

Transportation Master Plan

Draft 1.0 — December 2021



Draft for Public Review



PART 1 | POLICIES

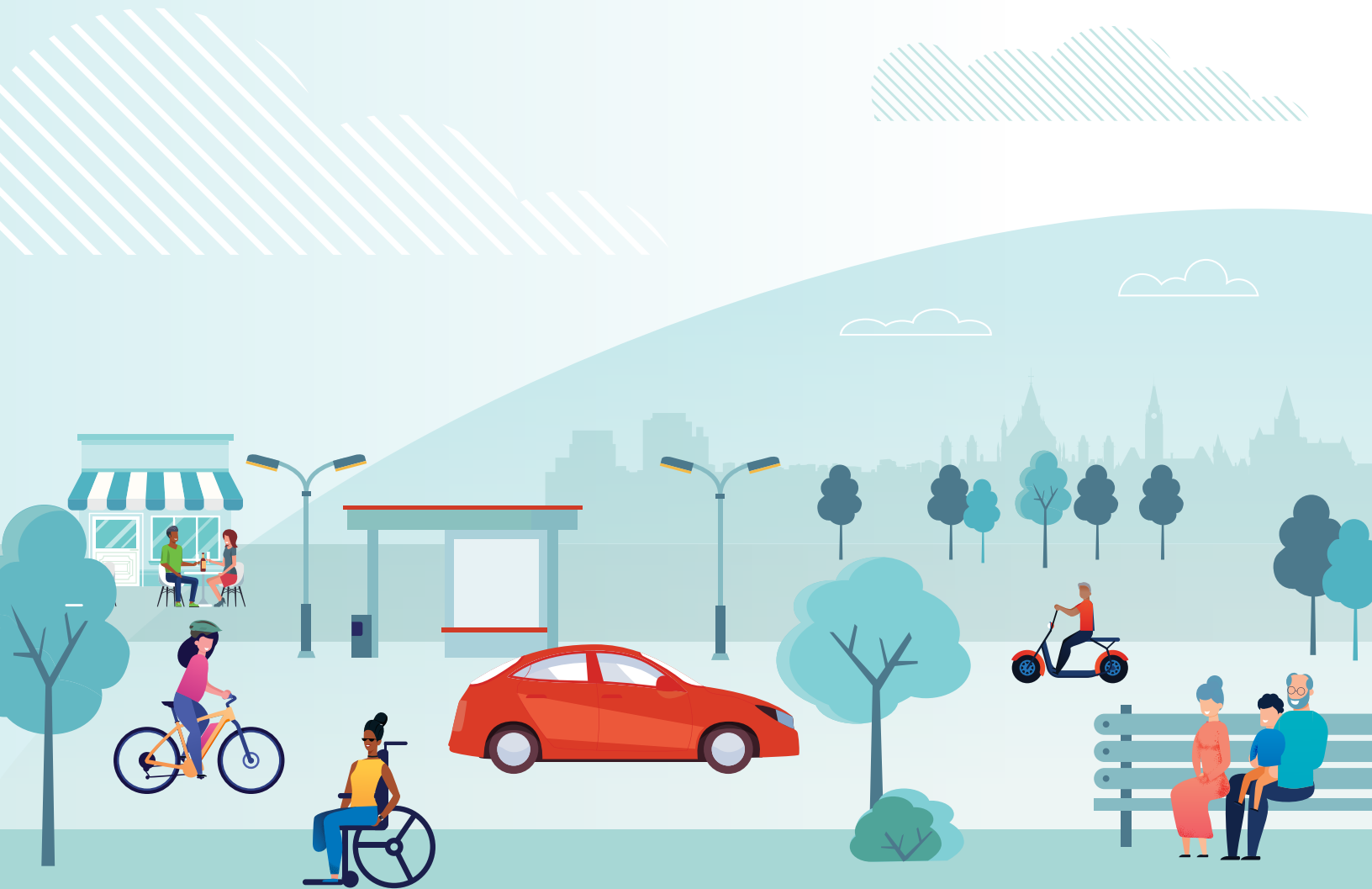


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Policy List





Policy List

Theme 1: Build a Sustainable and Resilient Transportation System

- Policy 1-1 Design a transportation system to meet GHG emission reduction targets
- Policy 1-2 Ensure that transportation is resilient to future climate conditions
- Policy 1-3 Apply a “climate change lens” to transportation project planning, design, and construction
- Policy 1-4 Continue the transition to clean vehicle technologies
- Policy 1-5 Minimize effects on land, water, air, wildlife, and vegetation
- Policy 1-6 Advocate for Federal and Provincial government support to address climate change

Theme 2: Create a More Equitable Transportation System

- Policy 2-1 Apply an “equity lens” to transportation planning
- Policy 2-2 Design streets for people of all ages, abilities, and backgrounds
- Policy 2-3 Accelerate investments that benefit priority neighbourhoods
- Policy 2-4 Continue to pursue affordable housing near transit stations and along frequent bus routes

Theme 3: Advance Regional Competitiveness

- Policy 3-1 Prioritize sustainable transportation options for improving regional mobility
- Policy 3-2 Pursue solutions to interprovincial goods movement
- Policy 3-3 Enable inter-regional transportation
- Policy 3-4 Create lively, people-friendly streets

Theme 4: Respond to Change

- Policy 4-1 Monitor and respond to changing work arrangements and travel patterns
- Policy 4-2 Harness the power of data generated by new technologies
- Policy 4-3 Improve the performance and adaptability of the road network using Advanced Traffic Management Systems
- Policy 4-4 Leverage the shared mobility marketplace to achieve the City's objectives
- Policy 4-5 Prepare for vehicle automation

Theme 5: Use Transportation to Support the City We Want to Build

- Policy 5-1 Adhere to best practices for network development
- Policy 5-2 Prioritize modes of travel that are space-efficient
- Policy 5-3 Incorporate Official Plan “transects” into transportation planning
- Policy 5-4 Encourage sustainable transportation through community planning and design



- Policy 5-5 Align development tools to support targets for travel mode shares
- Policy 5-6 Update land (Right-of-Way) protections for transportation corridors to support city-building objectives
- Policy 5-7 Apply a long-term affordability lens to transportation investments

Theme 6: Maximize Walkability

- Policy 6-1 Continue to address accessibility barriers and advance universal design
- Policy 6-2 Improve and expand the pedestrian network
- Policy 6-3 Address gaps in existing neighbourhoods through retrofits
- Policy 6-4 Make it easier to cross the road
- Policy 6-5 Invest in neighbourhood “shortcuts”
- Policy 6-6 Deliver supportive winter maintenance and asset renewal
- Policy 6-7 Improve quality, security, and vibrancy of the pedestrian environment
- Policy 6-8 Deliver pedestrian safety and promotion programs

Theme 7: Develop a Great Cycling City

- Policy 7-1 Improve and expand the cycling network
- Policy 7-2 Retrofit by priority to improve connectivity
- Policy 7-3 Target missing links and major barriers
- Policy 7-4 Provide safe and comfortable facilities and routes
- Policy 7-5 Continue to advance design and construction standards
- Policy 7-6 Plan for an increase in e-bikes, cargo bikes, e-scooters, and other users
- Policy 7-7 Deliver supportive maintenance and renewal
- Policy 7-8 Enable winter cycling
- Policy 7-9 Require adequate, secure bicycle parking in new developments
- Policy 7-10 Deliver cycling safety and promotion programs
- Policy 7-11 Provide high quality information about the cycling network

Theme 8: Expand and Improve Transit City-Wide

- Policy 8-1 Invest in the Rapid Transit and Transit Priority Network
- Policy 8-2 Avoid adding new road or highway capacity that competes with rapid transit
- Policy 8-3 Improve the convenience, comfort, and accessibility of transit
- Policy 8-4 Expand the catchment of rapid transit through improved walking and cycling connections to stations
- Policy 8-5 Monitor evolving travel patterns and adjust service accordingly

Theme 9: Provide Safe, Multimodal Streets

- Policy 9-1 Continue to advance the implementation of complete streets
- Policy 9-2 Implement the concept of “access” and “flow and capacity” streets
- Policy 9-3 Identify future street network needs
- Policy 9-4 Ensure that modifications to the road network foster “human-scaled” streets



- Policy 9-5 Continue to optimize traffic signal operations to maximize multimodal efficiency
- Policy 9-6 Continue efforts to minimize traffic impacts on neighbourhoods
- Policy 9-7 Implement the Road Safety Action Plan to reduce fatal and major injury collisions
- Policy 9-8 Reduce operating speeds on “access” streets
- Policy 9-9 Advance the implementation of protected intersections and other designs that can improve safety

Theme 10: Manage the Curb, Parking, and the Movement of Goods

- Policy 10-1 Update truck route planning and street design guidelines based on complete streets principles
- Policy 10-2 Aim to accommodate deliveries using off-street space
- Policy 10-3 Encourage and enable the use of smaller, human-powered, and electric vehicles for goods movement
- Policy 10-4 Monitor goods movement trends and consult with the freight industry for mutual benefit
- Policy 10-5 Develop a strategy to modernize how curbside space is allocated and managed
- Policy 10-6 Leverage parking to support economic activity and encourage sustainable transportation

Theme 11: Advance Transportation Demand Management

- Policy 11-1 Advance and evolve Transportation Demand Management
- Policy 11-2 Prioritize active school trips
- Policy 11-3 Encourage sustainable travel options for City of Ottawa employees
- Policy 11-4 Increase support for multimodal trip planning tools



Introduction

The Transportation Master Plan (TMP) is the City's blueprint for planning, developing, and operating its walking, cycling, transit and vehicular networks in the decades to come. It identifies transportation policies, facilities and services that will meet the needs of residents and businesses. The TMP builds on previous plans completed in 2003, 2008 and 2013, and was developed based on extensive public feedback, following the Municipal Class Environmental Assessment process.

Since the adoption of the 2013 TMP, the City has supported intensification of land uses and built the spine of the O-Train system. The network of walking and connected cycling facilities has expanded significantly, the concept of "complete streets" that are safe for all road users has been implemented in several corridors, and the City is piloting the use of electric cargo bikes and connected and autonomous vehicles to help prepare Ottawa for the future. This has been supported by an evolution in best practices and transportation design guidance to improve safety and accessibility. Furthermore, Ottawa has seen significant growth, new technologies are changing the transportation landscape, City Council has declared a climate emergency, and the COVID-19 pandemic has accelerated trends such as flexible working arrangements and online shopping. While this TMP continues to build on the success of the 2013 plan, it also responds to these emerging challenges and opportunities. In addition, it includes a strong focus on affordability given the funding challenges that currently exist.

Through the new *Official Plan*, the City has set a goal to become **North America's most liveable mid-sized city** and has developed five "Big Moves" related to growth, mobility, health and resiliency, urban design, and the economy - each providing strategic direction to achieve this broader vision. The key goal related to the mobility "Big Move" of the *Official Plan* is that **the majority of trips will be made using sustainable transportation modes (walking, cycling, transit or carpooling) by 2046**. This TMP supports the mobility objectives of the new *Official Plan* with an emphasis on creating healthy communities, responding to the climate emergency, and building a safe and equitable transportation system.

The policies and actions in the TMP will guide day-to-day transportation planning and operations as well as future capital and operating budgets. The TMP also provides direction to supporting plans and guidelines where appropriate.

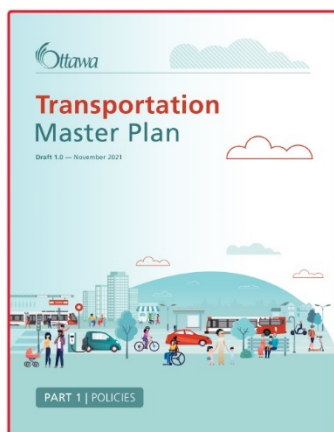


What's Inside

This document is one of two that forms the TMP:

- **Part 1 [2022] – Policies (this document):** Policies and supporting actions that provide a framework for improving Ottawa's transportation system to 2046 to help meet the goals of the new *Official Plan*
- **Part 2 [2024] – Capital Infrastructure Plan (separate document):** Detailed update to the City's planned road, transit, and active transportation networks that provides direction on transportation infrastructure expansion projects and investments.

Exhibit 1: Part 1 and Part 2 of the TMP



PART 1 | Policies (This Document)

- Transportation Vision and Guiding Principles
- Policies and Actions

PART 2 | Capital Infrastructure Plan (Separate Document)

- Travel Trends
- Mode Share Targets
- Transportation Network Scenarios and GHG Impacts
- Road Network, Rapid Transit and Transit Priority Network, and Prioritization
- Affordability Analysis and Budget Implications



This Part 1 policy document includes background information on Ottawa's transportation system, followed by a vision for Ottawa's transportation system and a set of guiding principles used to update the TMP. The remainder of the document presents policies and actions.



Cross-cutting policies span multiple modes of travel and subject areas:

- **1. Build a Sustainable and Resilient Transportation System** shows how the TMP will respond to climate change and other environmental issues.
- **2. Create a More Equitable Transportation System** addresses issues of fairness in the City's planning for and operation of the transportation system.
- **3. Advance Regional Competitiveness** discusses the links between transportation and economic development, with a particular focus on regional transportation.
- **4. Respond to Change** describes the City's approach to managing new mobility options, leveraging data and technology, and establishing a nimble transportation system.

Focused policies address specific modes of travel or transportation-related subject areas:

- **5. Use Transportation to Support the City We Want to Build** focuses on land use and development, including addressing connections between the *Official Plan* and TMP Update.
- **6. Maximize Walkability** identifies the City's approach to expanding and improving its pedestrian network to create more supportive environments for walking, improve access to transit, and address pedestrian safety.
- **7. Develop a Great Cycling City** discusses how the City will strengthen and expand its cycling network; encourage cycling as part of multimodal trips (such as using a bicycle to access the O-Train); expand and improve parking facilities for bicycles (including secure options); improve cyclist safety; and promote cycling.
- **8. Expand and Improve Transit City-Wide** describes how the City will expand rapid transit and transit priority to improve transit connections within and between communities; increase the attractiveness of using transit; enhance the customer experience; and plan for regional transit connections.
- **9. Provide Safe, Multimodal Streets** addresses the importance of complete streets that consider the needs of all road users and identifies how the road network can be made safer and more efficient.
- **10. Manage the Curb, Parking, and the Movement of Goods** describes the ways that the City will proactively manage curbside space, parking, passenger drop-off, and goods movement to support City objectives.
- **11. Advance Transportation Demand Management** describes the tools that the City will use to manage travel demand and encourage residents to make more sustainable travel choices for a greater range of trips, including incentives, educational programs, and promotions.

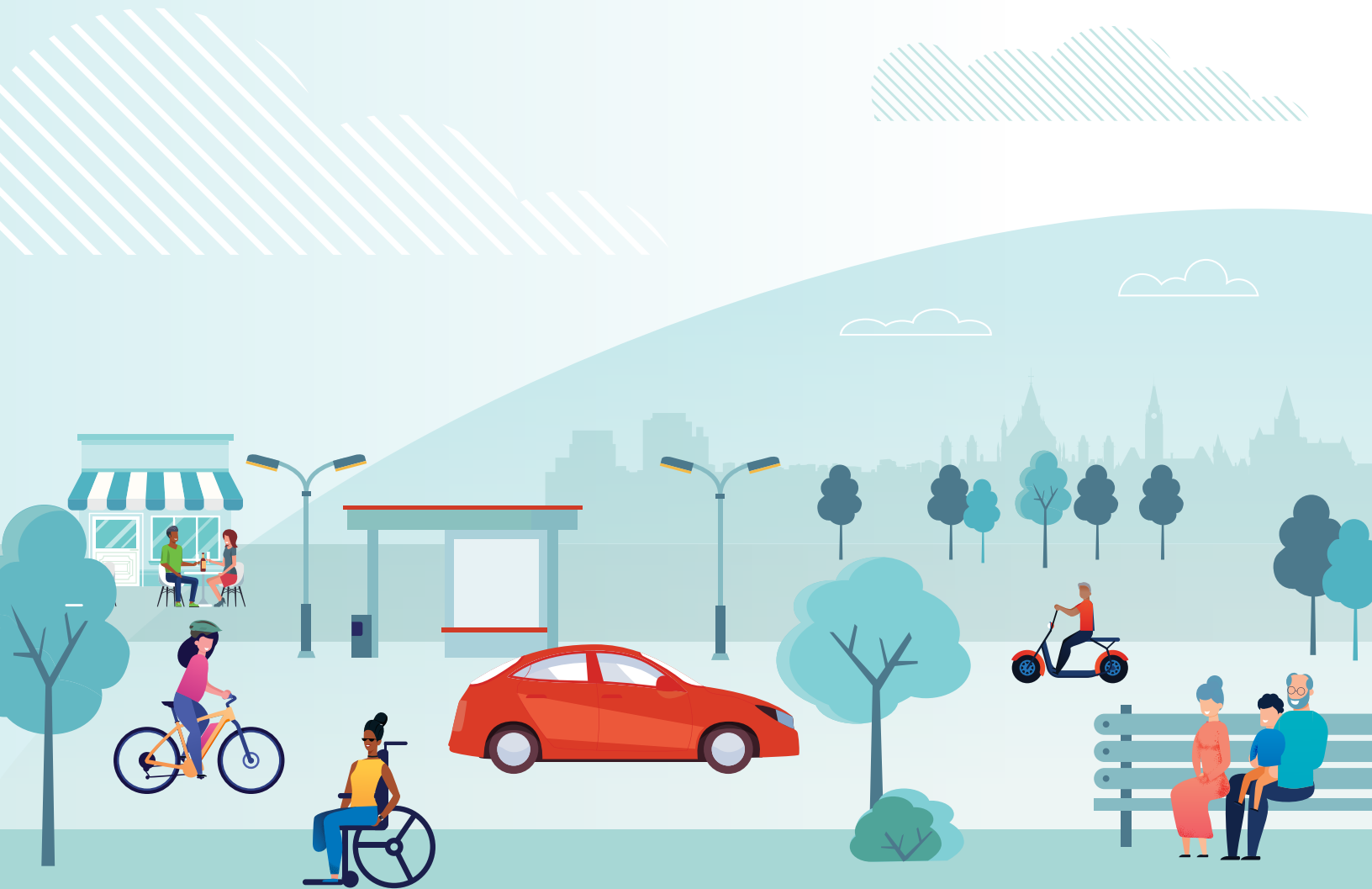


Annexes

- [Annex A](#) TMP Priority Neighbourhoods
- [Annex B](#) Guiding Principles
- [Annex C](#) Glossary



Background





Background

What Makes Up the City Transportation Network

The transportation network underpins a city's economic and social activities, and enables people to access destinations such as jobs, education, and health care. It supports mobility—the movement of people and goods—for many different purposes, over short and long distances. Transportation is integral to quality of life in a city; factors such as transportation safety, reliability, cost and enjoyment contribute to residents' physical, economic, social and mental well-being.

The transportation network is multi-modal, including infrastructure, services and amenities for walking, cycling, public transit, and vehicular travel. City streets are a core component of the multi-modal network and are the primary access points for adjacent properties and facilities. Streets are also at the heart of communities, serving as public spaces for human connection and contributing to local business success.

The transportation network also includes dedicated infrastructure and services for specific modes of travel. Pathways and active transportation bridges can provide comfortable and convenient routes for people walking and cycling. Dedicated transit infrastructure such as the Transitway and O-Train support fast and reliable travel by public transit. Highways such as Highway 417 are for the exclusive use of vehicles and public transit services. Airports and rail stations connect a city to the rest of the world.

Across different areas of a city, transportation networks have different characteristics, with higher density and more urban areas generally offering a greater variety of travel options. The transportation network is continually evolving as new infrastructure is built, as travel patterns change, and as the mobility landscape shifts. For example, shared mobility services enabled by mobile applications (e.g. e-scooter sharing and ride-hailing) are notable emerging features of the multi-modal transportation network.

A core requirement of the transportation network is to provide a sufficient level of mobility for people of all ages and abilities, recognizing that not everyone has access to all modes of travel. It must also be sustainable such that fuel consumption, vehicle emissions, safety, congestion, and social and economic access do not cause harm to current or future generations.¹ Finally, the transportation network influences land use planning, economic development, and public health. The City of Ottawa's focus on providing an integrated, multi-modal transportation network is intended to support its goals for climate change mitigation, growth management, social equity, public health, and livability.

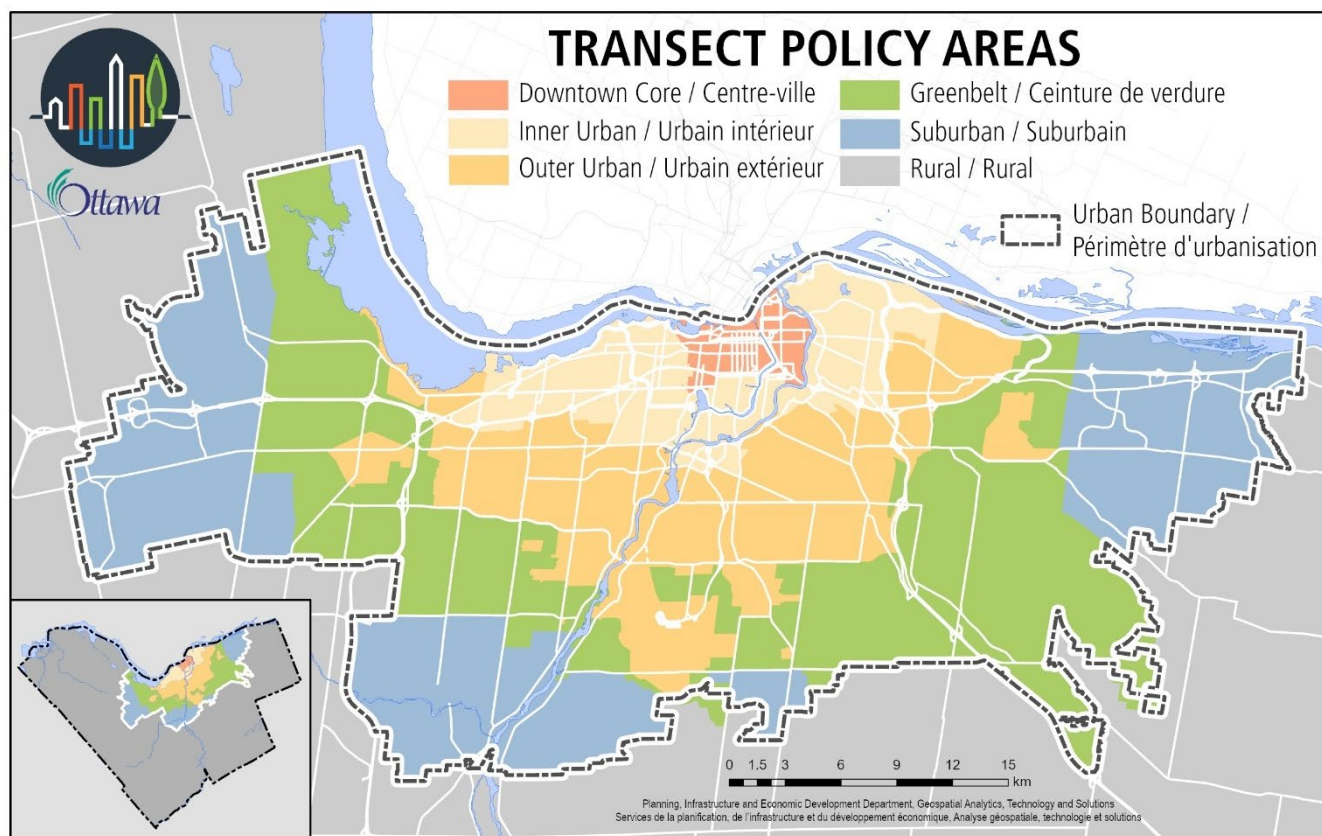
¹ Barbara Richardson (1999), "Towards A Policy On A Sustainable Transportation System, Transportation Research Record 1670, pp. 27-34.



Transportation in Ottawa Today

With approximately 1.4 million people, Canada's Capital Region (CCR) is the sixth-most populous metropolitan area in Canada after Toronto, Montreal, Vancouver, Calgary, and Edmonton. The City of Ottawa is the largest municipality in the capital region and is home to over 1 million people, covering an area of nearly 2,800 square kilometres. Though much of Ottawa's land area is rural, the bulk of the population lives within the city's urban boundary. Initially, Ottawa's urban neighbourhoods were surrounded by the Greenbelt. As the city grew, new communities were established outside the Greenbelt, including Kanata, Barrhaven, Riverside South, and Orleans. A significant amount of growth in recent years has occurred in these suburban areas. The new *Official Plan* has categorized the lands within the City of Ottawa's jurisdiction into six areas called "transects" which divide the City into different types of built environments. A map of these transects is shown in Exhibit 2.

Exhibit 2: The lands within the City of Ottawa Municipal Boundary [Official Plan - Schedule A]





Ottawa's large land area creates transportation challenges, including the potential for long travel distances. The transportation system is also characterized by many geographic barriers that present challenges to network connectivity and accessibility. The Rideau River and Rideau Canal, while cornerstones of Ottawa's cultural identity and natural beauty, make east-west connections across the city more difficult for all modes of travel. The Ottawa River similarly impacts interprovincial travel between Ottawa and Gatineau, with crossing opportunities focused predominantly in or near the downtown. Ottawa also faces the challenge of connecting residents across the Greenbelt while minimizing negative effects on ecosystems and agricultural activities. Finally, some elements of the transportation network itself, such as Highway 417, bisect the city and act as barriers to connectivity—particularly for active transportation.

Ottawa's transportation network features intersecting and overlapping jurisdictional contexts. Its transportation system connects two provinces (Ontario and Quebec) and two municipalities (Ottawa and Gatineau), and also supports federal interests given Ottawa's role as the nation's capital. Within the City's boundaries, transportation is a shared responsibility between the federal, provincial, and municipal governments. While the three levels of government work together to meet regional and local interests related to transportation, each is responsible for the planning, design, construction and maintenance of its own infrastructure and facilities.

- **City of Ottawa** – The City of Ottawa municipal corporation owns, operates, and maintains most of the streets, transit facilities, and pathways in Ottawa. The City also owns and operates highway 174 in the east end of the city².
- **Province of Ontario** – The Ontario Ministry of Transportation owns and operates the provincial highway system through Ottawa, including Highways 416, 417, and 7. The province also establishes rules that direct and guide how municipalities manage certain aspects of transportation planning and design³.
- **Federal Government** – The National Capital Commission (NCC) is a federal Crown corporation with a broad mandate to build a dynamic and inspiring capital that is a source of pride and unity for Canadians and a legacy for future generations. The NCC owns and manages a significant amount of land in the region, including a number of streets such as the parkways along the Rideau Canal, and a substantial pathway network. The NCC also manages the Greenbelt. In addition, there are five interprovincial road bridges owned and operated by the federal government.

The City's large geographic area includes a vast network of transportation infrastructure. The City of Ottawa operates and maintains over 6,000 km of roads, and over 15,000 vehicular parking spaces in off-street lots and paid on-street parking spaces.

² The Ottawa Road 174 freeway is the portion of the Queensway that runs through Orleans from Trim Road in the east to the Aviation Parkway / Highway 417 interchange.

³ The City of Ottawa must comply with a number of provincial Acts including (but not limited to) the Municipal Act, Planning Act, Environmental Assessment Act, Highway Traffic Act, and the Accessibility for Ontarians with Disabilities Act.



The active transportation network includes about 2,150 km of sidewalks, 325 km of pathways, 25 km of separated cycling facilities, and 340 km of on-road bicycle lanes. The network is also supported by over 11,000 publicly available bicycle parking spaces.

The City's O-Train system includes 17 stations and 20 km of rail, with an additional 24 stations and 44 km of rail under construction as part of Stage 2 LRT. The City's transit system also includes the Transitway (currently 57 stations), over 900 buses, 29 park-and-ride lots, and specialized vehicles that provide paratransit service for persons with disabilities.

Ottawa is served by four airports (one international and three general aviation airports), two passenger railway stations, two interprovincial ferry connections, a freight rail yard, taxi and ride share companies, and shared e-scooter providers. While the City of Ottawa is not directly responsible for these elements of the transportation network, the City collaborates with other agencies and private sector transportation providers to ensure the mobility needs of Ottawa residents are met.



Transportation in Ottawa Tomorrow

The TMP considers changes in Ottawa's mobility landscape since 2013 as well as future trends and issues.

The Growing City

Ottawa's population is projected to grow by 40% from 2018 to 2046, reaching an estimated 1.4 million people. 79% of this growth is expected to come from international immigration and national and regional migration. Ottawa's population is therefore projected to be more diverse as it grows. In addition, the city will have an older population, with 22% of Ottawa residents aged 65 or over by 2046. These changing demographics will influence the level and types of service provided, with an increased emphasis on accessible, comfortable, safe, and intuitive transportation options (walking, cycling, and transit), and safe roads for all.

The City's new *Official Plan* provides a vision for the future growth of the city and emphasizes the importance of sustainable transportation and walkable "15-minute neighbourhoods" (where amenities like shops and services are located within a 15-minute walk of where people live). The new *Official Plan* requires 60% of new homes to be built within existing neighbourhoods by 2046, including areas both inside and outside the Greenbelt. With this scale of intensification, demand on the existing transportation system will increase, including demand for improved walking and cycling facilities. With the



remaining development slated for the periphery of the urban area, including the new Tewin community in southeast Ottawa, increasing pressure will also be placed on the connections to these growth areas, particularly across the Greenbelt. The *Official Plan* reinforces the importance of public transit as the cornerstone of a sustainable land use and transportation system.

Travel in Ottawa will also continue to evolve in response to recent trends and the recovery from the COVID-19 pandemic. Some changes stemming from the pandemic may be short-term, while others may permanently alter the way that people and goods move around the city. For example, online shopping and flexible working arrangement trends were accelerated during the pandemic, increasing door-to-door delivery of goods, and evolving away from traditional peak-period commuter demand patterns. Moving forward, it will be important to draw on the lessons learned from the pandemic and take advantage of new opportunities that have emerged.

Climate Change

Ottawa's *Climate Change Master Plan* established greenhouse gas (GHG) reduction targets of 100% by 2050 for the city as a whole and 100% by 2040 for the municipal corporation. The transportation sector contributes 44% of Ottawa's overall GHG emissions, so significant action is needed to encourage the use of more sustainable modes and vehicles if these targets are to be achieved. This will require major investments such as expanding the transit network, electrifying the City's fleets, and other initiatives as outlined in the City's *Energy Evolution* strategy.

In addition to these mitigation strategies, Ottawa is also preparing to adapt to a changing climate over the coming decades as average temperatures rise, periods of extreme heat become more common, and extreme weather events such as floods occur more often. The City is developing a *Climate Resiliency Strategy* that will assess Ottawa's climate change vulnerabilities and develop strategies to mitigate risks. This includes risks related to transportation, such as heat-related risks for people walking or cycling, and damage to infrastructure as a result of freeze-thaw events and flooding. Meeting climate change objectives will require substantial funding beyond current levels. The TMP is one of many important avenues for action on climate change and works in tandem with other plans and strategies to drive progress.

Technology and New Mobility

New mobility services such as ride-hailing (e.g. Uber, Lyft), ride-sharing (e.g. UberPool), car sharing (e.g. Communauto), and e-scooters have begun to play a much larger role in Ottawa's transportation ecosystem since the development of the 2013 TMP. As mobility technologies and services evolve in the coming decades, they have the potential to significantly alter how people live, shop, and travel. New transportation technologies could create a range of positive and negative outcomes. For example, the increased automation of driving functions could reduce collisions, but could also increase congestion if not properly managed. Additionally, new transportation services such as ride-hailing and e-scooters may provide new options for getting around the city and make it easier to connect to the rapid transit network, but their benefits may not be equitably distributed. To leverage the



benefits of emerging technologies, the City must strive to ensure that such technologies support the City's objectives for a safe, efficient, sustainable, and equitable transportation system while continuing to encourage and support innovation.

Health, Equity and Safety

Healthy and inclusive communities are vitally important to the City and are core strategic directions underpinning the new *Official Plan*. The new *Official Plan* requires all supporting Master Plans and guidelines, including the TMP, to advance human health and well-being; it emphasizes the importance of sustainable transportation in facilitating physical activity, contributing to mental health, and reducing the impacts of air pollution and noise. Equity is also a key principle of the new *Official Plan*, with a particular focus on both gender and racial equity and on considering equity in infrastructure and investments across neighbourhoods. Finally, since the previous version of this document was approved in 2013, the City has introduced new initiatives that support safe streets for all, including the *Road Safety Action Plan*. The *Road Safety Action Plan* is founded on the "Safe systems" philosophy that prioritizes human life and health, and emphasizes that human error on our streets should not lead to death or serious injury.

Affordability

The City defines affordability from the point of view of both current and future taxpayers. Not only will current taxpayers be responsible for the capital cost of new infrastructure, but ongoing operational, maintenance, rehabilitation, and debt-financing costs mean that future residents will be paying for transportation projects for many years to come. To contend that a plan is affordable is to demonstrate that there is adequate funding available from identified sources to deliver planned services and infrastructure investments—that is, a funding plan has been identified with reasonable assumptions which also respects established fiscal policies. Ultimately, the City must prioritize and allocate investment among many competing demands.



