightly coloured.



Figure DJ  
**Glass Materials & Natural Surveillance**

The use of glass in this shelter in Calgary, Alberta enhances natural surveillance and lighting.

## Applicable Sections

3.2.1

3.2.2

## Additional Resources


- [Safer Than You Think! Revising the Transit Safety Narrative, Victoria Transport Policy Institute \(2024\)](#)
- [Prioritizing Safety on Public Transit, CUTA \(2023\)](#)
- [Enhanced Transit Safety Plan, City of Edmonton \(2024\)](#)

## 4.2.5 New Technologies

Establish a long-range technology implementation plan that coordinates short-term prioritized projects with longer-term planning in a way that maximizes benefits across the entire agency.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Intercommunity Bus Providers, Transportation Service Providers (TSPs), Transportation Network Companies (TNCs), MaaS Companies |
|  Large    |  Municipal |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

New technologies can dramatically improve transit efficiency and safety, but their implementation must be planned and coordinated to maximize benefits. The Transit Technology Toolkit is a key resource for guiding planning, procurement, implementation and ongoing use, outlining technologies that support operations and efficiency.

While new technologies require major financial investment, they can deliver substantial operational savings and service improvements. ITS enhance many aspects of transit service, and innovations continue to emerge. Given the fast pace of change, agencies should test new technologies through short-term projects to assess benefits before system-wide implementation. Each implementation should align with a prioritized plan to optimize investments and address institutional, technical, financial, and maintenance barriers that may limit benefits.

## Strategies

### Applicable Context

### Planning for Technology

#### Planning Scale



Regional



Municipal

- a) Develop a coordinated, agency-wide technology plan that prioritizes capital investments, as well as associated human resources development. Involve all partners at the planning stage, and clearly communicate the benefits of the plan, in advance of upgrades.
- b) Develop strategic project plans, considering the following key strategies:
  - use standards for interoperability of technologies, such as ITS Canada's National ITS Architecture and TCP/IP protocols when implementing communications and technology systems;
  - implement small projects incrementally, allowing benefits to be realized sooner;
  - plan for system upgrades, as technology changes quickly; and
  - involve operations and maintenance staff who will be responsible for operating and maintaining the technology early in the planning process.
- c) Identify a senior-level technology champion who can articulate and promote the vision and benefits of the technology to various stakeholders.
- d) Explore new revenue opportunities to fund transit assets and technology, such as public-private partnerships and pooling resources among agencies.

### Spotlight

#### Technology Champion

A technology champion should be most familiar with the available technologies and should help an organization (transit agency, municipality, etc.) understand the opportunities and costs of new technologies. They should only recommend technologies that provide higher net present value (NPV)

on potential solutions than non-technology adopting projects. They may look at intersections of issues where technology may be leveraged in more than one area to generate higher NPV returns when a broader implementation is undertaken.

## Maintenance

### Planning Scale



Regional



Municipal

- e) Consider the use of sensor technologies such as cameras and lidar to automatically inspect infrastructure.
- f) Develop a plan for recruitment, training and retention of personnel with the technical skills to support, maintain and utilize the new technology. A technical support agreement should be in place with technology vendors and/or the agency should develop the necessary expertise in-house.
- g) Develop a system for reporting, tracking and resolving problems during technology implementation and operation. Use the information to determine additional technology needs, and to improve future technology implementation projects.

### Applicable Context

## Testing New Technology

### Planning Scale



Regional



Municipal

- h) Develop pilot considerations and criteria for testing new technologies, aligned with agency performance monitoring plans and key performance indicators.
- i) Engage stakeholders and gather feedback from riders, operators, and maintenance staff during the testing phase to identify user experience issues and areas for improvement.
- j) Collaborate with technology providers and experts to ensure that the new technology is integrated seamlessly with existing systems and infrastructure, reducing the risk of operational disruptions.
- k) Use data analytics to monitor performance and track key metrics such as reliability, efficiency, and cost-effectiveness throughout the testing period.
- l) Test new technologies under varying conditions, including peak hours, different weather scenarios, and diverse routes, to assess the technology's adaptability and robustness.

## Additional Resources

- [Synthesis on Automatic Vehicle Location \(AVL\) systems, Transit Cooperative Research Program](#)
- [Leveraging ITS Data for Transit Market Research, Transit Cooperative Research Program](#)
- [Leveraging Big Data in the Public Transportation Industry, APTA](#)
- [The New Mobility Era: Leveraging Digital Technologies for More Equitable, Efficient and Effective Public Transportation, Institute for Research on Public Policy \(2024\)](#)



Figure DL  
**PRESTO Automatic Fare Payment**

Technologies such as automatic fare payment systems and open payment speed up boarding time and calculate the lowest fare applicable to the customer.

## 4.2.6 Asset Management

Develop an asset management plan that considers the life cycle costs of all physical assets, including vehicles, facilities, infrastructure, office equipment, technology and other assets, required to meet the agency's service and ridership targets.

### Applicable Context

| Community Size   | Planning Scale  | Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry |
|  Large    |  Municipal |  |
|  Medium   |   |  |
|  Small    |   |  |
|  Remote   |   |  |

Transit systems depend on physical assets to deliver reliable, convenient service. As assets age, they require maintenance or replacement, and new assets may be required for growth. Without an asset management plan, agencies risk unexpected costs, asset failures, and service disruptions that can reduce ridership.

A clear plan enables agencies to meet service and ridership targets cost-effectively and adapt to new requirements, such as the Province's mandate for fully accessible vehicles and services. The province has developed a Guide to Preparing an Asset Management Plan – this section presents some of the key recommendations from that guide.

## Strategies

### Applicable Context

### Determining Needs

#### Planning Scale

 Regional

 Municipal

- a) Identify the agency's assets and determine the risks and consequences of their failure to develop a cost-effective, long-term strategy for accommodating growth through transportation demand management ([Subsection 4.3.3](#)) and infrastructure investment. Agencies should determine the level of service and asset conditions required to meet the following objectives:
  - the service quality and ridership targets defined by the ridership growth plan;
  - the demand forecasted by the municipal official plan and the ridership growth plan;
  - regulatory requirements (safety, environmental, etc.);
  - broader regional and municipal objectives;
  - accommodating specific markets based on demographic outlook;
  - improving the transit system's performance; and
  - maximizing returns on investments on a life-cycle basis.
- b) Establish an inventory of current assets, including vehicles, facilities, infrastructure, office equipment, technology and other assets in order to assess the current condition, remaining lifespan, and the ability for agency assets to meet the required level of service. This should be used to determine which assets are critical, and estimate the likelihood, consequences, and costs of their failure.

### Prioritizing Investments

#### Planning Scale

 Regional

 Municipal

- c) Develop a prioritized capital investment plan and an associated operations and maintenance plan that will provide the level of service required. For example, in the case of rail-based systems, estimate the number of vehicles, expected mileage, number of stops, stations and depots, as well as track and wayside equipment required. The expected preventive and corrective maintenance associated with each asset should also be estimated.

- d) Develop a financial plan to fund the capital investment and operations and maintenance plans. These plans should consider life cycle costs and depreciation, as well as the full costs and benefits of the various types of asset ownership, from full public ownership, to leased vehicles and public-private partnerships.
- e) Select enterprise asset management software that meets the agency's needs. For smaller agencies, a basic spreadsheet program may be sufficient, while for larger organizations, it is beneficial to implement a tool and framework to track and plan the assets, operations and maintenance, and to store and distribute data.

### Applicable Sections

4.3.3

### Additional Resources

- [A Guide to Asset Management for Municipalities in Ontario, Municipal Finance Officers' Association of Ontario \(2018\)](#)
- [How to Develop an Asset Management Policy, Strategy and Governance Framework, Canadian Federation of Municipalities \(2018\)](#)
- [Transit Asset Management, National Rural Transit Assistance Program](#)
- [Transit Asset Management Systems Handbook, FTA Research \(2020\)](#)

## 4.3 Fare Collection and Ridership Strategies

Efficient and integrated fare collection is an effective way of encouraging transit ridership through convenience and simplicity. Technological developments have allowed fare collection to shift to digital and app-based formats, with regional integration using common fare payment options between transit systems in Ontario (e.g., PRESTO cards). The following topics explore fare collection and ridership strategies to ensure the convenience and efficiency of transit:

|   |     |
|---|-----|
| <b>4.3.1 Fare Strategies</b> .....                  | 339 |
| <b>4.3.2 Automatic Fare Collection (AFC)</b> .....  | 343 |
| <b>4.3.3 Transportation Demand Management</b> ..... | 347 |

### 4.3.1 Fare Strategies

Provide fare incentives, simplified fare structures and more convenient payment options to make transit more affordable and easier to use.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, MaaS Companies |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote   |   |  |

Traditionally, the most common objective of transit pricing has been to increase revenues in response to actual or forecast increases in operating costs, while minimizing the loss of transit ridership. However, as sustainable transportation becomes an increasingly pressing issue, increasing transit ridership and modal share are becoming primary objectives of their own.

To attract and retain transit riders, the cost and convenience of transit use should be competitive with other modes of travel. Adjustments to fare levels, fare structures and fare collection methods can make transit less expensive and more convenient for riders. For example, simplified fare structures are easier for riders to understand and tend to boost ridership, depending on the price level.

Fare collection cards, partnerships and online payment options can also be incorporated into a broader marketing and promotion strategy and data from these can be used in planning transit services [\(Section 4.1.1\)](#).

## Strategies

### Applicable Context

### Affordability

#### Planning Scale

 Regional

 Municipal

- a) Make fares more affordable by providing reduced base fares, free transfers (e.g., One Fare program), fare capping, free fare zones or discounts for multi-ride tickets and passes.
- b) Simplify transfers by offering short-term (e.g., 90-minute) unlimited, not directionally restricted, transfer windows or ride passes to encourage transit use for quick errands. A day pass that is priced at the equivalent of two or three linked trips can also help to improve rider convenience, reduce fare administration, and minimize rider-operator disagreements regarding transfer validity.

### Convenience

#### Planning Scale

 Regional

 Municipal

- c) Consider the integration of fare collection between transit systems to support inter-community connections and encourage transit users.
- d) Implement automatic fare collection systems (e.g., magnetic cards or smart cards) to improve fare payment convenience and efficiency.
- e) Expand fare card distribution and reloading options. This can be achieved by selling fare media at more retail locations or transit stops and implementing online reloading.
- f) Utilize pre-paid fare cards to reduce boarding times and thereby improve transit speed and reliability. This may provide transit systems with the benefits of improved revenue control and the financial advantage of receiving payment before the cost of providing service is incurred.
- g) Encourage the use of pre-paid fare cards by offering discounts relative to cash or tickets.
- h) Program smart cards so that they automatically charge the lowest applicable fare. This can help to ease decision-making and increase passenger desire to ride.
- i) Provide account-based automatic recharging of smart cards as an additional convenience for busy commuters.

- j) Support regional integrated fare policies and collection systems to allow riders to travel seamlessly on different transit systems across a single region. Integrated fare strategies include harmonized fare across systems, free transfers between systems, discounted fares for trips between systems or use of a common fare card to increase the convenience and affordability of public transit.

**Applicable Context**

**Programs & Incentives**

Planning Scale

-  Regional
-  Municipal
-  Community

- k) Partner with employers, universities, retail stores and events organizations to offer fare incentives or integrated fare payment options and programs ([Section 5.1.1](#)).
- l) Offer loyalty points or partner with a loyalty program, such as a reward miles program, so that riders are rewarded for each transit trip they take or are given an incentive for accessing certain services ([Section 5.1.1](#)).
- m) Explore opportunities to offer reduced fares for low-income travellers and other user groups (e.g., students, families) to promote equitable mobility.

**Accessibility**

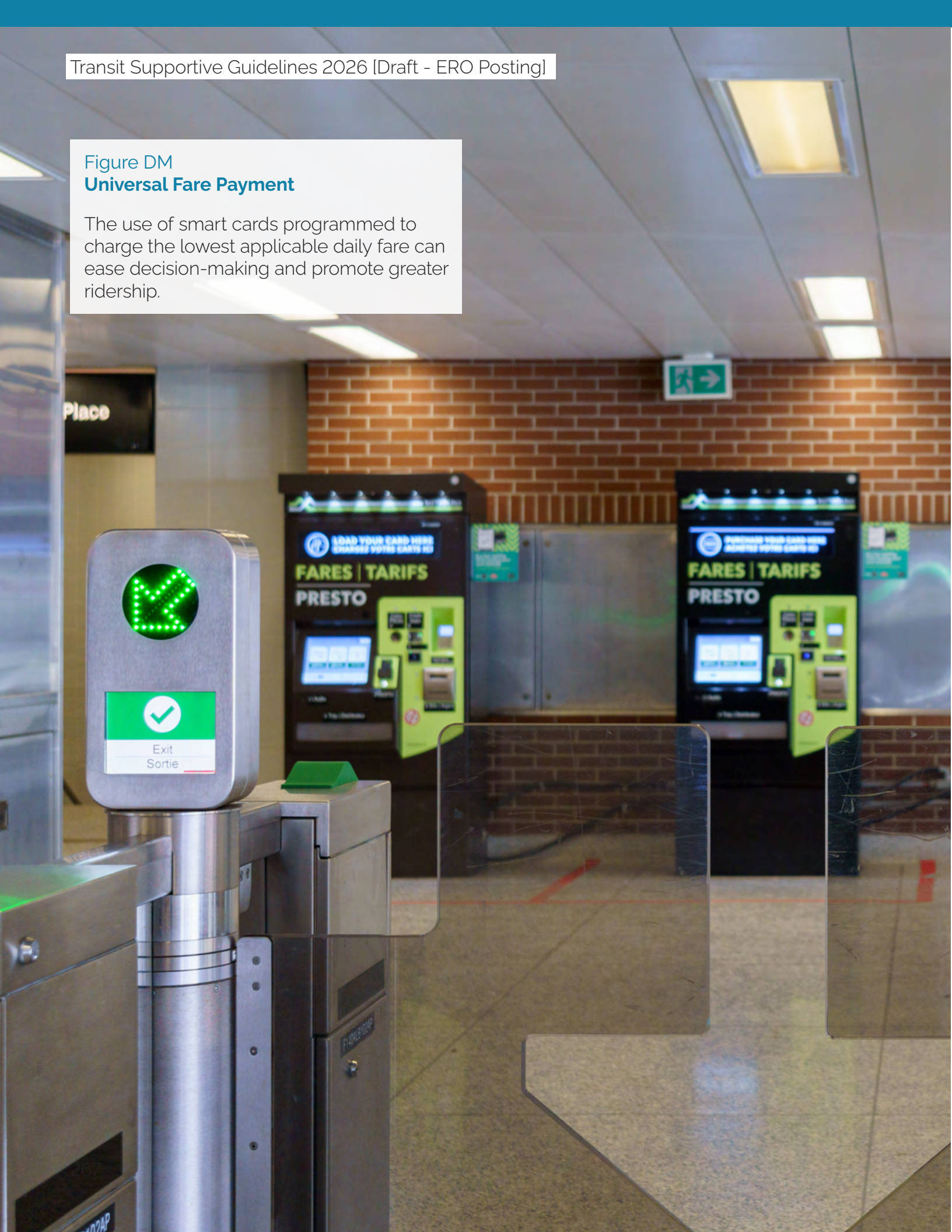
Planning Scale

-  Regional
-  Municipal
-  Site

- n) Program fare vending machines to provide simplified choices to riders by issuing optional smart cards for preset amounts of money and displaying information in accessible formats.
- o) Equip fare vending machines, fare gates, and fare payment devices with accessibility features, including lower heights, electronic displays in an accessible format, and auditory cues when a button has been pressed, card is loaded, fare has been accepted or declined, etc.
- p) Explore opportunities to offer reduced fares for persons with a disability and low-income travellers to promote equitable mobility.
- q) Consider accepting cash fares to provide accessible transit service for users without access to credit cards or computers.

Figure DM  
**Universal Fare Payment**

The use of smart cards programmed to charge the lowest applicable daily fare can ease decision-making and promote greater ridership.



## Applicable Sections

4.1

5.1.1

## Additional Resources

- [Re-Attracting Customers Through Fare Policy, CUTA \(2023\)](#)
- [Fare Recovery: Issue Paper, CUTA \(2023\)](#)
- [Transit Street Design Guide: Fares and Boarding, NACTO](#)
- [Transit Fare Policy: An International Best Practices Review for Metro Vancouver. City of Vancouver \(2016\)](#)
- [Transportation Affordability: Evaluation and Improvement Strategies. Victoria Transport Policy Institute \(2021\)](#)
- [Fare Strategies, Texas A&M Transportation Institute](#)

### Spotlight

#### **One Fare: Driving Seamless Regional Mobility**

The One Fare program launched in February 2024 as a fare integration initiative that supports seamless regional mobility in Ontario. Ontario's One Fare Program allows transit riders to pay only once when connecting to and from the TTC and GO Transit, MiWay, Brampton Transit, York Region Transit, and Durham Region Transit. This has made cross-boundary journeys simpler and more affordable and reflects the TSG's emphasis on integrated fare systems as a foundation for equitable and connected transit networks.

In the first two years since its launch, One Fare saved Ontarians nearly \$200 million and enabled nearly 62 million free transfers across participating transit agencies. By improving connectivity across the Greater Toronto and Hamilton Area, the program strengthens regional mobility corridors and supports multimodal travel. The One Fare Program makes cross-boundary travel more affordable and convenient for customers, while simplifying the customer experience. Its success highlights the importance of continued collaboration between transit agencies and municipalities to build a more connected and accessible transit system for Ontario.

## 4.3.2 Automatic Fare Collection (AFC)

AFC systems can provide important operational efficiencies and improvements for transit systems, particularly when compared to older, outdated farebox systems.

### Applicable Context

---

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, MaaS Companies |
|  Large    |  Municipal |  |
|  Medium   |  Site      |  |
|  Small    |   |  |
|  Remote   |   |  |

AFC systems simplify payment through readers on vehicles and at stations. They typically support smart cards like PRESTO, which use RFID chips, and are often compatible with digital fare media such as mobile smart cards, QR codes, and contactless credit/debit payments.

Implementing AFC usually requires procuring or upgrading fare equipment—validators, fareboxes, faregates, and ticket vending machines. Agencies may also need additional operational roles and customer service support to help users transition and troubleshoot new technologies.

## Strategies

### Planning & Monitoring

#### Applicable Context

##### Planning Scale

 Regional

 Municipal

- a) Work with local partners, transportation planners and other connected transportation service providers to clearly define the overall system requirements, specifications and business rules unique to the transit system. Identify the desired AFC objectives to ensure the system that is implemented is uniquely suited to the local or regional context and needs.
- b) Support both extended use (reloadable) and limited use smart cards (temporary and pre-loaded value) to accommodate different use cases.
- c) Consider opportunities to define and include incentives, reward programs or other subsidies to customers as part of the objective of promoting transit use.
- d) Provide opportunities for transit users to top up smart cards using cash rather than requiring a debit or credit card to make the transit system more accessible for low-income, unhoused or unbanked populations.

### Hardware

##### Planning Scale

 Municipal

- e) Work with the equipment provider to ensure that:
  - onboard and handheld validators used to process fare media and fare payments onboard vehicles are flexible and able to be optimized to accommodate a variety of installation locations and types;
  - validators are configured to accept and process valid fare media at a predefined speed (typically less than 500 milliseconds) and have a near perfect first read accuracy; and
  - fareboxes are designed to uphold all physical standards related to positioning, mounting, security, visual and aural requirements, in alignment with AODA standards.
- f) Work with the equipment provider to ensure that fareboxes are equipped to:
  - store, transfer, and retain the integrity and security of transaction data and include farebox alarms that are triggered in the event of security breach;


- support fare transactions using all denominations of cash and legal Canadian currency, are designed for ease of clearing coin and bill jams, and include an aural indication of when sufficient fare media has been provided by the customer; and
- accept a wide range of payment methods, including cash, coins, credit and debit cards, Apple Pay, Google Pay, stored value from Smart Card balances, among others that can be defined as per agency needs.

## Applicable Context

## Customer Experience

### Planning Scale

 Municipal

 Site

- g) Consider providing a customer website, a customer mobile app and an institutional website to allow customers to manage their accounts and purchase smart cards, paper tickets, stored value and fare products online.
- h) Ensure any online customer service websites, mobile applications and other mediums include multiple language options and that the user experience / interface is consistent with other agency interfaces to ensure compatibility and customer legibility.
- i) Ensure that any customer website or software platforms related to the an AFC system are compliant with AODA requirements. This includes consideration for colour contrast and colour choices to enable users with low vision to distinguish between options, and allowing for intuitive navigation through the use of keyboard shortcuts, tab keys or other methods that reduce the need to use a mouse to access information.
- j) Continue to provide users with the option to pay transit fares with cash, acknowledging that there are many transit users that are unbanked, or who do not have debit/credit cards or digital smart cards to pay for fare media.

