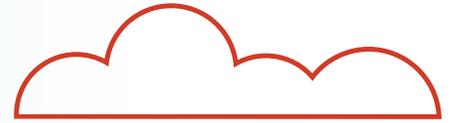




Transportation Master Plan



March 2023

Updated Draft



PART 1 | POLICIES



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Policy List





Policy List

Theme 1: Build a Sustainable and Resilient Transportation System

- Policy 1-1** Design the transportation system to achieve GHG emission reduction targets
- Policy 1-2** Mitigate flood risk and manage stormwater
- Policy 1-3** Mitigate the effects of extreme heat on transportation system users
- Policy 1-4** Ensure that maintenance and operations are resilient to future climate conditions
- Policy 1-5** Apply a “climate change lens” to transportation project planning, design, and construction
- Policy 1-6** Continue the transition to clean vehicle technologies
- Policy 1-7** Minimize effects on land, water, air, wildlife, and vegetation
- Policy 1-8** Advocate for Federal and Provincial government support to address climate change

Theme 2: Create a Healthier and More Equitable Transportation System

- Policy 2-1** Apply an “equity lens” to transit and transportation planning
- Policy 2-2** Promote healthy communities through transportation planning
- Policy 2-3** Design streets for all people including equity-deserving groups
- Policy 2-4** Accelerate investments that benefit priority neighbourhoods
- Policy 2-5** Continue to pursue affordable housing near transit stations and along major corridors with frequent street transit routes

Theme 3: Advance Regional Competitiveness

- Policy 3-1** Prioritize sustainable transportation options for improving regional mobility
- Policy 3-2** Support a regional approach to goods movement and delivery
- Policy 3-3** Pursue solutions to interprovincial goods movement
- Policy 3-4** Support air, rail and bus connections to Ottawa
- Policy 3-5** Create lively, people-friendly streets
- Policy 3-6** Encourage temporary street reallocations for placemaking

Theme 4: Respond to Change

- Policy 4-1** Monitor and respond to changing travel patterns
- Policy 4-2** Harness the power of data generated by new technologies
- Policy 4-3** Improve performance and adaptability of the transportation system
- Policy 4-4** Leverage the shared mobility marketplace to achieve City 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** Encourage sustainable transportation through community planning and design
- Policy 5-4** Incorporate Official Plan “transects” into transportation planning
- Policy 5-5** Align development tools to support targets for travel mode shares
- Policy 5-6** Update land protections for transportation corridors to support city-building
- Policy 5-7** Apply a long-term affordability lens to transportation investments

Theme 6: Maximize Walkability

- Policy 6-1** 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 the 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** Provide safe, comfortable, direct and connected cycling facilities and routes
- Policy 7-2** Improve and expand the cycling network
- Policy 7-3** Retrofit by priority to improve connectivity
- Policy 7-4** Target major barriers and other challenging missing links
- Policy 7-5** Develop and promote the rural cycling network
- 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 education 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** Prioritize transit improvements that meet riders' needs and attract new riders
- Policy 8-3** Focus on reliability
- Policy 8-4** Deliver convenience, comfort, and accessibility
- Policy 8-5** Expand the catchment of rapid transit through improved walking and cycling connections to stations
- Policy 8-6** Avoid adding new road or highway capacity that competes with rapid transit

Theme 9: Provide Safe, Multimodal Streets

- Policy 9-1** Implement "complete streets" to create streets for everyone
- Policy 9-2** Advance "complete street" design standards
- Policy 9-3** Implement the concept of "access" and "flow and capacity" streets
- Policy 9-4** Identify future road network needs
- Policy 9-5** Ensure that modifications to the road network foster "human-scaled" streets
- Policy 9-6** Optimize traffic signal operations for multimodal safety and efficiency
- Policy 9-7** Minimize traffic impacts in neighbourhoods
- Policy 9-8** Implement the Strategic Road Safety Action Plan to reduce fatal and major injury collisions
- Policy 9-9** Reduce operating speeds through changes in street design
- Policy 9-10** 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** Maintain an efficient truck route network
- Policy 10-2** Encourage and enable the use of smaller, human-powered, and electric vehicles for goods movement
- Policy 10-3** Design streets to accommodate trucks and active users
- Policy 10-4** Develop a strategy to modernize how curbside space is allocated and managed
- Policy 10-5** Leverage parking to support economic activity and encourage sustainable travel

Theme 11: Encourage Sustainable Travel Choices

- 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. Guided by Ottawa's *Official Plan*, it identifies transportation policies, facilities and services that will meet the needs of residents and businesses from now to 2046. 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 *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 *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.