Vision and Guiding Principles

The TMP's vision and guiding principles provide foundational guidance on how the future transportation system will benefit residents and help the City meet its vision of becoming the most liveable mid-sized city in North America. This update expands on the concepts of social, environmental, and economic sustainability that are articulated in the 2013 vision and reflects the need for flexibility in the face of an uncertain future.

Vision

In 2046, Ottawa's transportation network will be flexible, dependable, safe and efficient in meeting the evolving needs of residents and businesses across the City, while enabling the City to meet its climate change goals. The network will provide travel options for people regardless of their income, identity, or ability.

Guiding Principles

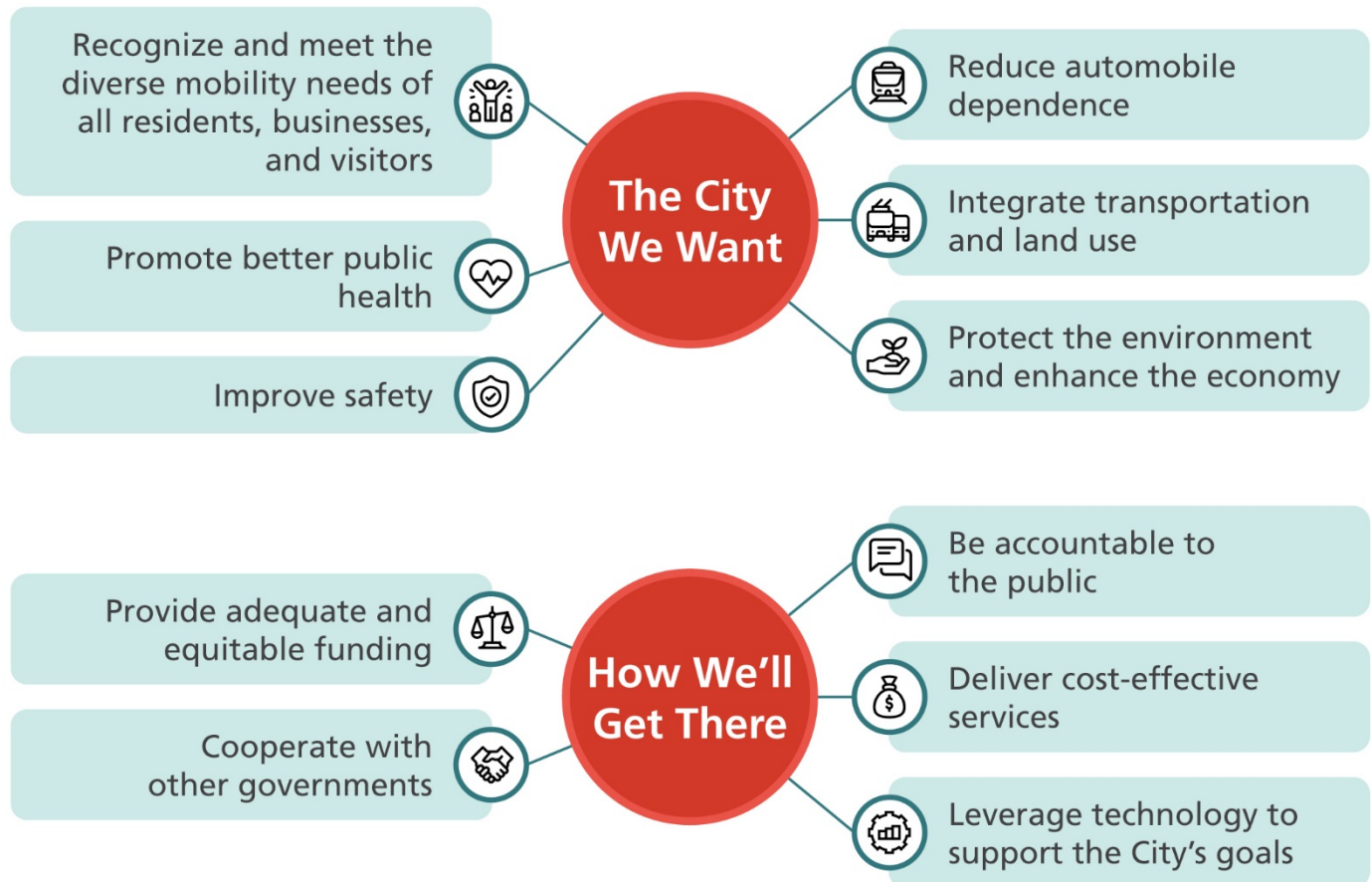
Along with the vision, the guiding principles of the TMP serve as a framework to guide policy and transportation network development. The guiding principles build on those in the 2013 TMP with an increased emphasis on key priorities identified in public and stakeholder consultation, such as climate change and equity.

The updated guiding principles, shown in Exhibit 3 and explained in greater detail in Annex B, fall into two distinct but equally important categories:

- **The City We Want:** our aspirations for the future of Ottawa, including social responsibility and environmental stewardship.
- **How We'll Get There:** how to achieve the City's vision with accountability and financial responsibility.



Exhibit 3: Guiding Principles



Cross-Cutting Policies

Policy themes within this section address cross-cutting issues that are relevant to all modes of travel and to a wide range of mobility-related programs and initiatives. Many of the policies and actions related to these issues require interdisciplinary efforts to advance. The cross-cutting policies address climate change and sustainability, equity, economic development, and emerging trends and technologies.





Theme 1: Build a Sustainable and Resilient Transportation System

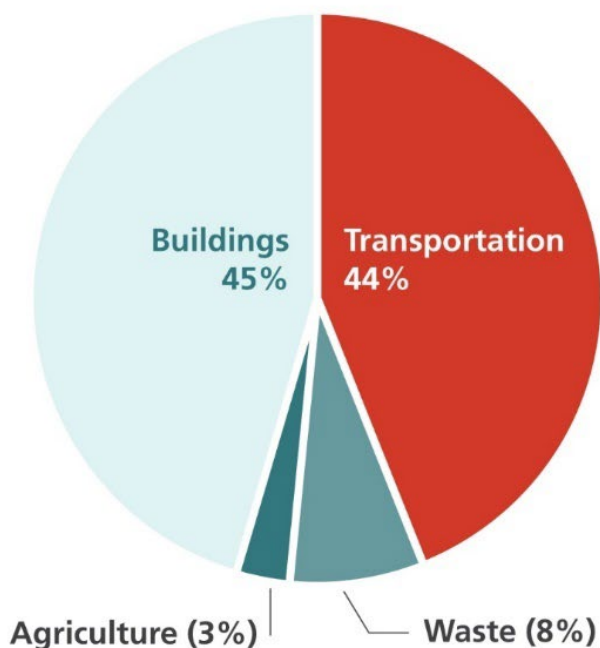
POLICY OVERVIEW	
Policy 1-1	Design a transportation system to meet GHG emission reduction targets
Policy 1-2	Ensure that transportation is resilient to future climate conditions
Policy 1-3	Apply a “climate change lens” to transportation project planning, design, and construction
Policy 1-4	Continue the transition to clean vehicle technologies
Policy 1-5	Minimize effects on land, water, air, wildlife, and vegetation
Policy 1-6	Advocate for Federal and Provincial government support to address climate change

On April 24, 2019, Ottawa City Council declared a climate emergency as part of a broader global consensus that the earth’s climate is changing, and that action must be taken to respond to this threat. Strategies to mitigate and adapt to climate change also create opportunities to achieve broader City goals by advancing healthy, sustainable communities and urban ecosystems. The TMP works together with other City plans and strategies to mitigate future climate change by targeting reductions in greenhouse gas (GHG) emissions from the transportation sector.

Ottawa’s *Climate Change Master Plan* established GHG reduction targets of 100% by 2050 for the city as a whole and 100% by 2040 for the municipal organization. The implementation of the City’s *Energy Evolution* strategy is one of the eight priority actions in the *Climate Change Master Plan* and sets the framework for what it will take for Ottawa to meet the Council approved long-term GHG emission reduction targets. The transportation sector contributes 44% of Ottawa’s overall community GHG emissions; further, the City’s vehicle fleet is responsible for 68% of the City’s corporate GHG emissions. Achieving these targets will therefore require significant shifts in vehicle technology and travel behaviour for both the City and its residents.



Exhibit 4: Total Annual Community GHG Emissions in 2019 by Sector



Annual Transportation Emissions by Source

1,620 kT Gasoline Fuel (60%)
 675 kT Diesel Fuel (25%)
 405 kT Aviation Fuel (15%)

Source: Climate Change Master Plan (2020)

The *Climate Change Master Plan* and new *Official Plan* also provide direction to adapt to a changing climate and build a city that is resilient to future climate conditions. Over the coming decades, average temperatures are expected to increase, and periods of extreme heat will become more common. Summers will be drier while all other seasons will be wetter, with longer shoulder seasons and more frequent freeze-thaw events in winter. Projections also forecast more frequent and/or severe extreme weather events like floods, freezing rain, tornadoes, and wildfires.⁴

⁴ Reference: *Climate Projections for the National Capital Region Report*



The transportation system will need to be resilient to the associated impacts of climate change:

- Flooding may result in washouts, closures, delays and/or restrictions to transportation networks for all modes of travel.
- Freeze-thaw cycles, freezing rain events, and more intense snow storms may increase winter maintenance costs as well as the risk of slip and fall injuries and collisions.
- Pavement quality may deteriorate faster because of extreme heat and freeze-thaw cycles, increasing resurfacing and renewal requirements.
- Extreme heat and smog days may increase the health risks for people walking, cycling, and using transit and may discourage the use of sustainable modes.

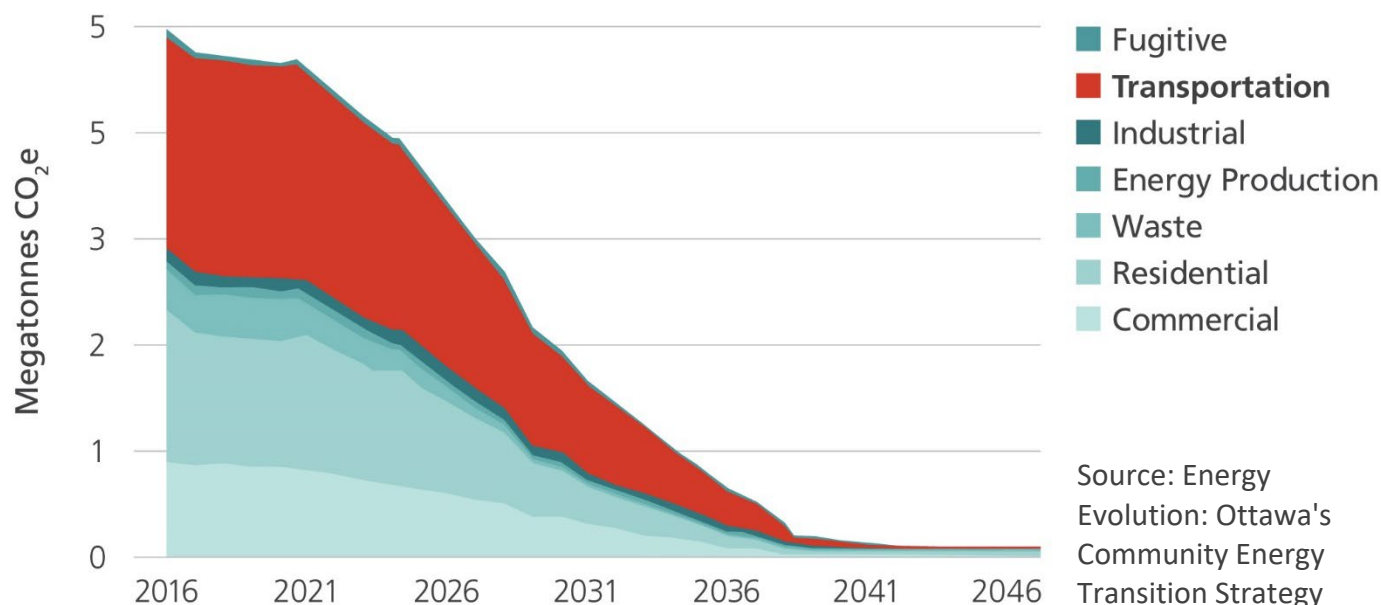
Building on the work of the City's *Climate Resiliency Strategy*, currently under development, the TMP responds to these climate risks and includes policies to ensure that transportation is safe and comfortable in future climate conditions.

POLICY 1-1 Design a Transportation System to Meet GHG Emission Reduction Targets

Shifting a large portion of residents' daily trips from automobile to transit, walking and cycling is critical for meeting the City's GHG emission reduction targets. It is estimated that in 2016, 74% of trips in Ottawa over a 24-hour period were made by automobile while only 26% were made by sustainable modes. Even with a significant shift to electric vehicles (EV), by 2030, trips by car will need to drop to 58% of daily trips to achieve GHG reduction targets, based on modeling developed through the City's *Energy Evolution* strategy. This aligns with the new *Official Plan* objective that the majority of trips should be made by sustainable modes by 2046.



Exhibit 5: GHG Emissions Reduction Forecast by Sector



As part of developing the TMP Capital Infrastructure Plan, the City will model one or more transportation network scenarios that achieve this required shift. These scenarios are expected to include significant new transit and active transportation infrastructure. While the Capital Infrastructure Plan focuses on new infrastructure, it will also consider interdependencies between infrastructure and supporting measures from *Energy Evolution* such as transportation demand management and pricing tools (e.g., parking fees, congestion charging, etc.). Assumptions about the transition to electric vehicles will also feed into the network scenarios.

In addition, the TMP Capital Infrastructure Plan will include an affordability analysis based on the City's *Long-Range Financial Plan*. The analysis will consider the cost of carbon under the federal carbon pricing framework and potential new funding sources for sustainable transportation infrastructure.

Action 1-1A

As part of the TMP Capital Infrastructure Plan, the City will develop one or more planning scenarios that achieve the City's GHG emission reduction targets for community transportation, and will identify the corresponding costs, benefits, and interdependencies of each, considering affordability, funding sources and implementation feasibility.



POLICY 1-2 Ensure That Transportation Is Resilient to Future Climate Conditions

The City is developing a *Climate Resiliency Strategy* to assess how Ottawa is vulnerable to climate change and identify strategies to mitigate the greatest risks. Based on the initial risk assessment, flood risk and extreme heat risk are short-term priorities at the network level because there are clear vulnerabilities for Ottawa and a clear path forward to better understand and mitigate the risks.

Climate change increases the risks of “riverine flooding” along rivers and creeks as well as “urban flooding” which occurs when intense rainfall overwhelms sewer systems. The City will use updated riverine flood mapping as well as the Flood Risk Profile for urban flood events to assess risks to major transit, road, and active transportation corridors. The City will then implement measures to reduce flood risks such as improved stormwater management, infrastructure upgrades, or designation of alternate routes. Flood risk mapping will also be an input into the TMP Capital Infrastructure Plan, to minimize flood risk for new transportation infrastructure.





From a transportation perspective, people walking, cycling, and using transit are at greater risk of being impacted by climate change. With climate change, extreme heat days (when the temperature reaches 30 degrees Celsius or higher) are expected to increase fourfold by the 2050s, reaching an average of 44 days per year. The impact of extreme heat days is exacerbated by the “urban heat island effect” whereby buildings, parking lots, roads and other dark surfaces in built-up areas become hotter than nearby areas with more greenspace and water bodies. While high temperatures can put everyone at risk, some people are more vulnerable including young children, older adults, those with a lower income, those with pre-existing health conditions and those with poor access to air conditioning.

Increasing the coverage of canopy trees and ‘built’ shade infrastructure in urban environments has a well-documented ability to mitigate heat-related risks. Going forward, all new transportation infrastructure should include shade trees and/or other infrastructure to provide shade. The City will also establish a new initiative to add trees and/or shade infrastructure along high priority existing corridors, following from examples of “Neighbourhood Shadeways” in other cities. Priority corridors will be selected based on vulnerability, focusing on areas with the following characteristics: low existing tree canopy coverage; high urban heat island effect; high concentrations of vulnerable populations; and important routes for walking, cycling and transit. Ease of implementation will also be an important consideration. A new “Shadeways” initiative would supplement existing programs to increase Ottawa’s tree canopy.

In addition, changing climatic conditions will require adjustments to how the City maintains its streets—particularly during winter months—to ensure the transportation network functions properly and safely for everyone. The *Climate Resiliency Strategy* and other transportation plans and guidance documents will identify next steps related to infrastructure operations, maintenance, renewal, and other aspects of the transportation system that require action to address vulnerabilities. The City will also continue to work with other jurisdictions in the region to address shared risks—for example, risks to inter-provincial bridges and National Capital Commission pathway networks.

Action 1-2A	Assess flood risks to major transportation networks for riverine and urban flooding and implement measures to reduce risks.
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Action 1-2B	Implement shade along priority corridors using urban heat island, tree canopy and equity mapping to inform prioritization of resources.
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Action 1-2C	Use flood risk mapping to inform the TMP Capital Infrastructure Plan.
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POLICY 1-3 Apply a “Climate Change Lens” to Transportation Project Planning, Design, and Construction

The City delivers many transportation projects each year, with a wide range of scales and scopes. Within a number of these projects, there are planning, design and construction decisions that have climate change impacts. Applying a “climate change lens” to these projects ensures that climate change mitigation and adaptation are considered. This aligns with recent federal government requirements that projects submitted for funding must be accompanied by a climate lens assessment.

The City will update key design guidelines and standards to include trees to provide shade and Low Impact Development stormwater management features to reduce runoff and mitigate localized flooding. Environmental Assessment (EA) studies for large transportation projects will continue to include climate change adaptation and mitigation assessment. This includes calculating expected production of GHG emissions, impact on carbon sinks and assessment of shade and permeable surface coverage for each alternative to help compare alternatives through a climate lens.

The City will also seek to monitor and adopt new and emerging project planning, funding, design, and construction practices to ensure that infrastructure addresses climate change from both a mitigation and adaptation perspective. For example, on the design side, emerging project features could include permeable pavement to manage runoff or recycling construction materials such as concrete.

Action 1-3A	Update design guidelines and standards to incorporate resiliency measures such as shade trees, vegetation, climate-supportive materials, and low-impact development stormwater management features.
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Action 1-3B	Review and adopt best practices for climate-friendly planning, funding, design, and construction, including methods to reduce GHG emissions from construction.
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POLICY 1-4 Continue the Transition to Clean Vehicle Technologies

Energy Evolution, Ottawa’s community energy transition strategy, calls for the uptake of clean vehicle technology to be accelerated. Based on *Energy Evolution* modeling, meeting GHG emissions targets requires that 90% of new vehicle purchases by Ottawa residents and businesses be electric by 2030, increasing to 100% of sales by 2040. In addition, the City fleet will need to be 60% zero emission by 2030, and 100% zero emission by 2040.



Transitioning the City’s transit and corporate fleet of vehicles from fossil fuels to greener alternatives is already underway. Timelines for fully converting the fleet are identified in the June 2021 report to Transit Commission and Council on *Zero-Emission Buses for OC Transpo*. The *Municipal Green Fleet Plan* will be updated in 2022. However, funding has not yet been identified for the later phases of the bus fleet transition and conversion of O-Train Line 2 to zero-emission technology also remains unfunded.

Within the community, all levels of government, the private sector, and community leaders have a role to play in driving greater uptake of electric vehicles among Ottawa residents and businesses. The City will be developing an EV charging standard for new residential construction, whereby 100% of parking spaces are designed to be EV-ready. The City’s *Personal Vehicle Electrification Strategy* (under development) also calls for adding EV charging stations along streets (in the public right-of-way) in select locations with high levels of urban density, rental housing, and limited off-street parking. The strategy will map priority streets for EV charging stations so that space in the right-of-way can be provided at the time of road reconstruction or other civil works.

Action 1-4A

Convert municipal fleets to cleaner propulsion technologies, following the guidance of the *Municipal Green Fleet Plan*, *Zero-Emission Buses* report, and *Energy Evolution* strategy, and identify the required funding to deliver these conversions.

Action 1-4B

Map priority locations for adding electric vehicle charging stations on City streets and leverage construction to provide space in the right-of-way for charging stations.

POLICY 1-5 Minimize Effects on Land, Water, Air, Wildlife, and Vegetation

Healthy ecosystems are at the foundation of our communities. They purify air, pollinate crops, help clean drinking water, sequester carbon, and perform many more vital tasks. Transportation infrastructure and services should aim to minimize negative impacts on the natural environment and support Ottawa’s ecosystems. To achieve these objectives, the City will continue to partner with conservation authorities and regulatory agencies to apply planning, design, and construction best practices such as including Low Impact Development stormwater management features, vegetation, and canopy trees in road designs.



The City will further consider the social and economic value of ecosystem services (e.g., air quality, stormwater management, climate regulation, biodiversity) when designing and constructing transportation infrastructure through quantitative approaches where feasible. For example, a square metre of vegetation has quantifiable environmental benefits relative to a square metre of asphalt. It also has a much lower lifecycle cost to the City. In this regard, the City should explore methods to support naturalization of existing paved surfaces where lifecycle benefits outweigh costs.

As part of considering ecosystem health across the city, special attention must be paid to Canada's Capital Greenbelt. The Greenbelt is made up of 20,000 hectares of farms, forests, wetlands, and other green spaces; it is the most ecologically diverse area in Eastern Ontario and the largest publicly owned greenbelt in the world. The agricultural activities occurring in the Greenbelt also provide local, sustainable food sources and contribute to the Region's food security. The majority of the Greenbelt is owned by the National Capital Commission (NCC), which is responsible for ensuring the long-term natural and cultural integrity of this important space. To maintain and enhance the Greenbelt, the potential impacts of any transportation projects in or near the Greenbelt must be carefully considered and addressed.



Where new or expanded transportation infrastructure is required in or adjacent to the Greenbelt, there may be opportunities for design enhancements to mitigate potential environmental impacts. Interventions such as wildlife crossings can increase ecosystem connectivity and reduce hazards to wildlife. Context-specific designs that consider the needs of farm vehicles and other agricultural equipment can also support local food systems.

Following completion of the Part 2 Capital Infrastructure Plan, a cumulative effects study will be conducted jointly

with the NCC to evaluate the effects of approved transportation projects. This initiative will ensure that Greenbelt conservation and management activities are not compromised, and any transportation impacts are minimized or mitigated to the extent possible, while also preserving the functional requirements of the transportation facilities. Further, the Official Plan directs low-volume or unopened road allowances within the Greenbelt to be evaluated for permanent closure to restore ecological contiguity and minimize asset maintenance costs.



Action 1-5A	Develop mechanisms to consider the social and economic value of ecosystem services when planning and designing transportation projects.
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Action 1-5B	Develop design standards for roadways within or immediately adjacent to the Greenbelt to reduce potential environmental impacts and accommodate farm vehicles.
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Action 1-5C	Conduct a cumulative effects study in collaboration with the NCC to assess the impacts of approved transportation projects identified in the Part 2 Capital Infrastructure Plan on Canada’s Capital Greenbelt.
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POLICY 1-6 Advocate for Federal and Provincial Government Support to Address Climate Change

Federal and provincial policies, regulations and funding mechanisms are critical to support the City’s response to the climate emergency. For example, *Energy Evolution* calls for dramatic investments in sustainable transportation, with funding sources yet to be identified. New funding sources, including financial support from senior levels of governments, will be required for the City to achieve its climate change goals. Regulatory changes may also be needed to move forward with the policies and actions from *Energy Evolution* and the *Climate Resiliency Strategy*. For example, achieving 100% electric vehicle sales in Ottawa by 2040 will likely require that the federal government mandate EV-only sales by 2040, instead of the current 2045 timeline. The City will continue to seek financial support, enabling legislation, and partnerships with other levels of government to address climate change.



Theme 2: Create a More Equitable Transportation System

POLICY OVERVIEW

Policy 2-1	Apply an “equity lens” to transportation planning
Policy 2-2	Design streets for people of all ages and abilities, and backgrounds
Policy 2-3	Accelerate investments that benefit priority neighbourhoods
Policy 2-4	Continue to pursue affordable housing near transit stations and along frequent bus routes

Equity is a central principle of the new *Official Plan* and a key consideration for transportation planning. For some people, transportation can be a barrier to getting and keeping a job, accessing healthcare and social services, buying groceries, or participating in community activities. “Mobility poverty” occurs when not having access to a car, poor public transit options, or substandard walking and cycling infrastructure compounds other forms of social or economic disadvantage (e.g., unemployment or low income, disability, or poor health). A transportation system that is equitable is one that enables everyone to access the destinations they need to reach and that helps to address systemic barriers to social and economic participation.

The policies in the TMP aim to improve access for people who experience transportation-related barriers. This includes considering the mobility needs and constraints of women, children, older adults, people with disabilities, people living in poverty, Indigenous peoples, and members of racialized communities. For example, women more often have complicated trip patterns—dropping off children at school on the way to work or picking up groceries on the way home—and are more likely to commute by public transit. Women and children are less likely to cycle on facilities that are not separated from vehicular traffic. People with disabilities continue to face numerous barriers as they navigate the built environment. These barriers are amplified when applying an intersectional lens to transportation; for instance, a woman who is a new immigrant may experience more mobility barriers in accessing destinations to meet daily needs and may also suffer greater impacts when accessibility is poor.

Following from the new *Official Plan*, the TMP emphasizes “priority neighbourhoods” where there are high concentrations of residents who are socially and economically vulnerable and who may experience transportation-related barriers and “mobility poverty”. Research from other cities shows that such neighbourhoods often bear a disproportionate share of negative transportation impacts (such as noise and air pollution) and contend with a lower standard of transportation facilities and services (such as a lack of shade, unsafe walking and cycling conditions, higher collision rates, and less frequent transit service).



Policies in the TMP ensure investments benefit priority neighbourhoods so that they share in transportation improvements and do not bear the disproportionate costs of transportation decisions. Finally, policies aim to enhance engagement with members of equity-deserving groups and residents of neighbourhoods with strong equity concerns.

POLICY 2-1 Apply an “Equity Lens” to Transportation Planning

Understanding transportation-related barriers is critical to being able to address them. However, members of many equity-deserving groups are less likely to participate in traditional consultation processes and are less likely to contact the City with complaints.⁵ The City will refine its transportation-related public engagement processes to increase the focus on TMP priority neighbourhoods and equity-deserving groups, and will also seek opportunities for collaboration with community partners who work with these groups. The result could be a public engagement toolkit with easy-to-implement options for enhanced engagement on transportation projects and initiatives. Demographic information collected as part of consultation should be used to verify that the input received is reflective of all population groups.

The City will also enhance the collection and analysis of transportation equity-related data, leveraging existing data sources to the extent possible. For example, transit ridership data collected during the pandemic can help the City better understand the travel patterns of essential workers and communities where residents are most dependent on transit service. Collision data can be reviewed for trends within priority neighbourhoods. Disaggregating data by equity factors such as gender and age can ensure the needs and experiences of different groups are considered. New metrics may also be needed to better measure accessibility to key destinations by travel mode, with a view to improving accessibility for priority neighbourhoods. Equity metrics used for project and network evaluation within the TMP Capital Infrastructure Plan will help create a framework for evaluating and monitoring transportation equity moving forward⁶.

Transit affordability is also a key equity concern. A variety of transit fare discounts are available for many user groups according to age, ability, income, and other factors. In particular, the Community Pass and EquiPass programs provide a discount of approximately 50% to Ontario Disability Support Program recipients and eligible persons below the federal low income threshold respectively. Discounts on monthly passes and single use fares are also provided to seniors, children, and youth. Transit fare policies are reviewed on a regular basis to ensure pricing remains equitable, affordable, and financially sustainable. As part of the next transit fare policy review, the City will specifically review the fare reductions for equity-deserving groups to ensure that the distribution of discounts

⁵ City of Toronto (2021). Equity & Climate Change in Municipal Decision-Making: Transportation Equity in Toronto. Presentation for Clean Air Council, April 13, 2021.

⁶ Refer to Policies 20, 27,37, and 45 to see the list of high-level evaluation criteria for pedestrian, cycling, transit, and road infrastructure, respectively.



aligns with the goal of reducing transportation-related barriers to social and economic participation. Going forward, the City will also continue to conduct equity and inclusion reviews of all planned changes to transit service.

Action 2-1A Refine transportation-related public engagement processes to increase participation of residents from TMP priority neighbourhoods and equity-deserving groups.

Action 2-1B Build on equity metrics being developed through the TMP process to create a framework for evaluating and monitoring transportation equity.

Action 2-1C Review transit fare reductions for equity-deserving groups.

POLICY 2-2 Design Streets for People of All Ages, Abilities, and Backgrounds

Designing for all ages, abilities, and backgrounds is about considering the needs of all people so that everyone can safely and conveniently move around the city. This includes ensuring that there are barrier-free options for people who may be challenged by features such as stairs, that barriers such as uneven sidewalks are quickly addressed, and that there are aids for those with visual and auditory impairments. Inclusive design also means accounting for the different needs of different people when designing infrastructure. For example, some people may require more buffer space between traffic and the sidewalk/bike lane to feel comfortable and safe, while others may prioritize seating and shade.





A key aspect of designing for all ages, abilities, and backgrounds is recognizing the importance of safety, both real and perceived. There are many factors affecting the safety of a trip for different user groups, such as snow and ice clearing, vehicular speeds, and traffic volumes. If a person's travel choices are impacted due to safety concerns, then their access to destinations has been restricted.

The security and comfort of the walking and transit environment—including lighting, passive supervision, and other elements of environmental design—are also critical for gender and racial equity, and impact people of all ages and abilities. The City will continue to advance existing “complete street” design standards and develop new design guidance and operational practices to ensure that streets and transportation infrastructure are inclusive. Specific policies and actions related to accessibility and security for pedestrians and transit system users are included in Theme 6: and Theme 8: respectively.

POLICY 2-3 Accelerate Investments That Benefit Priority Neighbourhoods

The TMP will pursue a more equitable transportation system and combat “mobility poverty” through investment in streets, sidewalks, the public realm, and other transportation improvements in neighbourhoods with strong equity concerns. Annex A identifies “TMP priority neighbourhoods” with high concentrations of vulnerable residents.

Transportation-related investments in TMP priority neighbourhoods can be implemented through existing programs that implement projects citywide. This may include efforts through the Road Safety Action Plan program, Neighbourhood Traffic Calming program, New Pedestrian Crossing program, and Bus Stop Improvement program. Within these programs, the City will continue to identify and implement projects citywide that meet program criteria and have technical merit. Where projects have comparable technical merit, the City will seek to accelerate projects that benefit priority neighbourhoods. At the same time, the City will continue to pursue the bundling of projects to take advantage of cost-savings and thus maximize the total number of projects that can be delivered.

TMP priority neighbourhoods will also be considered in the review of priority pedestrian facilities for winter maintenance and asset renewal (Theme 6). At a larger scale, the process of developing the TMP Capital Infrastructure Plan will consider many factors, including equity metrics for capital projects where appropriate (Theme 7 and Theme 8).

Action 2-3A

Accelerate transportation investments in TMP priority neighbourhoods where projects have comparable merit, while continuing to pursue bundling opportunities to maximize the number of projects deployed citywide.



POLICY 2-4 Continue to Pursue Affordable Housing Near Transit Stations and Along Frequent Bus Routes

Throughout North America, neighbourhoods with the most frequent, comfortable, and reliable transit tend to be more expensive to live in. Accordingly, many members of equity-deserving groups who are the most dependent on transit are not able to afford housing near high-quality transit. As the O-Train and Transitway systems reach more parts of Ottawa, having a supply of affordable housing options within walking distance of stations is important for both transit ridership and social equity. The City is pursuing a variety of strategies to create and/or maintain affordable housing near transit stations and along frequent bus routes. This includes redeveloping surplus public lands as affordable housing in line with the work being done by the Interdepartmental Taskforce on Affordable Housing near Transit Stations. It also includes exploring the use of air rights⁷ over O-Train stations for affordable housing and creating requirements for affordable housing as part of new developments near O-Train and Transitway stations (i.e., inclusionary zoning⁸), as per the new *Official Plan*. These and other initiatives to support affordable housing near transit are important to the creation of an equitable city.

Action 2-4A

Continue efforts to establish inclusionary zoning in Protected Major Transit Station Areas⁹.

⁷ Air rights refers to owning or renting the "space" above a piece of property or building.

⁸ Inclusionary Zoning is a provincial planning tool that allows municipalities to secure affordable housing in new developments in very specific areas, such as near major transit stations.

⁹ The Provincial Planning act allows municipalities to designate the area within approximately 500-800 m of an existing or planned higher order transit station as a Protected Major Transit Station Area.