## Additional Resources

- [Accessibility Tip Sheet: Universal Principles of Online Accessible Ticketing, The Kennedy Center \(2011\)](#)
- [Re-Attracting Customers Through Fare Policy, CUTA \(2023\)](#)
- [Transit Technology Toolkit, Ministry of Transportation of Ontario \(2023\)](#)
- [On-Demand Transit Toolkit, CUTA \(2022\)](#)
- [Implementation of Smart Card AFC Technology in Small Transit Agencies for Standards Development, TRN \(2016\)](#)



Figure DN  
TTC Fare Payment Terminal

### 4.3.3 Transportation Demand Management (TDM)

Transportation demand management (TDM) policies can encourage the use of transit, along with other travel alternatives. Implement TDM policies that promote and facilitate the use of transit modes and share the responsibility of encouraging transit use with employers, developers and other organizations.

#### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders   |
|--|---|--|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Land Use Planners, Municipal Planners, Transit Agencies, Transit Industry, Community Groups, Universities and Colleges, Hospitals & Health Care |
|  Large    |  Municipal |  |
|  Medium   |  Community |  |
|  Small    |  Site      |  |
|  Remote   |   |  |

TDM strategies manage the demand for transportation infrastructure and services by affecting people's choice of location, timing, means of reaching an activity and even whether to make a trip. These policies aim to reduce travel, distribute trips more evenly, and expand access to a variety of transportation options, including transit, cars and active modes.

Policies that enhance the convenience, reliability, and affordability of transit can make it a more attractive choice for a broader range of users. TDM policies should be developed within transit-oriented communities, and MTSAs, so that development-specific travel plans can be defined and integrated into the planning approvals process. Regions and municipalities can implement some of those policies, but encouraging actions by, and providing incentives for, employers, developers, schools and other organizations can often have a more direct impact on people's travel choices.

## Strategies

### Applicable Context

#### General

#### Planning Scale

 Regional

 Municipal

 Site

- a) Develop transportation demand management plans for transit stations, mobility hubs and mobility points, and integrate development-specific travel plans into the planning approvals process.
- b) Consider opportunities in the future to develop a MaaS platform capable of implementing TDM initiatives, leveraging the opportunity to provide information, coordinate services and optimize shared mobility through backend integration.

#### Increase Transit Use

#### Planning Scale

 Regional

 Municipal

 Community

- c) Increase transit ridership by creating various incentives to use transit for commuting and other trips, including:
  - working with employers to provide discounted transit passes to employees, shuttles between the workplace and transit stations and free taxi rides home in case of emergency for employees who take transit to work;
  - providing incentives to developers during the site plan review process such as reduced development charges or parking requirements for incorporating transit stops into designs and providing transit passes to new residents;
  - working with transit systems to change bus stop locations and route schedules, where needed, to better serve high-employment and residential areas; and
  - encouraging school boards and schools to undertake school-based TDM approaches which support the use of public transit, active transportation and carpooling by students and staff.

#### Increase Transportation Alternatives

#### Planning Scale

 Municipal

- d) Conduct cost benefit analyses on providing additional commuter parking versus investing in additional operating funds to feeder transit service.
- e) Negotiate developer subsidies to fund feeder transit service in new developments and subdivisions.
- f) Increase the appeal of transportation alternatives such

as carpooling, active transportation, and alternative work arrangements. Strategies may include:

- providing free and easy-to-use rideshare matching systems to assist commuters in coordinating carpools;
- encouraging employers, schools, and property managers to provide incentives for carpooling, such as priority parking locations;
- encouraging flexible work hours, compressed work weeks, telework, or working from satellite locations; and
- encouraging employers to provide facilities that make using active transportation a more attractive option, such as secure bicycle parking and shower facilities.

### **Additional Resources**

- [Transportation Demand Management for Canadian Communities: A Guide to Understanding, Planning and Delivering TDM Programs, Transport Canada \(2011\)](#)
- [Transportation Demand Management Background Paper, Metrolinx \(2015\)](#)
- [TDM Strategies, Victoria Transportation Policy Institute](#)
- [Travel Demand Management Toolkit: Managing Network Demand, UK Department for Transport \(2021\)](#)



Figure DO  
**Employment Centre Transit Services**

Conveniently locating transit stops to serve high employment areas, such as this example from Mississauga, can help to generate demand for transit services in areas that are not currently transit-supportive.





## 5.1 Fostering Partnerships

Building trust-based, transparent partnerships is essential for a connected transportation network and mobility options that reflect Ontario’s diverse communities. The Fostering Partnerships section provides guidance on the following key elements:

|   |            |
|---|------------|
| <b>5.1.1 Partnerships for Enhancing Transit Systems</b> ..... | <b>280</b> |
| <b>5.1.2 Indigenous Partnerships</b> .....                    | <b>283</b> |

## 5.1.1 Partnerships for Enhancing Transit Systems

Establish partnerships between governmental departments and transit agencies, and different organizations to deliver and promote transit use.

To support transit solutions, partnerships are forged across various sectors to build research, expertise, public support and funding. Collaboration between municipalities and transit agencies with other partners, such as governmental agencies and departments, non-governmental organizations, private transportation providers, and commercial partnerships, should be explored by municipalities to enhance the efficient delivery of transit infrastructure and services.

### Applicable Context

#### Community Size

 Big City

 Large

 Medium

 Small


 Remote

#### Planning Scale

 Regional

 Municipal

 Community

 Site

#### Key Stakeholders

Regions, Municipalities, Indigenous Communities, Transit Agencies, Municipal Planners / Staff, Transportation Service Providers, MaaS Companies / Providers, Land Use Planners, Architects / Landscape Architects, Developers

## **Strategies:**

### **Governmental Partnerships**

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- a) Engage and identify partners early in the development process through Technical Advisory Committees (TAC) and Stakeholder Advisory Committees (SAC) and public consultation. for transit-supportive projects and policies.

### **Non-governmental Partnerships**

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- b) Develop partnerships with non-governmental organizations (NGOs), such as non-profit transportation and housing organizations, charities, and other types of community groups (residents associations, student groups, etc.), leveraging their support and influence to guide and promote key transit-supportive policies, programs and initiatives.

### **Private Transportation Providers**

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- c) Consider forging partnerships with private transportation providers (e.g. Transportation Network Companies (TNCs) or Mobility Service Providers (MSPs)) to offer their transportation services in different community settings and during different transit service times.
- d) Establish data sharing agreements with private partners for additional insights into multimodal ridership in different communities, optimizing the interoperability of services centred around transit.
- e) Work with partnered private/semi-private Intercommunity Bus TNCs to establish optimal transit link locations in different municipal or community settings. Identify passenger PUDO locations and designs in different curbside environments.

### **Commercial Partnerships**

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- f) Consider integration of commercial advertising opportunities within transit systems to gain additional revenue sources.
- g) Consider leveraging creative media opportunities (ie. film) to use transit properties as a source of revenue.

### **Retail Partnerships**

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- h) Enable retail opportunities at transit stations to support local economies and provide commercial access to customers.
- i) Consider integration of discounts upon presentation of a transit ticket or pass with local retailers and other commercial partners

### Employer and Educational Partnerships

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- j) Encourage large employers, including educational institutions, to establish transportation demand management programs that support transit use among their employees. This may include subsidized passes for existing systems, including micromobility options; rewards programs for weekly / monthly transit ridership; and coordination of routes and schedules with planning considerations for large institutions or employers such as universities, hospitals and government campuses.
- k) Work with partnered educational institutions, including university and college campuses in the co-development of specialized transit facilities to promote multimodal and intermodal travel for students getting to and from campus.

### Other Partnerships

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- l) Work with local services such as child-care and medical care providers at and around transit to integrate cross-marketing of social services, such as child care, promoting family transit passes and indicating services on transit maps.
- m) Collaborate and engage with equity-deserving groups, including vulnerable populations, newcomers, seniors, youth, racialized communities, to ensure a diversity of voices to identify local transit service needs and solutions ([Subsection 3.1.6](#)).

### Large Events

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- n) Implement transportation management, logistics and operations plans for large events, focusing on multimodal transit integration.

## Applicable Sections

3.1.6

### Additional Resources

- [Case Study: Régie autonome des transports parisiens](#)
- [Case Study: Massachusetts Bay Transportation Authority](#)
- [Grand River Transit Corporate Pass, Region of Waterloo](#)
- [Travelsmart Vancouver, Translink](#)
- [Workplace Travel Plan: A Guide for Implementers, National Transport Authority \(Ireland\) & TFI Smarter Travel Behaviour Change Programme \(2022\)](#)
- [TDM Encyclopedia, Victoria Transport Policy Institute](#)

## 5.1.2 Indigenous Partnerships

**Facilitate partnerships between local municipalities and Indigenous communities to improve transit access, mobility and safety for Indigenous peoples and First Nations communities.**

Building strong, collaborative partnerships between Indigenous peoples, First Nations communities, and local municipalities/transit agencies is essential to improving transit access and opportunities for Indigenous communities. Municipalities, regions, and transit agencies should work with Indigenous partners to provide or enhance inter-community transit, strengthening connections between First Nations communities and local or regional hubs. They should also consult Indigenous partners to improve legibility, access, and safety for Indigenous transit users.

A key step is creating task forces that bring together government organizations, Indigenous leaders, transportation planners, and other stakeholders. These forums help identify transportation challenges, understand community needs and aspirations, and build consensus on projects and funding.

Indigenous communities, municipal partners, and regional transportation providers—including private operators—should collaborate to share information and implement solutions that improve transit links to First Nations communities. In partnership with Indigenous communities, municipalities can offer technology, technical support, capital investment, and workforce development to establish transit and mobility services owned and operated by Indigenous organizations.

### Applicable Context

| Community Size   | Planning Scale  | Key Stakeholders  |
|--|---|---|
|  Big City |  Regional  | Regions, Municipalities, Indigenous Communities, Transit Agencies, Municipal Planners / Staff, Transportation Service Providers, MaaS Companies / Providers, Land Use Planners, Architects / Landscape Architects, Developers |
|  Large    |  Municipal |   |
|  Medium   |  Community |   |
|  Small    |   |   |
|  Remote   |   |   |

### Applicable Sections



### Additional Resources

- [Case Study: British Columbia Transit](#)
- [First Nations Low-Carbon Transportation Project](#)

### Strategies

#### Increased Connectivity to, from, and within First Nation Communities

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- a) Establish regional task forces with Indigenous community leaders and local municipalities/transit agencies to build consensus around transportation projects and transit funding for First Nations communities. These task forces should foster partnerships that address unique, context-specific issues and improve transportation access and outcomes for Indigenous peoples.
- b) Facilitate partnerships between Indigenous communities, TNCs and MSPs to improve connections within an integrated transportation network. Consider how connectivity (through service planning, partnerships and multimodal transportation networks) impacts Indigenous communities in rural and remote areas.
- c) Support Indigenous communities to develop Indigenous-led transit and transit-supportive ventures through partnerships and funding ([Appendix A](#)).
- d) Leverage funding from federal and provincial programs that support transit and transit-supportive initiatives, including active transportation, accessibility, vision zero and complete communities ([Section 6.4](#)).
- e) Provide funding and mobility support for Indigenous community events.
- f) Work with Indigenous communities to remove barriers to implementing transportation-related infrastructure projects, such as technological support, strategic guidance and funding.

#### Inclusion, Safety and Accessibility of Transit for Urban Indigenous Populations

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- g) Assess if transit facilities and amenities are safe and inclusive for Indigenous peoples, particularly Indigenous women, girls and vulnerable populations, through user data, consultation with Indigenous communities, and Crime Prevention Through Environmental Design (CPTED) review.
- h) Establish partnerships between transportation providers and Indigenous communities to ensure the perspectives and needs of Indigenous communities are included in the planning, design, and implementation of transportation projects.
- i) Work with Indigenous agencies and organizations to determine transportation needs and investigate opportunities for community transportation (e.g. ensuring transit access to Indigenous spaces and service centres).
- j) Partner with Indigenous artists, architects, urban designers, and other professionals on transportation projects with the aim of integrating Indigenous art and design in the development of transit projects. This may include the design and development of new transit stations, stops, wayfinding and public art displays.





## 6.1 The Land Use Planning Process

The planning process, including statutory and non-statutory plans and approvals processes, plays a key role to play in realizing the principles and strategies outlined in this document. Developing transit-supportive environments requires collaboration in policy, planning, design, construction and operation. Official and secondary plans embed transit-supportive policies in the municipal planning process and are enforced through zoning by-laws and approvals, including subdivision and site plans.

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### **Ensure official plans set the stage for the creation of transit-supportive communities.**

Municipal official plans are key tools in the creation of transit-supportive communities. They provide the statutory framework to facilitate a strong connection between land use planning and transit service at a municipal scale. When drafting municipal official plans, it is important to emphasize

- the clear establishment of local community structure including settlement areas, built-up areas, designated growth areas, and strategic growth areas;
- policies related to the establishment of minimum density standards in secondary plans and zoning by-laws capable of supporting the desired level of transit service in different areas of the town or city;
- policies related to the creation of complete streets capable of supporting all modes of transportation;
- growth management, land use, and urban design policies to ensure the creation of a transit-supportive urban form, applicable to both new areas and the retrofit of existing areas to support higher levels of transit ridership;
- transit network design and the relationship between the transit system and land use patterns or major specialized uses within the town or city;
- policies enabling site plan control in areas where transit services exist or are planned so municipalities can evaluate development proposals at a detailed level; and
- the identification of secondary plan areas, particularly at key strategic growth areas where more detailed transit-supportive planning and design direction is necessary for the creation of more transit-supportive environments.

## **Use transportation master plans to strengthen the integration between land use planning and transit.**

A transportation master plan establishes a framework of policies, projects and programs to meet the transportation needs of a municipality. As documents that establish strategic priorities for investment in a municipality's transportation system, they can have a significant impact on transportation patterns within a community and can be used to strengthen the integration of land use and transportation policy.

Transportation master plans should suggest a balanced modal split and strengthen the integration of land use and transit by:

- emphasizing the integration of land use and transportation decisions and directing transit investments to support planned areas of higher-density and mixed-use development;
- identifying and prioritizing strategic transit initiatives and capital improvements needed to enhance transit service;
- aligning recommendations and strategic priorities for investment with the needs and living patterns of equity-deserving populations;
- identifying areas with a high concentration of vulnerable or marginalized communities and prioritizing transit access and connectivity in these regions;
- ensuring equity-deserving populations have access to reliable transportation options that connect them to employment, education, and essential services;
- identifying deficiencies in land use planning policy that may prohibit planned transit investments;
- assisting in the development of a comprehensive network of complete streets through the phasing of capital improvements;
- ensuring the safety and comfort of all users along active transportation facilities;
- identifying strategies such as the consolidation of access points to support the creation of an interconnected network of secondary streets in employment and commercial centres; and
- coordinating transportation decisions with adjacent jurisdictions to promote the establishment of a seamless regional transportation network.

## **Create community-level plans that provide detailed, place-specific policies to guide transit-supportive development.**

Community-level plans, including secondary plans and corridor studies, are crucial to guide development of transit-supportive strategic growth area and specialized uses, providing place-specific planning and design direction. When drafting community level plans, include detailed policy and guidance for:

- establishing a transit-supportive local road network including the layout and spacing of streets and inter-connectivity with existing street networks;

- supporting access and transit-supportive development, both pre- and post- introduction of new transit services, where plans precede investments in transit;
- planning and design of complete streets within the district to support a range of users;
- enhancing access to area transit, including strategies to improve key connections leading to and from stop/station areas;
- locating and designing transit stops and station areas, as well as enhancing transfers between modes of travel;
- ensuring that built form and urban design of the area is pedestrian and cyclist-friendly and integrates with existing and planned transit facilities;
- distributing land uses and densities to ensure that they are supportive of transit services and that stop and station areas contain a mix of uses; and
- encourage collaboration and consultation with equity-deserving groups to identify local transportation needs and barriers to inform evidence-based community solutions.

The goals and directions of community level plans can be embedded within a municipality's official plan through the creation of a special policy area and supported through zoning amendments.

### **Ensure plans of subdivision and condominium plans support long term transit-supportive development patterns.**

Plans of subdivision and condominium plans set the pattern of land parcels and public rights-of-way. These are important elements that can either establish a transit-supportive pattern capable of accommodating a mix of uses with strong connections to transit or create a disconnected pattern of streets and blocks that limit connectivity, relate poorly to transit facilities and support only a limited mix of uses. Plans of subdivision should:

- work to locate new uses that face onto and help to animate streets, open spaces, and key routes leading to and from transit stop or station areas, working in conjunction with site plan control by-laws;
- establish a pattern of streets and open spaces that are interconnected and organized to strengthen connections between, and relationships with, existing and planned transit facilities;
- delineate land parcels that are of a suitable size and shape to encourage transit-supportive urban form and a range of land uses and densities;
- have regard for the extent to which a plan of subdivision's design optimizes the available supply, means of supplying, efficient use and conservation of energy;
- consider approval conditions to require land dedications for pedestrian and bicycle pathways, public transit rights-of-way, commuter parking lots and transit stations; and
- designate street right-of-ways capable of supporting a broad range of users including pedestrians, cyclists, transit vehicles, private automobiles and freight vehicles.

## **Enact zoning by-laws that support transit-supportive land use and urban design policies.**

As the mechanism through which municipalities implement policies related to built form, density and land use, zoning by-laws are important tools in the creation of transit-supportive environments. It is vital that zoning by-laws have standards, regulations and metrics related to:

- minimum densities sufficient to support transit use and consistent with density and urban structure policies embedded within the municipal official plan;
- permitted uses on transit lands to unlock potential value by permitting a mix of uses (i.e., retail);
- permitted uses linked with planned levels of transit service, encouraging a greater mix of active uses in and around transit stop or station areas;
- built form and orientation requiring buildings to actively address streets and encouraging design characteristics to establish a pedestrian-friendly streetscape; and
- transportation demand management provisions, such as minimum bicycle parking requirements that encourage more active forms of transportation.

## **Use site plan control to evaluate how development applications contribute to transit-supportive environments.**

As with many planning efforts, the implementation of each individual development or site can have a significant impact on the character and function of a community. This is particularly true when planning for transit, where a poorly designed site can significantly impact access to transit facilities and create an environment which is difficult for pedestrians and cyclists to navigate. Site plan review should be used to evaluate transit-supportive elements including:

- site/building access and circulation including entrances and orientation to ensure that buildings help to enliven streets and open spaces, as well as key connections leading to and from transit;
- transportation demand management (TDM) elements such as preferred parking for car share users or bicycle parking/shower facilities;
- the massing and design of proposed buildings, including the relationship of buildings to streets, open spaces and transit facilities; and
- the design of new streetscapes and open spaces adjacent to and within development sites, including pedestrian and cycling infrastructure to ensure that they are of a high quality and supportive of a range of users.

The establishment of a checklist or other tool can be helpful in evaluating development applications for impacts on transit-supportive environments.

## **Involve transit systems in the planning process.**

Effective planning for transit-supportive communities requires a comprehensive approach, one that coordinates land use policy, development approvals and implementation, with the operational needs of transit systems.

Including both the planning and operations of transit systems in the development of municipal planning documents ensures the spatial organization, mix of uses, and development densities are coordinated with existing and planned investments in transit. It is important to specify the role of all stakeholders related to joint development within MTSAs. From a development perspective, the input of transit systems in the review of applications and amendments can ensure that the needs of the transit system are being addressed at the more local level of the stop or station area.

Key areas of involvement include:

### Official plans, transportation master plans, and secondary plans

Transit agencies have an important role to play in the development of official plans and secondary plans, ensuring that the mix of uses and densities are sufficient to support planned levels of transit service and that the layout and design of streets and open spaces is conducive to supporting ridership. Key areas of input include the:

- identification of the role and objectives for transit service within the community;
- identification of transit needs regarding arterial and collector road layout and spacing, local street layout, densities and mix of uses along transit routes;
- development of policies relating to the phasing and timing of future urban development;
- identification of future transit routes, transit nodes and stop locations;
- development of modal split targets;
- development of transit service standards, to indicate conditions which should be met prior to extending transit routes;
- identification of overall urban densities required to support desired levels of transit service;
- identification of development densities required at various activity nodes and mobility corridors in the urban area;
- review of proposed densities, mix of uses, and built form (including building orientation and connectivity to transit stations) in development applications to ensure that they are appropriate for projected levels of transit service;
- the development of proposals for future transit stop locations and planning of future space requirements for bus shelters, benches, amenities and compliance with AODA (Accessibility for Ontarians with Disabilities Act) requirements; and
- input into the identification of developer requirements for the installation of basic transit infrastructure, such as bus stop pads.