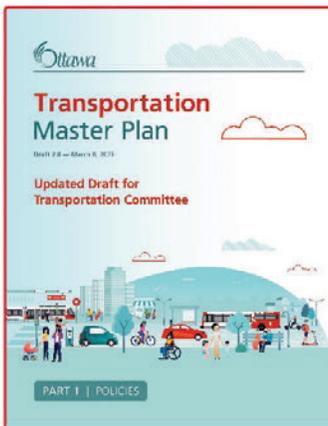


What's Inside

This document is one of two that forms the TMP:

- **Part 1 [2023] – 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 *Official Plan*
- **Part 2 [2025] – 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

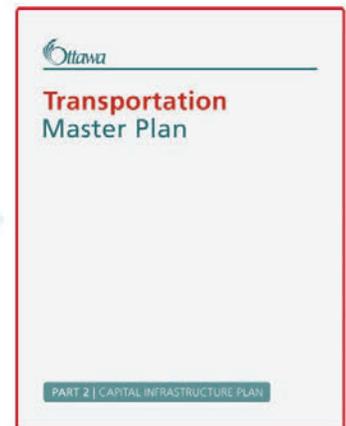


PART 1 | Policies (This Document)

- 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 Healthier and 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.
- 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.

Focused policies address specific modes of travel or mobility-related topics:

- 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; and enhance the customer experience.
- 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. Encourage Sustainable Travel Choices** 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.



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 safety, reliability, cost, and enjoyment contribute to residents' physical, economic, social, and mental well-being.

The transportation network is multimodal, including infrastructure, services, and amenities for walking, cycling, public transit, vehicular travel, and other modes. City streets are a core component of the multimodal network and are the primary access points for adjacent properties and facilities. Streets are also central to community identity, serving as public spaces for human connection and contributing to local business success.

The transportation network also includes dedicated infrastructure 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 multimodal 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 harm current or future generations.¹ Finally, the transportation network is interconnected with land use planning, economic development, and public health. An integrated, multimodal transportation network will support Ottawa's goals for climate change mitigation, growth management, social equity, public health, and livability.

Transportation in Ottawa Today

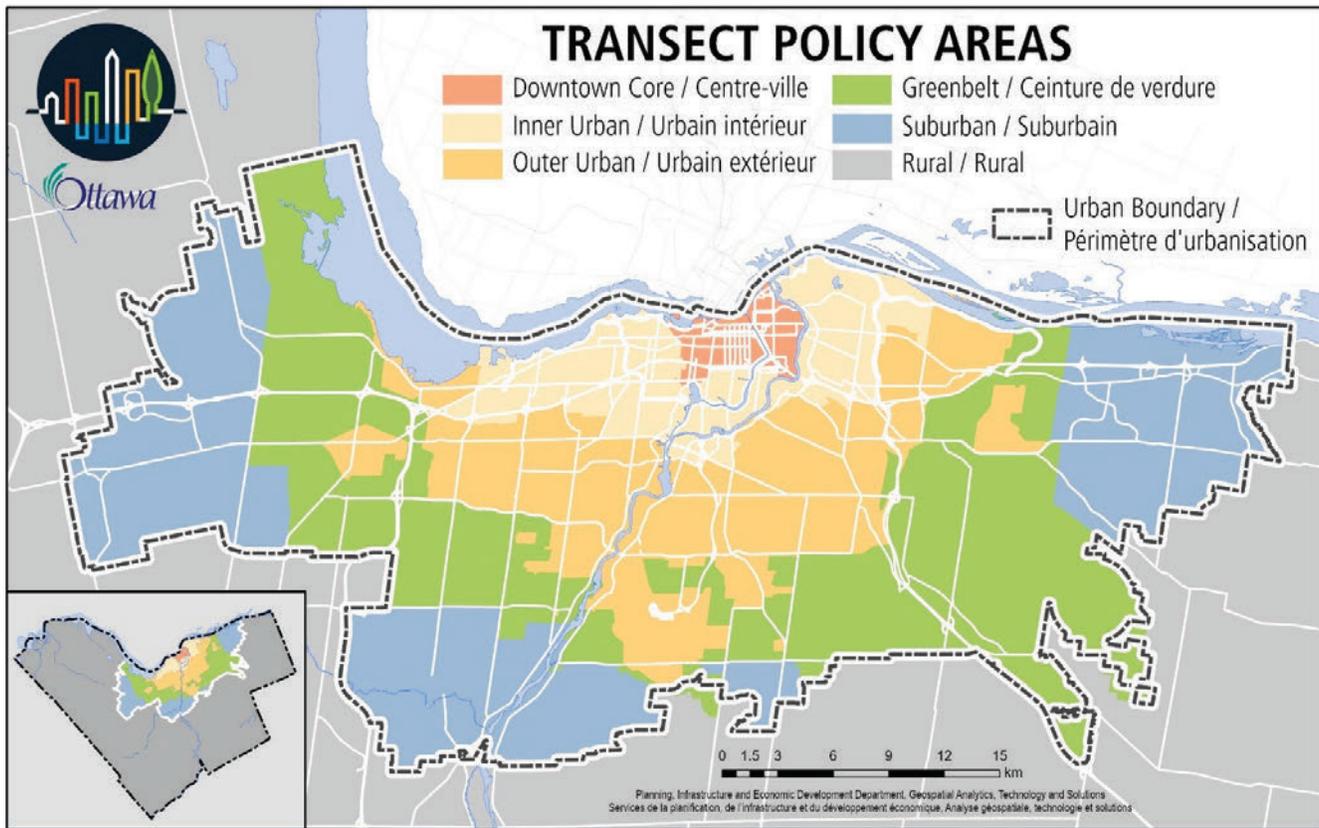
With a population of approximately 1.4 million people, Canada's Capital Region (CCR) is the sixth-most populous metropolitan area in Canada after Toronto, Montreal, Vancouver, Calgary, and Edmonton. The City of Ottawa is the largest municipality in the region and is home to over 1 million people, covering an