Theme 3: Advance Regional Competitiveness

POLICY OVERVIEW

Policy 3-1	Support Regional Improvements to Sustainable Transportation
Policy 3-2	Support Improvements to Interprovincial Transportation and Goods Movement
Policy 3-3	Enable Inter-Regional Transportation
Policy 3-4	Create Lively, People-Friendly Streets

Ottawa, like other cities, competes for talent and economic development opportunities. As knowledge-based industries are a major employer in the region, Ottawa's economic success relies on its ability to attract and retain a skilled workforce by providing a high quality of life. Safe, convenient and sustainable transportation options are critical to creating a liveable and affordable city where everyone can get around efficiently. Tourism is also a major employment sector and economic generator in Ottawa. The new *Official Plan* highlights the need for a sustainable transportation network that supports tourism and makes Ottawa an attractive place to visit.

The policies throughout the TMP support regional competitiveness by promoting a healthy, efficient and dependable transportation system. The policies in this section specifically emphasize the importance of fostering inter-city, inter-regional, and international connections for economic development. They also emphasize the creation of vibrant, walkable streets where businesses can thrive.¹⁰ While many policies address walkability, this section specifically addresses place-making activities to create lively streets.

To be successful, businesses also require an efficient system for goods movement, and residents likewise rely on access to goods and services, whether by visiting physical shops and stores or through on-line channels with home delivery. While efficient goods movement is central to regional competitiveness, heavy vehicles are inherently incompatible with many land uses, creating noise, air pollution, and safety concerns, especially for pedestrians and cyclists. Chapter 9 addresses these issues and includes policies related to the truck route network, changes to local delivery patterns, and goods movement.

¹⁰ Research suggests that walkable shopping areas are often economically successful, that travelers walking, cycling and using transit spend more per month than those traveling by car. (Litman, T. 2018. Economic Value of Walkability. <https://www.vtpi.org/walkability.pdf>)



POLICY 3-1 Prioritize Sustainable Transportation Options for Improving Regional Mobility

Ottawa and Gatineau operate as a single region, with many residents living on one side of the Ottawa River and working, shopping, or attending school on the other. A strong, integrated regional transit system is therefore critical to economic competitiveness. The Société de transport de l'Outaouais (STO) is currently planning the West Gatineau tramway which will connect into downtown Ottawa. The NCC has also expressed interest in a longer-term transit loop connecting both downtowns, with the potential for a pedestrian mall along Wellington Street. The City will continue to work with other agencies that are leading, implementing and financing these regional transit improvement projects. Beyond these infrastructure-focused initiatives, the City will continue working with the STO to offer coordinated and seamless interprovincial transit service.

The City will also continue to work with federal, provincial and municipal partners on regional active transportation networks. The City is currently upgrading the Chief William Commanda Bridge, which will provide an important new walking and cycling connection between Ottawa and Gatineau across the Ottawa River. Over the longer term, it is envisioned that the Chief William Commanda Bridge could be converted to support a light rail connection between Bayview Station and Gatineau, while also providing active transportation facilities.

Action 3-1A

Encourage the federal government to undertake a feasibility study, at no cost to the City, for a transit loop between downtown Ottawa and downtown Gatineau, including the potential to convert Wellington Street to a pedestrian mall.

POLICY 3-2 Pursue Solutions to Interprovincial Goods Movement

The volume of truck traffic passing through Ottawa's downtown to and from the Macdonald-Cartier Bridge has substantial negative impacts on local neighbourhoods and businesses. This is particularly true on King Edward Avenue as one of the main routes through the city and across the Ottawa River into Gatineau and beyond. The City will continue to work with other governments and the private sector to explore ways to better accommodate truck traffic in the downtown and reduce impacts from goods movement. This includes working with the National Capital Commission, in conjunction with both provincial governments and affected municipalities, on studies reviewing interprovincial transportation and the possibility of a sixth bridge crossing of the Ottawa River. The City will review the removal of Rideau Street and King Edward Avenue from the City's identified truck route network once a suitable, safe, and efficient alternative is implemented.



Action 3-2A

Work with federal, provincial and municipal partners in the National Capital Region to address interprovincial truck traffic in the downtown.

POLICY 3-3 Enable Inter-Regional Transportation

Travel between Ottawa and other regions is important for the local economy and tourism. Ottawa's MacDonal-Cartier International Airport is a major economic engine for the city and plays an important role in the region by providing regional, national, and international connections for both people and goods, with over 5 million travelers passing through and more than \$2 billion in economic activity taking place each year. This area has been identified as a Special Economic District in the new *Official Plan*, with 16,000 jobs projected for this area in the future. The new O-Train extension to the airport, currently under construction, will provide an easier, more affordable option for people to get to and from the airport and surrounding economic district while reducing traffic in neighbouring communities.

Inter-regional transportation services are also expected to improve and evolve in the coming years. Bus connections between the communities surrounding Ottawa and the City's rapid transit network are particularly important to relieve pressure on Ottawa's roads and encourage sustainable travel choices by people working, shopping, or attending school in the city. The City will support initiatives to enhance bus connections to Ottawa from surrounding communities as a priority over road expansion. As per the new *Official Plan*, all new inter-regional passenger terminals are to be located along the O-Train network and preferably within the Downtown Core or Inner Urban transects. The City will collaborate with service providers to facilitate inter-city bus operations and will also support efforts to establish a new intercity bus terminal. Through the new *Official Plan*, the City has also protected all rail corridors that could potentially be used in the future for regional and inter-regional transit such as VIA's High Frequency Rail project. Existing rail connections to Ottawa play a critical role in supporting passenger and freight movement, and the City will support enhancements to such connections where opportunities exist.





POLICY 3-4 Create Lively, People-Friendly Streets

There are some streets that serve as destinations themselves or act as extensions of the places that front them. This is the case in places like the ByWard Market, Lansdowne Park, and to some extent streets like Centrum Boulevard, Marketplace Avenue, Manotick Main Street, and Elgin Street. In these locations, the design of the street needs to emphasize “place-making” over transportation needs. The City will develop design guidance to incorporate place-making concepts into street design, particularly in Design Priority Areas, and ensure these designs consider the range of different functions the street serves. This includes ensuring streets are places where everyone feels safe and welcome, with plenty of shade and shelter, places to rest, and interesting things to see and do for people of all ages. Emphasizing place-making presents an opportunity for the City to pilot designs such as “woonerven¹¹” or “bicycle streets” on low-volume, low-speed streets. These concepts are still emerging in Ottawa and a pilot would help the public gain experience with these types of designs. In developing a pilot, a number of considerations would need to be addressed, including any requirements for transit and para-transit service.



There are also streets where the desired function changes with the season, the day of the week, or even the time of day. The new *Official Plan* supports the seasonal or temporary reallocation of space within streets from primarily serving vehicles to providing other amenities. Seasonal or temporary street reallocations can foster community interaction, add greenery, allow for creativity and cultural expression, support local businesses, promote tourism, and provide opportunities for rest and play. According to the new *Official Plan*, repurposing streets for place-making is most appropriate for streets that

¹¹ A woonerf is a shared-space local street designed more as a public space than a typical road. Vehicles are treated as “guests” and the street only supports very low operating speeds (<20 km/h) for any mode of travel.



function as neighbourhood commercial destinations; border or bisect community parks; are adjacent to community facilities such as transit stops, community centres, schools, and markets; or serve as an amenity for residential areas. In response to the pandemic, the City implemented several temporary and seasonal lane closures to support COVID-19 pedestrian/cyclist health measures and/or economic recovery. Such initiatives can be expanded and evolved going forward. Further, lessons learned from temporary or seasonal place-making interventions may help to inform permanent street redesigns.

Action 3-4A Develop design guidance to incorporate “place-making” into street design and development review.

Action 3-4B Pilot street designs that function as “places” such as the “woonerven” concept along low-volume, low speed streets, as opportunities arise.

Action 3-4C Expand and evolve the program and guidance for temporary or seasonal repurposing of streets for place-making activities, considering requirements for consultation, project implementation, and monitoring.



Theme 4: Respond to Change

POLICY OVERVIEW

Policy 4-1	Monitor and Respond to Changing Work Arrangements and Travel Patterns
Policy 4-2	Harness the Power of Data Generated by New Technologies
Policy 4-3	Improve Performance and Adaptability of the Road Network Using Advanced Traffic Management Systems
Policy 4-4	Leverage the Shared Mobility Marketplace to Achieve the City's Objectives
Policy 4-5	Prepare for Vehicle Automation

Technology has changed rapidly since 2013, and mobility has evolved in parallel. Smartphones and mobile applications have enabled rapid growth in new mobility services in Ottawa, including ride-hailing, carsharing and e-scooter sharing. New "big data" sources have also emerged, including crowd-sourced data and near real-time data on travel patterns. The rapid pace of change is expected to continue, with new shared mobility options, Mobility as a Service (MaaS)¹², and connected and automated vehicles all on the horizon.

The TMP policies aim to help the City harness data to improve transportation planning and operations; and leverage technology and innovation to improve transportation in Ottawa. As a transportation regulator and system operator, the City has an important role to play in ensuring that these new technologies help to expand mobility choices and meet broader City goals related to climate change, the economy, healthy communities and equity.

The TMP also emphasizes the importance of a nimble transportation system that can respond rapidly to changes in the mobility environment using a data-driven approach. The COVID-19 pandemic resulted in the most significant immediate change in travel behaviour ever observed in Ottawa. It remains to be seen how travel trends will evolve as Ottawa recovers from the pandemic. The City will be flexible in both responding to and shaping these trends in support of broader city objectives, with a particular focus on reducing car trips and increasing the proportion of travel done by sustainable modes.

¹² Mobility as a Service Is the provision of complete multi-modal trips as a service rather than selling vehicles or individual trip segments.



POLICY 4-1 Monitor and Respond to Changing Work Arrangements and Travel Patterns

Remote working, commuting at off-peak hours, and online purchasing trends were accelerated by the COVID-19 pandemic and are changing the way the transportation system is used. The City will continue to monitor vehicular traffic, transit ridership, and active transportation usage to understand how daily travel patterns are evolving and to optimize the transportation network accordingly.



The City will seek opportunities to repurpose excess road capacity to provide additional space for pedestrians, cyclists, transit and/or place-making. This is particularly important in locations such as the downtown core, main streets, and areas currently planned for high land use density (e.g., transit-oriented development zones and other areas of intensification) where the competition for space is more significant.

As part of monitoring efforts, the City and its partner agencies in the National Capital Region are planning to conduct an Origin-Destination Travel Survey in 2022 to collect detailed information about the travel made by residents over the course of a typical day. Part 2 of the TMP, the Capital Infrastructure Plan, will evaluate planned road and transit projects based on travel patterns as revealed by the 2022 data. There is the possibility that, with changes in travel patterns, some projects may become more critical while others become less important. For example, even small reductions in traffic levels can drastically improve the performance of an existing roadway, potentially eliminating the need for additional roadway infrastructure.

Recognizing the importance of up-to-date data for transportation planning, the City and its partner agencies are exploring the option of increasing the frequency of the Origin-Destination Travel Survey (which is currently conducted every five to ten years) or completing shorter supplementary surveys in the interim on a smaller subset of the population.

Action 4-1A	Monitor evolving traffic levels on an ongoing basis and identify opportunities to repurpose excess road capacity for other uses.
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Action 4-1B	Collect detailed travel data through an Origin-Destination Travel Survey in partnership with other local and senior governments and consider increasing the frequency of how often this survey is conducted going forward.
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POLICY 4-2 Harness the Power of Data Generated by New Technologies

The City's transportation data collection has become increasingly advanced. Passive data collection techniques using sensors and cameras have largely replaced traditional traffic surveys and counts. Anonymized smartphone data purchased from third parties provides an invaluable new source of data on trip origins and destinations as well as corridor speeds and volumes. The City's Cycling Safety group uses crowd-sourced data from BikeMaps.org on cycling collisions, near misses and hazards. Going forward, the City will continue to be a leader in harnessing the power of data generated by new technologies to enable more informed and data-driven decision-making and responses.



Beyond direct transportation and traffic data, performance metrics rely on many types of data collected and monitored by different groups within the City of Ottawa. For example, the GHG inventory, a study conducted annually within the City of Ottawa to quantify and track both community and corporate sources of GHG emissions, relies on data collected by six different City departments in addition to external data sources. All departments responsible for these transportation performance metrics will collaborate to

expand and improve data collection processes where needed, particularly in areas related to equity and climate change.

In addition to data collected by the City, shared mobility companies have been collecting detailed data on their customers' travel patterns. Without mandating City access to this data, the City risks overseeing a transportation network it does not fully understand or manage. As new transportation modes and services are introduced, it will be increasingly important for the City to mandate data sharing and privacy controls. To this end, the City will look to peer governments for examples of data stewardship, such as the Los Angeles Department of Transportation's Mobility Data Specification.

Action 4-2A

Ensure that agreements with mobility providers allow for appropriate data access.

Action 4-2B

Ensure inter-departmental collaboration on transportation and mobility data collection to support improvements to outcomes.



POLICY 4-3 Improve the Performance and Adaptability of the Road Network Using Advanced Traffic Management Systems

Transportation system management (TSM) strategies optimize the efficiency of existing transportation infrastructure, thereby reducing the need to build new streets or widen existing ones. TSM measures can be applied across the entire transportation system, in major corridors, or at individual locations. In 2012, the City adopted a new *TSM Strategy and Action Plan* which provides a detailed blueprint for action in several areas, including traffic and incident management, traveller information, maintenance, and innovation.

Advanced Traffic Management Systems (ATMS) are an example of TSM. ATMS applies computer, sensor, communications, and other technologies to improve the efficiency of traffic flow on the existing road network. ATMS can be used to improve safety and convenience for all road users through measures such as pedestrian countdown timers, vehicle and bicycle detection, and transit priority treatments at traffic signals. ATMS can also improve incident detection and response, for example, by reducing emergency vehicle response times through vehicle pre-emption at traffic lights. Research has shown that the majority of road congestion delays are a result of “non-recurring” sources, such as collisions, vehicle breakdowns, special events, adverse weather, and construction. Adding new capacity does not directly address these sources of congestion and it is therefore up to transportation operators to mitigate their impact using a variety of approaches, including ATMS and other TSM strategies.

The City will continue to provide effective traffic management by improving central monitoring, synchronization, and real-time adjustment of traffic control signals. One of the City’s priorities is to implement real-time traffic data collection systems to better understand traffic conditions, quickly identify recurring and non-recurring congestion, and inform real-time responses for improved traffic flow. Other focus areas include deployment of additional traffic cameras to improve the City’s awareness of on-the-ground conditions, and dynamic message signs to inform travellers of traffic conditions and incidents. Where opportunities arise, the City will pilot new technologies to further optimize the safety and performance of the transportation system.

Action 4-3A	Update the <i>TSM Strategy and Action Plan</i> , while continuing to implement its recommendations.
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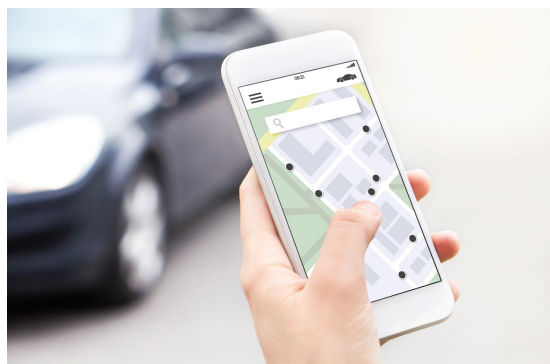
Action 4-3B	Continue to deploy traffic cameras that provide visual confirmation of conditions at key intersections.
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Action 4-3C	Implement dynamic message signs at strategic locations to inform travellers of traffic conditions and incidents.
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POLICY 4-4 Leverage the Shared Mobility Marketplace to Achieve the City's Objectives

Shared mobility allows users to access transportation services on an as-needed basis. It encompasses a variety of transportation modes including carsharing, bicycle sharing, scooter sharing, ridehailing and shuttle services. While shared mobility is typically provided (at least in part) by private companies, the City has an important role in ensuring that new mobility solutions align with the goals and objectives of the TMP and new *Official Plan*. Shared mobility services can be used to complement public transit and facilitate a lifestyle where all types of trips can be made without the need to own a car. Bikeshare, e-bike share, and e-scooter services can provide zero- or low-emission alternatives for a variety of trips



including first mile / last mile connections to rapid transit. Ridehailing or carsharing can also be used to connect to public transit or facilitate trips for which public transit may not be a viable option (e.g. a late-night trip or a day trip to a provincial park). However, shared mobility services can also have negative impacts such as increased congestion from ridehailing vehicles circulating to find their next passenger or accessibility barriers created by e-scooters incorrectly parked on sidewalks.

The City will take an active role in the shared mobility environment in order to advance transportation system objectives and mitigate potential negative consequences.

Shared mobility services must prioritize safety, comfort and accessibility for both users and non-users. They must also support the City's equity goals. The City will create appropriate regulatory frameworks, monitor the outcomes of these services, and refine its approach as needed. The City will also aim to leverage innovation—such as technology to detect when e-scooters are riding on sidewalks—to minimize any negative impacts of shared mobility.

The City will continue to explore opportunities to provide shared bicycle, e-bike, e-cargo bike and e-scooter services within Ottawa through partnerships with private companies. Further, the City will support carshare use in appropriate contexts, such as providing dedicated carshare spaces or free parking at transit stations, recreational areas, and other key destinations.

POLICY 4-5 Prepare for Vehicle Automation

Automated vehicles (AVs) are a technology that could revolutionize the way travellers move around cities. With much uncertainty on the timelines and progress of technology, societal acceptance, and how communities will be transformed by the availability of this technology, the City must be diligent in preparing for a range of possibilities. While many of the changes AVs usher in could be positive, they could also introduce challenges for traffic safety, congestion, or management of curbside space. As AVs continue to advance, each city will have its own local challenges to address; the impact to urban areas could be different than



experienced in suburban or rural communities. As the home of the Area X.O AV facility¹³, Ottawa is uniquely positioned to be a Canadian leader in AVs.



The City will create an AV readiness working group which includes leaders from affected departments and will look to involve local experts to provide knowledge on the opportunities and challenges, considering both policy and technology implications. This will include approaches to harnessing AV technology by supporting public transit; maintaining street designs that prioritize active transportation; disincentivizing empty cars on the road; mitigating any potential negative impacts on urban form; and ensuring that the benefits of new AV-driven mobility services equitably reach Ottawa residents.

Action 4-5A

Create an automated vehicles readiness working group to monitor and ensure the City's policies, regulations, design guidelines, buildings, and infrastructure are aligned with the forthcoming emergence of automated vehicles.

¹³ Area X.O is a facility designed to safely and securely create and test new mobility technologies including AVs.

Focused Policies

Policy themes within this section address specific modes of travel or mobility-related topics. They address land development, walking and cycling, transit, goods movement, and transportation demand management. Policies are targeted to each of these themes independently. However, they aim to work together to create a sustainable, integrated multi-modal transportation system.





Theme 5: Use Transportation to Support the City We Want to Build

POLICY OVERVIEW	
Policy 5-1	Adhere to best practices for network development
Policy 5-2	Prioritize modes of travel that are space-efficient
Policy 5-3	Incorporate Official Plan “transects” into transportation planning
Policy 5-4	Encourage sustainable transportation through community planning and design
Policy 5-5	Align development tools to support targets for travel mode shares
Policy 5-6	Update land (Right-of-Way) protections for transportation corridors to support city-building objectives
Policy 5-7	Apply a long-term affordability lens to transportation investments

Ottawa is expected to grow by more than 400,000 people by 2046, and the new *Official Plan* sets direction to accommodate 60% of new dwellings within existing neighbourhoods. With this scale of growth, demand on the transportation system will grow significantly. The City will need to accommodate this growth through more space-efficient modes including walking, cycling, and transit to maximize the capacity of the network. In urbanized areas, accessibility and multimodal mobility will be the focus rather than peak period vehicular capacity.

The new *Official Plan* includes the goal of having the majority of trips in Ottawa made by walking, cycling, transit, or carpool by 2046. To meet this goal and create a healthy, sustainable city, the new *Official Plan* emphasizes human-scaled¹⁴, walkable 15-minute

An “access” street has a close relationship to its surrounding land-uses, exhibits high vehicular friction and slow speeds, and prioritizes sustainable modes of transportation. In contrast, a “flow and capacity” street plays a structural role in the overall street grid by virtue of its role in moving transit vehicles, trucks, and general-purpose traffic over longer distances, between different areas of the city.

¹⁴ “human-scaled” streets which are designed as places welcoming to people whether they are passing through or stopping to enjoy the space (See Policy 9-4).



neighbourhoods where many daily needs can be met within a 15-minute walk from home. The new *Official Plan* also provides policy direction on context-sensitive planning, managing new growth, and sustainable transportation. As part of the policies on mobility, the concepts of “access” and “flow and capacity” streets are introduced to acknowledge the evolving transportation functions of streets across the network.

Beyond addressing mobility and growth, the transportation system plays a significant role in achieving quality of life objectives such as health, safety, well-being, and affordability. For example, residents located near rapid transit may see increased housing costs, but lower transportation costs due to living within a more walkable, transit-friendly neighbourhood. These indirect effects of transportation infrastructure must be considered to ensure that the goals of the new *Official Plan* are achieved.

The TMP advances and supports the policy directions set in the new *Official Plan* and builds on initiatives already underway that are helping to foster the evolution of walkable, 15-minute neighbourhoods and create a more liveable and sustainable city.

POLICY 5-1 Adhere to Best Practices for Network Development

The TMP is based on the following principles for mobility networks derived from national and international best practices:

1. Everyone should be able to get to and from all properties and amenities in the city.
2. All travel modes should be able to navigate the city safely in a connected manner.
3. The travel modes people choose (e.g., walking, cycling, transit, driving, etc.) are largely a result of relative competitiveness.¹⁵ Modes to be encouraged should be given a competitive advantage through time, cost, distance, comfort, or other factors.
4. Network design should consider the unique needs and characteristics of each mode to optimize their functionality. For example, pedestrians and cyclists are highly sensitive to route directness and the quality of the travel environment. Transit users are sensitive to travel time reliability (as well as cost).¹⁶ These characteristics are summarized in Exhibit 6.
5. Transportation and land use context influence each other and should be considered concurrently. Areas of dense land use require a focus on spatially efficient transportation modes (e.g., walking, cycling, and transit).


























As the goal of transportation is to improve access between places, the transportation system should strive to minimize negative impacts on place while maintaining its core mobility function.

¹⁵ Individuals' mode choices depend on transportation network factors including travel time, travel cost, comfort and reliability of different modes. Together, these network variables determine the relative competitiveness of each mode for a given trip. Individuals' mode choices are also linked to social, economic, cultural, and environmental factors.

¹⁶ Miller, E., Shalaby, A., Diab, E. *et al.* (2018). Canadian Transit Ridership Trends Study. https://cutaactu.ca/wp-content/uploads/2021/01/cuta_ridership_report_final_october_2018_en.pdf



Exhibit 6: Characteristics of Different Travel Modes

Traffic Mode	Ideal Trip Distance	Route Directness	Trip Time ¹	Spatial Quality	Ease of Wayfinding	Level of Sociability
Pedestrian	< 2 km					
Cyclist	< 8 km					
Car	> 3 km					
Truck	∞					
Transit	> 3 km					

1. Includes travel time reliability and time spent waiting for a bus or train; evidence suggests that riders view wait time as a much more onerous burden than an equivalent amount of time spent in travel.¹⁷

The principles above provide important guidance to encourage additional use of walking, cycling and transit. Denser and more direct networks should be provided for modes that rely on lower speeds and physical effort, such as walking and cycling. Pedestrian and cycling networks should be more direct than motor vehicle travel for short trips, with detour factors¹⁸ of 1.3 or less. To maximize directness and safety while minimizing travel times, pedestrian crossings should be provided approximately every 200 m on arterial and collector roads. Local streets should be designed for low operating speeds more sympathetic to informal crossing activity. Cycling facilities across major barriers should be provided every 500 to 750 m. The directness and connectivity of active transportation networks should be a particular focus around transit stops and stations, since this determines how many properties fall within the catchment area of the stop by walking and cycling. (See POLICY 8-4 for more information). To attract new transit riders, network design should focus on improving travel time reliability and minimizing total travel time, especially waiting time. One option to achieve this is to provide a smaller number of more direct routes with higher frequencies but lower geographic coverage (i.e., longer walking distances).

POLICY 5-2 and POLICY 5-3 expand on approaches to consider land use context within transportation planning, using the new *Official Plan* concepts of “transects” and “access” versus “flow and capacity” street designations.

¹⁷ Lam and Morrall 1982

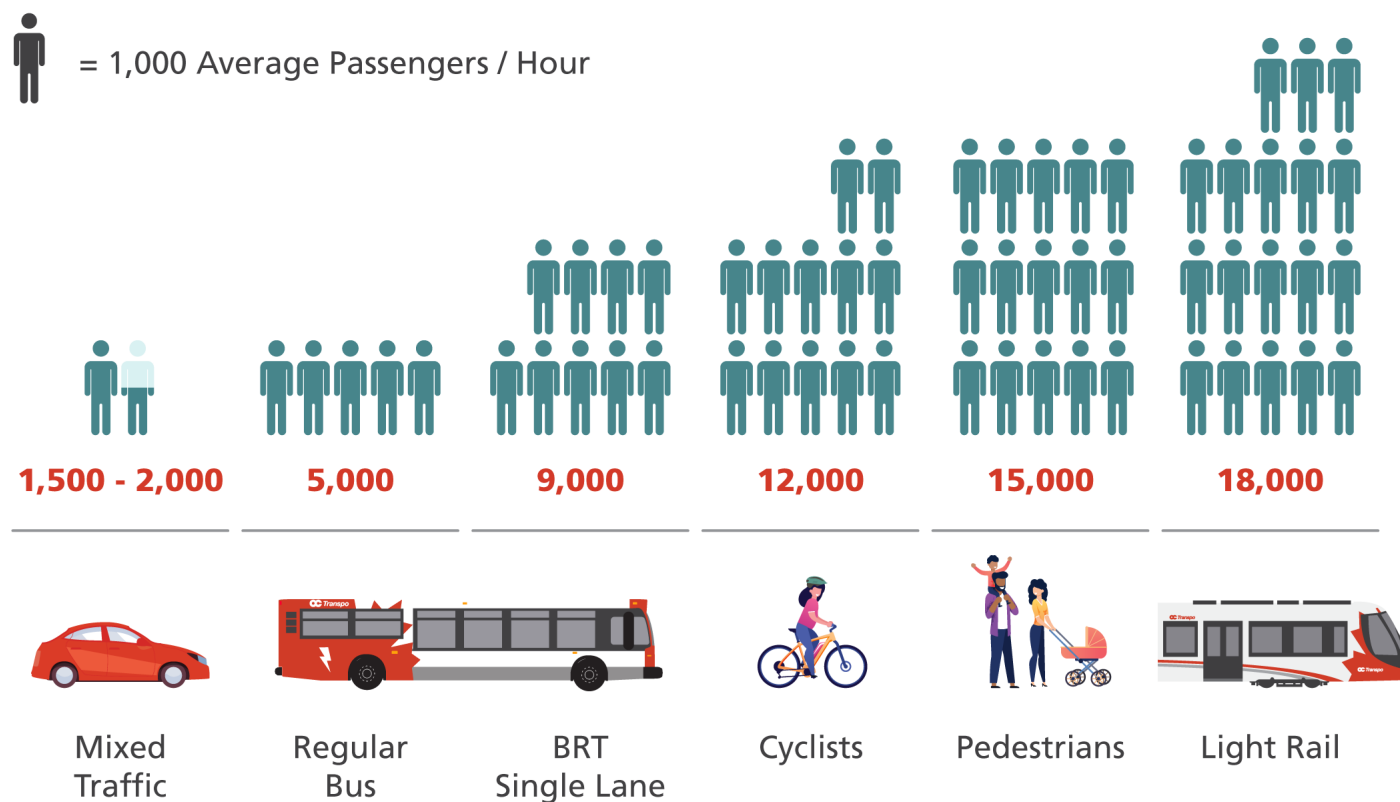
¹⁸ Detour factor is the ratio of traveled distance to distance “as the crow flies”.



POLICY 5-2 Prioritize Modes of Travel That are Space-Efficient

As Ottawa continues to grow and intensify, the transportation network will need to move more people and goods using the space available today. As highlighted in Exhibit 7, the City will need to accommodate this growth through more space-efficient modes including walking, cycling, and transit to maximize the capacity of the network. Practical experience has shown that continuing to add general purpose vehicular capacity to accommodate peak travel demand is unfeasible at the scale needed. Widespread road expansion also runs counter to a broad range of City objectives related to climate change mitigation, urban design, health, and safety.

Exhibit 7: Passenger per Hour on a 3.5 m wide Lane in the City



The new *Official Plan* directive towards intensification and greater use of non-auto modes has significant asset management and maintenance benefits, reducing overall per-capita costs. However, it also requires changes to maintenance standards for sidewalks, transit facilities, and cycling facilities in existing neighbourhoods that are upgraded and/or more heavily used as a result of intensification. While this will increase budget pressures for maintenance in the short-term, it is still a more cost-effective approach than pursuing more expansive and lower density growth that would result in greater infrastructure needs overall and higher per-capita costs.

Network planning and modelling for the TMP Capital Infrastructure Plan will focus on space-efficient modes while also maximizing the capacity and efficiency of the existing network and ensuring access to new growth areas. Moving more people on the street



network without a corresponding increase in vehicles requires measures to increase the relative attractiveness of transit and active modes compared to driving. Policies and specific actions to achieve this are embedded in Theme 8 and Theme 9.

POLICY 5-3 Incorporate Official Plan “Transects” Into Transportation Planning

Ensuring that transportation networks reflect the local environment is critical to maintaining and building vibrant, healthy, and safe neighbourhoods and places. The new *Official Plan* introduces the concept of transects—six zones that have a unique built form and planned function—to enable policy that is uniquely designed for the city’s different geographic contexts. Each of the six transects has different transportation considerations, including how people move around, how streets relate to the surrounding buildings, and the types of infrastructure required to safely accommodate all modes and encourage more sustainable transportation. For example, in the Downtown Core Transect, many destinations are accessible in a small area, whereas in the Greenbelt and Rural Transect areas, destinations are spread out and trip distances tend to be longer. Mobility characteristics of each Transect include the following:

- **Downtown Core and Inner Urban:** Most streets prioritize walking, cycling and transit and have a close relationship with adjacent land uses. Automobile-supportive development, such as drive-throughs and surface parking, is prohibited or discouraged.
- **Outer Urban and Suburban:** The existing built form is generally automobile dependent, but there are significant opportunities to increase the sustainable mode share through complete street reconstruction projects and improved access to rapid and frequent transit.
- **Rural and Greenbelt:** Personal vehicles are recognized as the main form of transportation. Outside of Villages, most roads facilitate traffic flow as their primary function.

The new *Official Plan* transect zones will help guide transportation planning decisions, including whether different streets in different neighbourhoods should be designed for “access” or “flow and capacity” objectives (see POLICY 9-2). Transects will also be considered as part of the update to the City’s *Multi-Modal Level of Service Guidelines* (see POLICY 9-1).

POLICY 5-4 Encourage Sustainable Transportation Through Community Planning and Design

The new *Official Plan* recognizes that land use and transportation systems are interconnected and strongly influence public health and quality of life. The new *Official Plan* emphasizes the development of compact, integrated land uses to encourage walking, cycling and public transit use. Compact communities and mixed land uses are important



to creating 15-minute neighbourhoods because they bring trip origins and destinations closer together, thereby reducing trip lengths and making walking and cycling more practical. Higher densities also enable more efficient transit service and help to attract higher ridership.



The new *Official Plan* also calls for infrastructure that supports sustainable transportation and enables a car-free or car-light lifestyle. This includes well-connected street networks with short and frequent blocks; high quality active transportation infrastructure; active transportation shortcuts; and safe and convenient walking and cycling access to transit stops and stations. Finally, the new *Official Plan* aims to create high quality environments for walking, cycling and transit use featuring the key elements noted in Exhibit 8. These elements contribute to the perceived safety and enjoyment of walking. An overarching objective is to create a sense of place and character in neighbourhoods by fostering human-scaled design and creating “Healthy Streets”¹⁹ that are welcoming places to be, rather than simply moving through.

¹⁹ Healthy Streets indicators are: Everyone feels welcome; Easy to cross; Shade & shelter; Places to stop & rest; Not too noisy; People choose to walk & cycle; People feel safe; Things to see & do; People feel relaxed; and Clean air. For more information see <https://www.healthystreets.com/>



Exhibit 8: Elements that Contribute to the Quality of the Pedestrian Environment²⁰

- A variety of buildings oriented to and framing the street (active frontages)
- Presence of other people walking
- Absence of visible surface parking lots
- Adequate lighting
- Fewer traffic lanes and lower traffic volumes
- Low traffic speeds
- High quality pedestrian facilities
- Benches
- Street trees that provide shade
- Adequate winter clearance of ice and snow
- Landscaping, on-street parking, or other means of buffering pedestrians from traffic
- Safe intersections and mid-block roadway crossing opportunities
- Public art, and places for children to play
- Wayfinding
- Passive supervision and perception of safety and security (feels like a place that is safe to move through and linger)²¹
- Absence of sidewalk cycling and scooting

Community Design Plans, Secondary Plans, and site design are all important tools for advancing 15-minute neighbourhoods and transit-supportive development. In new growth areas in particular planning land use and transportation in conjunction with one another is critical for ensuring walking, cycling and transit are the most attractive modes from day one. Theme 6 and Theme 7 discuss the provision of walking and cycling infrastructure through development and redevelopment, while the policies below address opportunities to support sustainable transportation more broadly through community and land use planning.