### Zoning by-laws

The review of draft by-laws by transit agencies can help to ensure that regulations regarding lot frontages, densities and permitted uses along transit routes will support the service and financial objectives of the transit agency.

### Site plans and plans of subdivision

A review of site and subdivision plans by transit agencies can ensure that the broader policies related to transit established at the municipal level are being adequately reflected at the scale of the site.

Key areas of input include:

- providing an assessment of local road layouts, arterial/collector road layouts, and analysis of the costs and feasibility of servicing the proposed development (e.g., route length per number of residents served);
- reviewing walking distances to transit stops and ensuring that they are properly sited and designed to enhance user access and comfort;
- providing a review of the proposed staging of development with respect to planned expansion of transit services and the cost/benefits of providing transit services if development is located away from the current transit service area; and
- providing comments on the orientation and design of buildings to ensure that they are appropriately addressing key pedestrian routes leading to and from transit stations and that there is a positive relationship between the location of entrances and transit stops.

In both subdivision and site plan applications, transit agencies should be given the opportunity to recommend changes to initial development proposals. Where major changes to an application are requested by the transit agency, the agency should play a direct role in consultation and negotiation with developers. Transit agencies should also be given the opportunity to review revised plans to ensure appropriate changes have been made.

### **Ensure that transit-related Environmental Assessment (EA) processes account for infrastructure impacts on the full range of transportation modes and the potential for new transit-supportive development.**

Environmental assessments are both a planning and decision-making process used to ensure environmentally responsible decision making regarding public infrastructure projects. This is achieved by considering the potential environmental impacts of options and selecting the preferred option, in consultation with agencies, the public, and indigenous communities. Public infrastructure projects designated in the Comprehensive EA Project Regulation, other regulations under the Ontario Environmental Assessment (EA) Act, and applicable approved class EA, including transit infrastructure must comply with the Ontario EA Act and, if triggered, the Canadian Environmental Assessment Act. In February 2024, certain transit and rail projects led by the Ministry of Transportation (MTO), Ontario Northland Transportation Commission (ONTC), Metrolinx, and municipalities became subject to a streamlined EA process.

As transit agencies, municipalities or regions perform required EAs, it is useful to:

- incorporate evaluation criteria for alternatives that includes consideration of:
  - the impacts of infrastructure on all modes of transportation;
  - the impacts of infrastructure on surrounding land uses and the potential to create transit-supportive development; and
  - the potential effects on the natural, social, cultural and economic environment including potential Indigenous interests.
- undertake an effective engagement process so that stakeholders, the public, and Indigenous communities understand the impacts of projects and can provide meaningful feedback.

When contemplating a transit project, the transit agency, municipality, or region should determine which EA process best applies and may consult with the Ministry of Environment on that decision. The following options are also available for non-dedicated transit projects (where transit will operate in mixed traffic) or when notification is provided to the Ministry of the Environment under Ontario Regulation 231/08 of a Class EA process:

- The streamlined transit EA process in Ontario Regulation 231/08;
- The Municipal Engineers Association Class EA: Transit Chapter; and
- If the provincial transportation system is affected, the Ministry of Transportation's Class EA for Provincial Transportation Facilities and GO Transit's Class EA.

### **Additional Resources**

- [Transit Projects and Greater Toronto Transportation Undertakings, Ontario Regulation 231/08 \(Province of Ontario\)](#)

## 6.2 Innovative Planning Approaches

Planning, designing, and building transit-supportive communities often requires new ways of thinking about problems and their solutions. Traditional planning standards and processes, which were developed to manage conventional growth patterns, may need to be re-examined and adapted to support transit-supportive planning and design.

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### **Create an alternative set of development standards and processes for transit-supportive development.**

Developing of a series of alternative transit-supportive development standards can guide public and private investment in designated areas such as strategic growth areas. They can be incorporated into guidelines or official plan policies and include items such as:

- streetscape standards designed to encourage higher levels of walking and cycling;
- building standards such as minimum ground floor height requirements to support more active uses; and
- transportation demand management requirements.

Alternative development standards can help to guide public investment in facilities, streets and open spaces to ensure that they meet objectives related to supporting transit. Implementation of standards can be achieved through municipal development approvals processes such as the establishment of plans of subdivision, rezoning processes, official plan amendments and/or site plan approvals.

### **Establish plans for the development of interim transit-supportive uses leading up to ultimate phases of development.**

Establish interim use provisions to support phasing strategies in development to allow uses that otherwise may not be permitted in the ultimate phase of development, but are required for the viability of initial development stages. This can be achieved by the following actions:

- Developing phased and interim zoning bylaws and designations for station areas, timed with implementation of rapid transit infrastructure and achievement of density targets to provide guidance and options for phasing out undesirable land uses and incompatible developments.
- Implementing phased zoning that allows for regular periods of review of interim bylaws and requirements to ensure they are reflective of development needs and transit, and transit-supportive multimodal objectives.

- Justifying interim cases on a case-by-case basis and include timelines and an ultimate development plan to ensure consistency with land use and transportation objectives.

### **Implement multi-modal transportation impact assessments.**

Multimodal transportation impact assessments would include opportunities for walking, cycling and transit use along with automobile use to:

- examine the wider catchment area of the stop or station in relation to the proposed transit-supportive development to understand the broader transportation issues of the surrounding community;
- consider the transportation impact of new and emerging mobility modes and services including mobility-as-a-service, and connected and automated mobility, may have on the mobility system and how to capitalize on their integration;
- assess the strategic mobility, economic and equity potential of the intersection of mobility options, expanding mobility access beyond the transit network, and facilitating multimodal mobility;
- require a comprehensive assessment examining impacts on all modes within the transportation network, including existing and planned modal split and trip generation rates;
- assess the appropriateness of modal split targets against existing and planned levels of road capacity and levels of transit service;
- explore the impacts of development on existing transit routes to identify whether there will be the need for service enhancements such as increased frequency and/or capacity, the addition of new stops or the implementation of transit priority measures; and
- consider the potential for transportation options and transportation demand management (TDM) measures to mitigate projected traffic impacts, such as improved transit service, pedestrian and cyclist-friendly site design strategies and/or other measures.

Consider using multi-modal transportation impact assessments as a basis for negotiated agreements between developers and the city to assist in servicing new developments. This could include providing support for capital investments such as new transportation infrastructure and/or operation agreements related to the provision of transit service, prior to full build-out of development.

Figure DP  
Transit Streetscape

## Spotlight

### City of Calgary Mobility Assessment & Plan

To better support and balance all modes of transportation around their light rail stations, the City of Calgary developed an alternative tool, the Mobility Assessment & Plan process. The Mobility Assessment and Plan process:

- engages the community at a greater level than typical transportation studies to identify issues and generate solutions to addressing community concerns;
- assesses existing, medium- and long-term transportation conditions considering all modes of movement;

- provides a list of hard and soft infrastructure recommendations such as cycling, pedestrian, transit, parking and road network improvements over the short, medium and long term to support planned levels of development; and
- aims to gradually improve walking, cycling and transit quality of service over time.

Source: Brentwood Station Area Mobility Assessment and Plan (City of Calgary, Transportation Planning)

## 6.3 Sustainability & Future Readiness

Solutions and strategies that increase resilience and support future readiness are needed to ensure that transit services respond to the needs of future generations and can adapt to changes in the environment.

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Building future-ready communities with resilient transportation systems requires a proactive approach to potential uncertainties and shifts in societal needs. A wide range of transit-supportive practices help to achieve sustainability objectives by supporting sustainable mode share targets, develop complete communities with multi-modal access to transit, and reduce GHG emissions. The following principles outline a number of key ways in which municipalities can be future-ready with regards to the resilience and preparedness of their transportation systems.

### Integrating the principle of sustainability

Ensuring that environmental considerations are applied and integrated with social, economic and scientific considerations is key for decision making regarding transit-supportive projects.

- **Incorporate sustainable practices in projects:** Municipalities should explore opportunities to incorporate sustainable practices into transit station area redevelopment and other transit-supportive developments, including, but not limited to smart building materials to conserve energy (e.g., LED lighting, solar panels), reducing urban heat island effect through innovative building design and adopting waste management strategies that promote recycling and reuse. The use of municipal land-use planning and policy plans, guidelines and/or strategy can further integrate and promote initiatives to achieve environmentally sustainability goals through local community development practices. Relevant strategies to support sustainable practices can be found in [Subsections 2.1.5, 2.1.6, and 3.2.1](#).
- **Leverage up-to-date climate change data to inform transportation investments:** Municipalities should utilize the most up-to-date climate change data and information, including findings from Ontario's provincial multi-sector Climate Change Impact Assessment, to make informed decisions on planning and infrastructure investments. Approaches that mitigate the impacts of climate change on the transportation system and that improve infrastructure resiliency should be integrated into transportation master planning and asset management exercises. This may include utilizing climate-related key performance indicators to inform proactive measures to minimize environmental impacts such as extreme temperature and precipitation events that may lead to premature deterioration of road infrastructure.
- **Reduce the impacts of transportation emissions:** Municipalities can consider the adoption of low or zero emissions zones (LEZ or ZEZ) policies, support the uptake of low- and zero-carbon modes, active transportation, shared mobility and the adoption of alternative fuel technologies for cars, trucks and transit vehicles, as part of the holistic approach to creating transit-supportive, people-oriented environments that are sustainable and future-ready.



Figure DQ  
**Mississauga BRT Station**

- **Continue advancing low-carbon transit technologies:** Investing in battery-electric, hydrogen-fuel cell and biogas technologies in the transit industry is essential for supporting Provincial decarbonization efforts. Undertaking efforts to transition municipal transit systems and fleets may also generate cost savings and operational efficiencies in the long-run, benefiting municipal budgets and taxpayers.

## Building resilience in the face of potential emergencies

Adopting a systems-based approach to prepare for and mitigate against unpredictable emergencies such as pandemics, climate-related events or mass demographic shifts is critical.

- **Equip transit systems with emergency preparedness tools and procedures:** Transit agencies and communities should establish and update emergency preparedness plans to react to emergencies. These can draw on the resources provided by Emergency Management Ontario (EMO) in helping develop and implement emergency management programs to support effective management and response activities. Municipalities can also apply to the Ontario Critical Infrastructure Assurance Program (OCIAP) to identify processes to react to key threats and vulnerabilities to Ontario's key facilities, systems and networks.
- **Invest in low-impact development (LID) practices:** LID practices can support municipalities in managing the impacts of urban stormwater runoff, including erosion and pollution. LID increases infiltration of stormwater into the soil, providing improved ecological, economic and social benefits than conventional infrastructure development.

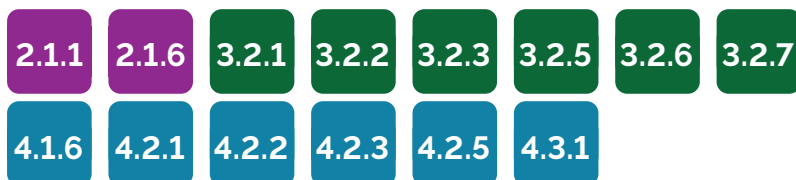
## Preparing for emerging transportation technologies

Emerging transportation technologies, such as connected and automated vehicle technologies, advanced air mobility and electrification should be considered and planned for to ensure adaptability in the face of technological changes.

- **Prepare transportation technology policy:** Preparing for the impact of new and emerging transportation technologies means being ready to embrace them when they reach the market. Policy for such technologies, including connected and automated vehicles, advanced air mobility and shared micromobility (among others), should be flexible to embrace these technologies as components of a diverse transportation ecosystem, while defining how they can enhance access to transit alongside other community objectives.
- **Refer to existing plans and guidelines to support investment:** Upgrading transit and transportation technologies may be critical for achieving long-term cost savings, service efficiencies and providing the best customer experience for riders. Communities should undertake transit / transportation technology feasibility studies to determine the best solution for their needs, and refer to established guidelines and toolkits, such as the MTO Transit Technology Toolkit and Ontario's regional transportation plans, to guide investments.
- **Seek opportunities to build capacity with emerging technologies:** Undertaking studies and seeking opportunities to pilot emerging technologies, such as connected and automated vehicle technologies, Big Data systems and others, offer valuable opportunities to enhance operational efficiency and plan for transit service improvements. These initiatives not only foster future readiness by testing and refining emerging technologies and systems, but also build resilience by ensuring agencies are prepared to adapt to emerging technologies and people's evolving transportation demands. These efforts can help transit agencies remain competitive and better serve communities.

- **Consider mobility-as-a-service integration:** Leveraging the transit-supportive capabilities of mobility-as-a-service applications through the integration of MaaS products in transit and mobility systems can promote transit to an expanded audience. Space at transit stations may be allocated to MaaS products, e.g. for bike docking stations or ride share pick-up drop-off areas, alongside similar mobility facilities and services to physically integrate MaaS within transit systems. Understanding MaaS is an emerging technology, examination of MaaS platforms through the lenses of flexibility, scale, function, and costs should also be undertaken prior to their implementation and on an ongoing basis afterward to ensure they serve communities needs and transit ridership.
- MaaS is an emerging technology that is more advanced in several other jurisdictions compared to Ontario. Practitioners in the mobility sector can support broader public-and/or private-sector led MaaS solutions by taking steps to ensure that key enablers for MaaS platforms are considered, pursued and established. Running a successful MaaS system requires improved fare and service integration policy, cross-sectoral and cross-government collaboration and improved data sharing standards, in addition to regular check ins with users and providers.

### Applicable Sections



### Additional Resources

- [Charging Forward: Urban Electric Mobility Toolkit, USDOT \(2023\)](#)
- [Emergency Management Program Resources, Emergency Management Ontario \(2023\)](#)
- [Global Policy Principles for a Sustainable Built Environment, World Green Building Council \(2023\)](#)
- [Guidebook for Deploying Battery Electric Buses, Federal Transit Administration \(2023\)](#)
- [New Shared Mobility Solutions \(2022\) Evergreen](#)
- [Regulating an Autonomous and Shared Future for Urban Mobility \(2021\) Canadian Urban Transit Association](#)
- [Low-Emission Zones: The Essential Guide, Clean Cities Campaign \(2024\)](#)
- [Low Impact Development Life Cycle Costing Tool, Sustainable Technologies Evaluation Program](#)
- [Low Impact Development Stormwater Management Planning and Design Guide, Sustainable Technologies Evaluation Program \(2024\)](#)
- [Low Impact Development, Toronto and Region Conservation Authority \(2019\)](#)
- [Ontario Critical Infrastructure Assurance Program Strategy, Office of the fire Marshal \(2023\)](#)

- [Ontario Provincial Climate Change Impact Assessment Technical Report, Ontario Ministry of the Environment, conservation and Parks \(2023\)](#)
- [Toronto Green Standard Version 4, City of Toronto \(2022\)](#)
- [Transit Technology Toolkit, Ministry of Transportation \(2023\)](#)
- [Sustainable Building and Development Guidelines, City of Burlington \(2021\)](#)
- [What is a Low Emission Zone?, Institute for Transportation & Development Policy \(2023\)](#)
- [Zero Emission Transit Fund, Government of Canada](#)
- [Zero Emission Vehicle Infrastructure Program \(ZEVIP\), Natural Resources Canada](#)

## 6.4 Funding and Investment

The development of transit and the creation of transit-supportive communities require investment. While transit infrastructure itself is often funded through large capital funding programs, other less traditional funding mechanisms can be utilized to pay for improvements vital to the creation of transit-supportive communities.

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### Lead by example

Some of the most successful transit-supportive communities are developed through public sector leadership. Where municipality or transit agency owns land in strategic locations associated with transit, consideration should be given to partnering with private developers to redevelop the area in a more transit-supportive manner. This may include:

- Successful development of public lands can set a high standard for private sector development near transit and create an increased market for similar developments.
- Consideration can be given to developing partnerships with private enterprises, where a partial transfer of strategic land holdings can be sold for development and, in exchange, the developer could create and maintain public amenities such as parks or facilities such as libraries.
- Proceeds from the sale of capital should only be used to reinvest in capital infrastructure or start-up costs to expand services (for example, expanding the bus/ train fleet to service a new community). Operating costs, including amortization, need to be supported fully by current and future operating revenue streams.
- Governments may also benefit from increased property tax revenues, as strategic investments in infrastructure may provide an incentive for the private sector to construct new developments or to redevelop existing properties to a higher and better use, resulting in an expansion of the property assessment base.

### Leverage funding across different levels of government

Multiple application-based funds are available for cities and communities to access capital investment to fund transit projects.

### Establish Community Improvement Plans (CIP)

A CIP is a tool under the Planning Act that allows a municipality to direct funds and implement policy initiatives towards a specifically defined project area, such as a (major) transit station area or the establishment of multimodal infrastructure. Community Improvement Plans (CIPs) can be

established through appropriate official plan policies and designating by-laws which identify CIP areas. CIPs allow municipalities to make grants or loans to finance certain project costs, typically those with a focus on maintenance, rehabilitation, development and redevelopment.

CIPs can be used to:

- advance public realm, transportation and public infrastructure elements important to creating transit-supportive communities;
- enable municipalities to provide grants and loans to stimulate private sector investment in targeted areas of a community;
- promote revitalization and placemaking to attract tourism, business investment and economic development opportunities;
- promote brownfield cleanup and redevelopment;
- make more attractive use of infrastructure;
- assist in funding the rejuvenation of existing infrastructure;
- promote and stimulate private sector investment in targeted areas; and
- help fund difficult redevelopment sites such as environmentally contaminated brownfield sites adjacent to planned investments in transit.

### **Leverage parking assets into revenue.**

Municipalities may wish to establish a levy on paid parking locations, including on-street metered parking and/or parking lots. Another effective way to gain revenue from parking is the establishment of a parking authority. A parking authority is a corporation owned by the municipality, whose primary responsibility is the provision of shared commercial (and residential, in some instances) parking, during both on- and off-peak demand hours. Key benefits of parking authorities include:

- costs of operations and maintenance can be covered through parking revenues;
- additional revenues can be reinvested to contribute to the funding of valuable public amenities such as cycling infrastructure or public realm enhancements that can support transit-supportive communities;
- parking supply can be adjusted where appropriate to promote higher levels of transit use;
- overall supply of parking within an area can be reduced in favour of shared parking arrangements; and
- management of spaces can be combined with innovative programming to promote carpooling and carsharing.

### **Use community benefits charges to achieve transit-supportive objectives.**

Community benefits charges (CBCs) are a flexible tool under the Planning Act that enable municipalities to apply a fee for new developments. This tool replaced the former section 37 height and density bonusing in the Act.

Municipalities can use community benefits charges to fund the capital costs of any public service associated with new growth if those costs are not already recovered from development charges and parkland provisions. CBCs allow for funding for community infrastructure to be collected on new development, to a maximum of 4% of the land value excluding high demand/high need developments (e.g., long-term care homes, retirement homes, universities and colleges, non-profit housing). To set a CBC, municipalities must develop a CBC strategy and pass a by-law. Strategic plans, public notices and consultation are also required prior to implementation of a CBC.

### **Use municipal capital facilities agreements to deliver new transit facilities.**

Municipalities can enter into municipal capital facilities agreements with other parties, whether public, private, Indigenous communities or not for profit, to deliver transit and transit-supportive transportation facilities, such as cycling or pedestrian infrastructure, where this can be done more effectively by an outside party. This can include the provision of a facility, leasing of a facility to a partner, operating a service or facility or maintaining a facility on behalf of the municipality.

### **Establish municipal services corporations to raise capital for transit projects.**

Municipalities can establish municipal services corporations for most services and/or facilities that the municipality itself could provide including transit and transit-supportive measures through Section 203 of the Municipal Act, 2001 (and the corresponding Regulation 599/06).

Establishing a municipal service corporation is one way for municipalities to bring in capital to deliver transit, by selling shares in a for-profit municipal services corporation or offering membership in a not-for-profit corporation to deliver transit and transit-supportive services. In addition, municipalities have the authority to use an area rate levy (Municipal Act, 2001 s. 326 (1)(a)), which can be provided to a municipal services corporation for economic development services, such as public transit.