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



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. Prior to the 1960s, 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 *Official Plan* has categorized the lands within Ottawa's municipal boundary 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 a number of geographic barriers that pose 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 Ottawa Road 174 in the east end of the city².
- **Province of Ontario** – The Ontario Ministry of Transportation (MTO) 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 the parkways along the Rideau Canal, and a substantial pathway network. The NCC also manages the Greenbelt. The NCC is the approval authority for any works on federally-owned lands, and is currently leading initiatives to advance coordinated regional work on interprovincial transit and transportation. In addition, there are five interprovincial road bridges owned and operated by the federal government. The Portage Bridge and Champlain Bridge are managed by the NCC, while the Alexandra Bridge, Chaudière Crossing and Macdonald-Cartier Bridge are managed by Public Services and Procurement Canada.

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 car parking spaces in off-street lots and paid on-street parking spaces. The City is also responsible for over 850 bridges within Ottawa's limits and works in partnership with the federal government on maintaining and upgrading interprovincial bridge crossings.

The active transportation network includes about 2,150 km of sidewalks, 325 km of City-owned pathways, 25 km of physically 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 (22 stations following the completion of Stage 2 LRT), over 700 buses, 29 park-and-ride lots, and specialized

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.



vehicles that provide paratransit service for persons with disabilities. In the vast rural area where densities do not support conventional transit, park-and-ride lots connect residents to the transit system. The City also partners with community support services in providing point-to-point shuttles for seniors and people with disabilities living in rural Ottawa.

Ottawa is served by four airports (one international and three general aviation airports), two passenger railway stations, two interprovincial ferries, an interprovincial water taxi, a freight rail yard, and taxi and ride share companies. In 2022, two e-scooter providers offered shared e-scooters in Ottawa as part of a pilot project. Intercity bus providers such as Ontario Northland also connect passengers and parcels to and from Ottawa every day. 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.

Ottawa's extensive transportation network must be designed and planned to operate across all four seasons, from extreme heat to several feet of snow. The City's transportation infrastructure must be resilient to repeated freeze-thaw cycles, flooding, and significant snow loads. The City's maintenance and operating procedures must also consider how to quickly and effectively clear snow and ice from the roadway, cycling facilities, and sidewalks to ensure safe, accessible mobility for all road users year-round.





Transportation in Ottawa Tomorrow

Ottawa's land use context, mobility landscape and policy objectives have all evolved since 2013, and many more changes are expected within the TMP's planning horizon. The TMP considers how to leverage these changes as well as emerging trends and issues to support the goals in the City's *Official Plan*.

The Growing City

The City of 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, safe, and intuitive transportation options for people of all ages, including people who are not able to drive.