- **Road Network Design.** New neighbourhood²² streets should form part of a highly connected multimodal network with street design that results in low vehicle speeds, safe conditions for all users, space for trees, safe intersections, and a vibrant public realm. New collectors, major collectors and arterials will be spaced with sufficient proximity to support transit and minimize the need for very wide streets that tend to act as barriers between neighbourhoods. Where new surface parking lots are required, they should include shade, stormwater management features, and facilities that accommodate safe cycling and pedestrian movements across parking lots and to building entrances.
- **School Sites and Surrounding Streets.** Schools are a significant community destination; enabling more active travel to school is crucial for promoting healthy

²⁰ City of Ottawa 15-Minute Neighbourhoods

²¹ This includes the concept of crime prevention through environmental design (CPTED) which is intended to provide people with more safety reassurances through measures such as lighting, adjacent buildings with windows facing the street, avoiding introduction of blind corners, and sufficient population density to increase the proportion of "casual eyes on the street".

²² Within existing and future Neighbourhoods and Town Centres



lifestyles from a young age. Siting and design of new schools within Local Plans and subdivision development applications must facilitate safe walking and cycling to school, as per recommendations from the Building Better and Smarter Suburbs study²³, new *Official Plan* policies, and best practices. The City will work with school boards and the development community to create specific guidance for the siting and design of school sites and surrounding streets to encourage the use of active transportation for school trips. Measures will also be pursued in existing communities to reduce vehicular congestion related to student drop-off and pickup, reduce vehicular speeds, and improve safety concerns along school frontages.

- **Pathways, Bridges and Access to Green Space.** Local off-street trails, parks, natural features, and other green spaces contribute to health and well-being as well as sustainable transportation. Secondary Plans and Community Design Plans will identify off-road pathways through new communities that help to provide access to green space, as well as pathways and active transportation bridges that shorten trip distances relative to the road network.
- **Transit-Supportive Design.** The new *Official Plan* encourages higher density and mixed-use development around rapid transit stations, including in Hubs, Protected Major Transit Station Areas (PMTSAs), and along major transit corridors. To maximize the benefits of these policies, site design should facilitate access to transit, and redevelopment should improve connectivity to the surrounding urban fabric, including through extending or creating new public streets, establishing mid-block connections, and providing pathways.
- **Redevelopment of Surface Parking Around Transit Stations.** Surface parking lots within Protected Major Transit Station Areas detract from the pedestrian environment and are a barrier to achieving density targets. Where large surface parking lots in PMTSAs are owned by the City, the City will develop a strategy to redevelop them where feasible within the planning horizon. Where possible, redevelopment of large surface parking lots owned by other levels of government should also be encouraged. These developments should establish a safe and connected pedestrian and cycling environment through extension of a public street grid or the establishment of multi-use path connections to the surrounding street network. Following from the new *Official Plan*, the City will consider the conversion of all or part of park-and-ride facilities to transit-supportive development in Hubs or on Corridors²⁴ where the redevelopment is expected to result in more people using transit compared to the park-and-ride lot considered for conversion.

²³ <https://ottawa.ca/en/city-hall/planning-and-development/community-plans-and-design-guidelines/design-and-planning/completed-guidelines/building-better-and-smarter-suburbs-bbss>

²⁴ Hubs and Corridors are designations within Ottawa's new *Official Plan*. Hubs are areas centred on planned or existing rapid transit stations and/or frequent street transit stops that aim to concentrate a higher density of developments and a diversity of functions including employment. Corridors are bands of land along specified streets that combine higher densities and mixed uses, but at lower densities than nearby Hubs.



Specific actions are as follows:

- | | |
|--------------------|---|
| Action 5-4A | Complete the Street Planning Manual for New Neighbourhoods as part of the Building Better and Smarter Suburbs initiative to ensure that new road networks encourage sustainable transportation. |
| Action 5-4B | Include ultimate pathways and active transportation bridges/underpasses as part of Secondary planning, including connections to surrounding communities. |
| Action 5-4C | Develop a checklist and best practice guidance for school site location and designs to ensure that new schools encourage walking and cycling to school and maximize safety around school perimeters. |
| Action 5-4D | Develop a strategy to redevelop or encourage redevelopment of large publicly owned surface parking lots within Protected Major Transit Station Areas, including partial or full conversion of park-and-ride facilities where appropriate. |
| Action 5-4E | Require new or redeveloped large surface parking lots to include shade, stormwater management features, and facilities that accommodate safe cycling and pedestrian movements. |

POLICY 5-5 Align Development Tools to Support Targets for Travel Mode Shares

The City has several tools to ensure that new development supports transportation objectives and pays for growth-related capital infrastructure, including development charges, transportation impact assessments, and early transit service agreements.

Development Charges (DCs) are levied by the City on new developments to pay for growth-related infrastructure. DC rates are updated every five years and fund new road, transit, and active transportation infrastructure. Recent experience indicates that there are some sustainable transportation projects that meet the criteria for growth-related infrastructure that do not receive (or receive limited levels of) DC funding. The City will ensure that DCs account for growth-related active transportation facilities that are required because of intensification and growth, including upgrades that transition streets from rural cross-sections with ditch drainage to urban cross-sections with active transportation facilities and lighting.



The City will also aim to ensure that road and transit infrastructure can be delivered in a timely way to support growth, recognizing the challenges created by funding gaps. Since the previous TMP, construction costs have escalated and insufficient DCs have been collected, hindering the delivery of projects and requiring a more dynamic approach to project implementation. As noted in POLICY 8-1 and 9-3 for transit and roads respectively, the Capital Infrastructure Plan will establish mechanisms for reviewing and re-prioritizing projects as land use and transportation patterns evolve. The City will also review the use of front-ender agreements to expedite the delivery of transportation infrastructure where appropriate.



The Transportation Impact Assessment (TIA) process is intended to identify and mitigate any impacts on the transportation network resulting from development. The process estimates the number of trips generated by the development for each travel mode, identifies the corresponding transportation impacts, and recommends measures to address impacts and accommodate the anticipated travel demand. The City will review the TIA Guidelines for new developments following the TMP update. As part of this work, the City will review opportunities to strengthen the monitoring and enforcement process for large developments to verify that projected mode shares are achieved. To assist developers in meeting mode share targets, the Travel Demand Management (TDM) section of the TIA Guidelines will be updated with information on the expected effectiveness of TDM measures.



Early transit service agreements are a developer-funded mechanism for providing transit service in new communities before there is a sufficient population base to support such service. This is a critical tool for achieving mode share targets; research shows that individuals' transportation habits are established shortly after a life change (e.g., moving into a new house) and are difficult to change once established. Providing transit service early in the life of new developments enables new residents to use transit from the outset. The City will continue to rely on developer-funded early transit service in select locations and in the early stages of a community's development.

Action 5-5A Ensure that all growth-related sustainable transportation infrastructure requirements are appropriately considered and funded through the next update to the Development Charges Bylaw.

Action 5-5B Update the Transportation Impact Assessment Guidelines and strengthen the mode share monitoring and enforcement requirements for large new developments.

Action 5-5C Continue to work with developers to provide early transit service until there is sufficient development to support transit.

POLICY 5-6 Update Land (Right-of-Way) Protections for Transportation Corridors to Support City-Building Objectives

The City owns the land along its transportation corridors and allocates space within these lands for transportation facilities (lanes, sidewalks, boulevards, etc.), public amenities, and utilities including electricity, gas, water, and communications infrastructure. This City-owned land is called the public "right-of-way" and is shown in Exhibit 9. Through the new *Official Plan Schedule C16*, the City identifies requirements for a wider right-of-way along some corridors where additional space for transportation infrastructure is needed or is expected to be required in the future. The additional right-of-way may be used for new transit lanes, vehicle lanes, active transportation facilities, boulevards, trees, or other street design requirements. This additional land is dedicated to the City at the time of redevelopment along the corridor or through property acquisition when necessary.



Exhibit 9: Right-of-Way



The City will update its road right-of-way requirements for specific arterial road corridors to ensure that they reflect overall city-building goals. This requires considering transportation needs and street design objectives, as well as land use and intensification objectives—and trade-offs between these objectives. Along some corridors, additional right-of-way may be required to accommodate pedestrian or cycling facilities, transit priority measures, and streetscape elements such as trees. In other locations, right-of-way protections may be reduced where a narrower right-of-way is feasible, supporting more “human-scaled” designs, higher densities and lower transportation infrastructure costs. The right-of-way review for the selected corridors may also identify space required for intersection improvements, incorporating design guidance for “protected intersections”. Environmental Assessments for significant transportation projects will also continue to review ultimate right-of-way protection requirements. The City will take a judicious approach to increasing right-of-way protection, considering the likelihood of corridor redevelopment, the impacts on lot sizes and development potential, and other context-specific factors.

Action 5-6A

Review and update right-of-way protections for selected arterial road corridors where increases or reductions may be warranted, considering factors including land use context, sustainable transportation infrastructure requirements, and impacts to lot sizes and development potential.

Action 5-6B

Continue to identify ultimate right-of-way requirements as part of Environmental Assessment studies for significant transportation projects.



POLICY 5-7 Apply a Long-Term Affordability Lens to Transportation Investments

The City must remain within its long-term affordability envelope in order to continue to deliver the infrastructure and services that residents and businesses require for success. The TMP Capital Infrastructure Plan will identify the projects that are affordable within the City's long-range financial plans, while also identifying additional network needs and considering opportunities for other sources of funding.

Affordability includes consideration of capital (construction) costs as well as operations and maintenance costs. Once transportation infrastructure is built, it has operational and maintenance requirements such as managing traffic signals, removing snow, fixing street lights, repairing cracked pavement, and rebuilding infrastructure once it is at the end of its useful life. Design decisions can affect lifecycle costs for transportation infrastructure. The City will therefore consider both capital and lifecycle costs as part of delivering new transportation infrastructure. Once infrastructure is built, the City's *Maintenance Quality Standards* outline the required level of maintenance (e.g. winter snow clearing and pothole repair). The City's *Transportation Asset Management Plan* uses a comprehensive asset management approach in order to reduce lifecycle costs while maintaining assets in a safe condition and delivering agreed-upon levels of service. The City will continue to apply a long-term affordability lens to planning and implementing new transportation infrastructure, recognizing the associated costs of operations, maintenance and renewal.



Theme 6: Maximize Walkability

POLICY OVERVIEW

Policy 6-1	Continue to address accessibility barriers and advance universal design
Policy 6-2	Improve and expand the pedestrian network
Policy 6-3	Address gaps in existing neighbourhoods through retrofits
Policy 6-4	Make it easier to cross the road
Policy 6-5	Invest in neighbourhood “shortcuts”
Policy 6-6	Deliver supportive winter maintenance and asset renewal
Policy 6-7	Improve quality, security, and vibrancy of the pedestrian environment
Policy 6-8	Deliver pedestrian safety and promotion programs

Walkability is a key indicator of a vibrant, healthy, and sustainable city and an essential component of a 15-minute neighbourhood. As the only form of transportation that is universally affordable, walking is a mode that can be enjoyed by all ages and all abilities. It is essential for community connectedness, and it is a part of all trips. Building on the success of the 2013 *Ottawa Pedestrian Plan* and *Pedestrian Charter*, the City will continue to work toward the vision of becoming a world class pedestrian city. Within the TMP, the term “walking” encompasses traveling with the use of a mobility device.²⁵

Ensuring a safe, comfortable, and connected walking network will contribute to various benefits including:

- **Health Benefits:** Walking for utilitarian trips, such as to work or school, has benefits for both physical and mental health.
- **Social and Equity Benefits:** Walking, including while using a mobility aid, is the most accessible form of transportation for people of all ages and backgrounds. A walkable city promotes social interaction and advances equity goals by allowing greater access to all the city has to offer for those who can’t travel by other modes.
- **Economic Benefits:** Improvements to pedestrian infrastructure can help support local business districts by attracting customers and can be a catalyst for new

²⁵ Likewise, the term “pedestrian” is inclusive of people using mobility devices.



economic investment. The health benefits of walking also translate to reduced healthcare costs and a more productive workforce.

- **Environmental Benefits:** Shifting away from motor vehicle usage and towards walking reduces air pollution, greenhouse gas emissions and traffic noise.

The City of Ottawa will be pursuing a variety of strategies to improve four-season walkability and accessibility. Policies and actions address land use planning, street design, pedestrian infrastructure, traffic control, winter maintenance, and asset renewal. The quality of the walking environment is also closely linked to community design, complete streets, and road safety (see Themes 5 and 9).

POLICY 6-1 Continue to Address Accessibility Barriers and Advance Universal Design

Ottawa is committed to improving the accessibility of its streets to serve people of all ages and abilities to the greatest extent possible, following the principles of universal design. The City adheres to the design standards and implementation process required by Ontario's *Accessibility for Ontarians with Disabilities Act (AODA)*. The City has also gone beyond AODA requirements by developing more detailed design guidance as part of the City of Ottawa *Accessibility Design Standards*. All new and reconstructed infrastructure is now designed and built to meet accessibility standards. This has resulted in major upgrades to infrastructure; for example, Ottawa now has over 900 intersections equipped with accessible pedestrian signals (APS). The City will continue to implement accessibility standards through new infrastructure and reconstruction of existing infrastructure.

The City also has several programs that help to address accessibility barriers through localized investments. Examples include rebuilding bus stops, adding curb ramps and tactile walking surface indicators, and rebuilding signalized intersections as part of cycling "retrofit" projects. The City will engage residents and stakeholders on where accessibility upgrades are needed. Existing programs can then be targeted to focus on addressing the most significant accessibility barriers. Building on recent advances in accessibility design, the City will also encourage provincial consistency in design standards and further develop Ottawa's guidance for implementing accessibility improvements.

Action 6-1A	Continue to work with the accessibility community, provincial government, and Ontario municipalities to advance consistent standards for universal design.
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Action 6-1B	Engage the public and stakeholders on where accessibility upgrades are needed, in order to focus accessibility investments for maximum benefit.
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POLICY 6-2 Improve and Expand the Pedestrian Network

Sidewalks are critical to pedestrian comfort, safety and accessibility and are therefore an important building block of walkable neighbourhoods. The majority of new sidewalks in the City are built as part of new developments, with new development contributing about 60% of new sidewalks. Redevelopment and reconstruction also provide valuable opportunities to fill gaps in the pedestrian network within existing neighbourhoods, accounting for about 30% of new sidewalks.

The new *Official Plan* includes policy direction for where sidewalks are required at the time of development, redevelopment, and reconstruction (see Exhibit 10 below). Based on this policy, the City may consider a multi-use pathway instead of a sidewalk in certain defined locations “where it would provide for improved system continuity”. Situations where these conditions are met are defined below to clarify the contexts where multi-use pathways are appropriate, in order to minimize the likelihood of conflicts between cyclists and pedestrians. These policies will be implemented through development review and City infrastructure projects.

Exhibit 10: The new *Official Plan* Policies for Sidewalks and Multi-use Pathways

Sidewalk Policy

In the Urban Area and Villages, sidewalks are required on both sides of all new and reconstructed Arterials, Major Collectors and Collectors.

In the Downtown Core and Inner Urban Transects, sidewalks are required on both sides of new local streets.

In the Outer Urban and Suburban Transects, sidewalks are required on one side of all new Local streets, and on both sides of Local streets where required to create continuous and direct connections to destinations such as public transit stops or stations, schools, public parks, pathways, recreation centres, public buildings and institutions and commercial areas.

On existing Local streets in the Urban Area and Villages, sidewalks will be pursued where possible, subject to practical considerations such as the existing context, available space in the right-of-way, impacts to the stormwater system and trees, network connectivity and financial affordability.



Multi-Use Pathway Policy

New multi-use pathways are appropriate in the following contexts:

- Outside the Urban Area and Villages, and within the Greenbelt Transect
- In specific situations within other Transects:
 - Within parks, greenspaces and along off-road corridors (except in locations with a high volume of peak daily users and a high ratio of pedestrians to cyclists, where separated facilities should be considered)
 - Along roads where there are a low total number of active users expected, a high ratio of cyclists to pedestrians, and infrequent signalized crossings;
 - To extend adjacent multi-use pathways by short distances; or,
 - To connect adjacent cycling facilities over short distances where there are significant constraints to providing separate pedestrian and cycling facilities.

In all other contexts, road construction, reconstruction and development projects should provide separate space for pedestrians and for cyclists.

Action 6-2A

Implement the Official Plan Sidewalk Policy and TMP Multi-Use Pathway Policy.

POLICY 6-3 Address Gaps in Existing Neighbourhoods Through Retrofits

Many roads in Ottawa would benefit from additional pedestrian infrastructure and there is significant demand from residents to address network gaps. From 2016 to 2020, residents contacted the City to request sidewalks in approximately 250 locations. During public consultation on the TMP in the fall of 2020, residents identified over 600 missing pedestrian links citywide. The City has programs and funding to add new sidewalks, pathways, and pedestrian crossings in existing communities. However, the number of projects far exceeds the funding available.

A prioritized list of “retrofit” pedestrian projects has been developed. The supporting document, *How Candidate Active Transportation Projects Were Selected*, includes further information on the process used to identify and evaluate projects. High-level evaluation criteria are included in Exhibit 11.



Exhibit 11: Evaluation Criteria - Pedestrian Retrofit Projects

Community Connectivity	Considers importance in facilitating access to schools, public transit, parks, recreation centres, commercial areas, employment areas, or other major destinations, as well as land use density and expected intensification
Network Contribution	Considers travel distance reduction and/or the availability of alternative accessible routes
Improvement to Existing Conditions	Considers actual or perceived safety and/or comfort concerns with existing conditions
Equity	Considers whether the project is in or immediately adjacent to a Priority Neighbourhood
Implementation Considerations	Considers the cost per kilometre and challenges such as available space in the right-of-way and impact on mature trees

The priority projects will be carried forward in the development of the TMP Capital Infrastructure Plan in the next phase of the TMP. If funding levels remain at base funding as identified in the City's *Long Range Financial Plan*, implementation may require the full TMP period of 2023 to 2046. However, experience has shown that additional funding for active transportation projects may become available from City, federal and provincial sources. Should allocated funding be increased by a factor of three, implementation of all projects may be achievable by 2030. The implementation schedule will be based on the projects' evaluation results, coordination opportunities, and geographic considerations.

Action 6-3A Implement the priority pedestrian projects from 2023 to 2046 and seek opportunities to accelerate implementation through additional funding from all levels of government.

POLICY 6-4 Make It Easier to Cross the Road

Frequent and well-designed pedestrian crossing opportunities are critical to walkable, 15-minute neighbourhoods while infrequent crossings can create significant barriers in terms of safety and the ability to efficiently reach destinations. Where crossing demand exists, and no crossing is provided, it is common for people to cross midblock. In areas where vehicle volumes and speeds are high, this has resulted in people being seriously injured or killed. The City has well-established programs to address these barriers by adding pedestrian crossovers, signalized pedestrian crossings, median refuge islands, and traffic calming. For example, over 180 new pedestrian crossings have been installed since the start of the pedestrian crossover program in 2016.



The City's warrant system for pedestrian crossings was adopted in 2015 and aligns with current provincial and North American engineering guidance. The warrant system allows for some flexibility and use of professional judgment based on context. In the coming years, Ottawa and other Ontario municipalities have an opportunity to refine their warrant systems based on recent experience and emerging best practices.²⁶ Specific consideration should be given to whether roads are "access" vs. "flow and capacity" streets; latent and projected pedestrian demand; minimum spacing of crossings relative to adjacent controlled crossings; and contexts where exceptions are warranted.

Linked to the objective of making it easier to cross the road, the City will continue to review opportunities to consider "no right turn on red" restrictions as per the *Road Safety Action Plan*. The City will also continue to advance design standards for "access" streets where

²⁶ For example, Sacramento considers latent and projected pedestrian demand in addition to observed pedestrian volumes; uses a shorter minimum distance between crossings; and makes exceptions to minimum distances where a crossing serves a trail system. Seattle now adds crossings at arterials along its neighbourhood greenway system without any assessment of pedestrian volumes. See: <https://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Publications/Transportation/Bicycle-Pedestrian/Ped-Safety.pdf?la=en>



vehicle speeds and lane configurations allow pedestrians to feel comfortable crossing the road at any location. These strategies can both help to elevate the safety, comfort, and convenience of walking.

Action 6-4A Work with provincial and municipal partners to review pedestrian crossing warrants based on recent experience, emerging best practices, and context-appropriate solutions.

POLICY 6-5 Invest in Neighbourhood “Shortcuts”

A lack of direct walking routes can greatly reduce the number of destinations that can be reached within a 15-minute walk of a resident’s home. In some instances, particularly in suburban developments, a destination that is physically 200 metres away could require walking almost a kilometre due to a lack of direct connections. The City will continue to invest in neighbourhood “shortcuts” that provide more direct pedestrian routes from residential streets to collector or arterial roads where services and amenities are found. In certain locations, implementing efficient pedestrian routes may require property agreements or land acquisition. Shortcuts may also be negotiated through the development review process or identified in Secondary Plans. Shortcuts to rapid transit stations are expected to be the highest priority for property agreements or acquisition.

Exhibit 12: Walking Distance to Transit Station in a Neighbourhood with and without Shortcuts



Note: Figures are not to scale



There are also valuable neighbourhood shortcuts citywide that cannot be used in the winter months because they are not winter maintained. In some cases, pathways would need to be upgraded to a higher construction standard at the time of renewal to allow for winter maintenance. Not all neighbourhood pathways can be winter maintained given the cost implications; specific criteria may include: additional walking distance without the shortcut, peak user volumes; and/or type of destination. The City will map the pathways that provide important shortcuts for pedestrian connectivity and that should be prioritized for winter maintenance and upgrades where required. At the same time, pathway winter maintenance information will be added to “GeoOttawa”²⁷, the City’s online mapping system. Winter maintenance of National Capital Commission (NCC) pathways that function as community connectors should also be explored in partnership with the NCC.

Action 6-5A

Identify important shortcuts to rapid transit stations and key neighbourhood destinations for acquisition as properties become available, along with associated funding needs.

Action 6-5B

Identify and map existing pathways that provide important shortcuts and that should be prioritized for winter maintenance (and if needed, upgraded at the time of renewal to allow winter maintenance).

POLICY 6-6 Deliver Supportive Winter Maintenance and Asset Renewal

Year-round maintenance of pedestrian facilities is a key factor in encouraging more walking in Ottawa. The City’s *Winter Maintenance Quality Standards* set the level of service for pedestrian facilities and the hierarchy of routes for snow clearing. In the past, the hierarchy of streets for sidewalk clearing matched the hierarchy for road clearing. Recognizing that pedestrian routes are often different from vehicular routes, the City is updating the hierarchy of pedestrian routes to give greater priority to sidewalks around important walking destinations such as major transit stations and other high density, high activity areas. Important walking routes within neighbourhoods with strong equity concerns will also be considered for higher priority of winter maintenance. In addition, the City will be reviewing opportunities to clear paved shoulders along a limited number of high priority pedestrian routes where sidewalks are warranted but have not yet been built.

²⁷ <https://maps.ottawa.ca>



Sidewalk and pathway quality—the absence of bumps and cracks and the suitability to support snow clearing equipment—is also important for effective snow clearing and for year-round walking comfort. While the City’s infrastructure renewal activities are constrained by budget pressures, there may be opportunities to improve outcomes by refining the prioritization process for pedestrian infrastructure renewal. The City will investigate establishing a hierarchy of routes for prioritizing sidewalk/pathway renewal, considering the same criteria as for winter maintenance. The annual prioritization process will also consider requests from people with disabilities who require a higher surface quality to be able to navigate a sidewalk/pathway safely.

Finally, the City will review opportunities to enhance the walking environment in select locations where asset renewal is already occurring. For example, bulb-outs for traffic calming could be added to a sidewalk reconstruction project on a residential street that is an important route to school and/or where speeding is a concern. The design, delivery and funding implications of this project delivery approach require further review.

Action 6-6A Review the hierarchy of pedestrian routes to inform the City’s *Winter Maintenance Quality Standards* and infrastructure renewal activities.

Action 6-6B Investigate winter clearing of select, high priority paved shoulders on arterials and collectors in the urban area and villages to temporarily improve winter walking until sidewalks can be built.

Action 6-6C Review opportunities to add low-cost street design improvements to select sidewalk, pathway, and roadway renewal projects.

POLICY 6-7 Improve Quality, Security, and Vibrancy of the Pedestrian Environment

Walkability is about more than safe sidewalks and crossings. Many other characteristics of the built environment influence walkability, including greenery, shade and shelter, seating, boulevard width, the surrounding land use context, driveway crossings, etc. Security of the walking environment—including lighting, “eyes on the street”, and other elements of



environmental design—can contribute positively to broad equity goals with respect to gender, economic, and racial equality, and can also help create a welcoming and relaxing space for people of all ages and abilities.



Some of these characteristics are difficult to change within the planning horizon, for example, the design of adjacent buildings along existing corridors. However, the City is working to improve many elements of the streetscape that contribute to the quality of the pedestrian environment. The City will continue to work through existing programs to add new street trees, benches, transit shelters and context-appropriate street furniture, with a focus on Mainstreet and Minor Corridors. A stand-alone policy for pathway lighting is also needed to clarify which new pathways should be lit and to prioritize existing unlit pathways for lighting. At the same time, the City will add pathway lighting information to the “GeoOttawa”²⁸ online mapping system.

Action 6-7A

Review local, collector, major collector, and arterial road design standards to ensure that they support a high-quality pedestrian environment; in particular, local road cross-sections will be updated to include a sidewalk and trees that provide shade for people walking or cycling.

Action 6-7B

Conduct a review of best practices in street design for pedestrian security and engage with equity-focused community partners to better understand pedestrian security challenges on Ottawa’s streets.

Action 6-7C

Develop a pathway lighting policy to clarify which new pathways should be lit and to prioritize adding lighting to existing pathways.

²⁸ <https://maps.ottawa.ca>



POLICY 6-8 Deliver Pedestrian Safety and Promotion Programs

As the most vulnerable road user group, pedestrian safety and promotion is key to ensuring that users feel comfortable walking. The City's *Road Safety Action Plan* focuses resources on targeted efforts to reduce collisions that result in serious injury or death. The *Road Safety Action Plan* recommends safety and promotion programs including the Pedestrian Safety Evaluation Program, expansion of the Be Safe Be Seen initiative, pedestrian safety campaign blitzes at schools, and implementation of enforcement measures delivered by the Ottawa Police Service, including RIDE programs. To encourage more walking, the City will also continue to use promotional campaigns that promote the benefits of walking.



Theme 7: Develop a Great Cycling City

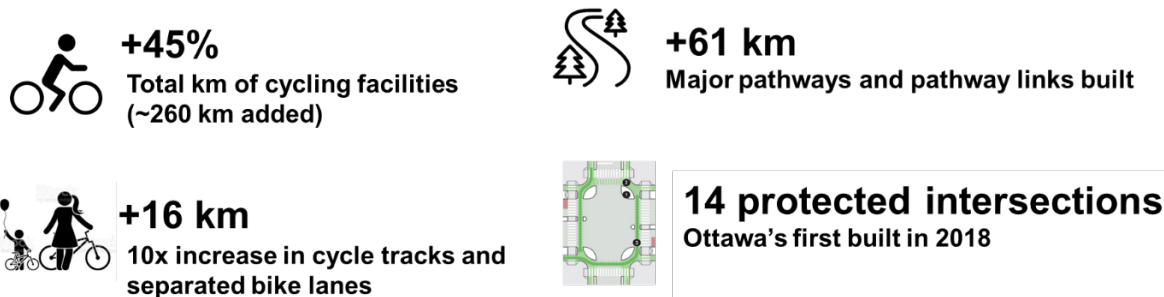
POLICY OVERVIEW

Policy 7-1	Improve and expand the cycling network
Policy 7-2	Retrofit by priority to improve connectivity
Policy 7-3	Target missing links and major barriers
Policy 7-4	Provide safe and comfortable facilities and routes
Policy 7-5	Continue to advance design and construction standards
Policy 7-6	Plan for an increase in e-bikes, cargo bikes, e-scooters, and other users
Policy 7-7	Deliver supportive maintenance and renewal
Policy 7-8	Enable winter cycling
Policy 7-9	Require adequate, secure bicycle parking in new developments
Policy 7-10	Deliver cycling safety and promotion programs
Policy 7-11	Provide high quality information about the cycling network

Since the 2013 TMP was approved, Ottawa has made significant progress toward the vision of developing a city-wide, connected network of cycling facilities, supported by policies and programs that establish Ottawa as a North American leader. Approximately 260 kilometres of cycling facilities have been added since 2013, including 16 kilometres of separated cycling facilities and 61 kilometres of off-road pathways. The City built its first “protected intersection” (an intersection design that promotes safety for all road users) in 2018, with 14 constructed to date and many more in the planning stage. The City has also made progress towards delivering a network of connected, high quality cycling routes with the Cross-Town Bikeways network.

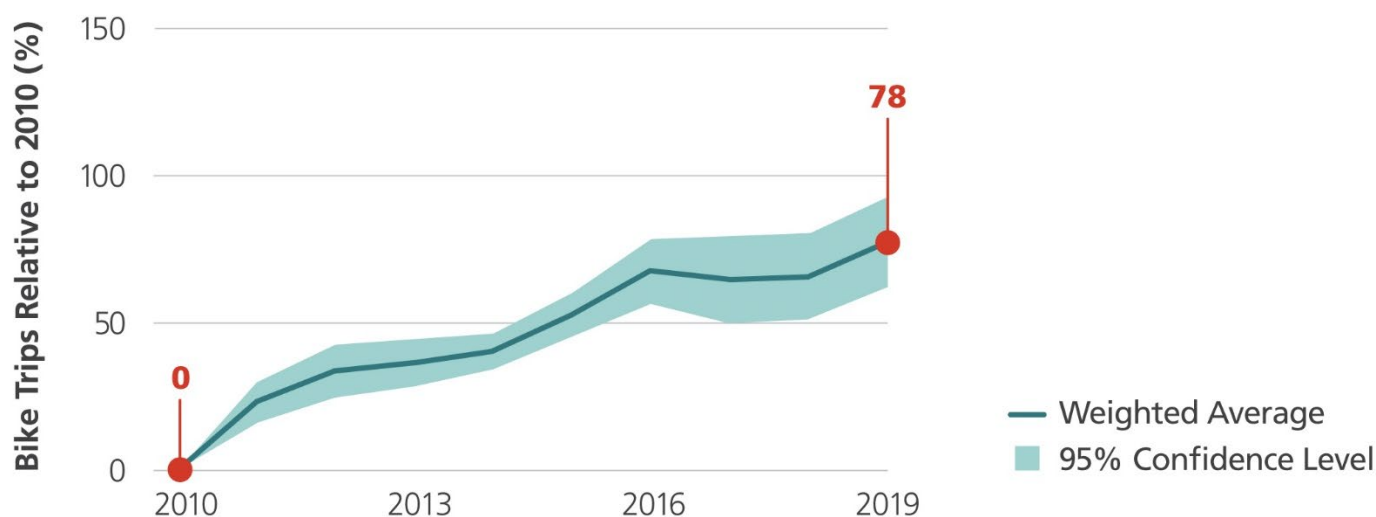


Exhibit 13: Expansion of Cycling Facilities from 2013 to 2020 (All Funding Sources)



Linked to these efforts, cycling is on the rise in Ottawa, with rapid growth in cycling trips over the last decade. In central Ottawa, the City's bike counter data for Wards 11 to 18 indicates an 80% increase in cycling trips between 2010 and 2019. There is also evidence of notable increases in cycling in the outer urban and suburban areas of the city. This upward trend is expected to continue as commuting patterns recover in the wake of the pandemic. At the same time, cycling infrastructure is accommodating a growing range of users, with cargo bikes, tricycles (for residents with balance challenges), electric bikes, and scooters increasing in popularity.

Exhibit 14: Cycling Trip Growth from 2010 to 2019 (Wards 11 to 18)



Despite significant progress in expanding and improving the cycling network, the City of Ottawa is vast and there are still many critical gaps in the network. The majority of residents are interested in cycling but are not willing to ride on roads with a high level of traffic stress²⁹; many destinations therefore remain impossible for them to reach by bike.

²⁹ Level of Traffic Stress (LTS) is a rating given to a road segment or crossing indicating the traffic stress it imposes on cyclists (Furth. Northeastern University).



This disproportionately impacts women, children, and older adults who tend to be more sensitive to level of traffic stress.

Ottawa's new *Official Plan* states that all roads in the Urban Area and Villages are part of the City's ultimate cycling network (with the exception of highways and transitways). This policy emphasizes that any destination that is accessible by car should eventually also be safely accessible by bike given that people live, work, play, shop, and travel all over the city. It also recognizes that achieving the City's climate change and sustainable transportation targets will require a dramatic increase in the proportion of trips made by sustainable modes, including the opportunity to combine cycling and transit trips. This will require improvements to cycling infrastructure citywide.