### **Structure development charges to recoup costs associated with expanding service areas.**

Development charges (DCs) are a municipal financing tool, implemented through by-law, that can be leveraged by Ontario municipalities to pay for new infrastructure resulting from the need to accommodate new growth.

The Development Charges Act, 1997, allows municipalities to levy charges on new development to help finance the growth-related capital costs of providing roads, transit, active transportation facilities and other transportation-related works. Likewise, DCs can be used to partly finance other transit-supportive land uses such as recreational facilities, libraries and parks.

Municipalities are required to undertake a background study to show estimates and calculations used to establish development charges. The study must include a 10-year growth projection, estimates of future service needs, and estimates of the cost of the infrastructure required to provide those services.







Figure DR  
Long Beach Transit Gallery

# Southern California Association of Governments

Southern California, USA

## Applicable Subsections

3.1.4 4.2.2

The 'Adaptation and Resilience Planning for Providers of Public Transportation', shortened to the 'Climate Resilience Toolbox' is a toolbox of resources developed by SCAG that includes guidance and templates to assist public transit agencies and providers in Southern California in beginning to incorporate climate resilience into their transit networks and operations.

Through engagement with transit agencies in the Region, the Climate Resilience Toolbox organizes key resources, elements and guidance on transit and climate resilience around five core objectives. Together, they provide transit agencies with a foundation on which to improve the resilience of local transit services and operations.

## Applicable Context

### Community Size

 Big City

 Large

 Medium

 Small

 Remote

### Planning Scale

 Regional

 Municipal

### Stakeholders

Regions, Municipalities, Indigenous Communities, Regional Transportation Agencies, Local Transit Agencies

Listed below are the five 'Transit and Climate Resilience' objectives and resources provided within the Toolbox to achieve these objectives:

- Objective 1: Provide an actionable climate adaptation and resilience plan. The Toolbox empowers transit agencies to conduct their own high-level criticality and vulnerability assessments. A SCAG-produced resource 'Assessing Vulnerability and Consequences: Getting Started' is included in the Toolbox and provides a series of steps that agencies may follow to assess, plan, and implement transit.
- Objective 2: Identify critical assets and routes. Tools to support this objective include a guideline for 'Integrating Climate Change into Transit Planning Processes' and an 'Assessing Criticality' Excel template that allow agencies to determine the criticality of their existing transit assets and integrate climate resilience into the transit planning process.
- Objective 3: Integrate climate change forecast data. The Toolbox provides a 'Sensitivity Matrix' excel spreadsheet template, and a resource detailing 'How to Obtain detailed Climate Projection Data'. Together, these tools provide guidance for transit agency staff seeking to access and apply local climate change projection data.
- Objective 4 – Increase regional transit system disaster recovery and resilience. Collaborative workshops allowed SCAG to work with local transit agencies to begin and continue to promote transit system resilience. The Toolbox also includes resources to assist agencies in pursuing climate resiliency initiatives.
- Objective 5 –Support local planning efforts. The Toolbox includes guidance for integrating climate change information and considerations into existing processes, including those required by local or federal standards.

## Key Lessons Learned

- **Fortifying transit systems against climate events:** The case study highlights several important elements to consider when advancing transit-supportive initiatives and practices. Providing resources, guides and additional support to transit agencies to prepare for adverse climate events and make their transit systems resilient to them can help to ensure the long-term reliability and prosperity of the system.
- **Engagement with Local Agencies is Key:** A defining characteristic of the development of the Toolbox was SCAG's continued engagement and collaboration with local transit agencies and municipalities to assess climate readiness, establish priority actions to inform the type of guidance needed and develop shared goals. Ensuring that all agencies in Ontario, no matter their size, location or ability, are equipped with the resources needed to fortify their transit systems and operations constitutes a key benefit to them and the province overall.
- **Tailoring Solutions to Geography:** The efficacy of a Climate Resilience Toolbox will depend on how relevant it and other accompanying resources are to the types of climate realities faced in different geographic contexts. Adverse climate events in Ontario will be considerably different to those in Southern California. As a result, provincial or regional guidance on climate resilience and transit for Ontario communities must encompass careful consideration of the specific climate change projections relevant to Ontario's geographies.

## Additional Resources

- [Adaptation and Resilience Planning For Providers of Public Transportation, SCAG](#)
- [Climate Resilience Toolbox, SCAG](#)



Figure DS  
Nation Station in Paris

# Régie autonome des transports parisiens

Ile-de-France, France




## Applicable Subsections

- 3.2.1
- 3.2.2
- 3.2.5
- 3.2.6
- 3.3.1
- 3.3.5
- 5.1.1
- 4.2.1
- 4.2.3

At the regional level, Île-de-France Mobilités, the regional transportation authority, recognizes the important role of mobility hubs in facilitating intramodality, providing urban services, and developing vibrancy in the surrounding area. In 2020, the Multimodal Transport Hubs Good Practice Guidelines was published by the Agence Française de Développement (AFD) for the Île-de-France region with the intent of supporting the implementation of efficient and sustainable mobility systems through the achievement of these goals. The AFD understands mobility hubs as serving functions beyond transport. Mobility hubs are the connection points between various modes and places – where the transit network and cities interface.

## Applicable Context

### Community Size

-  Big City
-  Large
-  Medium
-  Small

### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

### Stakeholders

All

## Key Lessons Learned

- **Providing Service that Encourages Desired Behaviours:** A comprehensive set of transportation options that is inclusive of all demographic groups will maximize desired travel behaviours. The use of active transportation, electric vehicles, transit, etc., is most suggestible to new users with ease of access; when these systems are implemented and barriers to access are lowered. As such, a hierarchy of modes should be established at the design stage and carried through to the construction and maintenance phases.
- **Defining and developing tools for mobility hub implementation:** To

streamline and ensure consistency in the implementation of mobility hubs, plans and technical documents were produced to be used as references for the planning, design, and financing of mobility hubs. The urban master plan for Ile-de-France (Plan directeur d'urbanisme d'Ile-de-France) set service quality targets and identified specific equipment to reach these targets (below). A set of blueprints and technical reference handbooks were also produced by Ile-de-France Mobilités to provide information to contracting authorities on the design of mobility hub and infrastructure elements, including bus terminals, passenger information systems, equipment operations, etc.

| Passenger Service Target  | Equipment   |
|---|---|
| Receive real-time information about waiting times, connections and disturbances.                        | Multi-operator, multimodal information display screens.   |
| Easily understand the layout of the hub and the offer provided by all transport modes serving the hub.  | Schematic plan of the hub and network plan featuring all carriers.<br>Neighbourhood and platform access maps, wayfinding signage.   |
| Move about and feel safe in a quality, non saturated space.   | Refurbishment of indoors interchange areas, transfer hallways and platforms.<br>Improvement of in-station waiting conditions (platform furniture, wifi and seats in interchange areas). |
| Walk and ride a bike to and from the hub easily and safely, and safely park the bike there for the day. | Pedestrian forecourt in front of the main access, large-capacity, secure bike parking facilities.<br>Isochrone maps displaying walk times to access the hub.                            |
| Prepare & obtain information remotely about transportation and associated services.                     | Web site and smartphone applications with schematic maps of the hub.  |
| Have a dedicated, safe drop-off area.   | Dedicated short-term parking for drop-offs with safe pedestrian links.<br>Parking spots reserved for ride-sharing, close to the hub and with PRM parking spaces.                        |

## Additional Resources

- [Multimodal Transport Hubs Good Practice Guidelines](#)



Figure DT  
TransLink Shuttle at Horseshoe Bay Ferry Terminal

# British Columbia Transit

British Columbia, Canada

## Applicable Subsections

4.1.1

4.1.2

4.1.12

5.1.2

## Related Subsections

3.1.4

3.1.5

6.4

The 'Northern BC Inter-Community Transportation Study' was initiated by Northern Development and examined the challenges, opportunities, and recommendations for rural and inter-community transportation through Central and Northern BC. This covers approximately 70% of the province, including 89 First Nations communities.

The Online Transportation Demand Management (TDM) Encyclopedia is a collection of transportation management solutions that further supports transit operations in BC. Developed by Victoria Transport Policy Institute, this resource provides TDM planning and evaluation strategies built on the understanding of transportation challenges across BC.

## Applicable Context

### Community Size

 Big City

 Large

 Medium

 Small

 Remote

### Planning Scale

 Regional

 Municipal

### Stakeholders

Regions, Municipalities, Indigenous Communities, Transit Agencies, Hospitals / Healthcare Centres, Airport Authorities, Transportation Service Providers, Private Intercommunity Bus Companies

## Key Lessons Learned

- **Support rural transit programs:** Increase the feasibility of rural and Indigenous transit planning programs by: extending time frames in consideration of the time required to procure vehicles; providing up to date cost-assumptions and budgets; providing longer lead times for applications and supports (in-take workshop, examples, etc.) for new applicants; and considering joint procurement opportunities.
- **Improve communication and promotion of transit services for all demographics:** Include non-electronic means of communication by using grassroots approaches including radio, newspapers, bulletin boards, community newsletters at libraries, community service agencies, visitor information centres, and community centres.
- **Shared Procurement:** Consider opportunities for shared procurement between transportation providers if services are confirmed to continue for the long term.
- **Indigenous-Led Ventures:** Explore opportunities to develop / empower Indigenous-led transit, and transit-supportive ventures through partnerships and funding, such as Two Worlds Transportation: an Indigenous-led joint venture between Tsawwassen Shuttles and TRAXX Holdings that provides shuttle and motorcoach services.
- **Sponsoring Partners:** Provide opportunities for local governments and Indigenous communities to act as a sponsoring partners for regional and provincial transit service
- **Leverage funding from federal and provincial programs:** Federal programs (that are also available for Ontarians) and provincial programs that cover a range of transit and transit-supportive initiatives, including active transportation, accessibility,

vision zero, complete communities etc. are critical in actualizing mobility projects in rural and Indigenous communities. At the time of publication, federal programs include:

- Rural Transit Solutions Fund (RTSF) – Infrastructure Canada
- Investing in Canada Infrastructure Program (ICP) (Rural and Northern Communities stream) – Infrastructure Canada
- Indigenous Services Canada (SC) & Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)
- Active Transportation Fund – Infrastructure Canada
- Public Transit Infrastructure Fund – Infrastructure Canada
- Canada Community-Building Fund (CCBF) – Infrastructure Canada

## Additional Resources

- [Northern BC Inter-community Transportation Study](#)
- [Transportation Demand Management Encyclopedia](#)
- [Active Transportation Fund](#)
- [Rural Transit Solutions Fund](#)
- [Investing in Canada Infrastructure Program](#)
- [Public Transit Infrastructure Fund](#)
- [The Canada Community-Building Fund](#)



Figure DU  
Interchange Station Signage in London

# Transport for London

London, England

## Applicable Subsections

- 3.2.1
- 3.2.2
- 3.3.3
- 3.3.4
- 3.3.5

## Related Subsections

- 2.1.5

'Legible London' is the City of London's comprehensive Wayfinding strategy, first introduced in 2007 to enhance the experience of pedestrians navigating central London. Initially funded by Transport for London, the government agency responsible for much of London's public transit network, 'Legible London' is an important, best practice case study in the development of a wayfinding network that supports connections to and from public transit services, shared mobility stations and PUDO areas, and neighbourhoods within a 15-minute walkshed.

## Applicable Context

### Community Size

-  Big City
-  Large
-  Medium
-  Small
-  Remote

### Planning Scale

-  Regional
-  Municipal
-  Community
-  Site

### Stakeholders

Municipalities, Indigenous Communities, Transit Agencies, Land Use Planning & Urban Design / Architecture Professionals

## Key Lessons Learned

- Legible London wayfinding elements include:
  - **Monoliths:** Wide signs that include detailed directional information and a large walking map to illustrate a five-minute walk in any direction.
  - **Miniliths and Midiliths:** Tall, narrow signs that offer detailed information on the local area. Their height ensures they are visible from a distance and amongst crowds of people.
  - **Interlith Totems:** Tall signs that combine detailed directional information, walking maps and an illuminated beacon, designed for transport interchanges.
  - **Finger posts:** More traditional signs pointing the way to places where a map-based sign may not be suitable.
  - **Wall-mounted signs:** Wall-mounted signs for locations where there are spatial constraints.
  - **Digital signs:** Any of the Liths can be adapted to incorporate intelligent transport devices, such as interactive displays, data live feeds, digital displays, touch screens, motion sensors, CCTV, ticket machines, journey planners, wifi, bluetooth, etc.
  - **Accessibility:** Important information displayed on wayfinding elements are located between 90cm and 180cm above the ground, so it is viewable by most people.
  - **15-Minute City:** Enhance FM / LM pedestrian connectivity in the application of wayfinding elements to support journeys within and beyond Central London, including a '15-minute map', which displays the proximity of different neighbourhoods within a 15-minute walkshed.
- **Connections to Transit and Mobility Choices:** The program additionally supports increased access to London's extensive transportation network by displaying the location of bus stops, Tube stations, Santander Cycles (bike share) docking stations and taxi ranks on different wayfinding elements.
- **Fostering Transit Connections and 'Place':** Distinct and reliable wayfinding elements were critical in building a sense of 'place' in Central London, encouraging pedestrian activity and assisting them in navigating dense urban cores.
- **Consistency and Coherence is Crucial:** Establish a consistent visual identity including considerations for the use of typography, colour and symbology to help users recognize and trust the signage throughout the city.
- **Replicable in Small Communities:** Despite its size, the 'Legible London' program can be, and has been, replicated in smaller municipalities.
- **Digital Elements:** Incorporating digital tools like mobile apps, interactive features and other virtual elements could be programmed to provide real-time updates, personalized directions, trip planning, booking and payment, and additional information on things like nearby points of interest.

## Additional Resources

- [Transport for London: Maps & Signs](#)
- [Legible London Yellow Book: A prototype wayfinding system for London](#)
- [Applied Information Group, Legible London: The birth of modern city wayfinding](#)
- [London Assembly, Legible London](#)



Figure DV  
Jelbi Mobility Hub at Berlin Südkreuz

# Berliner Verkehrsbetriebe

Berlin, Germany

## Applicable Subsections

- 3.2.1
- 3.2.2
- 3.2.5
- 3.2.6
- 3.2.7
- 3.2.10
- 3.3.4

## Related Subsections

- 2.1.2
- 2.1.5

'Jelbi' is Berlin's all-encompassing mobility-as-a-service platform – a mobile application that integrates the city's public transit services with a suite of shared mobility offerings including:

- Transit: Bus, Train, Tram and Commuter Rail
- E-scooters: Voi, TIER, and Bolt
- Bike share: Nextbike, Lime, TIER and Bolt
- Cargo Bikes: Cargoroo and Sigo (only available for rental and returns at select Jelbi locations)
- Electric mopeds: Emmy
- Car Share and Taxi: MILES, SIXT, Cambio, DB Flinkster and Taxi Berlin

## Applicable Context

| Community Size                                 | Planning Scale                             | Stakeholders  |
|--|--|---|
| Big City<br>Large<br>Medium<br>Small<br>Remote | Regional<br>Municipal<br>Community<br>Site | Indigenous Communities, Local Transit Agencies, Specialized Services / Major Trip Generators, Mobility-as-a-Service Companies / Providers, Developers |

Customers may tailor their trip preferences, selecting from a range of customizable options to build trips according to their needs, informed by real-time network information, vehicle locations and availability, trip time and cost comparisons, amongst other factors.

Concurrent with Jelbi's launch and expansion, BVG have introduced three types of 'mobility hubs' called 'Jelbi Clusters', 'Jelbi Stations' and 'Jelbi Points'. These are physical spaces where public transit and the City's partnered private mobility service providers are co-located and accessible through the Jelbi App or on-site interactive kiosks.

Both hub types are located at or near the City's S-Bahn and subway stations and several Campus locations, allowing users to easily access a shared mode when getting to or getting off public transit, while doubling as a designated stopping, pick up and drop off areas for taxis. Jelbi Stations include shared, active modes such as bike share and micromobility, as well as car share vehicles and electric vehicle charging facilities. Jelbi Points are smaller hub locations primarily for two-wheeled vehicles such as bike shares, mopeds, and micromobility scooters.

## Key Lessons Learned

- **Reliable FM/LM Mobility Hubs:** Jelbi 'Clusters', 'Stations' and 'Points' are typically installed at or near transit stations and co-locate different shared mobility options to provide customers with a range of FM/LM modes to complete their journey to or from transit. Over 60,000 vehicles are provided in the Jelbi network, offering customers a range of modes to complete their trips on the vehicle they require.
- **Plan, Book and Pay in One App:** As a MaaS platform, Jelbi achieves a type of FSI by integrating the city's public transit and private mobility services into

a single mobile application. Customers can plan, book and pay for trips through the application without the need to set up multiple accounts or make multiple payments.

- **Public Transit Must be the Backbone of MaaS:** A common concern with MaaS systems is that they may disincentivize public transit services by making access to the whole suite of additional mobility modes and services too convenient. In this case study, that BVG is the owner of the MaaS application 'Jelbi' means it can ensure public transit remains the foundation on which additional mobility services are offered. Similarly, it can provide in-app incentives to riders that include transit in their trips.
- **Operationalizing MaaS through Mobility Hubs:** The linkage between an all-encompassing mobility application, and the deployment of physical locations where many of the modes in that application are located is a demonstrably effective way of operationalizing the MaaS concept.
- **Optimizing Underused Spaces to Support FM / LM:** Urban spaces near transit stations such as parking spaces and certain curbside areas can be adapted and repurposed as locations for multiple shared mobility modes and services. These can support quick and easy access to a range of FM/LM mobility choices to get to or from a transit network and introduces opportunities to increase a sense of 'place' through the placement of wayfinding elements, street furniture and more.

## Additional Resources

- [Berlin's entire public transport and sharing services in just one app, BVG](#)
- [BVG Jelbi – all urban mobility in one place](#)
- [The Stations, BVG](#)
- [Jelbi, the MaaS application from Berlin](#)



Figure DW  
**Montreal Bike Lane**

# Société de transport de Montréal

Montreal, Canada

## Applicable Subsections

- 3.2.2
- 3.2.5
- 3.2.6
- 3.2.7




## Related Subsections

- 2.1.5
- 4.1.11

Montreal is typified by several higher density boroughs that include 'missing middle' urban typologies and which support a diverse mix of land uses and amenities contributing to the city's walkability. The BIXI Montreal bike share system has grown progressively into a network of over 10,000 bikes, spread across 830 stations located in Montreal and its neighbouring municipalities. The launch of the Réseau Express Vélo (REV), an express bike network totalling some 191 kilometres of protected cycle lanes will connect different points of interest across the City and consist of 17 corridors, accessible year-round. This further encourages the uptake of active transportation and bike share, while fostering closer connections and integration with the city's public transit system.

## Applicable Context

### Community Size

-  Big City
-  Large
-  Medium
-  Small

### Planning Scale

-  Regional
-  Municipal
-  Site

### Stakeholders

Municipalities, Indigenous Communities, Local Transit Agencies, Specialized Services / Major Trip Generators, Mobility-as-a-Service Companies / Providers, Land Use Planning & Urban Design / Architecture Professionals, Developers

## Key Lessons Learned

- **Extensive Bike Share Network:** BIXI - Montreal's successful bike-sharing program, continues to expand and is an integral part of the city's bike infrastructure. It provides residents and visitors with a convenient and affordable way to access bicycles for short trips around the city. Efforts have been made to expand and improve bike-sharing programs, making it easier for individuals to access bikes for short trips or commutes.
- **Expansive Cycling Network Infrastructure:** The City actively supports people's ability to complete the first-mile last-mile of their journeys through the provision of an extensive cycling network and the rehabilitation of existing infrastructure. Initiatives being advanced through the REV (Express Bicycle Network) will create an even more extensive and interconnected network that improve safety and encourage more people to cycle.
- **Operational and Policy Support for Active Mobility:** Montreal is known for its efforts in promoting winter cycling, including snow removal from bike lanes, to encourage year-round bicycle use. It recently introduced changes to make the BIXI bike share system available year-round and has supported initiatives that encourage businesses to provide bike racks, shower facilities and incentive programs for employees who bike to work.
- **Transit-Oriented Bike Share Station Selection Criteria:** BIXI station locations are generally selected based on population density, travel generators, such as proximity to regular commuter routes, amenities, transit stations and routes, and nearby bike paths. Occupancy permits are issued by the City and STM where applicable.
- **Curbside and Road Space Allocation:** Montreal has ample examples of road space reallocation from parking and driving lanes, into pop-up plazas, parkettes, patios and bike-share docking areas. The city also

launches numerous seasonal placemaking initiatives and road closures to encourage walking, cycling and socializing. These temporary street transformations draw on important tactical urbanism methodologies on the role of public space and the value of 'place'. Measuring their usage and success can lead to these interventions becoming permanent fixtures in the future.