The City's *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 an approximate 15-minute walk of where people live). The *Official Plan* calls for 47% 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. Given that the transportation sector contributes 44% of Ottawa's overall GHG emissions, significant action is needed to encourage the use of more sustainable modes of travel and vehicles if these targets are to be achieved. The TMP is therefore a critical component of the city's response to climate change, which will work in tandem with other plans and strategies. Meeting climate change objectives will require substantial funding beyond current levels.

The Energy Evolution Strategy set the framework for what it will take for Ottawa to achieve these GHG emission reduction targets. The Energy Evolution model projected which outcomes are required to meet



the 100% scenario in five key sectors, including transportation. The Strategy demonstrates that major investments will be required such as expanding the transit network, electrifying the City's fleets, and dedicating space in the public right-of-way for electric vehicle charging spaces.

In addition to these mitigation strategies, Ottawa is also preparing to adapt to a changing climate over the coming decades as temperatures rise, periods of extreme heat become more common, and extreme weather events such as floods or freezing rain occur more often. The City is developing a *Climate Resiliency Strategy* to mitigate Ottawa's top climate risks. The Climate Vulnerability and Risk Assessment (approved by City Council in July 2022) identified climate risks related to transportation, such as heat-related risks for people walking or cycling, damage to infrastructure as a result of freeze-thaw events and flooding, and disruptions due to power outages. Ottawa's transportation networks must adapt to be safe, comfortable and reliable in future climate conditions while continuing to meet mode share targets.

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 the pilot project for shared e-scooters (e.g., Bird, Neuron) 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.

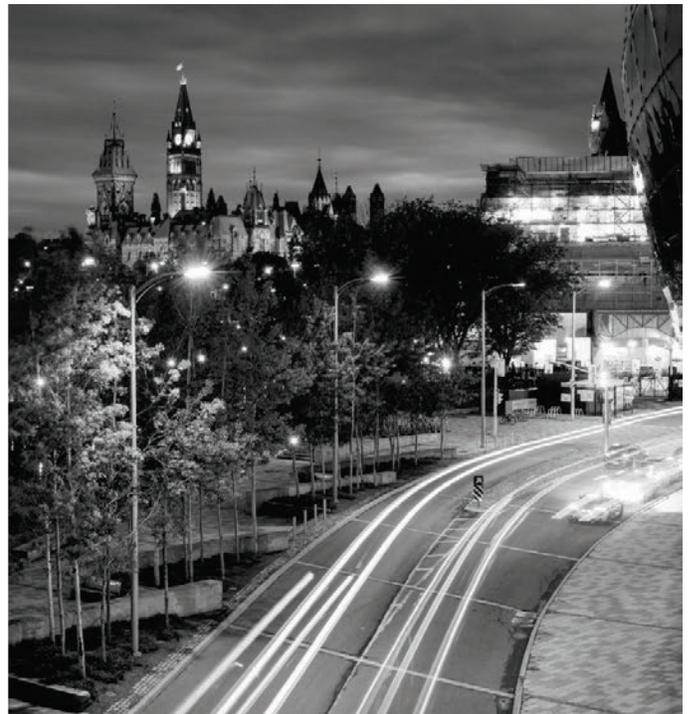
Health, Equity, Accessibility, and Safety

Healthy and inclusive communities are vitally important to the city and are core strategic directions underpinning the *Official Plan*. The *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, reducing the impacts of air pollution and noise, and mitigating the impacts of climate change. Equity and universal accessibility are also key principles of the *Official Plan*, including considering the needs of children, older adults, people with disabilities, women and gender-diverse persons, those identifying as 2SLGBTQIA+, people who are racialized, and people living with lower incomes. The *Official Plan* discusses the importance of transit and active transportation in neighbourhoods with strong equity concerns and sets the direction to respond to transportation and infrastructure needs in these neighbourhoods. Finally, since the previous version of the TMP was approved in 2013, the City has introduced new initiatives that support safe streets for all, including the *Strategic Road Safety Action Plan*. The *Strategic Road Safety Action Plan* is founded on the "Safe Systems Approach" 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. Affordability also means being able to keep existing transportation assets in an acceptable condition; the Transportation Asset Management Plan identifies estimated costs that are greater than the funding identified in the City’s current Long Range Financial Plan. 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