In the coming years, the City will continue to invest in infrastructure, policies, and programs that support safe, multimodal, comfortable, and convenient cycling, wheeling, and scooting as a critical element of a healthy and sustainable city.

POLICY 7-1 Improve and Expand the Cycling Network

In line with the new *Official Plan* policy that all roads in the Urban area and Villages are part of the City's ultimate cycling network (with the exception of highways and transitways), cycle tracks and protected intersections are to be provided on all new Collector, Major Collector, and Arterial roads. Existing Collectors, Major Collectors, and Arterials (including bridge spans) are to be upgraded to include separated cycling facilities at the time of redevelopment, reconstruction, and where feasible during asset renewal. Where cycling facilities are required approaching an intersection, these facilities are to be continued through the intersection.





Adding cycling facilities as a general requirement of new developments along existing collectors and arterials is a change in the new *Official Plan*; in the past, this was only a requirement along Cross-Town Bikeways.³⁰ The City will develop guidelines to assist in the application of this policy. The guidelines will aim to achieve the following objectives: support the addition of useful segments of facilities; avoid creating ‘missing links’; and align requirements with the scale and frontage of the development.

Outside of the Urban area and Villages, cycling improvements will also continue to leverage construction activities to provide connectivity. The Rural Active Transportation Network focuses on connections between Growth Villages, to the Urban area, and to recreational destinations and trails. Quiet, secondary roads are used for connectivity as a more enjoyable alternative to busy roads. Paved shoulders are prioritized on high speed, high volume roads that are already well-used today and where there are few comfortable alternative cycling routes. Paved shoulders will be added to select roads at the time of resurfacing as per the Rural Active Transportation Network, and off-road pathways will be pursued along available corridors as opportunities present themselves.

Action 7-1A Develop guidelines for building cycling facilities through redevelopment.

POLICY 7-2 Retrofit by Priority to Improve Connectivity

The City’s Capital Infrastructure Plan includes funding for independent cycling “retrofit” projects that implement cycling facilities in priority locations. These independent projects are distinct from cycling facilities that are delivered through major transit projects, road renewal, or road resurfacing. Independent retrofit projects were identified based on the priorities that emerged from the TMP public consultation including enabling community trips by active transportation; facilitating connections to transit; and addressing short missing links to improve network continuity.

Independent retrofit projects aim to cost-effectively improve safety relative to existing conditions. Since funding is limited, projects aim to maximize the impact of each dollar, while still meeting City standards for separation from traffic. For example, buffered or flex post-protected bike lanes may be implemented instead of cycle tracks to increase a project’s length. Examples of the scope of retrofit projects include:

- Restriping a roadway to add painted or buffered bike lanes;
- Minor civil works to add cycling-compatible “raised cycle track” bus stops;
- Implementation of traffic calming or diversion measures to create neighbourhood bikeways;

³⁰ Cross-Town Bikeways are routes designed to provide continuous connectivity over long distances for cycling across Ottawa. Cross-Town Bikeways include both on-road and off-road facilities that provide a consistently high level of comfort for their entire length and are prioritized for maintenance.



- Construction of new multi-use pathways through parks or greenspaces;
- Modifications to or reconstruction of intersections to create “protected intersections”; and
- Construction of short segments of cycle track along existing roadways.

Given the size of the city and the number of missing links, the number of worthwhile cycling projects far exceeds the funding available. A prioritized list of citywide “retrofit” cycling projects has been developed based on the evaluation criteria in Exhibit 15 below.

Exhibit 15: Evaluation Criteria - Cycling Retrofit Projects

Community Connectivity	Considers importance in facilitating access to schools, public transit, parks, recreation centres, commercial areas, employment areas, or other major destinations, as well as expected intensification
Network Contribution	Considers travel time reduction versus alternative comfortable routes, importance in the citywide network of Cross-Town Bikeways and/or role in addressing short missing links
Improvement to Existing Conditions	Considers actual or perceived safety and/or comfort concerns with existing conditions
Equity	Considers whether the project is in or immediately adjacent to a Priority Neighbourhood
Cost and Implementation Considerations	Considers the project cost and implementation challenges such as potential parking impacts or impacts to transit operations

The City has developed a list of priority cycling projects. The supporting document, *How Candidate Active Transportation Projects Were Selected*, provides further information on the process used to identify and evaluate projects. These priority projects will be carried forward in the development of the TMP Capital Infrastructure Plan in the next phase of the TMP. If funding levels remain at base funding as identified in the City’s *Long Range Financial Plan*, implementation may require the full TMP period of 2023 to 2046. However, experience has shown that additional funding for active transportation projects may become available from City, federal and provincial sources. Should allocated funding be increased by a factor of three, implementation of all projects could potentially be achieved by 2030. The implementation schedule will be based on the projects’ evaluation results, coordination opportunities, and geographic considerations. Several of the priority projects improve access to recreational trails and green spaces owned by the federal government. The City will collaborate with federal and provincial stakeholders on the priority projects and on the broader goal of connecting neighbourhoods to green space.



Action 7-2A Implement the priority cycling projects from 2023 to 2046 and accelerate implementation in line with approved funding levels from all levels of government.

Action 7-2B Work with the National Capital Commission and other stakeholders to improve access to green space on foot and by bike.

POLICY 7-3 Target Missing Links and Major Barriers

Across the city, many rail corridors, waterways, and highways create major barriers to cycling. The bridges, underpasses and on-ramps that provide vehicular connectivity may have a high level of traffic stress for cycling with no alternative routes available. The City will work with partner agencies to address major barriers wherever opportunities exist. Where solutions to improve crossings of major barriers are not apparent, a feasibility study may be pursued as a first step.

The City will also pursue feasibility studies to evaluate options for addressing missing links along important cycling routes where cycling infrastructure cannot be easily accommodated without significant changes to lane configurations and/or parking. Following from the new *Official Plan*, if a street or intersection cannot accommodate active transportation facilities within the existing travel lane arrangement, space may be reallocated to protect pedestrians and cyclists. Feasibility studies can help to evaluate options and trade-offs in the context of multimodal level of service.

In some cases, the City must work with external stakeholders to improve crossings over major barriers, including the Ontario Ministry of Transportation, federal authorities managing interprovincial bridges, rail companies, etc. The City's role may include identifying needed changes, providing connections to the wider network, co-funding, or engagement to improve related active transportation technical standards. Several of the required feasibility studies involve improving (or adding) cycling facilities over Ministry of Transportation highway bridges, across access ramps, and into adjacent communities.

The City has identified a list of feasibility studies that will be pursued from 2023 to 2030. Where feasibility studies identify viable solutions, additional funding may be needed for implementation.

Action 7-3A Pursue feasibility studies to explore possible solutions to important but difficult projects that address missing links and major barriers, including working with external stakeholders.

**Action 7-3B**

Work with the Ontario Ministry of Transportation to reduce connectivity barriers posed by urban highways and to improve design standards for crossings related to highway interchanges and bridge spans.

POLICY 7-4 Provide Safe and Comfortable Facilities and Routes

Cyclists can be grouped into four categories based on their comfort riding in different levels of traffic stress: “strong and fearless”, “enthused and confident”, “interested but concerned” and “no way, no how”. Cyclists who fall under the “strong and fearless” category feel comfortable riding at a higher level of traffic stress compared to the “interested but concerned” category. A person may fall into different categories depending on their age, gender, and background, and for different trips depending on trip purpose, who they are riding with, weather conditions, familiarity with the route, and various other factors.



Within the Urban area and Villages, the City of Ottawa aims to design new cycling facilities that will be comfortable for cyclists who are “interested but concerned”. This aligns with the objectives of creating facilities that appeal to the widest number of residents, including new cyclists; recognizing equity needs; and enabling most community trips to be made by



active modes. Implementation follows the facility selection methodology and nomograph³¹ for the urban context within *Ontario Traffic Manual - Book 18: Cycling Facilities*, with additional refinement based on the road context, network context and project context.

Notwithstanding the above, on existing streets in the Urban area and Villages, the City will place a high priority on reducing the level of traffic stress relative to current conditions. As more people of all ages and abilities cycle for transportation, the City will see higher volumes of bikes on all streets, regardless of cycling infrastructure. The City will therefore consistently seek opportunities to increase separation of cyclists from motor vehicles and reduce the level of traffic stress.

In the Rural transect outside the Urban and Village boundaries, there is a large geographic area, a low density of residences and destinations, long trip distances, and a lower prevalence of utilitarian cycling. Cycling facilities will therefore reflect the *Book 18* guidance and nomograph for the rural context. The rural nomograph in *Book 18* is based on a target cyclist who is traveling longer distances and is either highly confident or somewhat confident. The ultimate rural cycling network will feature a mix of quiet secondary roads with shared operating space, paved shoulders along busy roads, and select off-road pathways along rail corridors that are expected to be used primarily for recreational purposes. The City will co-ordinate cycling routes with its neighbors to facilitate longer regional routes of interest to cycling tourists.

POLICY 7-5 Continue to Advance Design and Construction Standards

Since 2013, the City has made significant progress in developing cycling and “complete street” design standards. Ottawa’s efforts have also frequently helped to inform provincial and national design standards. Recent initiatives include the *Protected Intersection Design Guide* and the *Interaction Zone Design Guidelines for Bus Stops and Off-Road Cycling*, both of which enhance safety, comfort and accessibility for pedestrians and cyclists. The City has also initiated a project to develop the *Roundabouts for Complete Streets Guidelines*. The City will continue to be a leader in working with provincial stakeholders to adopt global best practices in facility design. Examples of emerging measures may include bike crossovers, continuous sidewalks/cycle tracks, and nearside bike signals. The City’s *Pedestrian and Cycling Design Toolbox* will continue to be the internal repository for emerging designs.

The City will also increase its focus on the design and construction details that can help reduce the potential for cycling accidents due to poor surface quality and transition zones. Bicycles and other human-powered vehicles generally lack suspension systems found on motor vehicles and can suffer greatly from poor surface quality. Depressed curbs, transitions between asphalt and concrete, cross-slopes, elevation changes, and poor pavement quality can all have an adverse effect on safety, comfort, and enjoyment of the ride. Improving these design details requires a concerted effort but has minimal impact on

³¹ This type of nomograph is a cycling facility selection tool used in Ontario and many other jurisdictions to define recommended levels of cyclist-motor vehicle separation based on traffic speeds and volumes. The general philosophy is that as speed and/or traffic volumes increase, cyclists will require higher levels of separation from motorized vehicles to travel safely and comfortably.



project costs and delivers significant benefits to cyclists. Finally, wherever possible, the City should “ground truth” its design work. This will involve conducting pilots and documenting results; observing how facilities are used; comparing user behaviour before and after project implementation; and updating design guidance accordingly.

Action 7-5A Advance design and construction standards for cycling facilities including a focus on surface quality.

Action 7-5B Work with national and provincial organizations to identify research needs, support pilot projects and co-develop new design standards for active transportation facilities.

Action 7-5C Create design sheets for emerging functional design practices within the Pedestrian and Cycling Design Toolbox.

POLICY 7-6 Plan for an Increase in E-Bikes, Cargo Bikes, E-Scooters, and Other Users



Bikes come in many shapes and sizes. This is increasingly true as electric bikes (e-bikes), cargo bikes, e-cargo bikes and other alternative bikes increase in popularity. Initial research indicates that e-bikes have significant potential to open up cycling to new groups, such as medium-distance commuters and older adults. Cargo bikes and e-cargo bikes provide households and businesses with new options for transporting people and goods, potentially allowing some residents to reduce their car ownership and delivery companies to reduce the size of their truck fleet. Across Canada, sales of e-bikes and cargo e-bikes have been growing rapidly.

As e-bikes become more widespread in Ottawa, it is expected that bike trip lengths will increase. More residents will be able to travel longer distances by cycling, increasing the number of vehicle trips that can potentially be replaced by cycling. This in turn has the potential to reduce greenhouse gas emissions.



The emergence of new types of bicycles and micro-mobility devices may require modifications to cycling infrastructure design. The City's cycling facilities are now also used by e-scooters in addition to conventional bikes, e-bikes, cargo bikes, and bikes with trailers for children, and they may host other new forms of micro-mobility in the future. Users of cycling facilities may have very different acceleration profiles, average travel speeds, vehicle weights and turning radii. In some locations, wider facilities may be needed with wider turning radii and more opportunities for passing. Recommended facility widths and turning radii for new cycling facilities will need to accommodate cargo bikes, trailers, e-scooters, and other emerging users of cycling facilities.

POLICY 7-7 Deliver Supportive Maintenance and Renewal

Surface condition is an important determinant of cycling safety and comfort. While a pothole may be only a minor inconvenience for a driver, it could cause a serious fall for a cyclist. In a study of Toronto and Vancouver cycling injuries treated in emergency departments, almost 30% of injuries were due to falls.³² At the same time, pavement quality often deteriorates first along roadway edges, where many cycling facilities are located. To ensure that acceptable surface conditions are maintained for cyclists, the *Transportation Asset Management Plan* (in progress) identifies a potential improvement action to undertake a future pilot project to monitor the condition of bike lanes and paved shoulders. This could allow issues like potholes in bike lanes to be identified and addressed sooner.

There is also an opportunity to update the prioritization criteria for off-road cycling facility renewal to consider asset condition as well as cycling network considerations. This will allow those pathways that have high usage or play a critical network role to be prioritized for renewal. At the same time, the City will refine its criteria for upgrading pathways at the time of renewal:

- Pathways will be widened at the time of renewal in high volume locations and in locations where existing widths have the potential to create conflicts between users.
- Pathways will be upgraded at the time of renewal to allow winter maintenance where they have been identified as critical for community connectivity.

The City already uses road resurfacing as a key opportunity for cycling network improvement. Road resurfacing projects often deliver long segments of new on-street bike lanes, paved shoulders and/or improvements to existing facilities. However, modifications beyond the roadway curbs can rarely be accommodated within resurfacing project scope. Going forward, the City will review opportunities to deliver additional cycling improvements as part of existing works such as through road resurfacing projects, in select, high priority locations. For example, for a small additional cost, a jug-handle approach could be added

³² Tesche, K., Frendo, T., Shen, H., et. al. (2014). Bicycling crash circumstances vary by route type: a cross-sectional analysis. *BMC Public Health*, 14:1205. [Note that this statistic includes injuries resulting from recreational and utilitarian cycling.](#)



to an existing intersection or a bulbout could be modified to accommodate cycling. The design, delivery and funding implications of this change require further review.

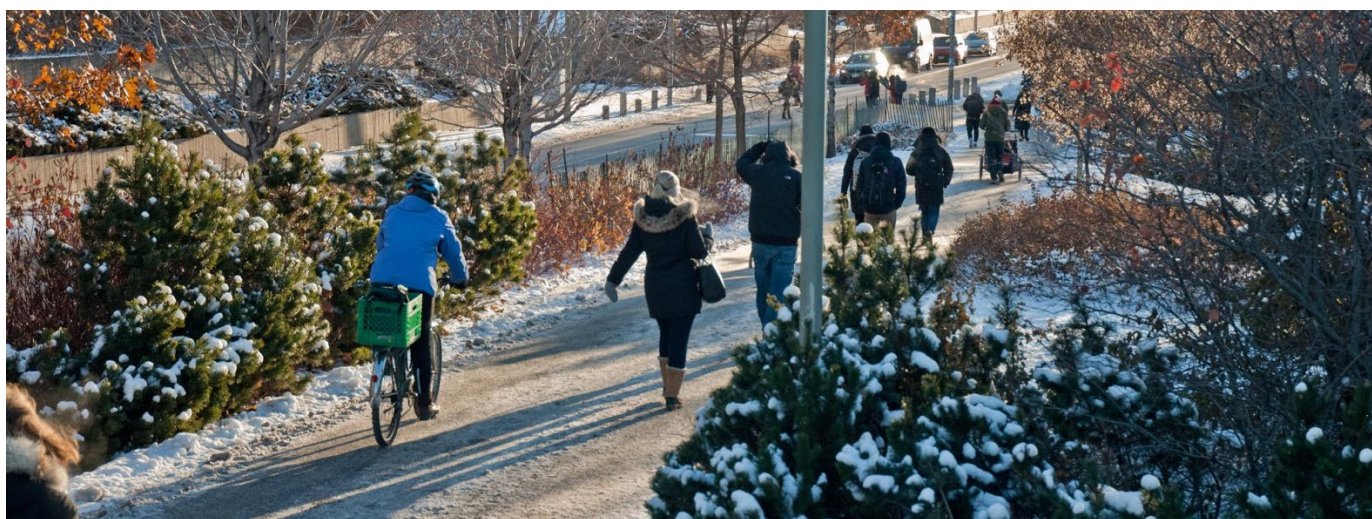
Action 7-7A Pilot the tracking of asset condition for paved shoulders and bike lanes, separate from general roadbed conditions.

Action 7-7B Update the prioritization criteria for multi-use pathway renewal, including criteria for upgrading width and quality at the time of renewal.

Action 7-7C Review opportunities to deliver additional cycling improvements as part of existing works such as through road resurfacing projects.

POLICY 7-8 Enable Winter Cycling

The 2013 *Ottawa Cycling Plan* established the City's first winter cycling network and identified a network of routes that are cleared of snow through the winter. The winter cycling network includes approximately 40 km of connected facilities in the Downtown core and Inner Urban transects, where there is the highest amount of cycling traffic. The winter cycling network prioritizes maintenance of physically separated and off-road facilities because they are more attractive for winter cycling trips. From the creation of the winter cycling network in 2015 until pandemic-related disruptions in 2019, Ottawa saw significant growth in winter cycling trips. Mid-winter trips in January and February increased by more than 50% along some corridors between 2015 and 2018. Data collected along Laurier Avenue, one of the City's busiest utilitarian cycling routes, indicates that 17% of annual bike trips along this corridor occur from December to mid-March.





other parts of the City, focusing on connections to rapid transit stations. New routes proposed for addition to the winter cycling network will be evaluated based on the following criteria:

- Route consists primarily of separated facilities³³
- Route has moderate to high summer volumes (250+ users over 12 hours for two-way facilities); and
- Route connects to the existing winter network or directly to a rapid transit station

The target will be to double the total kilometres of winter cycling routes by 2030 and to enable winter cycling to at least six rapid transit stations outside the Inner Urban transect.

Action 7-8A

Expand the winter cycling network to include additional facilities that connect to the existing winter network or to a rapid transit station and identify the associated funding requirements.

Action 7-8B

Establish criteria and procedures for future additions to the winter cycling network as new cycling facilities are built.

POLICY 7-9 Require Adequate, Secure Bicycle Parking in New Developments

Bike ownership is a prerequisite to utilitarian cycling in Ottawa. However, people are less likely to purchase a bicycle if they have no place to store it³⁴. Bicycle storage is of particular concern for people living in apartments and condos. Floor space is limited, modifications to units are difficult, and transporting a bicycle to and from a unit can be a major deterrent. Vancouver's research revealed that secure bike parking in existing multi-residential buildings is often over capacity, difficult to access or simply does not exist.³⁵

Ottawa's minimum bike parking rates should support long-term cycling mode share targets and associated bike ownership levels. The current rate of 0.5 bike parking spaces per unit in multi-residential buildings is not expected to be adequate based on bike ownership levels and mode shares in other cities.³⁶ Vancouver recently increased its minimum requirements from 1.25 spaces per unit to between 1.5 and 3 spaces per unit, based on current and projected demand.

³³ Separated facilities include multi-use pathways, cycle tracks, pinned curb bike lanes and buffered bike lanes.

³⁴ Riekkö, H. (2013). Bicycle Parking Regulations for Multi-Unit Residential Buildings in Toronto. Paper presented at the Canadian Institute of Transportation Engineers conference, Calgary, Alberta, April 7-10, 2013.

³⁵ Bell, P.J. (2015). [All Ages and Abilities Bicycle Parking in New and Existing Development](#).

³⁶ For example, in Vancouver, in 2008, bike ownership in multi-residential buildings was approximately 0.75 bikes per person, or 1.25 bikes per unit (Bell, P.J., 2015). [All Ages and Abilities Bicycle Parking in New and Existing Development](#).



The quality and placement of bike parking is also important to encourage regular cycling. Long-term bicycle parking should be in secure bicycle rooms, compounds, or lockers that are in sight of building entrances, well-lit, and provide easy access to outside. Requirements should consider the expected growth in e-bikes and cargo bikes that are larger, more expensive, may require access to electrical outlets, and are poorly suited to in-unit storage. Short-term bicycle parking spaces should be provided close to building entrances in convenient, well-lit, and highly visible locations.

Changes to bicycle parking requirements for new developments will be implemented through updates to the City's Zoning Bylaw. Requirements for secure, long-term bicycle parking and for short-term visitor parking may vary by transect and will be based on the demand generated by different uses. The City will also provide design guidance to developers on recommended bike parking designs, rack types, and placement, to make it easy for developers to provide convenient and space-efficient bicycle parking. It is important to get bike parking right at the time of construction, as retrofits are difficult, expensive, and unlikely to occur. Requirements for bike parking should also consider the space needed for stroller/trailer parking to make travelling on foot or by bike more feasible for people with young children.

Action 7-9A

Update the Zoning By-law to require an adequate quantity and a high quality of bicycle parking in new developments suitable for a range of different types of bicycles.

Action 7-9B

Develop a bike parking guide to assist developers in providing high quality, space-efficient secure bike parking.



POLICY 7-10 Deliver Cycling Safety and Promotion Programs

The City delivers a number of cycling safety programs, guided by the *Road Safety Action Plan*. These include Share the Road and the Cycling Safety Improvement Program. Share the Road brings together external partners and various City departments, such as Public Works, Planning, Public Health and Emergency Services, to review how cycling safety and awareness can be incorporated in their work.

The Cycling Safety Improvement Program implements physical modifications to address specific safety issues. The program uses public input, collision analysis, and field investigations to identify high-risk locations and appropriate mitigation measures.



The City also delivers cycling education and promotion programs to equip residents with safe cycling skills and encourage more cycling year-round. The Cycling Safety Awareness Program provides site-specific education and outreach on new cycling infrastructure to increase safety and awareness. Other key cycling TDM and education initiatives are delivered in collaboration with partners and include bike safety training, public messaging through radio ads, workplace cycling safety outreach, Bike Month, and the “Be Safe and be Seen” initiative. The City also works with external partners such as Tourism Ottawa to promote cycling tourism. Finally, the City’s Integrated Neighbourhoods Services Team has been working with Cycle Salvation and the Ottawa Community Foundation to distribute free



bicycles to youth in priority neighbourhoods and to encourage safe cycling through bike rodeos and training sessions. Promotional strategies should seek to reach equity-deserving groups and groups that may face information-related barriers to participation, for example students and new immigrants.

Action 7-10A Seek funding to accelerate upgrades to existing cycling facilities.

Action 7-10B Continue to work with external partners to promote cycling tourism.

Action 7-10C Continue to work with external partners to enable cycling in Priority Neighbourhoods and amongst equity-deserving groups.

POLICY 7-11 Provide High Quality Information About the Cycling Network

Residents need to be aware of the City's cycling facilities and routes in order to use them. The City's online mapping system (called "GeoOttawa"³⁷) is the primary location where residents can find the most up-to-date information about the cycling network. It is interactive and searchable, allowing residents to quickly locate specific areas of the City and view the layers that are of interest to them. It is also a critical tool for planning purposes and allows the City to manage and analyze geospatial information. The City will continue to update GeoOttawa regularly, including adding pathway lighting and winter maintenance information to the map and updating recommended routes. The City will also continue to support the NCC in issuing cycling maps in print and online every few years. Finally, recognizing that people use many different tools to plan routes—one of the most popular being Google Maps—the City will ensure that accurate and current open data is provided for use by Google and other third parties.

The City uses automated pedestrian and cyclist counters to collect high quality data on active transportation usage for planning and monitoring purposes. The City will install additional automated counters in key locations, focusing on locations outside the Downtown and Inner Urban transects. All City projects that add significant active transportation facilities should also include automated counters.

On the ground, wayfinding along cycling routes is also very important to the user experience, especially where routes do not follow streets in a straight line. The City will develop a consistent strategy for cycling route wayfinding and signage, apply the strategy

³⁷ <https://maps.ottawa.ca>



going forward, and conduct a one-time review of existing major cycling routes to roll-out appropriate wayfinding. This will include a focus on wayfinding to rapid transit stations.

Action 7-11A	Provide up-to-date cycling facility information as open data for use by Google and other third parties.
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Action 7-11B	Develop and implement a cycling wayfinding strategy for major cycling routes.
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Action 7-11C	Install automated counters in key locations and as part of projects that add significant pedestrian or cycling facilities.
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Theme 8: Expand and Improve Transit City-Wide

POLICY OVERVIEW

Policy 8-1	Invest in the Rapid Transit and Transit Priority Network
Policy 8-2	Avoid adding new road or highway capacity that competes with rapid transit
Policy 8-3	Improve the convenience, comfort, and accessibility of transit
Policy 8-4	Expand the catchment of rapid transit through improved walking and cycling connections to stations
Policy 8-5	Monitor evolving travel patterns and adjust service accordingly

A convenient and robust transit system can help the City meet its greenhouse gas emission reduction targets, attract economic development opportunities, and improve access to amenities, services, and jobs. The City has made significant strides in building its rapid transit system since the 2013 TMP was adopted. The City has implemented the core of O-Train Line 1 and started construction on extensions of Line 1 to the east and west, as well as Line 2 to the south. The O-Train and Transitway systems serve as the backbone of the transit network in Ottawa and attract riders from inside and outside the Greenbelt.

Moving forward, the City will build on every aspect of its transit system. This includes expanding the Rapid Transit and Transit Priority (RTTP) network to reach more parts of the city. It also includes improving the convenience, comfort, and accessibility of the system and expanding its reach by providing direct active transportation connections from the lands surrounding stations. To be effective, connections to stations must be attractive, safe, accessible, and maintained year-round. Beyond neighbourhood connections to stations, the City will pursue the goal of enhancing service integration and providing a seamless travel experience throughout the Ottawa-Gatineau region by working with other governments to connect Ottawa with future regional and federal transit initiatives. Finally, the City will pursue supportive land use development near and at transit stations and along frequent transit routes to further build ridership demand through the policies of the new *Official Plan* as well as POLICY 5-4 above.

POLICY 8-1 Invest in the Rapid Transit and Transit Priority Network

Continued expansion of the RTTP network will be a critical element in the achievement of the City's transit objectives. The RTTP network includes the O-Train system, bus Transitway, and on-road transit priority measures (e.g., queue jump lanes and bus priority signals at intersections). RTTP projects improve the reliability, speed and/or comfort of transit,



thereby increasing its attractiveness. Significant progress has been made in implementing the core of the O-Train system and projects such as transit priority improvements along St. Laurent Boulevard.

In the short term, prior to the development of the TMP's Capital Infrastructure Plan, the City will continue to advance transit projects identified in the 2013 version of the TMP. Council has identified the O-Train extensions to Barrhaven and Kanata (Stage 3) as a priority and the City is currently seeking federal and provincial funding to implement these projects. The scope and phasing of these extensions are subject to further affordability assessment and refinement to maximize the travel and operational benefits. Cross-town rapid transit corridors such as the Baseline Transitway that have completed the Environmental Assessment process are also expected to proceed to construction, pending confirmation of funding.



Once the core O-Train system has been completed, a key priority will be to develop new RTP infrastructure on corridors within the Inner Urban and Outer Urban transects, to leverage and build upon existing ridership in areas with supportive development patterns (either existing or planned) that would benefit from improved service. The objective is to expand rapid transit service to a higher percentage of the city, focusing on destinations outside the downtown core as well as connections between communities.

Part 2 of the TMP, the Capital Infrastructure Plan, will identify the 2046 RTP network to support the achievement of the City's climate change targets and mobility objectives, while also highlighting the highest impact projects for priority implementation. RTP projects from the 2013 TMP that have not yet been implemented will be carried forward for evaluation within the Capital Infrastructure Plan. Evaluation and prioritization of RTP projects within the Capital Infrastructure Plan will consider quantitative and qualitative measures to assess the relative benefits of projects. The proposed project evaluation criteria are presented below.



Exhibit 16: Evaluation Criteria - Rapid Transit and Transit Priority Projects

Ridership	Considers the importance of the project in addressing short missing links and/or facilitating access to schools, public transit, parks, recreation centres, and/or commercial or employment areas
Improvement in Transit Service	Considers the importance of the project in the citywide network of Cross-Town Bikeways and/or its role in addressing short missing links
Cost	Considers the potential safety improvement relative to existing conditions
City-building	Considers the project cost and implementation challenges such as potential parking impacts or impacts to transit operations

The City's capital investments must be affordable. The Capital Infrastructure Plan will establish an Affordable RTTP Network that includes a subset of projects from the transit network to advance the City's climate and transit mode share targets within the 2046 horizon. In the past, the City has faced challenges aligning the timing of new transportation infrastructure with growth. The Capital Infrastructure Plan will establish mechanisms for monitoring, feedback, and re-prioritization of investments as land use and mobility patterns evolve.

Monitoring is also important for the City to learn from recent projects and maximize the benefits of future investments, particularly with regards to transit priority. The City will evaluate recent transit priority projects in different contexts and with different design features, considering outcomes such as transit speed, reliability, ridership, and public perceptions of project effectiveness. The results may inform capital infrastructure planning and strengthen project design and operational guidelines for future transit priority projects.

Action 8-1A Continue to seek funding from other levels of government for O-Train and Transitway system expansion.

Action 8-1B Review and assess current and emerging best practices in other jurisdictions to fund transit infrastructure and services.

Action 8-1C Evaluate recently implemented transit priority projects to determine effectiveness in different contexts.



POLICY 8-2 Avoid Adding New Road or Highway Capacity That Competes With Rapid Transit

Two of the primary benefits of investing in new rapid transit infrastructure are reductions in transit travel time and improvements to service reliability, both of which are known to attract and retain transit riders. Likewise, adding new road or highway capacity can result in short-term improvements to travel time and reliability for drivers, mitigate community cut-through traffic, and provide new or improved active transportation facilities.

However, when road or highway capacity is built close to a rapid transit corridor, it can undermine the attractiveness of the rapid transit link by making driving more attractive, resulting in lower transit ridership. To maximize the benefits of the City's investment in transit corridors, the City will not pursue or support further road or highway widenings within the urban area that compete with rapid transit corridors unless all reasonable alternatives to meet long-term travel demands, including enhancements to sustainable transportation, have been exhausted. It is acknowledged that, in some instances, parallel road and rapid transit corridors may not compete for the same travelers and that road widening will not adversely impact transit ridership.

POLICY 8-3 Improve the Convenience, Comfort, and Accessibility of Transit

The City will strive to make public transit the “first-choice” travel mode for trips that cannot be made by walking and cycling. In addition to investments in new transit infrastructure (see POLICY 8-1), this will require the City to continue to improve all aspects of the customer experience. Focus areas will include travel speed, use of technology to improve service, and accessibility.

The City will continue to seek operational improvements to reduce transit travel times relative to driving where buses operate in mixed traffic and experience travel delays. The City will review measures such as parking restrictions, turn restrictions for general traffic, and conversion of vehicle lanes to bus lanes, with implementation evaluated on a case-by-case basis considering corridor-level impacts to all modes. The City will also be implementing new GPS-based technology for transit signal priority. This means that buses will be able to communicate directly with traffic signals and move through intersections with fewer delays, without needing physical infrastructure in the road. This technology can be rolled out broadly at low cost, generating significant benefits for riders.

The City will also explore whether on-demand transit service can play a cost-effective role in Ottawa's transit system. On-demand transit models are being used in several North American cities in a limited number of contexts such as to provide service late at night, in low density areas, or to address certain first mile / last mile connections to frequent and rapid transit.³⁸ Fare payment technology is another area that is evolving rapidly.

³⁸ First mile / last mile connections by active transportation are discussed in Policy 40. Connections by shared mobility are discussed in Policy 65.



The City has initiated upgrades to allow riders to pay by credit card and smartphone mobile wallet. System-wide rollout of digital payment alternatives will make it easier for residents and visitors to use transit without advance planning.

Finally, a core requirement of Ottawa's transit service is to continue to offer fully accessible transit service for residents and visitors who have permanent or temporary disabilities, through specialized services and barrier-free infrastructure. The City will continue to provide specialized (Para Transpo) transit services that meet or exceed legislative requirements and guidelines. OC Transpo recently upgraded the Para Transpo booking system to allow all customers to book next-day trips while still being able to call at any time for a same-day booking. The City will also continue to ensure that all conventional transit stations and vehicles have been designed respecting the City's *Accessibility Design Standards*, and bus stops will continue to be upgraded to meet the City's accessibility standards.

Action 8-3A

Implement digital payment alternatives for transit customers.

Action 8-3B

Develop a strategy to roll out GPS-based transit signal priority, considering equity as part of the implementation plan.

Action 8-3C

Review opportunities for on-demand transit to enhance service.