- **Expanded 'OPUS Card' Functionalities:** Montreal's fare card system, 'OPUS' enables access to the city's Metro, Train, REM (LRT), Buses and shared Taxibus (microtransit). Through integration with 'Chrono' (see next), users are able to check the status of fares loaded on OPUS cards through the application.
- **OPUS Integrations with Third-Party Mobile Applications:** The city has recently introduced 'Chrono', a limited Mobility-as-a-Service mobile application that supports trip and route planning, real-time information and complete network updates in one place. Chrono supports integration with the BIXI bike share network, allowing OPUS cardholders to locate and unlock a BIXI without leaving the application.
- Montreal's urban form, density, and walkability, allows for mobility hub-like settings to form more intuitively, due to the wide and dense coverage of mobility options that intersect each other. An increased investment in cycling infrastructure is reflected in the increased use of active transport and multi-modality.

## Additional Resources

- [Climate Plan 2020-2030, City of Montreal](#)
- [Favouring sustainable mobility in Montreal, City of Montreal](#)
- [Cycling and Bike Paths, City of Montreal](#)
- [The EBN: Montreal's Express Bike Network, City of Montreal](#)



Figure DX  
Hubway Bikes at Copley Square

# Massachusetts Bay Transportation Authority

Boston, USA

## Applicable Subsections

2.1.5 2.1.4

## Related Subsections




3.2.3 3.2.5 3.2.9 3.2.10 4.2.3 5.1.1

In recent years, Boston has established a comprehensive set of guidelines which speak to the intersection of transit, mobility, and placemaking. A Guide to Placemaking and Mobility was published in 2016, establishing the foundational structure of spatial typologies for the mobility network in Boston. Based on placemaking goals associated with certain spatial typologies, a collection of strategies for enhancing the public realm were identified.

The Boston Complete Streets Design Guidelines and Tactical Public Realm Guidelines expand on placemaking guidance in Boston with applicability to the development of transit-supportive communities.

## Applicable Context

### Community Size

-  Big City
-  Large
-  Medium
-  Small

### Planning Scale

-  Municipal
-  Site

### Stakeholders

Municipalities, Indigenous Communities, Local Transit Agencies, Specialized Services / Major Trip Generators, Mobility-as-a-Service Companies / Providers, Land Use Planning & Urban Design / Architecture Professionals, Developers

## Key Lessons Learned

- **Public Realm:** The creation of a safe, comfortable, and connected pedestrian environment is intrinsic to supporting first-mile last-mile connectivity. The Complete Streets Design Guidelines, GoHubs! placemaking guidance, and Placemaking for Mobility public realm strategies published by the City of Boston work together to ensure the public realm enables individuals to complete the first and final leg of their journeys.
- **Sustainable Connections for the Car:** Sustainable options are available for trips that require the use of a personal vehicle for the first or last mile. Dedicated curbside spaces for pick-up and drop-off can be used by all vehicles, including ride hailing companies, to enable quick transfers between modes. Car sharing services may also operate in the public right-of-way, with priority for implementation focused in underserved areas, particularly Environmental Justice Communities. Finally, electric vehicle charging stations are intended to be incorporated into the design of GoHubs! with an extensive implementation guide detailing site selection and design, management, and operations, etc.
- **Spatial and Station Typologies:** Structurally, the mobility network in Boston can be characterized by places, which consist of mobility hubs, gateways, squares, centres, and points, and corridors, which include greenways, transit collectors, neighbourhood bridges, and pedestrian promenades.
- **Opportunities for Collaboration with Community Leaders:** The development and funding of guidance documents may be supported or completed in collaboration with local community leaders. In the case of Boston, the expertise of A Better City, a group of business leaders with an interest in supporting Boston's

economic competitiveness through transportation, land use, and development projects, among other topics, and the Barr Foundation, which works with local leaders to advance climate change solutions, were drawn on in the development process of multiple guidelines.

## Additional Resources

- [GoHubs! Neighbourhood Mobility Hubs Guidebook](#)
- [Bike Parking Guidelines](#)
- [How to Guide: Electric Vehicle Charger Installation](#)
- [Pick-Up/Drop-Off Pilot Initial Assessment & Early Findings](#)
- [Bus Stop Planning & Design Guide](#)
- [Tactical Public Realm Guidelines](#)
- [Boston Complete Streets Design Guidelines](#)
- [Transit-Oriented Development \(TOD\) Policies and Guidelines](#)
- [A Guide to Placemaking for Mobility, 2016](#)



Figure DY  
Antelope Valley Zero-Emission Bus

# Antelope Valley Transit Authority

Antelope Valley, USA

## Applicable Subsections

4.1.2

4.1.7

4.1.12

6.4

In 2022, the Antelope Valley Transit Authority (AVTA) became the first all-electric transit agency in North America after decommissioning the last of its diesel buses in 2020. In total, AVTA's total zero-emission transit fleet consists of 62 zero-emission buses serving the region's conventional transit routes, 24 battery-electric commuter coaches, and eight battery electric vans that provide on-demand microtransit services in the rural parts of northern Los Angeles County.

## Applicable Context

### Community Size

 Big City

 Large

 Medium

 Small

 Remote

### Planning Scale

 Regional

 Municipal

### Stakeholders

Regions, Municipalities, Indigenous Communities, Local Transit Agencies, Transit Industry and Transit Consultants

AVTA, a small transit agency, effectively transitioned its fleet to zero-emissions through a coordinated action plan and set of incremental procurements that would support the agency's growing fleet. Steps include:

- 2004: AVTA became the first public transit operator to install a solar facility over bus parking shade structures to generate solar power for facility operations.
  - 2016: AVTA placed an order of up to 85 electric buses from electric bus manufacturer BYD, leveraging a total \$24.4 million in state grant funds and federal and agency funds.
  - 2017-2021: AVTA installed a total 12 WAVE inductive charging systems across four transit centres. The chargers are inductive (wireless) charging pads that enable buses to be charged simply by driving over them, allowing for quick charge 'top ups' when buses pull into the transit centres along frequent bus routes.
  - 2020: AVTA procured eight 'GreenPower' EV Star electric vans to its fleet to support the launch of an all-electric microtransit program in the rural Los Angeles County communities, offering on-demand transit services to rural populations otherwise underserved by reliable transit options.
  - 2021: AVTA introduced the first of 24 battery electric commuter coaches to provide cross-jurisdictional connections to the San Fernando Valley and Downtown Los Angeles.
  - 2022: AVTA celebrated its all-electric fleet completing over 7 million zero emission miles, avoiding 1,750,000 gallons of diesel fuel and an estimated 41 million pounds of CO2 emissions and over 130,000 pounds of particulate matter. In total, this resulted in an estimated \$2,362,500 in net savings.
- and stick to schedule. These complement more powerful plug-in conductive chargers in AVTA's transit depots that support overnight charging and assist in general fleet management and vehicle health monitoring.
- **Aesthetic On-Route Charging:** On-route charge pads eliminate the need for manual connections and can reduce the risk of collision with non-transit vehicles. In turn, these may improve safety by minimizing roadway or sidewalk obstructions and are less visually obtrusive than pantograph or other plug-in charger types.
  - **Providing rural and commuter connections:** The procurement of electric microtransit vans and electric commuter coaches demonstrate the agency's commitment to providing important connections and means of access for rural residents in the service area, and commuters requiring access to cross-jurisdictional transit networks.
  - **High Upfront Costs Pay Off in the Long Run:** The reduction in total emissions and particulate matter, alongside the estimated financial savings associated with AVTA's fleet transition demonstrate the economic benefits of transit electrification. Total fleet replacement lifecycle costs can be conducted to forecast savings and assist smaller agencies and municipalities with financial budgeting
  - **Leveraging Government Funding:** AVTA was purposeful in its use of Federal and State funds to finance its fleet conversion.

### Key Lessons Learned

- **Efficient On-Route and In-Depot Charging:** On-route inductive charging pads allow bus batteries to be 'topped up' on route, reducing bus downtimes and ensuring that bus operations are efficient

### Additional Resources

- [AVTA becomes the First All-Electric Zero-Emission Transit Agency in North America,](#)
- [Climate Action Plan, AVTA](#)
- [Electric Bus Fleet Conversion, AVTA](#)
- [How Small Cities can Lead in Electrification, Planetizen](#)
- [Antelope Valley Transit Authority Comprehensive Long-Range Transit Plan, AVTA](#)



Figure DZ  
BC Transit Bus in Victoria

# Victoria Regional Transit Commission

Victoria, Canada

## Applicable Subsections

2.1.2 2.1.5

## Related Subsections

3.2.6 3.2.7 3.2.10

The City of Victoria, British Columbia passed the Missing Middle Housing Initiative, which aims to create opportunities for the development of diverse housing options in Victoria in light of the city's steady growth. The policy and its constituent elements comprise an important case study for the role that residential intensification plays in the growth of transit-supportive environments and TOCs more broadly.

## Applicable Context

### Community Size

-  Big City
-  Large
-  Medium
-  Small
-  Remote

### Planning Scale

-  Regional
-  Municipal
-  Site

### Stakeholders

Municipalities, Indigenous Communities, Local Transit Agencies, Land Use Planning & Urban Design / Architecture Professionals, Land Use Planners, Developers

Through the policy, new developments accommodating up to six units, including townhouses and duplexes will be permitted on existing residential lots as-of-right, without the need for Council approval or rezoning. As part of the initiative, Victoria's city council published the Missing Middle Design Guidelines (2023) which provide design guidance for the development of Missing Middle typologies where they are permitted in Victoria's neighbourhoods, as well as the Affordable Housing Standards Bylaw, which establish affordability standards for rental and affordable home ownership. Together, these resources provide a critical foundation for the development of denser, transit-oriented housing, while supporting the ability for diverse income earners to access housing as renters or owners.

### Key Lessons Learned

- **Car-Share Membership:** Developers may reduce required vehicle parking spaces by 0.15 spaces per dwelling unit in exchange for the provision of one membership to a two-way car sharing service, and an initial \$100 usage credit for that service for every dwelling unit.
- **Minimum Bicycle Parking Requirements:** At least two long-term bicycle parking spaces are provided per dwelling unit, or one bicycle parking space if the unit is a secondary dwelling unit. Of these, a minimum of 15% of the required bicycle parking must accommodate oversized bicycles, such as e-cargo or recumbent bicycles.
- **Electric Bicycle Charging:** Of the total bicycle parking spaces required, 50% must be equipped with electric bicycle charging stations. This requirement supports the uptake of e-cycling, which can reduce barriers to cycling that certain users may face.
- **Public Transit Passes:** Where units are secured as rental units, developers may reduce required vehicle parking spaces by 0.77 per unit in exchange for the provision of one BC Transit public transit pass for a minimum five-year term per dwelling unit. These potential cost savings provide a clear incentive to developers to reduce parking while supporting transit uptake.
- **Bicycle Maintenance Amenities:** To support active mobility, developments with six or more dwelling units are required to have a bicycle maintenance facility in a secure area where the bicycle parking spaces are located. This must include a bicycle repair stand, common bicycle maintenance tools, a pump and a water faucet with functioning drainage.
- **Small, Growing Cities can be Role Models:** Victoria's Missing Middle Housing Initiative demonstrates that comparatively small cities can be leaders in advancing progressive, future-oriented and transit-supportive housing policy. In light of Victoria's growth, advancing policy that can help limit sprawl, reduce car dependency and intensify existing neighbourhoods can serve as a model for communities in Ontario to replicate, in the interest of promoting dense, transit-oriented neighbourhoods.
- **Entrenching TDM in Policy:** The case study exemplifies how policy can be tailored to incentivize and ultimately change common design practice to advance mobility outcomes. Setting standards for bicycle parking, amenities, car share vehicles and the provision of transit passes in exchange for density bonuses or parking reductions may be important steps to change people's travel behaviours within neighbourhoods and evolving TOCs.

### Additional Resources

- [Missing Middle Housing Initiative, City of Victoria](#)
- [Zoning Regulation Bylaw, Amendment \(No. 1278\), City of Victoria](#)
- [Affordable Housing Standards Bylaw, City of Victoria](#)
- [Missing Middle Housing Project, Phase 1: Early Engagement Summary, City of Victoria](#)



Figure EA  
Leduc On-Demand Transit

## Leduc Transit

Leduc, Canada

### Applicable Subsections

4.1.8

4.1.11

4.1.12

4.2.3

4.3.1

Leduc is a municipality located south of Edmonton, Alberta with a population of 34,000. In 2021, Leduc Transit transitioned from providing fixed route service to on-demand service with the goal of improving first-mile last-mile connectivity and access to economic and employment opportunities. The previous fixed route network operated by Leduc Transit provided transit service with headways of up to an hour and insufficient access to a prominent business park located in an adjacent municipality.

### Applicable Context

#### Community Size

 Medium

 Small


 Remote

#### Planning Scale

 Regional

 Municipal

 Community

 Site

#### Stakeholders

Regions, Municipalities, Indigenous Communities, Local Transit Agencies, Specialized Services / Major Trip Generators, Transportation Service Providers (TSPs), Transit Industry and Transit Consultants

On-demand transit service has since replaced the previous bus network by absorbing existing transit stops while adding new virtual stops which are located closer to trip origin and destination points. The new transit system is composed of a total of 450 transit stops and four vehicles which service a 59 km<sup>2</sup> area that encompasses the City of Leduc and Nisku Business Park. Riders are able to book trips up to two weeks ahead of time using a mobile app, online browser, or through a call centre, which the transit system uses to calculate the most efficient route. Transit services also include the Leduc Assisted Transportation Service (LATS), a door-to-door, driver assisted service for seniors and individuals with cognitive or physical disabilities.

The implementation of on-demand service in Leduc has provided residents with a mobility option that is more convenient and equitable. Since on-demand service has been introduced, the cost per passenger has almost halved while overall transit ridership has increased by 252%, service hours have increased by 60%, and headways have decreased to 13 minutes.

## Key Lessons Learned

- Rural Transit Operations: Recognizing the shortcomings of fixed route transit service in the rural context, Leduc Transit implemented an on-demand transit solution which provided stronger first-mile last-mile connectivity and increased ridership while reducing operational costs.
- Provide Transit Service Based on the Needs of Riders: Recognizing fixed route service was unable to provide sufficient connectivity between origin points and prominent destinations, an alternative approach to transit service was explored. Small and rural communities may be able to provide more flexible and efficient transit service while reducing operating costs using on-demand transit compared to fixed route transit.
- Leverage Digital Technologies: Emerging technology may be integrated into the transit operations to provide more efficient service; reducing maintenance and operating costs while improving user experience.

## Additional Resources

- [Microtransit Literature Review & Case Studies](#)
- [Leduc Assisted Transportation Services \(LATS\)](#)
- [On-Demand Transit](#)
- [Leduc Transit Gets Green Light for On-demand Service](#)



Figure EB  
Okotoks E-scooters

# Okotoks Transit

Okotoks, Canada

## Applicable Subsections

4.1.12

4.2.2

4.3.1

Okotoks is a small town of approximately 29,000 people, located south of Calgary in Alberta. In 2021, Okotoks launched the first of three subsequent e-Scooter pilots following the success of an initial pair of e-Scooter pilots launched in 2019 in Calgary and Alberta. The 2021 pilot shared e-scooter program was launched on June 1 and ended on October 31 in association with Bird Canada, a Canadian-owned shared micromobility company. In the first year, a total 3,203 riders in Okotoks completed nearly 16,000 trips on the fleet of 75 e-scooters deployed in the town. The success of the pilot resulted in the Town launching two additional pilots in the following 2022 and 2023 seasons.

## Applicable Context

### Community Size

 Big City

 Large

 Medium


 Small

 Remote

### Planning Scale

 Municipal

 Community

 Site

### Stakeholders

Municipalities, Indigenous Communities, Transit Agencies, Municipal Planners / Staff, Universities and Colleges, Hospitals / Healthcare Centres, Transit Industry and Transit Consultants, Mobility-as-a-Service Companies / Providers

Key improvements made to the Pilot to enhance the use of e-Scooters include:

- **Improved Data Gathering:** In the pilot's second year, a third-party data company was contracted to generate more in depth insights regarding the use of Bird's e-scooters, ridership, location, battery health and other metrics that would better inform subsequent pilots and improve the operation of the e-scooters to best meet the Town's needs.
- **Implementation of Slow Zones:** While e-scooter maximum speeds are capped at 20 km/h, Okotoks demarcated a series of 'Slow Zones' where scooter speeds are 'geofenced' (speeds are automatically reduced through the Bird application) to travel at a maximum 15 kilometers per hour.
- **Expanded Fleet of Scooters:** In 2022, Okotoks nearly doubled the initial fleet of e-scooters, deploying 140 e-scooters in the Town. This was met with increased ridership among users in the Town, where ridership was reportedly 'among the highest in Canada.'
- **New Pricing Packages:** New pricing packages were introduced to incentivize ridership while aiming to increase access for more users. An \$8-per-month pass program was introduced as well as a '3 rides for \$15' program. Similarly, a 'Community Pricing Program' was introduced that provided a 25% discount for qualifying low-income residents, seniors and health care workers.
- **Desire for More Supportive Infrastructure:** Survey respondents stated their desire for more protected lanes and better road surfaces to support the safe use of e-scooters in Town. This feedback demonstrates the importance of safe infrastructure to support active and micromobility use in growing TOCs.
- **Micromobility in Small Communities:** Shared micromobility pilots and programs are feasible in small communities. Inaugural pilots should be scaled to community size and local conditions, leaving room for incremental improvements in subsequent pilots.
- **Ridership Data and Engagement can Provide Key Insights:** Leveraging ridership data from the shared mobility provider can provide highly valuable data on ridership patterns, areas of high or low demand, incidents and collisions to inform the need for additional safety measures.
- **Equity and Access:** Breaking down barriers of entry for different user groups is important to optimize the use of a shared mobility service and ensure everyone can benefit. Introducing new cost programs that provide affordable means of access for low-income users, seniors and other groups is key to bring everyone along for the ride.

### Key Lessons Learned

- **Fostering Connections:** Following the 2021 pilot season, nearly 40% of residents surveyed on their use of the e-scooters reported that they used the e-scooters to connect to or from another mode of transportation. Of these, 37% connected to or from walking, and 10% connected to or from a bus.
- **Desire for expansion among residents:** The community supported the use of non-motorized / more space efficient

### Additional Resources

- [Shared e-Scooter Micromobility Pilot Program, Okotoks](#)
- [E-Scooters and Modernizing the Alberta Traffic Safety Act for Personal Use, Alberta Municipalities](#)
- [Integrated and Accessible Transportation, Okotoks](#)
- [What you need to know about the return of e-scooters to Okotoks, Okotoks](#)
- [2021 e-Scooter survey report, Okotoks](#)

# Appendix B: Glossary of Terms & Acronyms

## A

### Accessible Formats

May include, but are not limited to, large print, recorded audio and electronic formats, braille and other formats usable by persons with disabilities.

### Account-Based Fare System

A fare system in which customers register their personal information, fare media, and preferences to track their usage patterns. These systems depend on connection to the central account system for verifying fare payment.

### Active Transportation

Human-powered travel, including but not limited to, walking, cycling, inline skating and travel with the use of mobility aids, including motorized wheelchairs and other power-assisted devices moving at a comparable speed.

### Active Uses

Land uses such as retail, storefronts, cafes and restaurants, which encourage pedestrian activity at street level and maintain visual interest.

### Adapted Cycle

Adapted cycles cover the full range of bikes that may be used by people with a range of disabilities and by seniors. Examples include handcycles, tricycles and pedicab-type trikes with a two-person seat at the front such as those used by Cycling Without Age programs.

### Affordable

- a) In the case of ownership housing, the least expensive of:
  - 1. Housing for which the purchase price results in annual accommodation costs which do not exceed 30 percent of gross annual household income for low and moderate income households; or
  - 2. Housing for which the purchase price is at least 10 percent below the average purchase price of a resale unit in the municipality;
- b) In the case of rental housing, the least expensive of:
  - 1. A unit for which the rent does not exceed 30 percent of gross annual household income for low and moderate income households; or
  - 2. A unit for which the rent is at or below the average market rent of a unit in the municipality.

### Airports

All Ontario airports, including designated lands for future airports, with Noise Exposure Forecast (NEF)/Noise Exposure Projection (NEP) mapping.