Action 8-3D

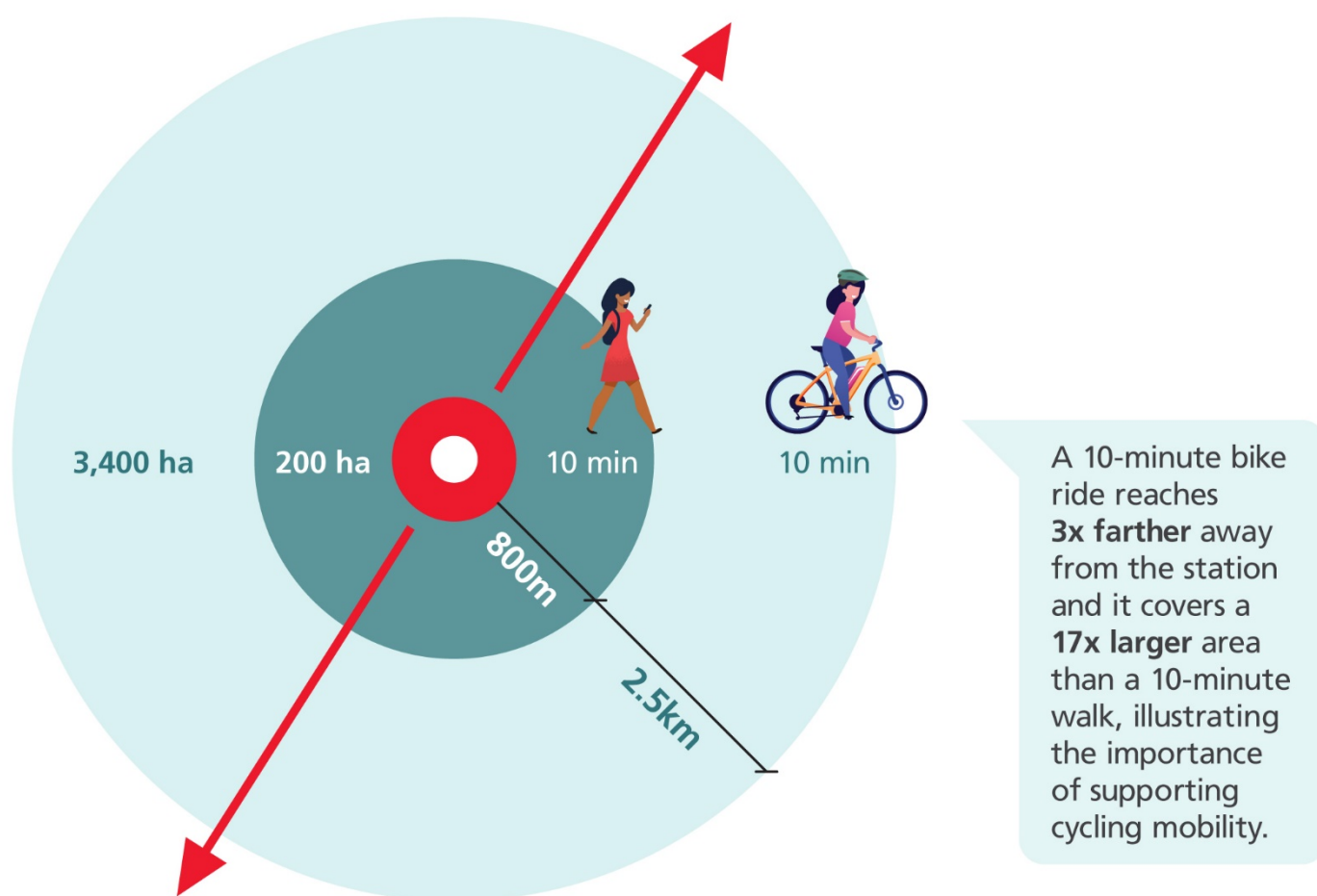
Continue to meet or exceed municipal, provincial and federal guidelines and legislation for people with disabilities.



POLICY 8-4 Expand the Catchment of Rapid Transit Through Improved Walking and Cycling Connections to Stations

The “walkshed” and “bikeshed” of a rapid transit station refer to the surrounding area where people can comfortably access the station by foot or bike in less than 10 minutes using “low stress” routes³⁹. This is approximately an 800 m walk or a 2.5 km bike ride, as illustrated in Exhibit 17. These areas vary in size depending on community and transportation network layout and design. The size of the “sheds” can also change seasonally based on winter maintenance of active transportation facilities.

Exhibit 17: Walkshed and Bikeshed of a Rapid Transit Station



Expanding the walkshed and bikeshed of rapid transit stations can help build ridership by making the door-to-door trip more attractive and reliable. This can be done by building more homes and apartments near transit stations or creating more direct and comfortable

³⁹ “Low stress” in this context is defined using the Level of Traffic Stress (LTS) methodology. A low LTS equates to a high level of safety (e.g. walking on a sidewalk buffered from traffic or cycling on a segregated bicycle facility or multi-use pathway).



active transportation routes between the station and adjacent land uses. The City will map the walkshed and bikeshed of its existing and planned rapid transit stations, as the starting point for understanding existing conditions and identifying the most significant opportunities for improvement. New active transportation shortcuts and infrastructure upgrades will be identified and pursued to increase the number of destinations reachable by walking and cycling from rapid transit stations. In some locations, for high-priority shortcuts, the City will consider acquiring property where necessary to create these shortcuts. Winter maintenance of walking and cycling facilities to enable year-round access to transit is also important to supporting transit access and is discussed in Theme 6 and Theme 7.

For new rapid transit stations, active transportation facilities that ensure a minimum viable walkshed and bikeshed should be provided as part of capital projects, rather than adding these facilities thereafter. The 2013 *Transportation Master Plan* established the policy of providing walking and cycling opportunities along and across new rapid transit corridors. Building on the success of this policy and recent experience with the construction of the O-Train network, the City will scope rapid transit capital projects to also include active transportation facilities between rapid transit stations and the adjacent neighbourhoods, extending to and including the nearest intersections. Designs will prioritize high quality walking and cycling environments including emerging best practices along station frontages and on streets adjacent to stations.

Secure bicycle parking at rapid transit stations is another important measure to enable multimodal trips. The City recently launched “Bikesecond” parking at Fallowfield, Greenboro, St-Laurent and Strandherd stations and will build on these initial rollouts in the coming years. Finally, recognizing the importance of the quality of the pedestrian environment around rapid transit stations, the City will set higher targets for pedestrian level of service in these areas.

Action 8-4A	Map the walkshed and bikeshed of existing and planned rapid transit stations to identify existing conditions and opportunities for improvement.
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Action 8-4B	Scope rapid transit capital projects to include active transportation facilities along rapid transit corridors, across rapid transit corridors, and between rapid transit stations and the adjacent neighbourhoods ⁴⁰ .
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Action 8-4C	Implement secure bicycle parking at rapid transit stations.
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⁴⁰ Where desired active transportation facilities cannot be implemented through a rapid transit project, a phased implementation plan will be identified and considered in the project designs to facilitate and protect for their implementation at a later date.



POLICY 8-5 Monitor Evolving Travel Patterns and Adjust Service Accordingly

While the long-term impacts of the pandemic are not yet known, one potential outcome is a permanent and widespread change to commuting patterns, which could impact both the destinations and timing of transit trips. The pandemic presents challenges related to rebuilding transit ridership. However, it may also create opportunities. Transit operating costs are largely driven by the number of buses and operators required during the busiest period of the day. Long-term, a potential reduction in relative demand during the peak hour may create opportunities to add service at other times of day. Sustained reductions in the proportion of trips to and from downtown could also create opportunities to add service within and between communities outside the Downtown Transect.

Over the course of the pandemic, the City has made numerous changes to transit service based on evolving travel patterns and ridership levels. The City will continue to monitor transit ridership and travel patterns to inform ongoing planning and operations for service optimization. In planning for new transit infrastructure through the development of the TMP's Capital Infrastructure Plan, the City will evaluate potential transit infrastructure investments based on travel patterns informed by the next Origin-Destination Travel Survey, currently planned for Fall 2022.



Theme 9: Provide Safe, Multimodal Streets

POLICY OVERVIEW

Policy 9-1	Continue to advance the implementation of complete streets
Policy 9-2	Implement the concept of “access” and “flow and capacity” streets
Policy 9-3	Identify future street network needs and develop a multi-phased Capital Infrastructure Plan
Policy 9-4	Ensure that modifications to the road network foster “human-scaled” streets
Policy 9-5	Continue to optimize traffic signal operations to maximize multimodal efficiency
Policy 9-6	Continue efforts to minimize traffic impacts on neighbourhoods
Policy 9-7	Implement the Strategic Road Safety Action Plan to achieve the goal of reducing fatal and major injury collisions
Policy 9-8	Reduce operating speeds on “access” streets
Policy 9-9	Advance the implementation of protected intersections and other designs that can improve safety

Ottawa’s street space is in high demand. Not only are streets a key element of Ottawa’s transportation system, but they also act as entry points to businesses, parks, schools, and homes, and are social places where residents can explore their community, exercise, meet friends, or enjoy a patio. Street space is a scarce resource, and it needs to be designed and managed for the greatest public benefit.

One of the primary tools for managing street space is applying a “Complete Streets” approach. Complete streets incorporate the physical elements that allow a street to offer safety, comfort, and mobility for all users of the street regardless of their age, ability, or mode of transportation. A complete streets approach uses every transportation project as a catalyst for improvements within the scope of that project to enable safe, comfortable, and barrier-free access for all users. Complete streets support neighbourhood liveability; they accommodate multiple modes and incorporate context-sensitive design principles. All streets can be complete streets, but they may look different based on the surrounding context. For example, a complete street along a rural collector will vary in appearance and function from one along a local urban road. For this reason, the complete streets approach



does not prescribe a specific design for streets, but rather refers to a process that ensures the basic safety, comfort, and mobility needs of all users is addressed.

Climatic conditions in Ottawa are an important consideration as part of street design. The design of the network and the facilities within it need to consider maintenance and operational costs and requirements for the four seasons: summer, spring, fall, and most notably winter.

The City has introduced a number of new plans, guidelines and business processes that support road safety and complete streets since the 2013 version of the TMP was approved. This includes the *Road Safety Action Plan*, *Complete Streets Implementation Framework*, *Multi-Modal Level of Service Guidelines*, design guidance for arterial streets and neighbourhood collector streets, and the *Local Residential Streets 30km/h Design Toolbox*. In addition, the *Traffic Calming Design Guidelines*, Neighbourhood Traffic Calming Program, Road Safety Audit procedures, and an updated scoping process for road renewal all help the City advance implementation of safe, multimodal streets. The City will continue to pursue the implementation of these plans and guidelines, and will update and create new tools as necessary to help advance broader City objectives.

POLICY 9-1 Continue to Advance the Implementation of Complete Streets

In 2015, City Council approved the *Complete Streets Implementation Framework*, which has enabled the City to move forward with numerous complete street projects over the last several years. According to the framework, the City will leverage planned construction—including road construction, reconstruction, and major transit projects—to implement road designs that consider the needs of all users. For example, on Main Street, the City leveraged road reconstruction to transform the corridor and include safe and comfortable space for all modes of travel. This included lanes for transit and vehicular traffic, new separated cycling facilities, wider sidewalks buffered from traffic, new rest areas, accessible bus stops, shortened pedestrian crossings, and more trees that provide a visual buffer between traffic and vulnerable road users and will eventually provide shade. The *Transportation Asset Management Plan* (in progress) describes a backlog in renewal of existing road assets. While the Complete Streets Framework provides a cost-effective mechanism for the City to gradually transform all streets into complete streets, it has added pressure to road renewal budgets and additional funding sources are needed to address the funding gap.

As part of the *Complete Streets Framework*, the City developed “level of service” targets and metrics for pedestrians, cyclists, and transit customers, supplementing established measures for motorized traffic. The *Multi-Modal Level of Service Guidelines (MMLOS)* allow the City to quantify how design choices would affect different users and more clearly understand potential trade-offs between modes of travel. This has been a key component in shifting the emphasis from moving vehicles to moving people.



Ottawa's *Complete Streets Implementation Framework* and *Multi-Modal Level of Service Guidelines* have been helpful in advancing sustainable transportation objectives and have been used as an example by many other North American cities. At the same time, there are opportunities for refinements to the *Framework*, *Guidelines* and supporting business processes based on lessons learned since 2015. The *Implementation Framework* and *MMLOS Guidelines* will be updated based on the City's practical experience, direction from the new *Official Plan*, new provincial MMLOS guidance, and evolving best practice including the Healthy Streets Approach which emphasizes the importance of creating a safe, welcoming and relaxing environment by considering elements such as noise, air quality, lighting, rest areas, and shade. The updated *Guidelines* will indicate how to document design decisions and trade-offs, and how to determine facility widths where space is constrained⁴¹. The City will also adopt complete street standards for temporary conditions, to better maintain safety and comfort for all users during construction.



Action 9-1A Review and build upon the inter-departmental project implementation process in the *Complete Streets Implementation Framework*.

Action 9-1B Update the *Multi-Modal Level of Service Guidelines* including the development of systematic approaches for documenting trade-offs.

Action 9-1C Adopt standards for temporary conditions to maintain an acceptable level of service for all users during construction.

⁴¹ The City of Toronto's Lane Widths Guideline (2017) can serve as an example.



POLICY 9-2 Implement the Concept of “Access” and “Flow and Capacity” Streets

As noted in Theme 5, an “access” street has a close relationship to its surrounding land-uses, exhibits high vehicular friction and slow speeds, and prioritizes sustainable modes of transportation. In contrast, a “flow and capacity” street plays a structural role in the overall street grid by virtue of its role in moving transit vehicles, trucks, and general-purpose traffic over longer distances, between different areas of the city. Access and flow/capacity functions are, by definition, incompatible objectives; a street that provides robust access to destinations through frequent pedestrian crossings, transit stops, driveways, and parking spaces will require slow traffic speeds and therefore reduced vehicular flow. For this reason, streets should be designed with either “access” or “flow and capacity” as the primary objective, recognizing that all streets also accommodate other functions to varying extents, and that all streets are to be designed as complete streets. The land use surrounding the roadway also plays a key role in determining and supporting its function; this principle is discussed further in Theme 5.

The new *Official Plan* provides direction about how “access” and “flow and capacity” designations interact with standard road classifications (including arterials, major collectors, collectors, and local roads) and land use contexts (as defined by transect) to guide the planning and design of the City’s streets. illustrates the way these overlays interact with one another. It provides a general guideline on how to characterize Ottawa’s streets as either “access” or “flow and capacity” streets. Streets identified as Mainstreet and Minor Corridors within the new *Official Plan* will generally be designated as access streets, although it is recognized that some exceptions will exist. As a general principle, corridors desired for land-use intensification should not also seek traffic flow and capacity. To advance the concepts in the new *Official Plan*, the City will develop a framework for designating streets according to their function as either “access” or “flow and capacity” following the completion of the TMP.



Exhibit 18: Road Classification and Function

Transect	Downtown Core & Inner Urban	Outer Urban & Suburban			Greenbelt & Rural	
Planning Framework	Town Centre (TC), Hub, Corridors Overlays + Other	TC, Hub, + Corridors	Overlays	All Other	Villages	All Other
Provincial + City Highway	Flow	Flow	Flow	Flow	Flow	Flow
Federally Owned Roads	Access / Flow	Flow	Flow	Flow	Flow	Flow
Arterial	Access / Flow	Access / Flow	Access / Flow	Flow	Flow / Access	Flow
Major Collector	Access / Flow	Access / Flow	Access / Flow	Access	Flow / Access	Flow
Collector	Access	Access	Access	Access	Access	Flow
Local	Access	Access	Access	Access	Access	Access
Lane	Access	Access	Access	Access	Access	Access

Source: City of Ottawa *Official Plan* (2021)

As envisaged in the new *Official Plan*, there is a relationship between a street's designation as "access" or "flow and capacity" and its physical design. In recognition of this, the City's existing design guidelines will be reviewed, and may require updating to incorporate this new layer. As part of this review, a key focus will be which street design elements should be considered for "flow and capacity" and "access" streets. For example, on "flow and capacity" streets, speeds will be higher. On "access" streets, frequent pedestrian crossings will be desired and place-making features will be emphasized.

Action 9-2A Develop a framework for designating streets as "access" or "flow and capacity" streets and for updating design guidance based on their designation.

POLICY 9-3 Identify Future Road Network Needs

The Capital Infrastructure Plan (TMP Part 2) will identify the needs and priorities for the modification of the road network to support travel demand to 2046 in the context of the new *Official Plan* and the TMP's vision and guiding principles. Projects proposed in the Plan will include new roads, road widenings, and projects to transition street designs from rural segments with ditch drainage to urban cross-sections with active transportation facilities. In recognition of the new *Official Plan* target to have the majority of trips made by sustainable modes of transportation, the Capital Infrastructure Plan will prioritize making



the most efficient use of existing road capacity and increasing the use of sustainable modes and before considering the addition of new capacity. For network planning purposes, a volume-to-capacity (v/c) ratio⁴² target of 1.0 will be adopted citywide for the peak periods to maximize space-efficiency. Peak hour v/c targets will continue to be used for operational planning.

New roads and road widenings are expected to be reserved for select circumstances such as to provide access to new communities or address cut-through traffic; where transit alternatives are infeasible or have been exhausted; and where isolated measures such as intersection modifications are insufficient to address localized bottlenecks. Previously proposed projects will be reviewed against updated network criteria to confirm project need and justification, with a climate change mitigation, adaptation and equity lens. The Capital Infrastructure Plan may also identify where street reconfiguration projects in existing communities are required to support intensification, modal shift, and achievement of the City's climate change targets. For example, changes to St. Joseph Boulevard may be required before road renewal following from the Orléans Corridor Secondary Plan, to support its future development as a mixed use, complete liveable community.

Evaluation and prioritization of projects will consider quantitative and qualitative measures to assess the relative merit of each project and the priority for implementation. In particular, each project will be evaluated against the following three criteria that align with the TMP's vision and guiding principles, as shown in Exhibit 19.

Exhibit 19: Evaluation Criteria—Road Projects

Mobility Needs	Considers provision of access to new development; congestion relief; and support for transit, goods movement, and active transportation
Cost	Considers project capital cost, ease of implementation, and the ability to cost-effectively maintain
City-building	Considers land use and redevelopment; equity; natural systems protection; network connectivity; climate resilience; and other strategic considerations

The City's capital investment must be affordable. The Capital Infrastructure Plan will establish an Affordable Road Network that includes a subset of the 2046 road network based on the evaluation criteria noted above. In the past, the City has faced challenges aligning the timing of new transportation infrastructure with growth, and there is a need for a more dynamic and nimble approach to respond to changing conditions. The Capital

⁴² The volume-to-capacity ratio is the ratio of total vehicular traffic volumes to available road capacity. A road segment or intersection with a volume-to-capacity ratio of 1.0 indicates that the infrastructure is being to its maximum efficiency, although some isolated congestion may be observed for short periods of time. A ratio less than 1.0 indicates that the road has residual capacity to accommodate more traffic and is not being used to its full potential. A ratio greater than 1.0 indicates that vehicular demand has exceeded the road capacity, resulting in congestion and delay.

Infrastructure Plan will establish mechanisms for monitoring, feedback, and re-prioritization of investments as land use and mobility patterns evolve.

In the short term, prior to the development of the Capital Infrastructure Plan, the City will continue to advance projects identified in the 2013 TMP.

Action 9-3A	Adopt a volume-to-capacity target of 1.0 for vehicular traffic during peak periods for network planning purposes.
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Action 9-3B	Consider the implementation of targeted measures to address congestion bottlenecks before exploring options for road widening, and as an interim measure where road widening projects will not be implemented for some time.
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POLICY 9-4 Ensure That Modifications to the Road Network Foster “Human-Scaled” Streets

“Human-scaled” streets are designed as places welcoming to people whether they are passing through or stopping to enjoy the space. They encourage walking, cycling, and transit use along with lower travel speeds. Human-scaled streets apply to busy commercial streets as well as quiet residential streets and designs can vary widely depending on the context.



To contribute to maintaining a human scale, the City will avoid widening streets beyond four midblock general-purpose lanes.⁴³ To accommodate transit on roads, alternative measures that improve transit conditions will be considered before widening a four-lane roadway. Alternative measures include turn restrictions for general traffic, conversion of vehicle lanes to bus lanes, and isolated transit priority measures at intersections. Where these measures are not feasible / effective and where the streets are not identified

⁴³ Turn lanes may be provided at intersections to accommodate turning vehicles. In these scenarios, refuge islands may be provided along pedestrian crossings and / or cycling cross-rides to ensure vulnerable road users do not have to cross more than 4 travel lanes at any given time.



as Mainstreet or Minor Corridors in the new *Official Plan*, the addition of dedicated bus lanes will be considered (resulting in a 6-lane cross-section with 4 general-purpose lanes and 2 bus lanes). Lane conversions should be evaluated based on existing traffic volumes, since they do not preclude the possibility of road widening in the future if traffic volumes increase. Lane conversions rather than road widenings also dramatically reduce project costs. This allows more transit delay reduction measures to be implemented with available funding.

Action 9-4A Avoid widening streets beyond four midblock general-purpose lanes.

POLICY 9-5 Continue to Optimize Traffic Signal Operations to Maximize Multimodal Efficiency



One approach to improving operations for all modes is traffic signal optimization. This typically involves signal timing adjustments to maximize the multimodal throughput and related activities such as data collection, signal maintenance, and equipment upgrades. It may involve the retiming of individual traffic signals to improve their performance, or the coordination of a series of traffic signals along a corridor. As traffic volumes change over time, timing and coordination need to be revisited to ensure they remain optimal for current conditions. The City will continue to pursue traffic signal optimization on an ongoing basis. To further improve traffic operations and prepare for the future, the City is also evaluating advanced technologies for signal optimization and future communication of signal information to connected and automated vehicles (CAVs).

Action 9-5A Continue to evaluate advanced technologies for signal optimization and future communication of signal information to connected and automated vehicles (CAVs).



POLICY 9-6 Continue Efforts to Minimize Traffic Impacts on Neighbourhoods

Motor vehicle use in neighbourhoods can have undesirable effects including excessive traffic speeds, aggressive driver behaviour and the creation of hostile conditions for walking and cycling. The City's Neighbourhood Traffic Calming program works to preserve the quality of life in existing neighbourhoods by mitigating undesirable traffic impacts on existing local and collector residential streets in a way that addresses the needs of residents, businesses, and street users. The City receives more requests for improvements than resources permit; the City's Neighbourhood Traffic Calming Process outlines how the City screens and prioritizes requests to ensure the most pressing concerns are addressed first.

The City will continue to address concerns about vehicle speeds and aggressive driver behaviour in existing neighbourhoods through the Neighbourhood Traffic Calming program. For new neighbourhoods, the City has a number of practices and guidelines that are applied during community planning to prevent traffic issues from arising in the first place. Examples include the City's *Traffic Calming Design Guidelines* and requirements applied through the Transportation Impact Assessment process for new developments.

POLICY 9-7 Implement the Road Safety Action Plan to Reduce Fatal and Major Injury Collisions

In December 2019, City Council approved the *2020-2024 Strategic Road Safety Action Plan*, a 5-year plan that builds on the City's existing road safety programs. The plan is based on the Safe Systems approach to road safety and is guided by the theme of Think Safety, Act Safely in recognition of the shared responsibility and the change in culture required to continue the progress towards zero fatalities and major injuries. The Safe Systems approach recognizes that transportation systems must be designed to prioritize human life and health, so that human error does not lead to death or serious injury. Strategies include separating vulnerable road users from traffic in space and in time and reducing vehicle speeds in the presence of vulnerable users.

The *Road Safety Active Plan* serves as a comprehensive and proactive strategy for making Ottawa roads safe for all users. Though the plan calls for a 20 per cent reduction in the rate of fatal and major injury collisions by 2024, the City's longer-term goal is for zero fatalities on streets by 2035. The City will continue to focus on reducing fatal and major injury collisions by implementing the recommendations from the *Road Safety Action Plan*.

POLICY 9-8 Reduce Operating Speeds on "Access" Streets

Streets with slower operating speeds are safer for vulnerable users and encourage active transportation while continuing to allow for the provision of high-quality transit service. According to the new *Official Plan* and recent Council direction, the following streets shall be designed for a 30 km/h operating speed at the time of construction or reconstruction:



all local residential streets, some streets within Special Districts and near schools, and some main streets (e.g., Elgin Street). Implementation will be based on new guidelines such as the *Local Residential Streets 30 km/h Design Toolbox*.

Extending this policy further, other streets that are intended to have a close relationship with surrounding land uses (i.e., “access” streets) should generally be designed to achieve operating speeds of 50km/h or less, with the desired operating speed varying based on context. To support this, “target speed” should be used for design purposes⁴⁴, and target speeds should not exceed the desired speed limit. This aligns with best practices from other municipalities. Design features to achieve target speeds should be integrated into the City’s design guidelines for “access” streets and implemented at the time of construction or reconstruction. Operating speed reductions will be pursued through physical changes to roadway design; changes to posted speed limits on their own are not an effective strategy to achieve this.

Action 9-8A	Design “access” streets based on a target speed that does not exceed the posted speed limit.
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Action 9-8B	Identify which streets (beyond all local residential streets) should be designed for 30km/hr.
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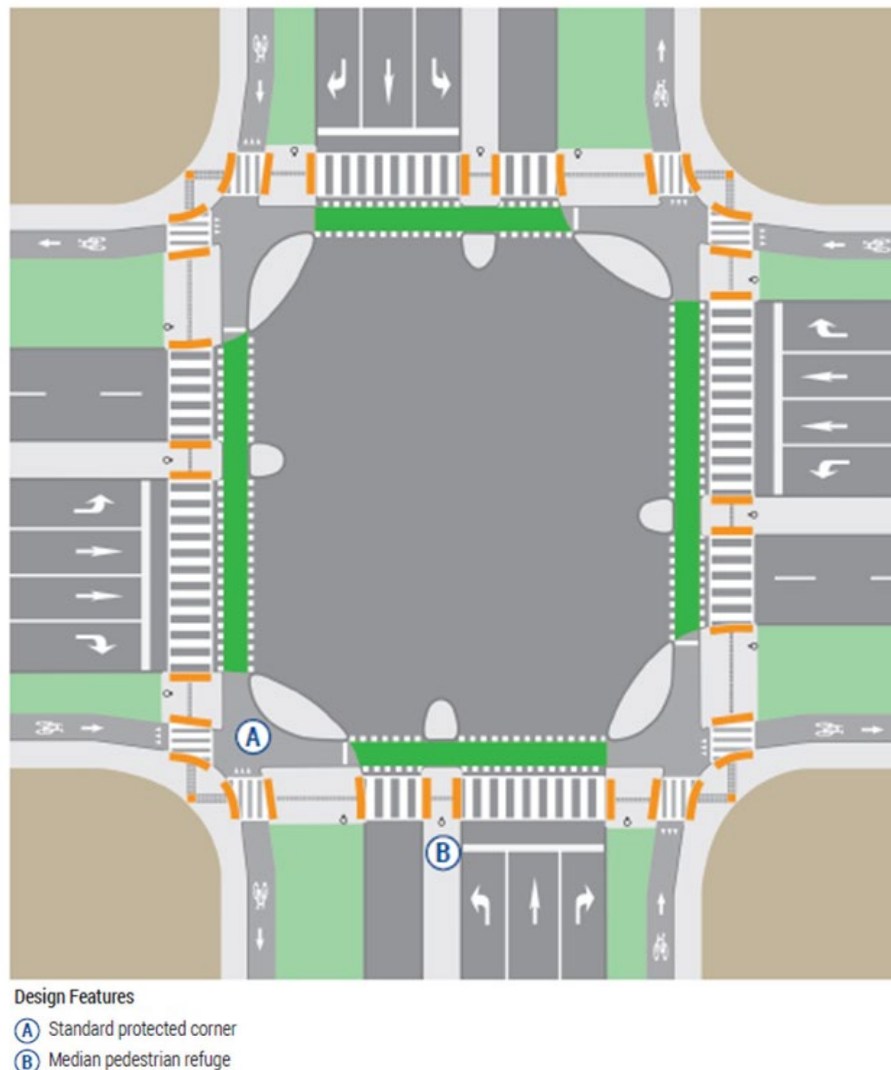
POLICY 9-9 Advance the Implementation of Protected Intersections and Other Designs That Can Improve Safety

The City recently developed detailed guidance for the design of “protected” intersections—an intersection design shown to reduce the number and severity of collisions involving vulnerable road users. Protected intersections improve safety and comfort and minimize potential conflict by providing dedicated space and crossings for pedestrians, bicycles, and motor vehicles.

⁴⁴ Target speed is the speed at which drivers should drive, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a safe environment for pedestrians, bicyclists, and public transit users.



Exhibit 20: Bird's eye view of protected intersection with standard protected corners



Source: City of Ottawa Protected Intersection Design Guide

The City has made considerable progress, installing fourteen protected intersections in recent years with more in the planning stage. Moving forward, protected intersections shall be the City's preferred option when constructing or reconstructing any signalized intersection where cycling facilities are warranted, as per the new *Official Plan* and *Protected Intersection Design Guide*. In the interim, the City will continue to improve intersection safety for vulnerable users at strategic locations using a variety of measures. This includes "retrofit" projects to build protected intersections as well as other lower-cost approaches that provide dedicated space for vulnerable users and improve safety relative to existing conditions.



Theme 10: Manage the Curb, Parking, and the Movement of Goods

POLICY OVERVIEW

Policy 10-1	Update truck route planning and street design guidelines based on complete streets principles
Policy 10-2	Aim to accommodate deliveries using off-street space
Policy 10-3	Encourage and enable the use of smaller, human-powered, and electric vehicles for goods movement
Policy 10-4	Monitor goods movement trends and consult with the freight industry for mutual benefit
Policy 10-5	Develop a strategy to modernize how curbside space is allocated and managed
Policy 10-6	Leverage parking to support economic activity and encourage sustainable transportation

The movement of goods to, from and through Ottawa underpins our economy and occurs almost entirely on the street network. Goods deliveries are in a period of rapid growth and change. Ottawa has seen a dramatic increase in deliveries from online shopping—a trend which accelerated during the COVID-19 pandemic. Delivery companies are also beginning to use smaller, lower-emission vehicles. However, large trucks will continue to play a key role in goods delivery, and the City must provide an efficient goods movement network while also addressing concerns around truck traffic in residential neighbourhoods.

A related consideration is the growing number of activities competing for use of the curb. Curbside space is a limited and increasingly valuable public resource. Traditionally, parking has been the primary use of the curb along with truck loading and unloading. However, rapid growth in the use of ride-hailing and on-demand package and food delivery are putting increasing pressure on the curb. There are also a host of emerging uses in certain areas such as food truck stands, street-side patios, electric vehicle charging stations, stormwater management features, and parking for commercial cargo bikes, personal bikes, and e-scooters. Bus and bike lanes are often located in the curb lane as well, and Para-Transpo loading relies on this space.

The provision and management of parking is another interrelated concern. The supply of vehicle parking, the cost, and the use of parking regulations (e.g., maximum parking time limits, time of day restrictions, etc.) impact parking availability and also influence how

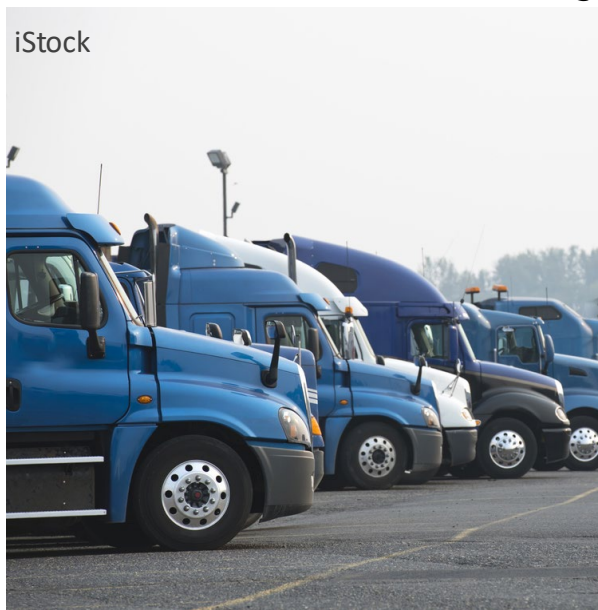


individuals choose to travel. Managing these factors can provide the City with a powerful tool to help reach the goal of most trips being made by sustainable modes while continuing to provide access to businesses and homes.

POLICY 10-1 Update Truck Route Planning and Street Design Guidelines Based on Complete Streets Principles

Ottawa maintains a comprehensive network of truck routes to accommodate goods movement. The City's truck routes are included in the Traffic and Parking By-law and set in accordance with the Council-approved Truck Route Designation Policy. The truck route network allows trucks to efficiently travel through the city to reach their destination while avoiding sensitive areas wherever possible. Trucks are allowed to deviate from designated truck routes for the purpose of local deliveries.

The truck route network consists of highways, arterial roads and select other roads that



give access to industrial and commercial areas as well as major transportation hubs such as the airport. These roads are designed to withstand use by heavy vehicles, the sizes of which are regulated by the Province of Ontario. Some truck routes are designated as "restricted load" due to the roadway's inability to support full loads during the spring thaw season. Because reduced routing options increase costs for freight providers, truck restrictions on arterial roads are currently only considered where community impacts are significant, where the road in question serves exclusively non-commercial land uses, and where adequate alternative routes are available.

In recent years, Councillors and community members have expressed concerns about truck traffic in the downtown, along streets with high pedestrian and cycling activity, and in close proximity to schools. There have also been concerns about the impacts of truck traffic from new warehousing activities near residential areas. From a road design perspective, requirements for heavy trucks often conflict with design objectives for pedestrians and cyclists. For example, where corners are designed for large vehicle turns, pedestrian crossing distances are longer, and vehicles of all types tend to make turns at faster speeds. In many locations, particularly in the Downtown and Inner Urban transects where space is constrained, this also limits the space available at intersection corners for pedestrians and cyclists.

As noted in POLICY 3-2, the City will work with its federal, provincial, and municipal partners in the National Capital Region to address interprovincial truck traffic in the downtown. Once this work is complete and solutions are in place, a comprehensive review of the City's



truck route network will be undertaken. The review will aim to support complete streets objectives while still providing sufficient route options to ensure efficient goods movement and maintain inter-regional competitiveness. The review will consider major transit and active transportation corridors, schools and sensitive land uses, and streets running through Special Districts. Time of day permissions will be considered in some locations to create a compromise between important truck routes and less compatible land uses. Trucks will still be allowed to use all City streets to access local destinations.

The City will also continue to review its design standards for truck routes. These design standards need not be “one size fits all”. The “design vehicle” and “control vehicle”, the two design criteria that determine intersection corner design needs, may vary by transect and between “access” and “flow and capacity” streets. It is expected that in many contexts, the largest vehicles that occasionally travel the corridor will need to navigate intersections slowly and carefully. Finally, the City will pursue the use of “truck aprons”. Truck aprons allow intersection corners to be designed for smaller vehicles and slower turning speeds, while still accommodating turns by large trucks.

Action 10-1A	Update the City's truck route network following the implementation of solutions to address interprovincial truck traffic in the downtown.
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Action 10-1B	Develop design guidelines to enable the use of “truck aprons” at intersections.
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Action 10-1C	Work with the provincial government to explore opportunities to create a two-tier network for large versus smaller trucks.
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POLICY 10-2 Aim to Accommodate Deliveries Using Off-Street Space

Demand for direct delivery and other e-commerce services has grown considerably in recent years and accelerated during the COVID-19 pandemic. The private sector has responded with new or improved delivery services for groceries, meals, and many other goods. This has resulted in increased demands on curb space, especially in higher density areas where adjacent buildings cannot accommodate these deliveries on-site. Given this trend, zoning by-laws and development review processes should be updated to ensure adequate off-street loading space is provided.

In addition, as outlined in POLICY 10-5, a curbside management strategy is needed to ensure curb space is allocated appropriately between the various users of the curb, including delivery vehicles. From a goods movement perspective, the strategy should consider the frequency, type, and timing of deliveries and the ability of adjacent buildings to accommodate these deliveries on-site. The strategy should also identify opportunities to improve efficiency and reduce impacts through time-of-day restrictions, trip planning tools, communication and enforcement, and other operational innovations.



Action 10-2A

Review the Transportation Impact Assessment Guidelines and site plan approval processes to ensure that requirements for onsite loading zones are adequate.

POLICY 10-3 Encourage and Enable the Use of Smaller, Human-Powered, and Electric Vehicles for Goods Movement

Commercial cargo e-bikes, electric delivery vans, low-speed vehicles, and delivery robots are among the emerging innovations in urban goods movement. In fall 2021, the City established a by-law to allow e-cargo bikes to operate in Ottawa. The City will continue to support sustainable and space-efficient delivery methods that align with City objectives in a variety of ways, including through enabling by-laws, curbside management practices, and support for pilot projects by goods movement companies.



Freight and delivery logistics shape the way goods move through cities to their destinations. Given current trends, it is expected that there will be an increase in smaller urban freight distribution centres and standalone pick-up facilities, supporting the use of more sustainable delivery methods and reducing the use of larger trucks in city neighbourhoods. The City will update by-laws and regulations as needed to encourage such facilities where aligned with climate and 15-minute neighbourhood objectives.

Many of the large vehicles that operate on Ottawa's streets are part of City operations such as waste management, emergency services, street sweeping, and snow clearing. In line with objectives for road safety and complete streets, the City will review opportunities to use smaller and safer vehicles for City operations without compromising operational requirements. This applies to both City fleets and contractor vehicles.

Action 10-3A

Provide an enabling regulatory context for the use of smaller, human-powered and electric vehicles for goods movement, including through enabling bylaws and curbside management practices.

Action 10-3B

Update zoning bylaws in anticipation of the emergence of small urban distribution centres and stand-alone pick-up facilities.

Action 10-3C

Review opportunities to use smaller and safer vehicles for City operations.



POLICY 10-4 Monitor Goods Movement Trends and Consult with the Freight Industry for Mutual Benefit

Over the years, the City has conducted roadside commercial vehicle surveys in collaboration with its federal, provincial, and municipal partners, the most recent of which was conducted in 2018. This data has been combined with truck GPS records and is currently being used to develop a first-generation commercial vehicle model for the National Capital Region. The City will continue to work with partner agencies to gather information on regional goods movement to better quantify freight demand characteristics, monitor trends, and help contextualize the impacts of truck movements (e.g., contribution to congestion, noise, vibrations, etc.).

The City will also encourage industry to explore goods movement technologies and practices that can reduce community impacts, improve efficiency, and enhance regional economic prosperity and competitiveness. The City will work with the freight industry and partner agencies on policies, guidelines, and regulations to anticipate and address goods movement issues cooperatively.

POLICY 10-5 Develop a Strategy to Modernize How Curbside Space is Allocated and Managed

Curbside space is a limited and increasingly valuable public resource, with a growing number of activities competing to use it. Rapid growth in the use of ride-hailing and on-demand package and food delivery are putting increasing pressure on the curb. There are also a host of emerging uses in certain areas such as food truck stands, street-side patios, electric vehicle charging stations, stormwater management bioswales, and parking for commercial cargo bikes, personal bikes and e-scooters. Bus and bike lanes are often located in the curb lane as well, and Para-Transpo loading relies on this space.



In Ottawa, as in most North American cities, vehicle parking has historically been the dominant use of the curb. For example, San Francisco's *Curbside Management Strategy* (2020) identified that 90% of curb space is allocated to private vehicle storage. This curb allocation is increasingly at odds with current transportation needs, and a new strategy is needed for managing curbside uses. In developing such a strategy, new policies, design standards, data sets, and business processes may be required to effectively adapt curb management. Pricing, permits, and enforcement are existing tools that could be modified. Key steps for the new strategy will include assessing the current state of the



curbside; creating a process to identify priority uses; monitoring and responding to emerging uses of the curb; and effectively communicating new curbside rules to the public.

Curbside use regulations are complex and can be confusing to navigate. As part of a new curbside management strategy, the City will explore communication approaches (including the use of smartphone apps) to help the public and businesses understand the changes and mitigate potential impacts.

Priority users and uses will vary based on the type of street, area of the city, time of day, and adjacent destinations and land uses. The City will develop a curb management strategy that includes a transparent process for identifying priorities and allocating space based on the new *Official Plan* transect designation, corridor objectives, and road classification, among other considerations. A guiding principle will be to maximize the social and economic benefit of the curbside space.

Action 10-5A

Develop a curbside management strategy, including documenting and describing the state of existing curbside uses and regulations throughout the city.

POLICY 10-6 Leverage Parking to Support Economic Activity and Encourage Sustainable Transportation

The *Municipal Parking Management Strategy* (2019) identifies parking rate-setting guidelines and performance measures. It also describes how better managing parking supply and demand can help the City achieve its transportation and city-building goals. One recommendation of the *Municipal Parking Management Strategy* is the implementation of a demand-based pricing model for on-street parking. This means that incremental pricing changes will be influenced by parking occupancy data, with the objective of establishing a location-specific price point that best supports local businesses and encourages high turnover. This has the added benefit of encouraging the use of sustainable modes of transportation to locations where the demand for parking is high.

The City will review its parking pricing and will consider the adoption of demand-based pricing. The review of parking pricing will also consider the cost of parking relative to transit. Unlike transit, drivers have few “per trip” costs. Parking costs are the exception. To avoid the perception that driving is cheaper than transit, the City’s parking supply should be priced at or above the cost of transit for a typically sized travel group.

The City’s *Public Bike Parking Strategy* was adopted in 2021. The *Public Bike Parking Strategy* is a comprehensive guide on where and how to provide various types of bicycle parking in the city. The provision of short- and long-term bicycle parking is an essential component of a larger cycling strategy and will allow more people to use active transportation more regularly. While secure, long-term bicycle parking is relatively new to the City of Ottawa, and often requires increased capital investment and maintenance



efforts, it is an important aspect of making biking trips feel safe, secure, and affordable for many users. Secure bike parking is most appropriate at destinations where bicycles are expected to be parked for long durations, such as near workplaces, park and ride facilities, and commuting transfer points.

Action 10-6A	Implement the recommendations of the <i>Municipal Parking Management Strategy</i> , including pricing parking with the intent to support economic activity and encouraging the use of sustainable transportation.
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Action 10-6B	Implement the recommendations of the <i>Public Bike Parking Strategy</i> , including rollout of secure bike parking pilots in strategic locations.
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Theme 11: Advance Transportation Demand Management

POLICY OVERVIEW

Policy 11-1	Advance and evolve Transportation Demand Management
Policy 11-2	Prioritize active school trips
Policy 11-3	Encourage sustainable travel options for City of Ottawa employees
Policy 11-4	Increase support for multimodal trip planning tools

Transportation demand management (TDM) aims to encourage sustainable travel choices to help make better use of existing transportation infrastructure. TDM uses incentives, promotion, education, and other measures to influence whether, when, why, where, and how people travel. By influencing travel behaviour, TDM can support key goals such as reducing demand for single-occupant car trips, encouraging a shift in travel away from peak periods, and increasing the uptake of sustainable transportation modes. The TMP provides direction for maximizing the effectiveness of the City's TDM efforts, including leveraging technology, focusing on school travel, and encouraging multi-modal trips.

POLICY 11-1 Advance and Evolve Transportation Demand Management

The City delivers a wide range of Transportation Demand Management (TDM) programs to shape the economic, social, and physical factors behind individuals' travel choices. Examples include School Travel Planning and "Let's Bike to Transit" promotional campaigns, university transit passes, and the TDM Checklist for new land development. Many TDM programs are delivered in coordination with private and public sector partners to maximize their effectiveness. TravelWise is the City program that works with organizations across Ottawa to encourage employees to walk, cycle, take transit, and carpool to and from work.

The City's existing *Transportation Demand Management Strategy*, developed in 2012, helps to guide these programs. However, much has changed in the transportation landscape since 2012. The core of the O-Train system was built and is being extended; shared micro-mobility (such as shared e-scooters and bikes) and transportation network companies (such as Uber and Lyft) are now important players in the mobility landscape; smartphones are widespread; and a global pandemic has shifted travel patterns. The City will update the TDM strategy to reflect post-pandemic travel patterns, take advantage of new travel options, and identify new opportunities to create travel behaviour change that supports broader City objectives.



The update to the TDM Strategy will also create a framework for enabling pilots to evaluate the effectiveness of TDM tools. This is critical because TDM best practices are evolving rapidly and many emerging approaches may be able to deliver significant benefit at modest cost. Given rapid changes in technologies and mobility services, the City will need flexible, responsive, and dynamic TDM programs to achieve its climate and sustainable transportation objectives. Pilot programs provide an opportunity to test different strategies and monitor effectiveness. Partnerships with community organizations, the private sector, and other levels of government will also be essential to enabling innovation in TDM.

Finally, TDM principles will continue to be integrated into a wide range of City-led initiatives. For example, the opening of new transit and active transportation infrastructure can be supported by TDM campaigns and special events. Public health campaigns, libraries and recreation centre programming may be able to promote walking, cycling and transit use. The City can also consider supporting and expanding construction mitigation initiatives like “I Dig Elgin”, providing bike valet services at major events, and leveraging tactical urbanism strategies⁴⁵ to enable the community to reimagine how they interact with their streets. The TDM Strategy will identify key opportunities across a wide range of City initiatives.

Action 11-1A

Update the *Transportation Demand Management Strategy* to integrate current technologies and best practices, provide guidance to support pilot projects, and consider opportunities for integration with other City initiatives.

POLICY 11-2 Prioritize Active School Trips

Safe active trips to school are a priority so that Ottawa’s youth can gain the health benefits of walking and cycling. The Active School Travel Planning program works with interested partner schools to encourage students to choose a sustainable mode to get to school. This helps to improve safety by alleviating the number of cars near schools around school start and end times. The Active School Travel Planning program has yielded increases in walking and cycling among students at participating schools. Results have been particularly significant when paired with new pedestrian infrastructure and/or “Walk-a-Block” programs that create designated vehicular drop-off zones away from school frontages.

The City will continue to build on its recent work encouraging active school trips. To support TDM programs, infrastructure improvements and operational changes will be pursued in school zones to ensure safe environments for walking and cycling. This may include piloting “School Streets” (car-free zones in front of schools during peak school arrival and departure times) in locations with safety concerns, following from similar initiatives in other Canadian cities. TDM programs will also encourage school staff to walk, bike, or take transit,

⁴⁵ Tactical urbanism refers to the practice of using low-cost, temporary changes to the built environment to meet changing priorities, needs, and contexts. Examples include protected bike lanes, pop-up patios, and temporary curb extensions using potted plants, pilons, and pavement markings.



with the dual benefits of reducing pressure for school parking lot space and contributing to safer walking conditions around schools.

**Action 11-2A**

Consider a “School Streets” pilot (car-free zone in front of a school during peak drop-off and pick-up times) in one or more locations where safety concerns along school frontages are difficult to address in other ways.

POLICY 11-3 Encourage Sustainable Travel Options for City of Ottawa Employees

The City of Ottawa aims to lead by example in encouraging employees to choose sustainable travel options. For example, a secure bike parking cage was provided and is now being expanded at City Hall. The City will continue to encourage active trips by providing secure bike parking and changerooms. The City will also implement paid parking for its employees in consideration of and where supported by market rates. This will help to cover the costs of providing and maintaining City parking facilities and will also encourage the use of sustainable modes.⁴⁶ Exceptions may be made for employees whose work schedules do not align with transit.

Action 11-3A

Develop a framework for paid parking for City of Ottawa employees in consideration of and where supported by market rates.

⁴⁶ Free parking is strongly related with the decision to drive to work, even after controlling for the location of a workplace (Hamre, Andrea and Ralph Buehler. 2014. Commuter Mode Choice and Free Car Parking, Public Transportation Benefits, Showers/Lockers, and Bike Parking at Work: Evidence from the Washington, DC Region. *Journal of Public Transportation*, 17 (2): 67-91.).

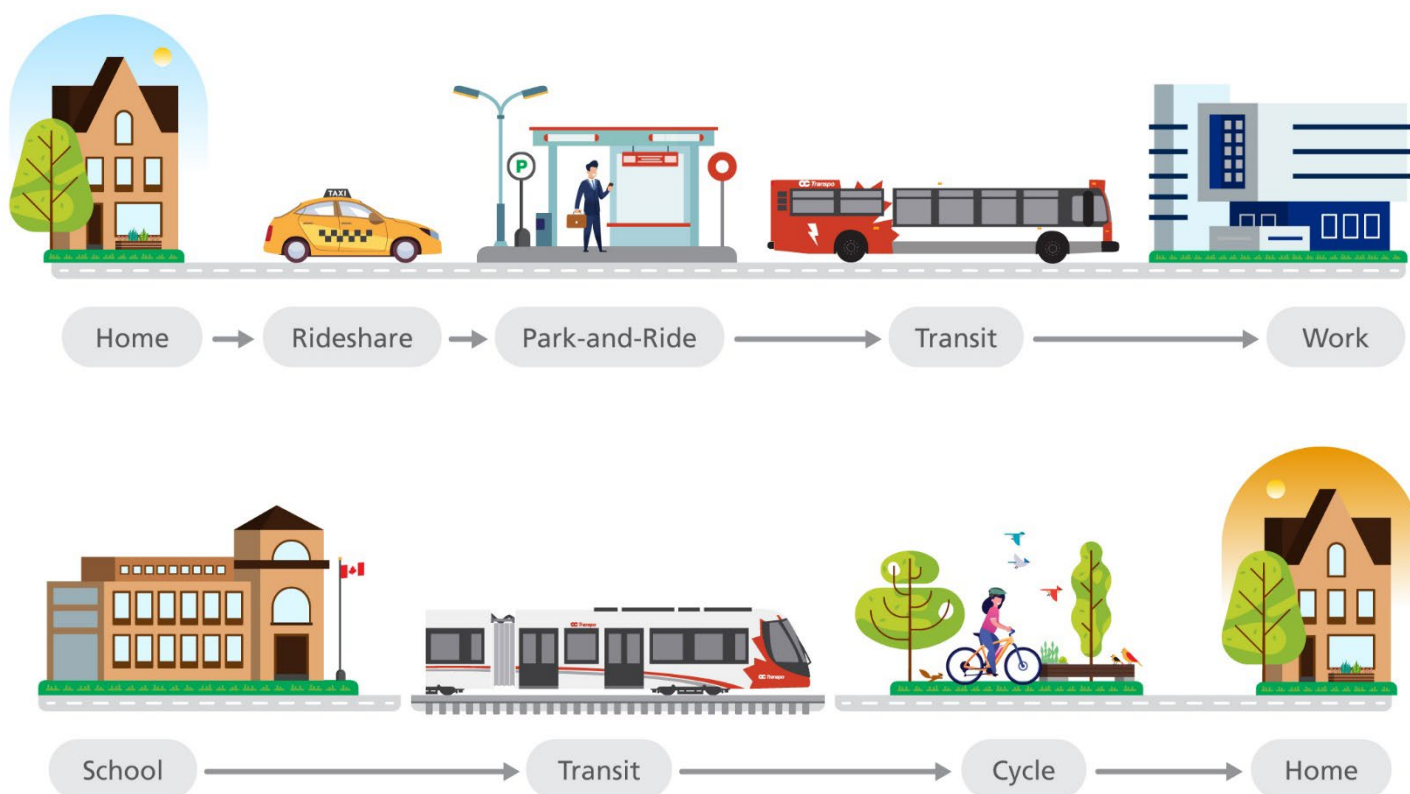


POLICY 11-4 Increase Support for Multimodal Trip Planning Tools

Multimodal trip planning tools allow people to plan trips based on full knowledge of their travel options. Trip planning tools can show users options for mixed-mode journeys, integrating multiple transit systems; cycling, walking, and micro-mobility options (e.g., shared e-scooters or bikes); car share, taxis, and ride-hailing. Multimodal trip planning tools are being offered by the private sector and can also include information on weather, incidents, construction projects and detours. The City can help by providing accurate and up-to-date data to the private sector. The City will also continue to provide real-time O-Train service and station information to improve the quality of multimodal trip planning tools available to the public. This will include exploring options to provide real-time information on available Park and Ride spaces.

Travellers are now used to planning trips using online platforms for ride-hailing, transit trip planning, driving directions, and e-scooter sharing. As these services advance, the possibility of service consolidation to a single mobility-as-a-service (MaaS) platform becomes more realistic. MaaS offers a single travel platform to seamlessly plan and pay for multimodal trips. For MaaS to succeed, service between independent modes of transportation must be complimentary, and numerous parties with different interests must be accommodated. The City will explore advancing payment and service integration.

Exhibit 21: Examples of Multimodal Trips





Action 11-4A Continue enhancement of City-owned tools, such as the Traffic Map website, to provide accurate traveller information for residents and expand capability to serve multimodal travel.

Action 11-4B Continue to provide data streams that can be used to support private sector traveller information tools.



Next Steps in the Transportation Master Plan (TMP) Process

The policies in this document represent an important step in the realization of the *Official Plan's* vision for Ottawa in 2046. Expanding and improving upon the 2013 TMP, these policies provide a framework for the evolution of the transportation system to help meet broader objectives and place an increased emphasis on key issues raised by Ottawa residents. Policies are included to address climate change, advance the City's equity goals, and respond to emerging travel trends and technologies.

These policies (Part 1 of the TMP) also set the stage for the next step in the TMP update process: the development of the City's Capital Infrastructure Plan (Part 2 of the TMP). The Capital Infrastructure Plan will review and analyze the effectiveness of Ottawa's current transportation system and propose changes to the road, rapid transit, and transit priority networks to achieve the City's transportation vision and accommodate anticipated growth. This analysis will consider future mobility needs and evolving travel patterns based on the planned 2022 Origin-Destination Travel Survey. To capture uncertainty in future trends, scenarios will be developed to assess the potential impact of factors such as changing work patterns or the introduction of autonomous vehicles.

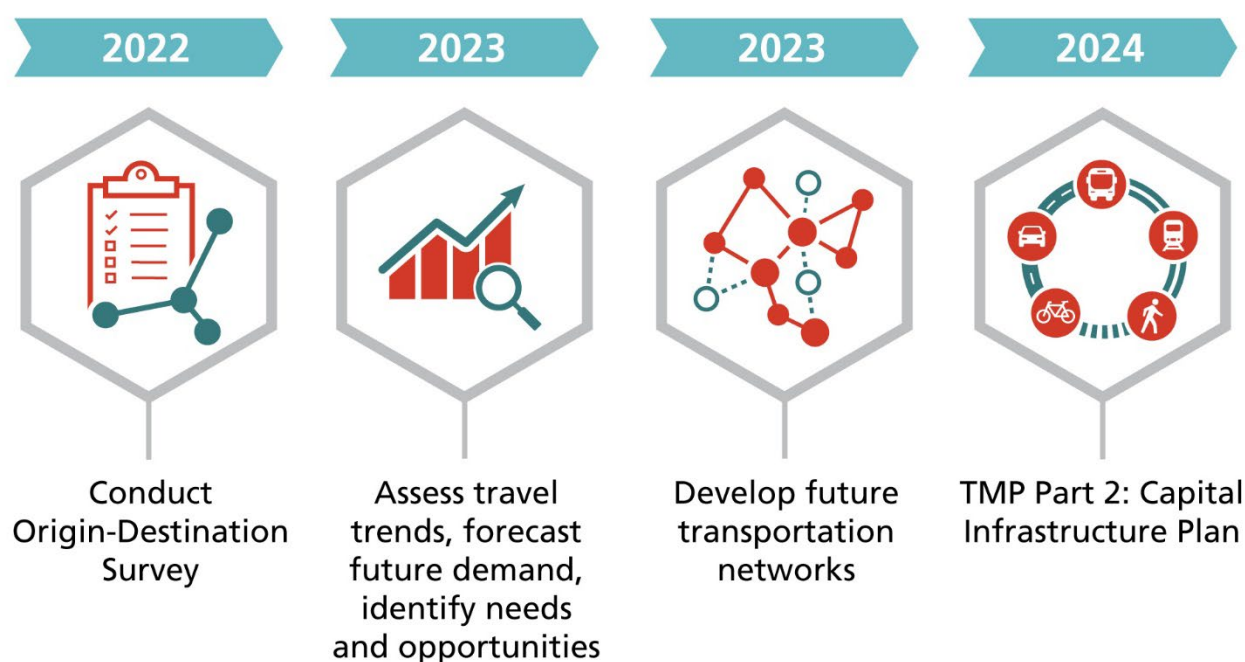
The Plan will set specific mode share targets (i.e., the percentage of people traveling by different modes of transportation) for different areas of the city to achieve the Official Plan's goal that at least 50% of trips will be made by sustainable modes by 2046. These mode share targets will guide the development of the city's future road and transit networks. The development of future networks will consider growth areas as well as existing communities. Connections to growth areas will be provided where needed, and options for addressing broader network needs will be explored, focusing on transit solutions as the first choice for accommodating longer distance trips. As part of this exercise, projects identified in the previous (2013) version of the TMP will be reviewed to confirm project need and justification. The analysis will generally focus on packages of transportation investments as a whole given the interaction between the various elements of the transportation system.

The Plan will also evaluate the infrastructure projects and supporting measures required to achieve the City's GHG emission reduction targets, and will develop scenarios that achieve varying levels of GHG reduction along with an estimate of the associated feasibility and cost. Based on this analysis and the network assessment described above, the Plan will include direction on the implementation and prioritization of transportation infrastructure projects with an emphasis on achieving mobility, climate change, equity, and long-term affordability objectives. A prioritization framework will be applied to determine implementation timelines based on affordability considerations; however, the impact of project delays will generally not be assessed given the focus on establishing future network needs. The Plan will be dynamic with respect to the implementation of projects, with flexibility to shift priorities if external factors affect planned growth or mobility.



Exhibit 22 shows the anticipated timeline for the development of the Capital Infrastructure Plan. The Origin-Destination Survey, intended to capture evolving travel patterns as the City recovers from the COVID-19 pandemic, is currently expected to be conducted in the fall of 2022. Over the course of 2023 and early 2024, the results of the Origin-Destination Survey will be used along with other inputs to assess future travel trends and expected demand; update the City’s transportation networks in accordance with anticipated mobility needs and mode share targets; and identify and prioritize transportation projects. The targeted date for completion of the Capital Infrastructure Plan is the fall of 2024.

Exhibit 22: Timeline for Next Steps in the TMP Update Process

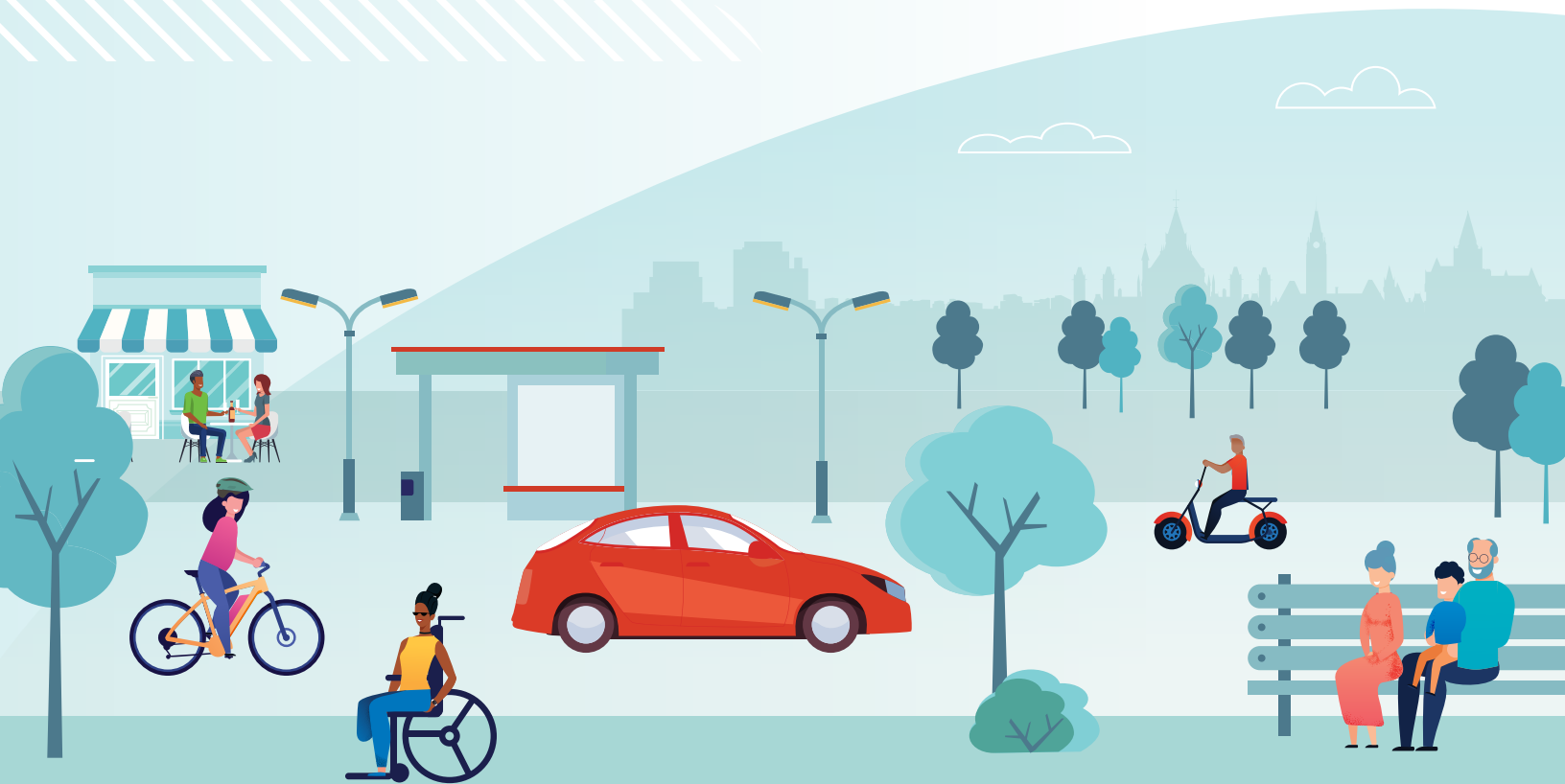


The Plan will be developed in accordance with the Environmental Assessment process and will include various opportunities for engagement and feedback from stakeholders and the public. Throughout this process, the City of Ottawa will continue to listen and respond to the community, leveraging the insights and experience of all residents to help us become the most liveable mid-sized city in North America.



Annex A:

TMP Priority Neighbourhoods





Annex A – TMP Priority Neighbourhoods

Transportation Master Plan (TMP) “priority neighbourhoods” have high concentrations of residents who are socially and economically vulnerable, and are therefore at higher risk of experiencing “mobility poverty” and facing transportation-related barriers to participation. The figure on the following page identifies the 37 TMP priority neighbourhoods.

The Ottawa Neighbourhood Equity Index (NEI) was used as the basis for identifying these neighbourhoods. The NEI is a tool to assess and compare different types of inequities between neighbourhoods across the city. This tool gives every neighbourhood (i.e. census tract) an overall index score that captures 17 “indicators” across the following five “domains”:

- economic opportunity;
- social and human development;
- health;
- community and belonging; and
- physical environment.

Neighbourhoods with a low NEI index score have equity concerns in one or more areas. The indicators from the first four domains listed above were used to generate new scores specifically to identify TMP priority neighbourhoods. The physical environment domain was excluded since it focuses on transportation infrastructure and accessibility. The physical environment domain indicators in the composite index are: average number of meeting places within a 10-minute driving distance; transit score from WalkScore.com; and commute time.¹ Transportation indicators will be assessed separately through City transportation planning processes including the development of the Capital Infrastructure Plan. Focusing on the four domains allows a more in-depth understanding of the specific aspects of the transportation system that could be improved to help neighbourhoods in the highest socio-economic need. A cut-off in scores for the four domains was identified based on a breakpoint in the scores just below the 20th percentile, yielding 31 of a total of 195 census tracts.