### Albedo

The measure of a material's ability to reflect sunlight on a scale of 0 to 1. Albedo determines how much solar energy, and therefore how much heat, a particular substance absorbs. A low albedo material

indicates that its surface absorbs most of the solar radiation, and vice versa. The urban heat island effect (high ambient temperatures in downtown environments) is often due to an abundance of conventional paving materials with low albedos, such as asphalt, which absorb significant amounts of heat. The use of materials with high albedos is therefore encouraged in urban areas.

### All Ages and Abilities

All Ages and Abilities (AAA) bicycle facilities are those that are comfortable for a wide range of cycling abilities and experience levels including families with children, seniors and new riders.

### Alternative Energy Vehicles

Vehicles that operate on a fuel other than the traditional petroleum fuels, such as biofuel, or are powered by something other than petroleum, such as electricity.

### Auto Occupancy

The average number of people in a vehicle, derived from the number of persons moved by car, divided by the number of vehicles on the road.

### Automatic Passenger Counter (APC)

A data collection tool located in a facility, such as a station or on a transit vehicle, that automatically counts passenger boardings and alightings. The data obtained can be used for both service monitoring or service planning purposes and include both time and location information. APC technologies include horizontal or vertical infrared beams, treadle mats, or machine vision applications.

### Automatic Vehicle Location (AVL)

A computer-based vehicle tracking system that uses a location technology such as a Global Positioning System. The location data collected is transmitted via a traditional radio frequency or a cellular-based communications system from the vehicle or data point to a dispatch centre to enable the public transportation agency to monitor the real-time position of its vehicles.

### Automated vehicles (AVs)

Vehicles, including cars and buses, that use sensors and connected vehicle technologies to take over some or all aspects of the task of driving. There are six levels of automated (level 0 to Level 5) to define the extent of a driver's involvement on the vehicle's operations and its degree of autonomy. Partially automated vehicles employ automated features such as parking and lane-change assistance, and collision avoidance. Fully automated vehicles operate all driving functions without the intervention of a human driver. Automated vehicles may be personally owned or part of shared fleets, including ride hail or taxi fleets.

## B

### Big Box Retail

Retail outlets that use a large amount of floor space, typically 50,000 sq ft or larger, often in a single story.

### Big Data

Large sets of structured or unstructured data, typically much larger than traditional survey data (e.g., internet clickstream data, social media content, email text, mobile phone call records or location data, machine data captured by sensors), that do not fit well in traditional databases. Big data can be used to support predictive and user-behaviour analytics, including geo-referencing of data about travel patterns. Big data can inform transportation research and analysis and provide personalized products and services.

### Bicycle Boxes

Square or rectangular pavement markings typically used on streets with bike lanes which allow cyclists to queue at a traffic signal ahead of motor vehicles.

### Bicycle Facility

A general term used to denote facilities designed for use by cyclists. Some examples of cycling facilities are signed bike routes with paved shoulders, urban shoulders, bicycle lanes, separated bicycle lanes, cycle tracks, multi-use paths and off-road multi-use trails.

### Bicycle Lane

A bicycle lane is a portion of a roadway which has been designated by pavement markings and signage for the exclusive use of cyclists.

### Bicycle Share / Bike-Share

A type of shared mobility that refers to the shared use of a bicycle or fleet of bicycles by multiple users that are available on-demand and allow for flexible rental periods and payment structures (e.g., single-use or as part of a subscription). Typically, users access bikes through a network of tech-enabled stations which are often located in higher-density areas or near transit stations. "Dockless" bike-share systems allow bikes to be left anywhere within a predefined service zone.

### Bi-directional Travel

In transportation infrastructure, a bi-directional traffic system divides travelers into two streams of traffic that flow in opposite directions.

### Bike and Ride

Bike and Ride refers to the use of cycling in combination with transit as a primary mode of mobility. It is a relatively inexpensive way to travel to a transit station, bus stop or park and ride lot, and should be promoted as a healthy, sustainable way of moving within a community. Bike and Ride programs allow cyclists to ride to the station, park their bike and enter the transit system. Weatherproofed facilities for bicycle storage are encouraged, so that commuters can bicycle to a station, leave the bicycle there, and take a bus or train. Additional amenities include bike repair facilities, washrooms, and water fountains.

### Brownfield Site

Undeveloped or previously developed properties that may be contaminated. They are usually, but not exclusively, former industrial or commercial properties that may be underutilized, derelict or vacant.

### Bulb-Out or Bus-Bulb

A bulb-out is an outward extension of the sidewalk into the roadway, allowing a bus or a vehicle to stay in its traffic lane to let off and pick up passengers instead of pulling over into the curb. Benefits include saved time from vehicles not having to pull back into traffic, reduced sidewalk congestion, more space for bus shelters and amenities, and easier full-length alignment of a bus entrance with a raised curb stop, especially to allow level boarding. Bulb-outs also retain more parking when compared to a bus stop located in a parking lane, where cars can park immediately on either side of the bus stop itself. Drawbacks include delaying vehicles that must wait behind the bus, especially on streets that provide only one traffic lane in each direction. Care should also be taken when designing bulb-outs to ensure that they do not create dangerous conditions for street users such as cyclists.

### Bus Rapid Transit (BRT)

Transit infrastructure and service with buses running in their own exclusive right-of-way, fully separated from traffic, typically with signal priority measures in place and longer spacing between stops than conventional bus routes (typically 500 metres to 1 kilometre) to maintain higher average speeds and ensure reliability of the service. May include additional features to improve operational efficiency and enhance the customer experience, such as off-board fare collection, platform-level boarding, and real time passenger information.

## C

### Car-Free

Car free environments favour active transportation, pedestrianized areas, and public transit. Car free environments may be set up in the context of temporary events, or as permanent spaces, where service and emergency vehicles often have access to areas where through traffic is not permitted.

### Car Share

A type of shared mobility that provides members with 24-hour access to a fleet of vehicles that are available on-demand and allow for flexible rental periods and payment structures (e.g., single use or as part of a subscription). Services can be two-way, requiring customers to borrow and return the vehicle to the same location, or one-way, allowing customers to pick up and drop off vehicles at different locations within a designated service area.

### Centre-to-Centre Buses

See vanpool.

### Compact Built Form

A land use pattern that encourages the efficient use of land, walkable neighbourhoods, mixed land uses (residential, retail, workplace, and institutional) all within one neighbourhood, proximity to transit and reduced need for infrastructure. Compact built form can include detached and semidetached houses on small lots as well as townhouses and walk-up apartments, multi-storey commercial developments, and apartments or offices above retail. Walkable neighbourhoods can be characterized by roads laid out in a well-connected network, destinations that are easily accessible by

transit and active transportation, sidewalks with minimal interruptions for vehicle access, and a pedestrian-friendly environment along roads to encourage active transportation.

### Community

An intermediate scale of planning area, smaller than a local municipality, but comprising a number of neighbourhoods within a municipality. Detailed land use planning policies at the community level are usually addressed in secondary plans.

### Community Transportation

The coordination of community transportation services amongst agencies and organizations that provide transportation to its members and clients with the aim of sharing resources and improving community access to services.

### Complete Communities

Places such as mixed-use neighbourhoods or other areas within cities, towns, and settlement areas that offer and support opportunities for equitable access to many necessities for daily living for people of all ages and abilities, including an appropriate mix of jobs full range of housing, transportation options, public service facilities, local stores and services. Complete communities are inclusive and may take different shapes and forms appropriate to their contexts to meet the diverse needs of their populations.

### Complete Streets

Streets planned to balance the needs of all road users, including pedestrians, cyclists, transit-users, and motorists. A complete streets approach also involves design, operation, and maintenance of roadways to enable safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Complete streets provide physical environments that make all forms of mobility attractive, comfortable, efficient, and as safe as possible. Complete streets also provide a positive physical environment that supports the form of development that is planned or exists adjacent to the street. In some cases, complete streets may also incorporate corridors for wildlife movement.

### Computer Aided Dispatch / Automatic Vehicle Location (CAD/AVL)

Software for transit agencies that incorporates transit routes, schedules, trip orders, and vehicle assignments to notify dispatchers of the location of transit vehicles. The software enables the dispatch and tracking of vehicle locations using the real time positioning of each vehicle. This information is then relayed back to a central location.

### Contraflow Bicycle Lane

Enables bidirectional bicycle travel on a roadway that has a one-way operation for motor vehicles. It has a contraflow bicycle lane the opposing direction of motorized traffic, and another type of bicycle facility in the direction of motor vehicle travel.

### Corridors

Refers to a linear route that provides for the movement of people and goods using a variety of transportation modes, including walking, cycling, transit and private vehicles. Corridors designated for transit-supportive intensification are typically associated with more intense density, activity and mix of uses, located along major transit routes (Guideline 1.1.3). Within the Greater Golden Horseshoe these may include areas defined as intensification corridors in the Growth Plan for the Greater Golden Horseshoe, 2006.

### Crime Prevention Through Environmental Design (CPTED)

Crime Prevention Through Environmental Design (CPTED) is a multi-disciplinary approach to deterring criminal behavior through environmental design. CPTED strategies rely upon the ability to influence offender decisions that precede criminal acts.

### Curb Data Specification (CDS)

Is a data standard and a digital tool that helps cities and companies pilot and scale dynamic curb zones. CDS provides a mechanism for expressing static and dynamic regulations, measuring activity at the curb, and developing policies that create more accessible, useful curbs (Source: Open Mobility Foundation).

### Curb Radius / Radii

The size of the radius at an intersection or driveway corner. Larger curb radii are associated with higher speed turning movements. Reducing the turning radius reduces turning speeds, shortens the crossing distance for pedestrians and improves sight distance between pedestrians and motorists. Nearby land uses and types of road users should be considered when designing an intersection so that curb radii are sized appropriately. Where there is a parking and/or bike lane, curb radii can be tighter, because vehicles will have more room to make the turn.

### Curbside Management

Curbside management seeks to inventory, optimize, allocate, and manage the curb space to maximize mobility, safety, and access for the wide variety of curb demands (Source: Institute of Transportation Engineers).

### Cycle Track

A one-way or two-way cycling facility that physically separates cyclists from motor vehicles through the use of curbs, bollards, planters, or other separation devices.

## D

### Decision Point

A physical space where two or more pedestrian paths diverge.

### Design Excellence

A strategy to deliver seamless integrated transportation systems to the traveller. It is inclusive of architecture, urban design, landscape architecture, signage and wayfinding, and integration of public art. Design excellence encompasses all of the touch points at which the traveller interacts with the transportation system, including delivery of universal access and accessibility, fare integration, safety and comfort, trip planning and integrated technology.

### Designated Growth Areas

Lands within settlement areas designated in an official plan for growth or lands added to settlement areas that have not yet been fully developed. Designated growth areas include lands which are designated and available for residential growth in accordance with PPS 2024 policy 2.1.4.a), as well as lands required for employment and other uses.

### Desire Line

Route that pedestrians will naturally take due to their inherent convenience. Desire lines often manifest themselves as informal paths that are established and regularly used by pedestrians in place of formal paths or sidewalks. Such desired paths are created because they may actually provide more convenient routes when compared to formal walkways. It is important to make sure that pedestrian desire lines are maintained and accompanied with marked crosswalks wherever possible.

## E

### Employment Area

Areas designated in an official plan for clusters of business and economic activities including, but not limited to, manufacturing, research and development in connection with manufacturing, warehousing, goods movement, associated retail and office, and ancillary facilities. An employment area also includes areas of land described by subsection 1(1.1) of the Planning Act. Uses that are excluded from employment areas are institutional and commercial, including retail and office not associated with the primary employment use listed above.

### Electric Vehicle (EV)

A vehicle that uses one or more electric motors for propulsion with onboard energy storage that is recharged by plugging it into an external source of electric power.

### Electric Vehicle Charging Infrastructure (EVCI)

Infrastructure necessary to supply electric energy to recharge electric vehicles, including battery charging ports and rapid charging ports.

### Electronic Fare Payment (EFP)

An automated fare collection and processing system that enable customers to use a variety of media such as magnetic stripe cards, smart cards or credit cards to pay for transit trips. The cashless system speeds boarding times and simplifies fare collection for transit agencies.

## F

### Fare and Service Integration

When transit fares and services are regionally integrated among multiple transit agencies to provide a simple, seamless and affordable harmonized fare structure experience for customers, improving financial efficiencies, convenience, equity and accessibility for customers when travelling by transferring between transit systems.

### Fare Integration Program

When partnerships are made between different transit authorities in a region, a fare integration program may be implemented. Fare integration enables passengers to easily pay the optimal fare for and use different forms of transportation within an integrated, seamless and convenient system. Fare integration includes approaches can take the form of regional passes, a common regional fare structure, and acceptance of major operators' media (tokens, passes) and transfers by other operators.

### Fare-Paid Line/Zone

Station or service areas where customers already have paid a fare to reduce need for additional fare validation and payment. Proof of payment may be required in these zones, depending on the transit agency.

### Feeder Bus Route

A bus service that picks up and delivers passengers to a higher-order transit station such as a rail transit station, rapid transit line, express-bus stop or terminal.

### First-Mile and-Last-Mile (FM/LM)

This describes the challenge of moving people between transit stations, or fixed-route transit services and their home, workplace or other major destination. The concept applies broadly to making improvements in transit access for all people trying to reach transit regardless if they live within one mile of a transit station. Alternatives to driving and parking a car can be advanced with, for example, programs that support carpooling; well-maintained infrastructure that facilitates walking and cycling, prioritizes transit access; and initiatives that support new mobility, like on-demand shuttle services. It can also describe moving goods between major intermodal hubs, such as rail yards and airports, and their final destination, such as retail stores, restaurants or even customers' homes.

### Floor Area Ratio (FAR) / Floor Space Index (FSI)

The FAR or FSI is the ratio of the total floor area of buildings on a certain location to the size of the land of that location, or the limit imposed on such a ratio. As a formula: Floor Area Ratio = (Total covered area on all floors of all buildings on a certain plot)/(Area of the plot). As a result, an FSI of 2.0 would indicate that the total floor area of a building is two times the gross area of the plot on which it is constructed, as would be found in a multiple story building.

### Frequent Transit

A public transit service that runs at least every 15 minutes in both directions throughout the day and into the evening every day of the week.

## G

### General Transit Feed Specification (GTFS)

An Open Standard used to distribute relevant information about transit systems to riders. It allows public transit agencies to publish their transit data in a format that can be consumed by a wide variety of software applications. Today, the GTFS data format is used by thousands of public transport providers (Source: GTFS.org).

### Geographic Information System (GIS)

A system of hardware and software used for storage, retrieval, mapping, and analysis of geographic data. Spatial features are stored in a coordinate system (latitude/longitude, state plane, Universal Transverse Mercator (UTM), etc.), which references a particular place on the earth. Descriptive attributes in tabular form are linked with spatial features. Geographic data and any associated attributes in the same coordinate system can then be layered together for mapping and analysis.

### Greenfield Development

Greenfield development is the creation of planned communities on previously undeveloped land. This land may be rural, agricultural or unused areas on the outskirts of urban areas. Unlike urban sprawls, where there is little or no proper suburban planning, greenfield development is about efficient urban planning that aims to provide practical, affordable, and sustainable living spaces for growing urban populations. The planning takes future growth and development into account as well as seeks to avoid the various infrastructure issues that plague existing urban areas.

### Greyfield Site

Previously developed properties that are not contaminated. They are usually, but not exclusively, former commercial properties that may be underutilized, derelict or vacant.

### Grid Network

The grid plan, grid street plan or gridiron plan is a type of city plan in which streets run at right angles to each other, forming a grid. These patterns display a higher degree of connectivity than hierarchical road patterns that feature dead-end streets and fewer through connections.

## H

### Heritage Attributes

As defined under the Ontario Heritage Act, in relation to real property, and to the buildings and structures on the real property, the attributes of the property, buildings and structures that contribute to their cultural heritage value or interest.

### High Occupancy Vehicle (HOV) Lanes

Special lanes typically reserved for vehicles carrying at least two people as well as transit vehicles. They are often denoted by signs and a recognizable symbol (a diamond symbol is used on Ontario highways) painted on the pavement. Ontario's provincial HOV lanes are located in the median lane and are separated from the general traffic lanes by a painted buffer. Vehicles carrying at least two people may enter and exit the HOV lane only at clearly designated points. On municipal roads, HOV lanes are generally located in the curb lanes. HOV lanes can be designated on a full-time basis, or may be limited to peak travel periods of the day. Bicycles may also be permitted on municipal HOV lanes in some instances.

### Higher Order Transit

Transit that generally operates in partially or completely dedicated rights-of-way, outside of mixed traffic, and therefore can achieve levels of speed and reliability greater than mixed-traffic transit. Higher order transit can include heavy rail (such as subways, elevated or surface rail, and commuter rail), light rail, and buses in dedicated rights-of-way.

### Housing Options

A range of housing types such as, but not limited to single detached, semi-detached, rowhouses, townhouses, stacked townhouses, multiplexes, additional residential units, tiny homes, laneway housing, garden suites, rooming houses and multi-residential buildings, including low- and mid-rise apartments. The term can also refer to a variety of housing arrangements and forms such as, but not limited to, life lease housing, co-ownership housing, co-operative housing, community land trusts, land lease community homes, affordable housing, additional needs housing, multi-generational housing, student housing, farm worker housing, culturally appropriate housing, supportive, community and transitional housing and housing related to employment, educational, or institutional uses, such as long-term care homes.

### 'Hub and Spoke' Radial Transit Networks

Fixed-route transit systems in which the Central Business District (CBD) is the central node of the system, with various routes radiating from this centre. Radial systems are designed to reach the maximum number of residential and employment districts within an urban area. However, as the distance from the CBD increases, the frequency and range of service decrease as a result of decreasing densities.

## Infill

New development within existing communities on previously underutilized sites, typically at a higher density. Good infill developments fit in seamlessly within the existing urban fabric, and the contributing elements include: setback – the distance from the front facade of the house to the street and should be the same distance as other houses on the street, height – which should be compatible with the height of buildings surrounding the lot, and mass – the bulk of the house.

## Infrastructure

Physical structures (facilities and corridors) that form the foundation for development. Infrastructure includes: sewage and water systems, septage treatment systems, stormwater management systems, waste management systems, electricity generation facilities, electricity transmission and distribution systems, communications/telecommunications, including broadband, transit and transportation corridors and facilities, active transportation systems, oil and gas pipelines and associated facilities.

## Intelligent Transportation Systems (ITS)

A form of transportation systems management that uses real time information technology to provide traffic-responsive, areawide traffic control and information that allows transportation providers to optimize system operations and enables travelers to use the system more efficiently, effectively, and conveniently. ITS includes planning, deployment, integration and operations to provide a cohesive, end-to-end solution for all transportation users, including traveler information and electronic payment.

## Intensification

The development of a property, site or area at a higher density than currently exists through:

- a) redevelopment, including the reuse of brownfield sites and underutilized shopping malls and plazas;
- b) the development of vacant and/or underutilized lots within previously developed areas;
- c) infill development; and
- d) the expansion or conversion of existing buildings.

## Intercommunity Transit Services

Inter-regional and inter-city transit services typically operated using larger, coach style buses.

## Internal Combustion Engine (ICE) Vehicle (ICEV)

A vehicle that is powered by a regular internal combustion engine (ICE) burning fuel to get power. Many governments are introducing policy to ban the sales of ICEVs in the upcoming decades with the intention of phasing out ICEVs.

## Intersection density

Walkable communities are measured by the "intersection density" also referred to as street-grid density or simply grid-density. This is determined by calculating the number of intersections in a given area. Typically, the more intersections per area, the greater the degree of connectivity and more route options are available. This is also a surrogate for infrastructure costs; i.e.: relates to the cost of the infrastructure reaching more people with less footage.

## L

### Lay-by Lane

A designated paved area beside a road that enables vehicles to stop temporarily to drop-off or pick-up passengers without disrupting traffic.

### Legibility

The ease with which it is possible to read and understand something. In the context of wayfinding and station design, the ease with which individuals can understand their environment, where they are and how to get where they want to go.

### Light Rail Transit (LRT)

Transit infrastructure and services consisting of light rail vehicles running in an exclusive right-of-way, fully separated from traffic, typically with transit signal priority measures in place and longer spacing between stops than conventional transit routes (typically 500 metres to 1 kilometre) to maintain higher average speeds and ensure reliability of the service. Typically include additional features to improve operational efficiency and enhance the customer experience, such as off-board fare collection, platform-level boarding, and real-time passenger information.