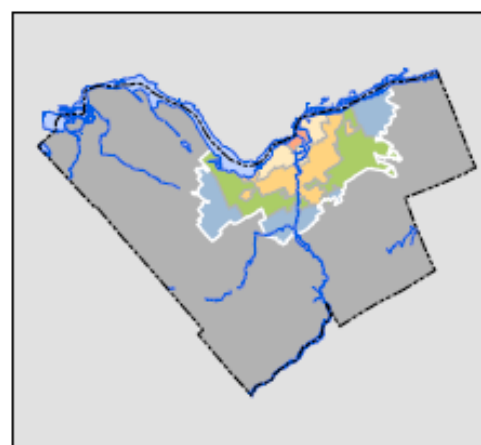
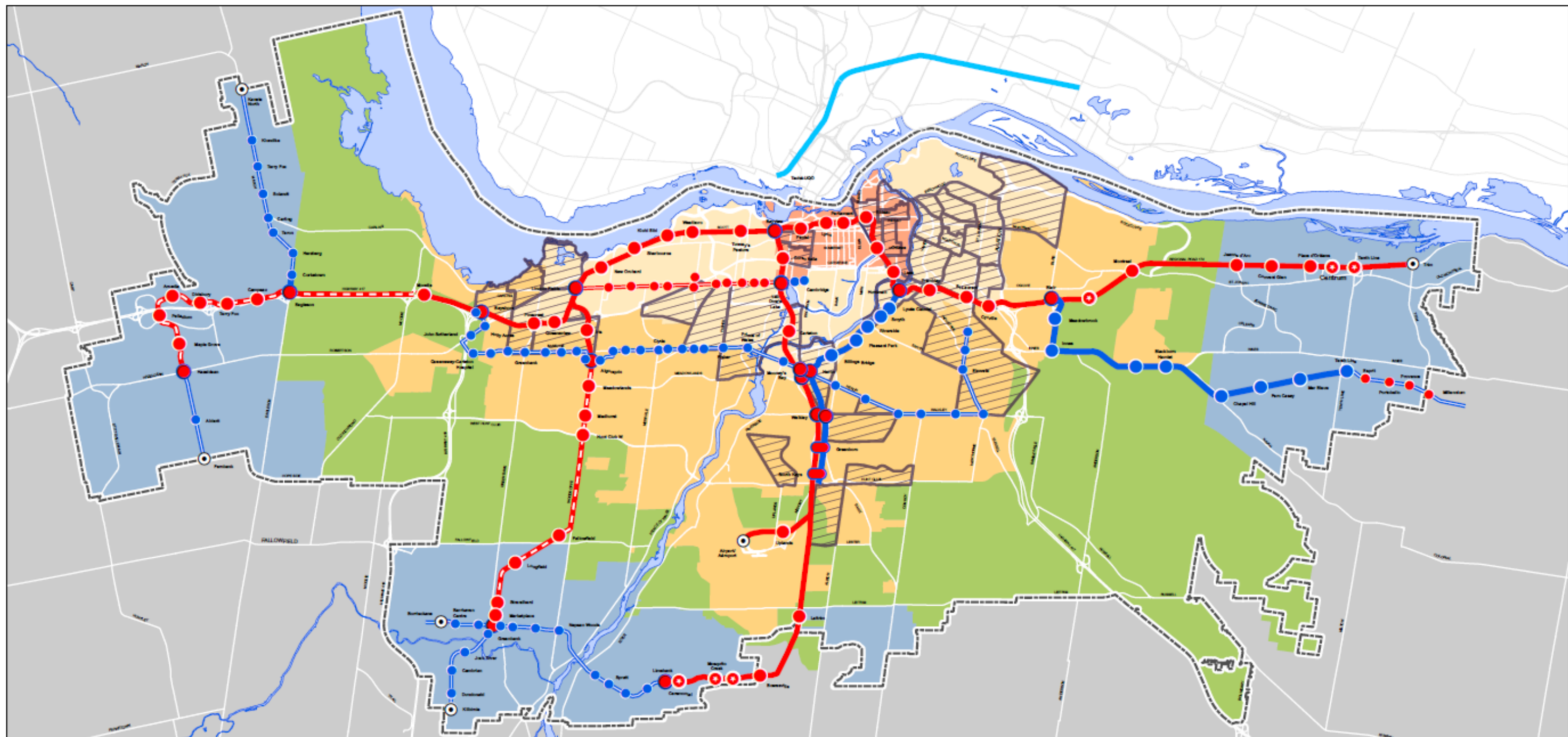
¹ These are coarse indicators of transportation infrastructure and accessibility that provide a high-level view of existing conditions across different Transects. For example, all neighbourhoods in the Downtown and Inner Urban Transects score have high scores in the physical environment domain. This masks that many of these neighbourhoods feature transportation deficiencies and/or opportunities for transportation-related improvements to address barriers to social and economic participation. For more information on the NEI, visit <https://neighbourhoodequity.ca/>



The TMP priority neighbourhoods also include six additional neighbourhoods, or micro-neighbourhoods, with service needs that are the focus of work by the City of Ottawa's Integrated Neighborhood Services Team.

The TMP calls for enhanced public engagement (POLICY 4-1) and accelerated investments in priority neighbourhoods through a number of existing City programs (POLICY 4-3). The TMP priority neighbourhoods are also considered as part of the evaluation criteria for walking and cycling retrofit projects (POLICY 6-3 and 7-2).

The TMP priority neighbourhoods will be reviewed periodically as new information becomes available, such as with updates to the Ottawa Neighbourhood Equity Index.



TRANSECT POLICY AREAS / SECTEURS STRATÉGIQUES DU TRANSECT

	Downtown Core / Centre-ville
	Inner Urban / Urbain intérieur
	Outer Urban / Urbain extérieur
	Greenbelt / Ceinture de verdure
	Suburban / Suburbain
	Rural / Rural

TRANSIT

	O-Train and Station / O-Train et station
	Future O-Train / O-Train et station (futur)
	Transitway – grade separated / Transitway en site propre
	Transitway – at grade / Transitway – Voie à niveau
	Transfer Station / Station de correspondance
	Terminus Station / Station terminus

	Gatineau RapiBus - grade-separated / RapiBus de Gatineau en site propre
	Equity Priority Neighbourhoods
	Urban Boundary / Périmètre d'urbanisation



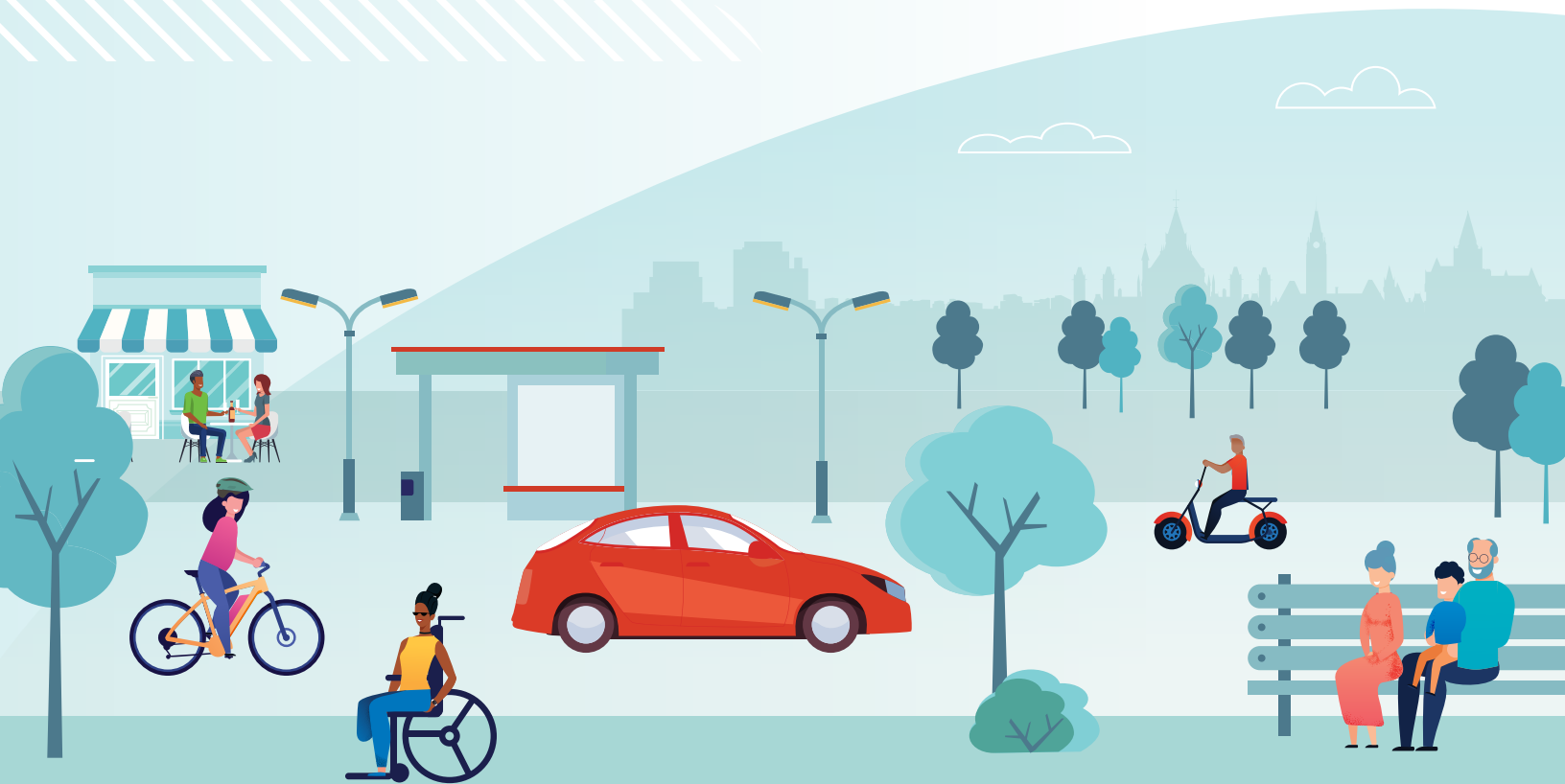
Planning, Infrastructure and Economic Development Department, Geospatial Analysis, Technology and Solutions
Service de la planification, de l'infrastructure et du développement économique, Analyse géospatiale, technologie et solutions





Annex B:

Guiding Principles





Annex B: Guiding Principles

The City We Want

Reduce automobile dependence

- Give priority to public transit, walking and cycling in accommodating future travel demand
- Make walking and cycling more attractive than driving for short trips
- Make transit more attractive than driving for long trips
- Promote more sustainable travel choices through education, promotion, incentives and disincentives
- Make travel alternatives like remote work and flexible working schedules more attractive where feasible.

Recognize and meet the diverse mobility needs of all residents, businesses, and visitors

- Provide an integrated system of multimodal facilities and services
- Aim to provide an acceptable level of service for each mode, towards the aims of economic and environmental sustainability and social equity
- Address the different mobility and accessibility needs of the different areas and contexts (or “transects”) of the city (e.g. rural, village, suburban, urban, core)
- Provide barrier-free transportation facilities and services, taking into account the needs of the most vulnerable
- Provide a range of travel options to people regardless of their income, identity, or ability

Integrate transportation and land use

- Build communities that are accessible by active transportation and support the creation of complete communities and 15-minute neighbourhoods
- Provide rapid transit and other quality transit services to connect people to community cores and employment areas
- Encourage transit-oriented development and support intensification where transit, walking and cycling can be made most attractive
- Foster a vibrant downtown by improving transit, walking and cycling access



The City We Want (Continued)

Protect the environment and enhance the economy

- Minimize the need for new infrastructure through transportation demand management programs
- Minimize transportation energy use, greenhouse gas emissions and other impacts on air, water and land
- Maximize greening within transportation rights of way
- Position transportation access and mobility as retention and attraction benefits for businesses, institutions, employees, clients and visitors
- Support efficient goods movement to, from and within the City



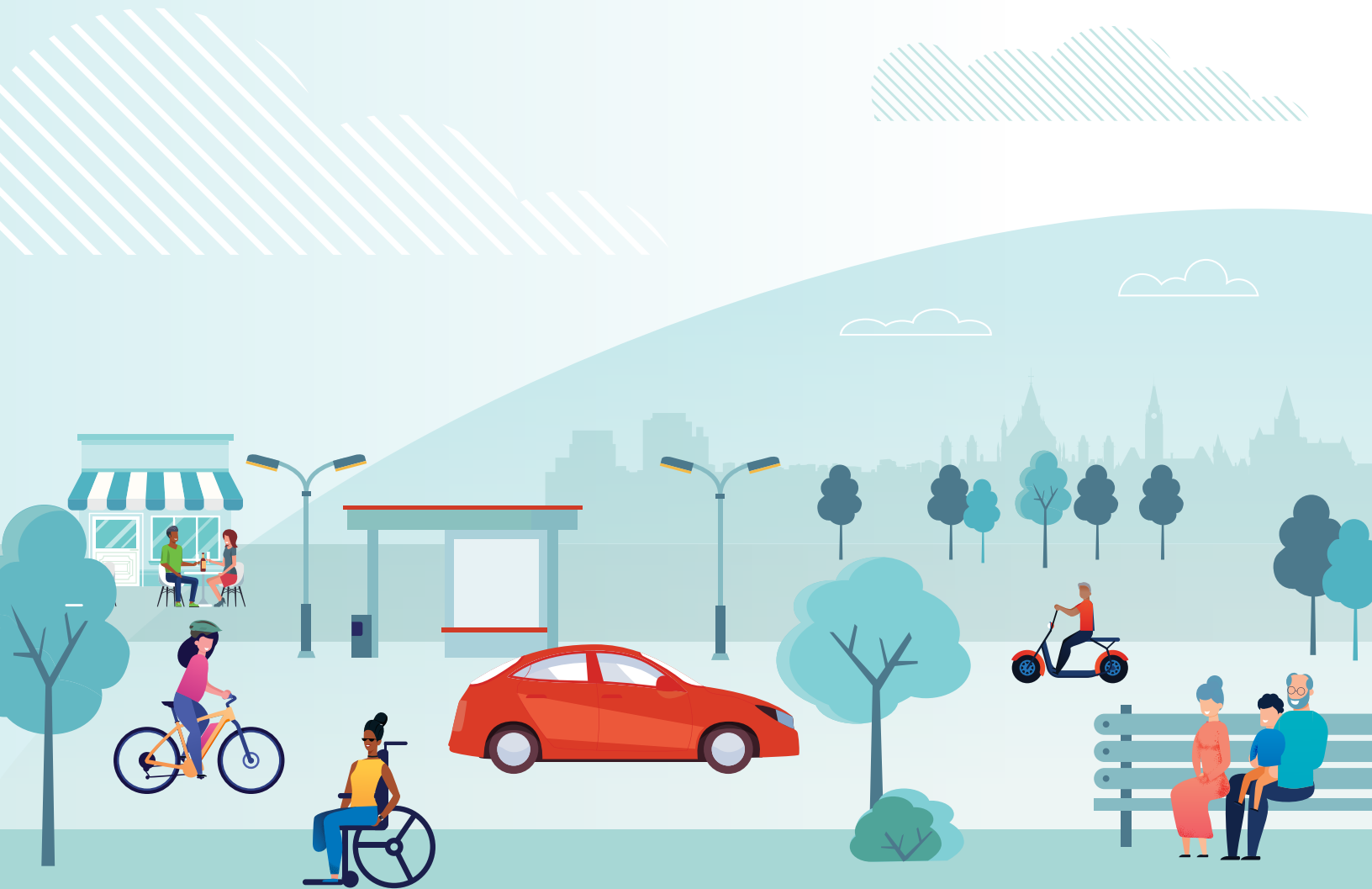
How We'll Get There

Deliver cost-effective services	<ul style="list-style-type: none"> Optimize existing transportation facilities before adding new infrastructure Integrate the consideration of life-cycle costs into decision-making processes Support the delivery of transportation infrastructure and services from other public agency partners and the private sector
Be accountable to the public	<ul style="list-style-type: none"> Encourage public input and informed decision making by reporting on transportation activities and results and providing opportunities for dialogue Consult with the public when planning budgets, programs and projects Develop policy that aims to support the City's strategic goals Measure and evaluate performance based on defined indicators and objectives Lead by example in terms transportation impacts from City fleets, operations, and services and how City employees travel
Provide adequate and equitable funding	<ul style="list-style-type: none"> Seek and/or establish funding sources that are stable and predictable Explore potential new funding options Respect Council's taxation targets
Cooperate with other governments	<ul style="list-style-type: none"> Liaise with provincial and federal governments to align plans and policies, and to attract financial, legislative and regulatory assistance Work with the National Capital Commission, Ontario Ministry of Transportation, Ministère des transports du Québec, City of Gatineau and other adjacent municipalities
Leverage technology to support the City's goals	<ul style="list-style-type: none"> Provide policy, regulation, and technical guidance for new mobility services delivered by third parties, as appropriate Prioritize new mobility options that enhance transit, walking, and cycling and ensure that the transit network remains the enabler and structuring element of urban/suburban growth "Future-proof" new transportation infrastructure by integrating enabling technology (such as vehicle-to-infrastructure communications) where feasible



Annex C:

Glossary





Annex C: Glossary

15-minute neighbourhoods

Compact, well-connected places with a clustering of a diverse mix of land-uses; this includes a range of housing types, shops, services, local access to food, schools and day care facilities, employment, greenspaces, parks and pathways. They are complete communities that support active transportation and transit, reduce car dependency, and enable people to live car-light or car-free.

Access street

A public or private street with a close relationship to its surrounding land-uses that exhibits high vehicular friction and slow speeds and prioritizes sustainable modes of transportation.

Accessibility

Accessibility refers to the design of products, devices, services, or environments for people who experience disabilities. Ontario has laws to improve accessibility for people with disabilities, including the Accessibility for Ontarians with Disabilities Act (AODA), the Ontario Human Rights Code, and the Ontario Building Code.

Accessible pedestrian signals (APS)

Accessible pedestrian signals (APS), formerly known as audible pedestrian signals, advise pedestrians who are blind, visually impaired, or deaf-blind when they have the right-of-way to cross at a signalized intersection and in which direction they may cross the intersection.

Active transportation

Active transportation means 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 transportation facility

A facility that is designed for active transportation, like sidewalks, bike lanes, and multi-use paths. These also may include protected pedestrian crossings.

Advanced traffic management systems (ATMS)

Advanced traffic management systems (ATMS) are the application of advanced and emerging technologies (computers, sensors, control, communications and electronic devices) in transportation to save lives, time, money, energy and the environment.



Arterial Street

A roadway that serves through travel between points not directly served by the road itself and along which limited direct vehicular access is provided to only major parcels of adjacent lands.

Articulated bus

Articulated buses are extended buses that link together two or more sections with pivoting joints to meet higher passenger capacities while still allowing the bus to maneuver appropriately.

Asset management

Measures to preserve the physical integrity of infrastructure by managing its condition and determining optimal reinvestment and renewal schedules.

Automated vehicles

Automated vehicles are vehicles designed to operate without a driver having to continually control steering, acceleration or braking. Advanced control systems and technology track the vehicle's position and monitor the driving environment.

Automobile dependency

Automobile dependency refers to transportation and land use patterns that favour automobile access and provide relatively inferior alternatives. It means that people find it difficult to reach services and activities without using an automobile.

Bike corral

Bike corrals are seasonal on-road bicycle parking that use car parking in the curb lane to park bicycles without further congesting the sidewalk.

Bikesecond

Bikesecond is a bike parking system at rapid transit stations in Ottawa that provides customers with a reserved parking spot in a shelter that protects their bikes against theft, vandalism and bad weather.

Bikeshed

A bikeshed is the area around a transit station – or any central destination – that is reachable on bike for the average person. This threshold is generally accepted as a 10-15 minute bike ride that avoids all high-stress cycling routes, to allow for a short leisurely paced bicycle ride.



Bioswale

Vegetated channels designed to concentrate, transport, and filter stormwater runoff whilst replenishing groundwater.

Bus Rapid Transit (BRT) / Transitway

A bus route or system running at least partially separated from general road traffic whether through dedicated on-road lanes or separated transitways entirely. Generally, vehicles have priority at intersections, and run on shorter headways than other bus routes.

Capital budget

The City's capital budget funds city infrastructure, including maintaining and rehabilitating existing infrastructure as identified in the Comprehensive Asset Management analysis. The capital budget also funds Council's Strategic Initiatives, which support the Term of Council Priorities.

City freeway

A limited access roadway where high-speed vehicular traffic travels cross-city.

City of Ottawa

The City of Ottawa is the largest municipality in the Canada's Capital Region and is home to over 1 million people, covering an area of nearly 2,800 square kilometres. Ottawa is the capital of Canada is a single tier municipality.

Climate adaptation

Climate change adaptation refers to actions that reduce the negative impact of climate change, while taking advantage of potential new opportunities. It involves adjusting policies and actions because of observed or expected changes in climate. Adaptation can be reactive, occurring in response to climate impacts, or anticipatory, occurring before impacts of climate change are observed.

Climate emergency declaration

A commitment to take the urgent action required to avert the climate crisis.

Climate mitigation

Interventions to reduce the human impact on climate change through strategies to reduce greenhouse gas sources and emissions.

Climate resilience

The capacity of a community, business or natural environment to prevent, withstand, respond to and recover from changing climate conditions and extreme weather events.



Complete communities

Places such as mixed-use neighbourhoods or other areas within cities, towns, and *settlement areas* that offer and support opportunities for people of all ages and abilities to conveniently access most of the necessities for daily living, including an appropriate mix of jobs, local stores, and services, a full range of housing, transportation options and *public service facilities*. *Complete communities* are age-friendly and may take different shapes and forms appropriate to their contexts.

Complete streets

A transportation system that works for everyone by balancing the multiple roles of roads and ensuring the best possible outcome to their management as a public resource. This concept of Complete Streets is a framework that ensures the needs of all stakeholders – pedestrians, cyclists, transit riders and motor vehicle users – are adequately addressed in the design, construction, maintenance and use of the City's roadways. Different streets have different functions and the principles of Complete Streets can be used to make the City's streets safe, comfortable and convenient to all users regardless of age or ability.

Connected vehicles

Connected vehicles combine leading edge technologies — advanced wireless communications, on-board computer processing, advanced vehicle-sensors, GPS navigation, smart infrastructure, and others — to provide the capability for vehicles to identify threats and hazards on the roadway and communicate this information over wireless networks to give drivers alerts and warnings.

Corridors

A Corridor is a land use designation in the Official Plan that applies to bands of land along specified streets whose planned function combines a higher density of development, a greater degree of mixed uses and a higher level of street transit service than abutting Neighbourhoods, but lower density than nearby Hubs.

Curb radius

The curb radius is defined by the actual and effective radius of the curb. The actual curb radius refers to the curvature along the curb line. Effective curb radius refers to the curvature vehicles follow when turning.

Development charges

A charge levied by the City of Ottawa on new development to help pay for growth-related infrastructure development.



Distribution centres

Facilities that intercept and temporarily store goods transported long distances by air, rail or truck and transfer them to smaller, more energy-efficient vehicles for distribution within the city.

Equity-deserving groups

Communities that identify barriers to equal access, opportunities, and resources due to disadvantage and discrimination, and actively seek social justice and reparation. This marginalization could be created by attitudinal, historic, social, and environmental barriers based on characteristics that are not limited to sex, age, ethnicity, disability, economic status, gender, gender expression, nationality, race, sexual orientation and creed.

Flow street

A public street that plays a structural role in the overall street grid by virtue of its distance and its ability to link several areas of the city, and where the movement of people is an important part of its function.

Frequent transit

Transit that is provided at least every 15 minutes between 6AM and 10PM, and more often during weekday peak times, and in some cases on a 24-hour basis.

Goods movement

The distribution of freight (including raw materials, parts and finished consumer products) by all modes of transportation including marine, air, rail and truck.

Greenbelt

A band of green space 200 square kilometres in size and generally owned by the National Capital Commission, that separates the older urban portions of Ottawa from its newer suburban communities and rural areas.

Greenhouse gases (GHGs)

Gaseous constituents of the atmosphere, both natural and anthropogenic that absorb and emit radiation at specific wavelengths within the spectrum of radiation emitted by the Earth's surface, by the atmosphere itself, and by clouds. Water vapour (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and ozone (O₃) are the primary GHGs in the Earth's atmosphere. Human-made GHGs include sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs) and perfluorocarbons (PFCs).



Healthy community

A healthy community is one that supports sustainable environments for present and future generations. Health is promoted through conserving, protecting, rehabilitating, and creating safe environments.

Hubs

Hubs are defined in the Official Plan as areas centred on planned or existing rapid transit stations and/or frequent street transit stops. The planned function of Hubs is to concentrate a diversity of functions, a higher density of development, a greater degree of mixed uses and a higher level of public transit connectivity than the areas abutting and surrounding the Hub. Hubs are also intended as major employment centres.

Human-scaled streets

“Human-scaled” streets are designed as places welcoming to people whether they are passing through or stopping to enjoy the space. Designs can vary widely and be fostered on busy commercial activity streets as well as quiet residential streets.

Inclusionary Zoning

A planning policy provided by Sections 16(4) and 35.2 of the *Ontario Planning Act, R.S.O. 1990, c. P.13* that allows a municipality to authorize the inclusion of affordable housing units within buildings or projects containing residential units and maintain the affordability of the units over time.

Intensification

Intensification means the development of a property, site or area at a higher density than currently exists through:

- a) redevelopment, including the reuse of brownfield sites;
- 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.

Jug-handle

A type of intersection where some or all left turns are relocated away from the intersection itself to an alternative roadway(s). Typically, it is an at-grade ramp on the right-hand side of the road and is used for making left turns.

Land use

The occupation or use of land or water area for any human activity or any purpose defined in the Official Plan or the zoning by-law.



Land use designation

A land use designation describes an area of land within which a specific set of policies applies. A land use designation in an official plan is implemented through a range of more detailed land use zones in a zoning by-law.

Level of Service (LOS)

Indicators of the quality of operating conditions that may be applied to cycling, walking, transit and car travel.

Level of Traffic Stress (LTS)

LTS is connected to the safety (actual and perceived) of cycling facilities. It uses road characteristics such as vehicle speed, number of vehicle lanes, and the presence of parking to determine the quality for a particular segment. If the perceived level of safety is low (e.g. cycling next to fast traffic), then the corresponding level of traffic stress for cyclists is high. If the perceived level of safety is high (e.g. cycling on a segregated bicycle facility or multi-use pathway) then the level of traffic stress is low.

Light Rail Transit (LRT)

Rail transit technology capable of operating in a variety of physical environments, ranging from exclusive right of way to mixed traffic environments on public streets, as single vehicles or multiple-vehicle consists.

Liveable communities

Liveable communities shall foster health, inclusivity and sustainability to meet the challenges of the 21st century. The City's physical layout and design play an important role in shaping health and well-being by enabling Ottawa's diverse population to thrive and live their lives to the fullest.

Living Streets

Refers to the seasonal, or temporary reallocation of space within our streets from primarily serving vehicles, to providing a range of amenities that serve people in a manner that supports placemaking and healthy 15-minute neighbourhoods while informing permanent street design.

Master Plans

Long range plans which integrate infrastructure requirements for existing and future land-use with environmental assessment planning principles. The supporting plans of the Official Plan are the Transportation Master Plan, Greenspace Master Plan, Parks and Recreation Master Plan, Infrastructure Master Plan, Ottawa Cycling Plan and Ottawa Pedestrian Plan.



Micro-mobility

Micro-mobility refers to a range of small, lightweight devices operating at speeds typically below 25 km/h and is ideal for trips up to 10 km.

Mobility as a Service (MaaS)

Mobility as a Service (MaaS) is the integration of various forms of transport services into a single mobility service accessible on demand.

Mobility poverty

Mobility poverty occurs when not having access to a car, poor public transit options, or substandard walking and cycling infrastructure compounds other forms of social or economic disadvantage (e.g. unemployment or low income, disability or poor health).

Mode share

The percentage of person-trips made by one travel mode (e.g. walking) relative to the total number of person-trips made by all modes.

Multimodal

Transportation that considers and accommodates diverse travel options, typically including walking, cycling, public transit and automobile among others.

New mobility

The technologies and business models that enable Automated, Electric, Connected, and Shared transportation.

OC Transpo

The identity of the City's public transit system.

Official Plan

Ottawa's Official Plan is a legal document, adopted under the authority of the *Ontario Planning Act*. It contains the City's goals, objectives, and policies to guide growth and manage physical change to 2046. It also implements the priorities identified in City's Strategic Plan as they relate to land use.

Operating budget

The City's operating budget funds every city program and service and is designed to ensure the dependable delivery of a broad array of programs and services that residents rely on every day.



O-Train

The identity of the rail component of the City's public transit system.

Para-Transpo

Identity of the specialized door-to-door transit service provided for persons with disabilities.

Park-and-ride lots

Parking lots, usually located at rapid transit stations, that allow automobile users to transfer to and from transit service in a convenient manner

Pedestrian Crossovers (PXOs)

Pedestrian Crossovers are designated areas that allow pedestrians to safely cross the road, where vehicles must yield to pedestrians when crossing. Pedestrian Crossovers are identified by specific signs and pavement markings. In some cases, but not always, they may also have pedestrian activated flashing beacons.

Placemaking

A process that seeks to strengthen the connection people have to their communities through ensuring the public realm and public spaces benefits everyone by promoting people's health, happiness and well-being. It involves integrating the physical, cultural and social identities that define a place. Placemaking is about creating places people care about and want to be in.

Priority neighbourhoods

Neighbourhoods where there are high numbers of vulnerable residents who may experience transportation-related barriers.

Protected intersection

An at-grade road intersection in which cyclists and pedestrians are physically separated from motor vehicle traffic.

Protected Major Transit Station Areas (PMTSA)

A discretionary tool for municipalities for the establishment of transit-supportive densities and uses in a defined area that surrounds rapid transit stations, and to which Inclusionary Zoning may be applied.

Public realm

Refers to all of those private and publicly-owned spaces and places which are freely available to the public to see and use.



Rack & Roll

Rack & Roll is an OC Transpo program that helps customers make connections to transit using their bikes by installing bike racks on transit buses.

Rapid transit

Fast, frequent, high-capacity transit service provided using either bus or rail technology, operating in an exclusive right of way or otherwise not delayed by mixed traffic in shared corridors.

Ring-and-post

Ring-and-post bicycle stands consist of a pre-cast bike locking ring mounted on an aluminum post typically installed within the public right-of-way.

Road

Road is the surface used for general purpose traffic lanes, on-road parking and loading areas, on-road bike lanes and transit lanes. See definition for “street”.

Safety System Approach

The Safety System Approach (SSA) is how many countries leading in road safety are achieving their vision of eliminating deaths and serious injuries. SSA contains principles on ethics, responsibility, safety and mechanisms for change, which are further outlined in the City’s Road Safety Action Plan.

School Streets

Car-free zones in front of schools during peak school arrival and departure times.

Shared mobility

Transportation services and resources such as vehicles, motorcycles, scooters, or bicycles that are shared among users, either concurrently or one after another.

Street

Street is the entire public right-of-way corridor and all elements within it, including the road, sidewalks, boulevards and the public realm. See definition for “road”.

Sustainable modes of transportation

Includes walking, cycling, transit and carpool, as well as human-powered micro-mobility devices.



Traffic calming measures

Traffic calming measures help to address vehicle speeding to make streets safer for all road users and are an important part of encouraging safe and healthy communities. Traffic calming measures can include road narrowings or curb extensions, flex post signs, pavement markings and speed display boards.

Transect Planning

Transect planning is a New Urbanist planning model that is based on the creation of a set of six human habitats that vary by their level and intensity of urban character. Each Transect represents a different gradation in the type and evolution of built environment and planned function of the lands within it, from most urban to least urban.

Transitway

A rapid transit facility in the form of a roadway designed for the exclusive use of buses and other authorized vehicles.

Transit-Oriented Development (TOD)

Transit-Oriented Development (TOD) is a mix of moderate to high-density transit-supportive land uses located within an easy walk of a rapid transit stop or station that is oriented and designed to facilitate transit use.

Transit priority measures

Strategies to increase transit operating speeds and transit travel time reliability in mixed traffic relative to car travel, such as traffic signal priority or queue jumps.

Transit priority projects

Typically, projects are focused on upgrading a corridor to be equipped with a set of coordinated priority measures that give transit vehicles preferential treatment over other vehicles. These priority measures may include peak-period transit only lanes, short dedicated lane segments, queue-jumps and traffic signal priority.

Transit-Supportive

Makes transit viable and improves the quality of the experience of using transit. When used in reference to development, it often refers to compact, mixed-use development that has a high level of employment and residential densities to support frequent transit service. When used in reference to urban design, it often refers to design principles that make development more accessible for transit users, such as roads laid out in a grid network rather than a discontinuous network; pedestrian-friendly built environment along roads to encourage walking to transit; reduced setbacks and placing parking at the sides/rear of buildings; and improved access between arterial roads and interior blocks in residential areas.



Transportation Demand Management (TDM)

A range of strategies that encourage individuals to reduce the number of trips they make, to travel more often by non-driving alternatives, to travel outside peak periods and to reduce the length of their trips.

Transportation Impact Assessment (TIA) guidelines

The City of Ottawa TIA Guidelines assist land developers and their transportation consultants with the integration of their proposed developments with the City of Ottawa transportation network. TIA studies support the City's goal of creating an integrated land use and transportation system.

Transportation operations

Transportation operations can be used to describe the elements of the transportation network that allow it to function on a day-to-day basis, and can include traffic signals, transit service, traffic calming measures, road rehabilitation, maintenance, and snow clearance, among others.

Transportation system management (TSM)

A range of strategies that maximize person-carrying capacity and efficiency of the road system through operational measures and localized infrastructure modifications, for the benefit of all modes of travel

Urban heat island effect

Describes built-up urban areas that are hotter than nearby rural areas or greenspace because buildings and paved surfaces amplify and trap heat. The average air temperature of a city with 1 million people or more can be 1–3°C warmer than its surroundings. In the evening, the difference can be as high as 12°C. Heat islands can exacerbate the impact of an extreme heat event, putting additional stress on the health of vulnerable people.

Vehicular friction

Elements in the right-of-way or on abutting properties that are likely to slow motor vehicle speed, such as on-street parking, traffic calming, street trees, presence of other modes of transportation, or proximity of building facades.

Volume to Capacity (V/C) ratio

The volume-to-capacity ratio is the ratio of total vehicular traffic volumes to available vehicular road capacity. A road segment or intersection with a volume-to-capacity ratio of 1.0 indicates that the infrastructure is being well used to the best of its potential. A ratio less than 1.0 indicates the road has residual capacity to accommodate more traffic and not being maximized. A ratio greater than 1.0 indicates congested conditions.



Walkability

Walkability reflects overall walking conditions in an area. A walkable community is one where pedestrians have safe, convenient access to buildings, pedestrian routes, public transit, neighbourhood parks, services, and other amenities.

Walkshed

A walkshed is the area around a transit station – or any central destination – that is reachable on foot for the average person. This threshold is defined as a 1 km walk for the purposes of this TMP.

Wayfinding

Wayfinding refers to information systems that guide people through a physical environment and enhance their understanding and experience of the space.