### Local Transit

A passenger transit system that is operated principally within an upper-tier, lower-tier or single-tier municipality, with routes that serve generally short to medium distance trips. Parts of local transit routes may overlap with parts of the Frequent Rapid Transit Network and share the infrastructure and transit priority features. Local transit routes will also play an important role in connecting people to the Frequent Rapid Transit Network for longer distance trips. Local transit in the GTHA is provided by Burlington Transit, Brampton Transit, Durham Region Transit, Hamilton Street Railway, Milton Transit, MiWay (Mississauga Transit), Oakville Transit, the Toronto Transit Commission and York Region Transit/VIVA.

### Long-Term Bicycle Parking/Storage

Bicycle parking intended for long-term use (overnight or longer). Due to the fact that bicycles are stored for a lengthy duration, there is a greater need for security and weather-protection. Long term storage options may therefore include attended facilities, racks in enclosed and lockable rooms, indoor or outdoor bicycle lockers, or restricted-access parking facilities. Such facilities are often centrally-located, allowing seamless access to transit and related services.

### Low-Carbon

In the transportation sector, refers to vehicles that produce minimal greenhouse gas emissions through the adoption of electric and alternative-fuel vehicle technologies. Reducing greenhouse gas emissions from the transportation sector typically focuses on minimizing travel and shifting to more environmentally sustainable modes, technologies and fuels.

## Low- and Moderate-Income Households

a) In the case of ownership housing, households with incomes in the lowest 60 percent of the income distribution for the regional market area; or b) in the case of rental housing, households with incomes in the lowest 60 percent of the income distribution for renter households for the regional market area.

## Low Impact Development

An approach to stormwater management that seeks to manage rain and other precipitation as close as possible to where it falls to mitigate the impacts of increased runoff and stormwater pollution. It typically includes a set of site design strategies and distributed, small-scale structural practices to mimic the natural hydrology to the greatest extent possible through infiltration, evapotranspiration, harvesting, filtration, and detention of stormwater. Low impact development can include, for example: bioswales, vegetated areas at the edge of paved surfaces, permeable pavement, rain gardens, green roofs, and exfiltration systems.

## M

### Main Street

Contains a range of street-oriented uses including retail, cultural, institutional, residential, personal services and employment. Each main street has characteristics unique to the neighbourhood in which it belongs. It is important to consider historical preservation to maintain those characteristics.

### Major Transit Stations

Focal points within a community's transit network which act as important reception areas for transit riders and places of transfer between various modes and systems.

### Major Transit Station Area (MTSA)

The area including and around any existing or planned higher order transit station or stop within a settlement area; or the area including and around a major bus depot in an urban core. Major transit station areas generally are defined as the area within an approximate 500 to 800 metre radius of a transit station.

### Major Trip Generators

Origins and destinations with high population densities or concentrated activities which generate many trips (e.g., strategic growth areas, major office and office parks, major retail, employment areas, community hubs, large parks and recreational destinations, public service facilities, and other mixed-use areas).

### Micromobility

Small, compact, low-speed vehicles that are lighter weight than cars, which can include bicycles, cargo bikes/trikes, folding

bikes, electric two, three, or four-wheeled cycles, urban mobility vehicles (i.e. small, one-person e-cars), e-mopeds, electric kick-scooters (e-scooters), and more (Source: City of Toronto).

### Micro-transit

A type of shared mobility that refers to small-scale, flexible transportation services, using shuttles or vans, with dynamically generated, rather than fixed, routes to provide rides that are often ordered on-demand using a mobile app. Multiple passengers share trips with others who have similar routes or destinations.

### Mid-block Connection or Mid-block Walkway

Links within and across blocks that provide connections for pedestrians and cyclists. They are particularly useful where there are large blocks that may take a long time to travel around.

### Minimum Density Threshold

A zoning tool that specifies the minimum allowable development density or floor area ratio. The intent of minimum density thresholds is to encourage higher densities and more compact forms of development.

### Mixed-Use Development

Areas characterized by a wide variety of shopping, employment, entertainment, light industrial and residential uses. Mixed-use development may occur at the level of individual buildings or complexes, or at a larger scale within activity nodes or corridors.

### Mobility-as-a-Service

A new mobility technology that describes

the integration of various transport services including public transit, bike or car-sharing, taxis, ride sourcing and other forms of shared mobility that are bundled together and consumed on a subscription basis to meet the particular needs of individuals.

### Mobility Data Specification (MDS)

A digital tool that helps cities to better manage transportation in the public right of way. MDS standardizes communication and data-sharing between cities and private mobility providers, such as e-scooter and bike share companies. This allows cities to share and validate policy digitally, enabling vehicle management and better outcomes for residents. Plus, it provides mobility service providers with a framework they can re-use in new markets, allowing for seamless collaboration that saves time and money (Source: Open Mobility Foundation)

### Modal/Mode Share

The percentage of person-trips made by one mode of travel relative to the total number of trips made by all modes.

### Mode

A form of transportation, such as automobiles, walking, cycling, buses, rapid transit, rail (such as commuter and freight), trucks, air, and marine (e.g., cycling or driving to a transit station).

### Multimodal

Relating to the availability or use of more than one form of transportation, such as automobiles, walking, cycling, buses, rapid transit, higher order transit, rail (such as freight), trucks, air, and marine.

### Multi-Use Path

A shared pedestrian and cycling facility that is physically separated from motor vehicle traffic by hard-surfaced splash pad or by a grass strip. It is often referred to as part of a boulevard within the roadway or highway right-of-way.

### Multi-Use Trail

A shared facility located outside the roadway right-of-way for use by cyclists, pedestrians and other non-motorized users. If permitted by municipal by-law, multi-use trails may also be used by recreational motorized vehicles.

## N

### Natural Heritage Features and Areas

Features and areas, including significant wetlands, significant coastal wetlands, other coastal wetlands in Ecoregions 5E, 6E and 7E, fish habitat, significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River), habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area.

### Natural Surveillance

Used in Crime Prevention Through Environmental Design (CPTED) models for crime prevention. Natural surveillance can be facilitated by designing the placement of physical features, activities and people in such a way as to maximize visibility and foster positive social interaction. Natural surveillance increases the perception that people can be seen, which limits the opportunity for crime. Other ways to promote natural surveillance include low landscaping and installation of street lights.

### Navigation Application (App)

An application that provides navigational directions in real time on a map, receives real-time traffic and transit information, and can be programmed to preferences according to filters.

## New Mobility

A term to describe the suite of emerging transportation services and that are enabled through the development and convergence of technologies (e.g., smartphones, real-time data, autonomous and connected vehicles) and business models (e.g., shared mobility and mobility-as-a-service).

## Nodes

Areas within settlement areas of more intense density, mixed-use and activity. They are compact clusters of uses that may include downtowns, mixed-use communities, clusters of office buildings, post-secondary educational campuses or other higher density areas both large and small.

## O

### Off-Road Cycling Facility

Any form of cycling facility located outside the travelled portion of the roadway, but may or may not be within the road right-of-way. It may consist of a shared facility for use by cyclists and other non-motorized users.

### On-Demand Mobility

Shared mobility services that are provided to the user within a short time period upon request, either by telephone or mobile electronic device.

### On-Street Parking

The use of the roadway surface or the adjacent shoulder for vehicle parking is considered 'on street'.

### On-Road Cycling Facility

An on-road cycling facility includes any type of designated cycling facility on the travelled portion of a roadway, as well as a shoulder bikeway.

### Open Spaces/Open Space Network

Open spaces are parks, plazas, green spaces, natural areas, or bicycle/walking trails; when linked together they are open space networks.

## P

### Park and Ride

Park and rides are car parking lots that offer transit users a place to park their car, then transfer to a public transit service to complete their journey. They are typically used in suburban locations where distances to transit service are longer. Park and ride facilities should be visible from and located along heavily used commuter routes. They should be landscaped, weather resistant, well-lit, and contain a range of amenities.

### Parking Application (App)

Also referred to as digital parking, a parking app means a Town approved mobile application that allows the user to pay for a parking session on a mobile device or through an online process for a period of time for which a vehicle may be parked in a designated parking space or location.

### Parking Improvement Districts

A way to funnel parking meter funds back into the community through streetscape improvements, increased security measures, and improvements that promote walking and public transportation use.

### Passenger Pick-up and Drop-off (PPUDO)

Also known as Kiss and Ride, PPUDO areas are the locations where customers access the transit station as a passenger in a car or taxi. Also see PU-DO

### Pedestrian

A person whose mode of transportation is by foot. It also includes a person using a mobility aid such as a walker, a person propelling or being pushed in a manual wheelchair, or a motorized wheelchair that cannot travel at over 10 km/h. A person pushing a bicycle is also considered a pedestrian. It does not include any person who is in a vehicle, either motorized or human powered.

### Pedestrian District

Characterized by high levels of pedestrian activity, where pedestrians are prioritized over other forms of movement. Some municipalities designate pedestrian districts through zoning, restricting or eliminating vehicular travel in the area. It can be a neighbourhood, node or corridor within a community and typically contains a high mix of uses which contribute to the higher levels of pedestrian activity.

### Pedestrian-Oriented Lighting

Street lights installed at a lower height than arterial street lighting to improve walkway illumination for pedestrian traffic and enhance community safety. Typically, this lighting is positioned over the sidewalk, rather than the street, at about 4 to 6 m above the ground.

### Pedestrian Pathway

Paved walkways that are lit and accessible for users of different abilities. Pedestrian pathways can also be underground, creating indoor connections between buildings and destinations.

### Pedestrian Plaza

A type of public space that can act as an important organizing element in a dense urban environment. Within a station area, pedestrian plazas can facilitate transfers between modes, act as a receiving point for pedestrians and contain a range of services and amenities for transit users.

### Pedestrian Through Zone

A section of sidewalk reserved for pedestrians. Sidewalks comprise four zones: curb, furnishings, pedestrian, and frontage. The curb zone abuts the street and provides a buffer between the sidewalk and the street. The furnishings zone lies between the curb zone and pedestrian through zone, and provides a location for benches, bus shelters and other amenities such as trash receptacles, bicycle racks, and lighting. The pedestrian through zone is the sidewalk space kept clear for walking and is located between the furnishings zone and the frontage zone. The pedestrian through zone should be clear of obstructions at all times. Finally, the frontage zone provides a transition between the building or property line and the pedestrian through zone. It may feature furniture and act as a patio.

### Permeability

The degree to which pedestrians can see inside or physically enter buildings or sites. A permeable façade or site helps create a more animated and safe environment.

### Pick Up and Drop Off (PUDO)

Similar to PPUDO, but more ample term, referring to a short-term (often 3-15mins) zone or area, often as a curbside segment, where pick-up and drop off activities happen and can include pick up of goods as well as passengers. Pick up of goods is also known as Curbside Pick-Up.

### Placemaking

A people-centred approach to the planning and design of memorable public spaces that encourage community members to meet, relax, play, and engage with one another in active and vibrant communities.

### Planned Corridor

Corridors or future corridors which are required to meet projected needs, and are identified through provincial transportation plans, preferred alignment(s) determined through the Environmental Assessment Act process, or identified through planning studies where the Ontario Ministry of Transportation, Metrolinx, Ontario Ministry of Energy and Electrification, Ontario Northland, Ministry of Northern Development or Independent Electricity System Operator (IESO) or any successor to those ministries or entities is actively pursuing, or has completed, the identification of a corridor.

Approaches for the identification and protection of planned corridors may be recommended in guidelines developed by the Province.

### Pop-Up

Pop-up plazas or other temporary light infrastructure interventions in the public space, that can be removed after an event or after a period of testing.

## Proof-of-Payment System

Drivers are not responsible for collecting and inspecting every fare with this system. Instead, fare inspectors randomly check passenger transit tickets, passes and transfer stubs, and issue fines to those who do not present them. Proof-of-payment systems speed up boarding and reduce dwell times, as passengers can enter through any door of the vehicle, provided they have valid proof of fare payment. However, fare evasion under such a system can be an issue if not enforced.

## Public/Civic Infrastructure

Large scale infrastructure such as highway interchanges, bridges, and utility easements.

## Public Amenities

Resources, conveniences, facilities or benefits continuously offered to the general public for their use and/or enjoyment, with or without charge (e.g., restrooms, information displays, public telephones, rain shelters, drinking fountains, etc.). As such, public amenities are expected to function around the clock, in adverse conditions such as inclement weather, high noise environments and in varying degrees of light and heat. Consequently, there are several key attributes that should be integrated into all public amenities to ensure universal usability.

## Public Private Partnerships (PPP/P3)

Public-private partnership describes a government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. These schemes are sometimes referred to as PPP or P3. PPP involves a contract

between a public-sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project. In some types of PPP, the cost of using the service is borne exclusively by the users of the service and not by the taxpayer. In other types (notably the private finance initiative), capital investment is made by the private sector on the strength of a contract with government to provide agreed services and the cost of providing the service is borne wholly or in part by the government. Government contributions to a PPP may also be in kind (notably the transfer of existing assets). In projects that are aimed at creating public goods like in the infrastructure sector, the government may provide a capital subsidy in the form of a one-time grant, so as to make it more attractive to the private investors. In some other cases, the government may support the project by providing revenue subsidies, including tax breaks or by providing guaranteed annual revenues for a fixed period. PPP involves many models including Design Build Finance (DBF), Design Build Finance Maintain (DBFM).

## Public Realm

All spaces to which the public has unrestricted access, such as streets, parks and sidewalks.

## Public Service Facilities

Lands, buildings and structures including but not limited to schools, hospitals and community recreation facilities, for the provision of programs and services provided or subsidized by a government or other body, such as social assistance, recreation, police and fire protection, health, child care and educational programs, including

elementary, secondary, post-secondary, long term care services, and cultural services.

Public service facilities do not include infrastructure.

## Q

### Queue Jump Lanes

Short, dedicated transit lanes that allow transit vehicles to bypass queues at intersections and, in combination with transit signal priority, allow buses to easily enter traffic flow in a priority position. Applied thoughtfully, queue jump treatments can reduce delay considerably, resulting in run-time savings and increased reliability.

## R

### Rail Facilities

Rail corridors, rail sidings, train stations, inter-modal facilities, rail yards and associated uses, including designated lands for future rail facilities.

### Real-Time Trip Planning Information

Real-time trip planning information reflects travel conditions as they actually occur. To achieve this, vehicle location and expected travel times must be updated every few minutes or seconds.

### Recreation

Leisure time activity undertaken in built or natural settings for purposes of physical activity, health benefits, sport participation and skill development, personal enjoyment, positive social interaction and the achievement of human potential.

### Redevelopment

The creation of new units, uses or lots on previously developed land in existing communities, including brownfield sites.

### Region/Regional Municipality

An upper tier municipality, comprising a number of local or area municipalities, which carries out regional-scale planning functions. Counties or district municipalities which undertake planning functions are also included in this definition.

### Regional Cycling Network

A network of commuter-oriented cycling routes and dedicated infrastructure that supports longer distance trips (typically greater than five kilometres), supports cycling trips across municipal boundaries and between Urban Growth Centres, and provides connections to rapid transit stations. Infrastructure may include bike lanes, cycle tracks, and multi-use trails.

### Regional Transportation System

As in the Provincial Policy Statement (2014) the multimodal transportation system, including all of the municipalities of the Greater Toronto and Hamilton Area and the broader GO Transit service area, consisting of services and infrastructure such as, "facilities, corridors and rights-of-way for the movement of people and goods, and associated transportation facilities including transit stops and stations, sidewalks, cycle lanes, bus lanes, high-occupancy vehicle lanes, rail facilities, parking facilities, park-and-ride lots, service centres, rest stops, vehicle inspection stations, intermodal facilities, harbours, airports, marine facilities, ferries, canals and associated facilities such as storage and maintenance".

## Reserved Bus Lanes

Traffic lanes designated for bus use only, that are marked and signed differently from adjacent lanes but are not physically separated from them.

## Real-Time Trip Planning Information

Reflects travel conditions as they actually occur. To achieve this, vehicle location and expected travel times must be updated every few minutes or seconds.

## Reverse Lotting

Lots located adjacent to an arterial or collector road which front onto an internal street, while the rear yard faces onto the arterial or collector road. Landscaping and privacy fences are usually located adjacent to the arterial or collector road, and access onto the arterial or collector is strictly limited.

## Ride Hail

A part of Ride Share, Ride-hailing is when passengers hire a personal driver to take them to a destination. The activities of hailing, allocation of a driver and the passenger, as well as payment is facilitated through mobile phone apps, such as by companies: Uber and Lyft.

## Ride-Sourcing

A type of vehicle for-hire shared mobility that refers to service providers that use an online or app-based platform to connect passengers with drivers of personal vehicles. Operators are known as transportation network companies or private transportation companies.

## Ridesharing

A type of shared mobility that refers to both traditional carpooling and dynamic carpooling, where passengers with a common destination share a vehicle and the costs of a trip. Traditional carpool drivers provide a pre-organized ride for a passenger based on having a common route or final destination, such as a shared workplace. Dynamic carpooling relies on real-time connectivity between drivers and passengers to book trips on demand based on the passenger having an origin and destination that aligns with a driver's pre-determined route. A fare, not exceeding the cost of operating the vehicle on a non-profit basis (as defined under the Public Vehicles Act), is typically paid for this service.

## Ridematching

The process whereby passengers with a common destination, often a shared workplace, are matched in order to share a vehicle and the costs of a trip (e.g. using the Smart Commute tool).

## Right-of-Way (ROW)

Land that is reserved, usually through legal designation, for transportation and/or utility purposes, such as for a trail, hydro corridor, rail line, street or highway. A right-of-way is often reserved for the maintenance or expansion of existing services. A permit or legal permission is generally required for any work or encroachment on a right-of-way.

## Roads, Arterial and Collector

Major traffic, pedestrian, cycling and transit routes, intended to carry larger volumes of vehicular traffic, providing continuous access across neighbourhoods.

### Roads, Local

Roads designed to carry low traffic volumes, at low speeds, which are intended primarily to provide access to abutting uses, rather than to provide through traffic routes.

### Rural Areas

A system of lands within municipalities that may include rural settlement areas, rural lands, prime agricultural areas, natural heritage features and areas, and resource areas.

## S

### Screening

Landscaping can be used as a strategy to "screen" or mask parking lots or other visually unappealing elements of the urban landscape. Care should be taken to ensure that screening does not affect pedestrian safety.

### Secondary Plan

A land use policy plan for a district or large neighbourhood within a municipality which provides more detailed land use policies and designations than those found in a municipal official plan.

### Separated Cycling Facilities

Segregated cycling facilities are lanes, tracks or paths designated for use by cyclists and from which motorized traffic is excluded by means of physical barriers (e.g. bollards or curbs/medians).

### Semi-public Amenities

The semi-public area is the zone that extends from the edge of the building to the public sidewalk outside the public right-of-way but accessible to the public. Gardens, fountains, seating areas, and kiosks with small outdoor dining areas are all types of semi-public amenities to consider for this zone - these may be closed or cordoned off during certain hours.

### Sense of Place

Though sense of place has been defined differently and used in different ways. It is often used in relation to characteristics that make a place special or unique, as well as to those that foster a sense of authentic human attachment and belonging.

## Sensitive Land Uses

Buildings, amenity areas, or outdoor spaces where routine or normal activities occurring at reasonably expected times would experience one or more adverse effects from contaminant discharges generated by a nearby major facility. Sensitive land uses may be a part of the natural or built environment. Examples may include, but are not limited to: residences, day care centres, and educational and health facilities.

## Separated Bicycle Lane

A separated bicycle lane is a portion of a roadway which has been designated by special pavement markings or a physical barrier and signage for the exclusive use of cyclists. This facility type provides additional spatial or physical separation between motorists and cyclists.

## Settlement Areas

Urban areas and rural settlements within municipalities (such as cities, towns, villages and hamlets). Ontario's settlement areas vary significantly in terms of size, density, population, economic activity, diversity and intensity of land uses, service levels, and types of infrastructure available.

Settlement areas are:

- a) built up areas where development is concentrated and which have a mix of land uses; and
- b) lands which have been designated in an official plan for development concentrated over the long term.

## Shared Mobility

A type of new mobility that refers to a broad set of transportation services and business models that are shared among users, such as bike-sharing, car-sharing, micro-transit, ride-sourcing, and ridesharing.

## Shoulder

This is an area of gravel or hard surface placed adjacent to through or auxiliary lanes. They are intended for emergency stopping and travel by emergency vehicles. They also provide structural support for the pavement.

### Signal Priority

A traffic signal control scheme which triggers a traffic signal to turn green in the direction that a transit vehicle is travelling, as the vehicle approaches the intersection. Since transit vehicles hold many people, giving priority to transit can potentially increase the number of people that can move through an intersection. There are different types of signal priority:

- Passive priority strategies use timed coordinated signals in the area-wide traffic signal timing scheme.
- Active priority strategies involve detecting the presence of a transit vehicle and giving the transit vehicle priority. Each transit vehicle has an on-board transmitter that prompts the signal to give an early green signal or hold a green signal that is already active. (Also see Transit Signal Priority in this glossary)
- Real-time control strategies can consider not only the presence of a transit vehicle but also the adherence to schedule and the volume of traffic. One common strategy is to give priority only to late buses. This strategy optimizes schedule adherence rather than running time.

### Signed Bike Route with Paved Shoulder

A form of bicycle facility on a road with a rural cross section. A paved shoulder is a portion of a roadway which is contiguous with the travelled way. It provides accommodation for stopped and emergency vehicles, pedestrians and cyclists as well as for lateral support of the pavement structure. A paved shoulder on a designated bike route may include a buffer zone to provide greater separation between motorists and cyclists.

### Smart Card

Plastic cards, usually the size of a credit card, with an embedded microchip that can be loaded with data. These are used in Electronic Fare Payment (EFP) systems.

### Specialized Transit

Also referred to as "paratransit" or "custom transit", specialized transit provides door-to-door service to eligible individuals with disabilities and seniors who are not able to use conventional transit for all or part of their travels. Specialized transit works with conventional transit service providers to form a broader accessible transit network. It is usually funded and delivered by a municipality.

### Spill-out Space

The area between the building or property line and the pedestrian through zone. Spill-out spaces often allow restaurants and cafes to provide outdoor seating for their customers. Spill-out spaces help animate the public realm, creating a more inviting environment for pedestrians.

## Strategic Growth Areas

Within settlement areas, nodes, corridors, and other areas that have been identified by municipalities to be the focus for accommodating intensification and higher density mixed uses in a more compact built form.

Strategic growth areas include major transit station areas, existing and emerging downtowns, lands in close proximity to publicly-assisted postsecondary institutions and other areas where growth or development will be focused, that may include infill, redevelopment (e.g., underutilized shopping malls and plazas), brownfield sites, the expansion or conversion of existing buildings, or greyfields. Lands along major roads, arterials, or other areas with existing or planned frequent transit service or higher order transit corridors may also be identified as strategic growth areas.

## Streetscape

The elements of a street, including the road, buildings, street furniture, trees and open spaces, that define its character. Streetscapes can be divided into different types, depending on type/ intensity of land use, primary user groups and built form character. Streetscaping is the application of various elements found within the streetscape to support the unique character and function of an area.

## Structured Parking

An above- or below-grade structure designed to accommodate vehicle parking.

## T

### Tax Increment Financing (TIF)

TIF is a method to use future gains in taxes to finance current improvements (which theoretically will create the conditions for those future gains). When a development or public project is carried out, there is often an increase in the value of surrounding real estate, and perhaps new investment. This increased site value and investment sometimes generates increased tax revenues. The increased tax revenues are the "tax increment." Tax Increment Financing dedicates tax increments within a certain defined district to finance debt issued to pay for the project. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development might not otherwise occur. TIF creates funding for "public" projects that may otherwise be unaffordable to localities, by borrowing against future property tax revenues.

### Timed Transfers

When two or more connecting transit services arrive and depart a transfer point at the same time to minimize customer waiting time.

## Traffic Calming

Traffic calming is intended to slow or reduce motor-vehicle traffic in order to improve safety for pedestrians and bicyclists and improve the environment for residents. These may include, narrower traffic lanes, speed bumps, raised pedestrian crossings, pedestrian refuge islands in medians amongst others.

## Transit

Transit refers primarily to the public transit systems, including specialized transit, operated by or on behalf of municipal, regional or provincial governments, or transit authorities and includes all transit modes such as buses, streetcars, light rail and commuter rail lines. In this document, the term transit may also include transportation vehicles such as vans, ferries or taxis used to supplement transit service.

## Transit-Oriented Community

Vibrant, higher density, mixed-use community providing housing, jobs, retail, public amenities, and entertainment in connection with a priority transit project as defined by the Transit-Oriented Communities Act. Transit-Oriented Communities are to be developed by the Province in line with the following objectives of the TOC program:

1. **Appropriate Mix of Uses:** TOC development will provide for a context appropriate mix of uses that support the achievement of complete communities.
2. **Transit-Supportive Density:** TOC development will introduce a critical mass of people and/or jobs in a manner that increases transit ridership, thereby reducing reliance on personal

automobiles and traffic congestion.

**Great Public Realm:** TOC development will maximize opportunities to improve pedestrian experience and value for the community with an enhanced public realm, active ground floor uses, direct access to transit stations, and permeable, well-connected sites with a high level of site porosity.

3. **Natural, Built, and Cultural Heritage:** TOC development will maximize the conservation of existing features and resources that are integral to the economic prosperity, environmental health, and social wellbeing of the surrounding neighbourhoods and communities.
4. **Community Amenities and Infrastructure:** TOC development will encourage investment in integrated or adjacent community infrastructure (e.g. parks, recreation centres) to help promote city building and complete communities.
5. **Integration with Surrounding Area:** TOC development will respond to existing context through transitions in scale, building typologies, setbacks and stepbacks and minimize impacts on surrounding sensitive uses while anticipating the future scale of intensification.
6. **Transit Infrastructure Integration:** TOC development will maximize opportunities to provide direct and convenient multi-modal transit connections (e.g. bus, streetcar, LRT, subway, GO Rail) and number of residents and jobs with direct access to higher order transit.
7. **Housing Supply and Jobs:** TOC development will increase the supply of housing options, including affordable

housing and family sized units, and will provide new employment growth in targeted locations.

### Transportation Network Companies (TNCs)

A TNC connects passengers with TNC drivers to provide pre-arranged transportation services for compensation, exclusively through a transportation network, which can be an online enabled application (or app), digital platform, software, a website or any other system offered that is used and operated by the TNC. Examples for such companies are Uber and Lyft

### Transit-Oriented Development

A planning approach that calls for high-density, mixed-use business/residential neighbourhood centres to be clustered around transit stations and corridors. Transit-oriented development is focused within an 800 m radius of transit stops, with the highest intensity and mix of land uses concentrated within 400 m or adjacent to the station. A transit-supportive approach to land-use planning, urban design and transit operations may include transit-oriented development as well as a variety of other strategies that make transit viable and improve the quality of the experience of using transit. These may be implemented near transit stops or stations or at a broader scale, as appropriate. See transit-supportive.

### Transit Priority Measures

Techniques designed to minimize delays for buses or rail vehicles at intersections and along congested roads to provide a faster, more reliable trip. Transit priority measures include high-occupancy vehicle lanes, bus-only lanes, transit signal priority, turning restrictions for automobiles, and queue jump lanes.

### Transit Service Integration

The co-ordinated planning or operation of transit service between two or more agencies or services that contributes to the goal of seamless service for riders and could include considerations of service schedules, service routes, information, fare policy, and fare payment.

### Transit Signal Priority (TSP)

Transit signal priority tools modify traffic signal timing or phasing when transit vehicles are present to prioritize the movement of transit vehicles over automobiles, either conditionally when the transit vehicle is behind schedule or unconditionally for all arriving transit. Transit signal priority can be a powerful tool to improve both reliability and travel time, especially on corridor streets with long signal cycles and distances between signals. In urban contexts, benefits are significantly amplified when implemented alongside other strategies like dedicated transit lanes or queue jump lanes.

### Transit-Supportive

In regard to land use patterns, development that makes transit viable, optimizes investments in transit infrastructure, and improves the quality of the experience of using transit. It often refers to compact, mixed-use development that has a high level of employment and residential densities, including air rights development, in proximity to transit stations, corridors and associated elements within the transportation system.

Approaches may be recommended in guidelines developed by the Province or based on municipal approaches that achieve the same objectives.

### Transportation Demand Management (TDM)

A set of strategies that results in more efficient use of the transportation system by influencing travel behaviour by mode, time of day, frequency, trip length, regulation, route, or cost. Examples include: carpooling, vanpooling, and shuttle buses; parking management; site design and on-site facilities that support transit and walking; bicycle facilities and programs; pricing (road tolls or transit discounts); flexible working hours; telecommuting; high occupancy vehicle lanes; park-and-ride; incentives for ride-sharing, using transit, walking and cycling; initiatives to discourage drive-alone trips by residents, employees, visitors, and students.

### Transportation System

A system consisting of facilities, corridors and rights-of-way for the movement of people and goods, and associated transportation facilities including transit stops and stations, sidewalks, cycle lanes, bus lanes, high occupancy vehicle lanes, rail facilities, parking facilities, park-and-ride lots, service centres, rest stops, vehicle inspection stations, inter-modal facilities, harbours, airports, marine facilities, ferries, canals and associated facilities such as storage and maintenance.

### Trips per Capita

Number of trips proportional to the population of the municipality or service area.

## U

### Universal Design

The design of products, environments, programs and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. 'Universal design' does not exclude assistive devices for a particular group.

### Urban Design

A key tool for good urban form and placemaking. Urban design involves attention to elements such as site-specific design, streetscape and parking lot design, public safety and accessibility, heritage areas, and infill, among others. Many municipalities throughout the GTHA have various urban design guidelines, from district or area-based guidelines to city-wide guidelines that help to direct and implement desired outcomes. In regard to transit stations, urban design is an important component to ensure vibrant and accessible station areas.

## V

### Vanpool/Centre-to-Centre Bus

A form of public transportation which acts as a cross between a private taxi and a public bus. Vanpools or centre-to-centre buses follow a fixed route but have a flexible schedule, and the driver can make detours to reach specific locations.

### Vertical Circulation

Movement up or down between different levels of a facility, facilitated by either stairs, escalators, ramps, or elevators.

### Vision Zero

Vision Zero aims to achieve transportation systems with no fatalities or serious injuries using a variety of interventions. These include engineering for safer street design, enforcing laws such as speeding or impairment that have a significant correlation to fatalities or major injuries, and educating drivers, cyclists and pedestrians on safety measures and the impacts of law-breaking.

## W

### Wayfinding

An orientation system consisting of signage, mapping, and the provision of other information that enables travelers to choose a preferred route, monitor their journey and recognize when they have arrived. Wayfinding systems may be designed to guide people through a complex built environment such as a transportation hub or as an aid to navigate a transit or cycling network.

### Window Streets

Window streets are a system of service roads or looped local roads located parallel to limited access arterial roads. The intent of a window street is to enable uses such as housing to face onto limited access arterial roads without having to provide access from the arterial. This helps prevent a situation where built form backs out onto these high-volume streets, improves connectivity and provides more eyes on the street, but results in the duplication of road infrastructure, wide streets and is less ideal than buildings fronting directly onto an arterial.

## Z

### Zero Emissions Zone (ZEZ)

Also refer to Low Emissions Zone (LEZ) and Ultra Low Emissions Zone (ULEZ).

## List of Acronyms

|              |   |             |                                     |
|--------------|---|-------------|-------------------------------------|
| <b>AFC</b>   | Automatic Fare Collection                     | <b>ITS</b>  | Intelligent Transportation Systems  |
| <b>AODA</b>  | Accessibility for Ontarians with Disabilities | <b>KPIs</b> | Key Performance Indicators          |
| <b>APIs</b>  | Application Programming Interfaces            | <b>LRT</b>  | light rail transit                  |
| <b>ATMs</b>  | Automatic Teller Machines                     | <b>MaaS</b> | mobility-as-a-service               |
| <b>AVL</b>   | Automatic Vehicle Location                    | <b>MSPs</b> | Mobility Service Providers          |
| <b>BRT</b>   | Bus Rapid Transit                             | <b>MTSA</b> | Major Transit Station Area          |
| <b>CAD</b>   | Computer-aided Dispatch                       | <b>NGOs</b> | Non-Governmental Organizations      |
| <b>CAVs</b>  | Connected and Automated Vehicles              | <b>NPV</b>  | Net Present Value                   |
| <b>CCTV</b>  | Closed-circuit television                     | <b>ODMT</b> | On-Demand 'Micro' Transit           |
| <b>CPTED</b> | Crime Prevention Through Environmental Design | <b>OTM</b>  | Ontario Traffic Manual              |
| <b>CUTA</b>  | Canadian Urban Transit Association            | <b>PPS</b>  | Provincial Planning Statement       |
| <b>DWA</b>   | Designated Waiting Areas                      | <b>PUDO</b> | Pick-up and drop-offs               |
| <b>EFP</b>   | Electronic Fare Payment (Systems)             | <b>ROW</b>  | Right of Way                        |
| <b>EV</b>    | Electric Vehicle                              | <b>RTP</b>  | Regional Transportation Plan        |
| <b>EVCI</b>  | EV Charging Infrastructure                    | <b>SaaS</b> | Software-as-a-Service               |
| <b>FCB</b>   | Fuel Cell Buses                               | <b>SAC</b>  | Stakeholder Advisory Committees     |
| <b>FMLM</b>  | First-Mile Last-Mile                          | <b>TAC</b>  | Technical Advisory Committees       |
| <b>FSI</b>   | fare and service integration                  | <b>TDM</b>  | Transportation Demand Management    |
| <b>GGH</b>   | Greater Golden Horseshoe                      | <b>TNC</b>  | Transportation Network Companies    |
| <b>GHG</b>   | Greenhouse Gases                              | <b>TSG</b>  | Transit-Supportive Guidelines       |
| <b>GIS</b>   | Geographic Information Systems                | <b>TTC</b>  | Toronto Transit Commission          |
| <b>GPS</b>   | Global Positioning System                     | <b>TSP</b>  | Transportation Service Provides     |
| <b>GTFS</b>  | General Transit Feed Specification            | <b>TVM</b>  | Ticket Vending Machine              |
| <b>GTHA</b>  | Greater Toronto and Hamilton Area             | <b>TWSI</b> | Tactile Walking Surface Indications |
| <b>HFC</b>   | Hydrogen Fuel Cell                            | <b>UDG</b>  | Urban Design Guidelines             |
| <b>HOV</b>   | High Occupancy Vehicles                       | <b>V2V</b>  | Vehicle-to-Vehicle                  |
| <b>iph</b>   | Intersections per hectare                     | <b>VKM</b>  | vehicle-kilometre                   |
|              |   | <b>ZEBs</b> | Zero Emission Buses                 |

# Appendix C: Ontario's Regulatory Framework

Ontario's Land Use and Transit Planning landscape is defined and guided by a comprehensive regulatory framework of legislative Acts, Bills and policies. Each has been designed to support integrated land use and transportation planning that is sustainable, future oriented, and that facilitates regional and municipal planning in concert with provincial objectives. The following provides a high-level snapshot in time of the current policy context at the time of document publication. The most up-to-date policy framework, including legislation, provincial policies and plans, should be referenced when undertaking transit-supportive projects.

## Legislative Framework

Legislative Bills relevant to the TSG:

- **Planning Act, R.S.O. 1990, c P.13:** The Planning Act sets out the rules for land use planning in Ontario and identifies matters of provincial interest as they relate to land use planning, transportation planning, the protection of ecological systems and agricultural resources, and the promotion of development that is sustainable, supports the use of public transit and prioritizes pedestrian activity.

The following Bills have been passed, and make changes to legislation that impact objectives of Ontario's land use and transportation planning:

- **Bill 98 – Development Charges Act, 1997:** Bill 98 bestows on municipalities the power to enact by-laws to impose development charges for new development and redevelopment of land, to fund the growth-related capital costs of municipal infrastructure and services. In recent years, there has been a growing focus on leveraging development charges to fund transportation-related capital costs, such as transit vehicles and infrastructure, transit stations and stops, and multimodal transportation infrastructure and services, such as shared mobility programs and active transportation lanes.
- **Bill 108 – More Homes, More Choices Act, 2019:** Bill 108 introduced changes to legislation related to housing development in Ontario as part of the province's broader strategy of tackling Ontario's housing affordability crisis. Among other changes, this Bill restricted the application of Inclusionary Zoning to Protected Major Transit Station Areas.
- **Bill 171 - Building Transit Faster Act, 2020:** Bill 171 introduced new transit legislation aimed at empowering the province to build transit infrastructure faster by reducing red tape in the development process, specifically in relation to Ontario's four priority transit projects: the Ontario Line, the Scarborough Subway Extension, the Yonge North Subway Extension, and the Eglinton Crosstown West Extension.

- **Bill 222 - Transit-Oriented Communities Act, 2020:** Bill 222 enables the province to facilitate planning and delivery of development around transit stations (most notably along the Yonge North Subway Extension). The Act focuses on coordinating transit and community development under an overarching policy framework that aims to support the growth of TOCs across Ontario, promoting the co-location of housing, jobs, public amenities, and social services near high quality transit.
- **Bill 109 – More Homes for Everyone Act, 2022:** Bill 109 is aimed at providing near and long-term solutions to Ontario's housing affordability crisis by making the development process faster, easier and more efficient. The Act, among other matters, includes targeted provisions for land that is designated as transit-oriented community land as identified in the Transit-Oriented Communities Act, 2020.
- **Bill 23 – More Homes Build Faster Act, 2022:** Bill 23 made changes to the land use planning system in Ontario through updates to the Planning Act, Development Charges Act and Municipal Act, among others. Several changes to the Planning Act included, among other matters, requiring municipalities to update zoning to include minimum heights and densities within approved Major Transit Station Areas (MTSA) and Protected MTSA's within one year of an MTSA or Protected Major Transit Station Areas (PMTSA) being approved; and as-of-right zoning permitted up to three residential units per lot.
- **Bill 131 - Transportation for the Future Act, 2023:** Bill 131 will enable the development of more GO Transit stations and catalyze the growth of more mixed-use, transit-oriented communities in the GTHA. The legislation introduces a new funding tool – the 'Station Contribution Fee' – that allows municipalities to fund the design and construction of new GO stations and recover the costs as TOCs are developed around these future stations. Transit service integration is also core to the legislation. The City of Toronto and the Toronto Transit Commission (TTC) will be enabled to integrate with other regional transit networks by entering into cross-boundary service agreements with neighbouring transit agencies.
- **Bill 17 - Protect Ontario by Building Faster and Smarter Act, 2025:** Bill 17 is a comprehensive legislative update aimed at accelerating development approvals and improving the efficiency of Ontario's land use planning and housing supply processes. Building on previous bills like Bill 23 and Bill 108, Bill 17 introduces measures such as streamlined application requirements, standardized minimum setbacks, enhanced powers for the Minister of Municipal Affairs and Housing, and revisions to the Development Charges Act, including changes to payment timing for residential development charges. The Act seeks to balance faster housing delivery with sustainable community growth, supporting provincial objectives around transit-oriented development, housing affordability, and infrastructure funding.

# Appendix D: Figure & Photo Credits

## Chapter 1. Introduction

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## Chapter 2. Planning Around Transit

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### Figure C. **Ongoing Intensification around ION Central Station & Kitchener GO Station**

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### Figure E. **Active Street Frontage along Streetcar Route**

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### Figure P. **Placemaking at Pioneer Village Station**

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### Figure Q. **Széll Kálmán Square by Széll Kálmán tér Station**

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### Figure S. **Placemaking at Pioneer Village Station**

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### Figure T. **Laurel Trail, Waterloo Public Square & ION Light Rail**

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### Chapter 3. Transit + Mobility

#### Figure V. **Etobicoke Creek Miway Station, Mississauga**

#### Figure W. **Bus in Downtown Peterborough**

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#### Figure Z. **Clear View Toward Union Station**

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#### Figure AH. **New Communities Coordinated with Transit in Markham**

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#### Figure AL. **Enhanced Visibility and Access to Underground LRT Station**

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#### Figure AQ. **Accessible Platform at GO Train Station**

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#### Figure AR. **Braille at the Bottom of Stair Railings**

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#### Figure AV. **Temporary Storage Lockers in Station**

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#### Figure BB. **Complete Streets Road Configuration**

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#### Figure BC. **Cycle Track, Toronto**

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### Chapter 3. Transit + Mobility (Continued)

#### Figure BJ. **Flexible Streetscape**

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### Chapter 4. Transit Operations

#### Figure CI. **Mount Pleasant GO Station**

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**Chapter 4. Transit Operations (Continued)**

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## Chapter 6. Implementation

### Figure DP. **Transit Streetscape**

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## Chapter 7. Appendices

### Figure DR. **Long Beach Transit Gallery**

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Source: California Climate Investments

### Figure DZ. **BC Transit Bus in Victoria**

Source: Tourism Victoria

### Figure EA. **Leduc On-Demand Transit**

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### Figure EB. **Okotoks E-scooters**

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