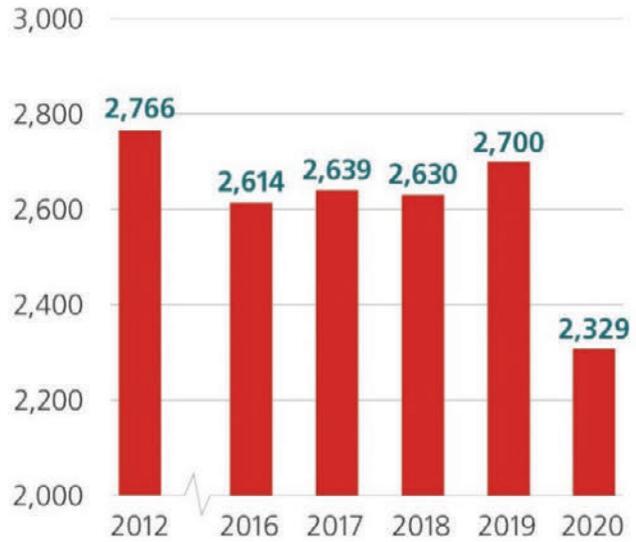
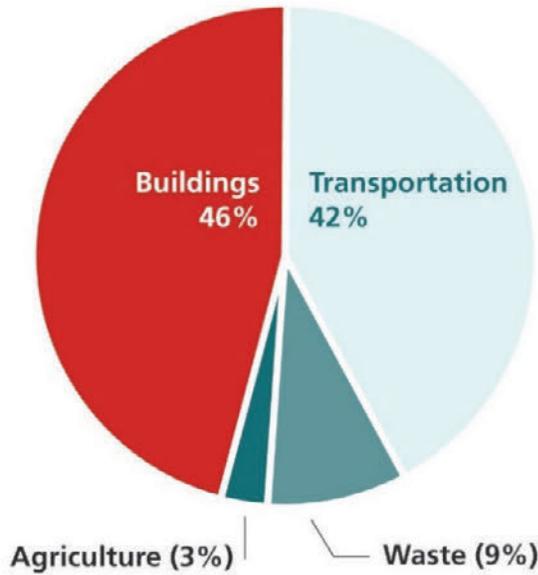
POLICY OVERVIEW	
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Policy 1-5	Apply a “climate change lens” to transportation project planning, design, and construction
Policy 1-6	Continue the transition to clean vehicle technologies
Policy 1-7	Minimize effects on land, water, air, wildlife, and vegetation
Policy 1-8	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 short-, mid-, and long-term GHG emission reduction targets with the ultimate goal of reducing community emissions by 100% by 2050 and corporate emissions by 100% by 2040. 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 GHG reduction targets. The transportation sector contributes 42% of Ottawa’s overall community GHG emissions. Looking at emissions from municipal operations, the City’s vehicle fleet is responsible for 59% of the City’s corporate GHG emissions. Achieving the 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



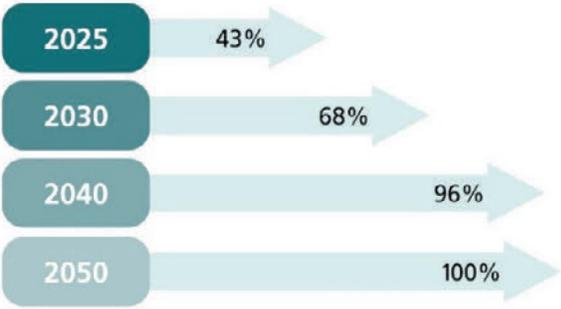
Annual Transportation Emissions by Fuel Source (2020)

- 1,165 kT Gasoline Fuel (50%)
- 665 kT Diesel Fuel (29%)
- 499 kT Aviation Fuel (21%)

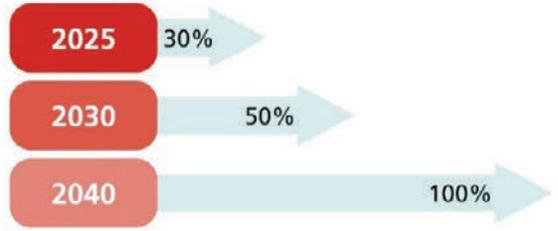
Transportation GHG Emissions (kT Co₂e)

GHG emissions have declined by roughly 2% over the last decade while the population has increased by roughly 8%.

Community GHG Reduction Targets
(Relative to 2012 Baseline)



Corporate GHG Reduction Targets
(Relative to 2012 Baseline)

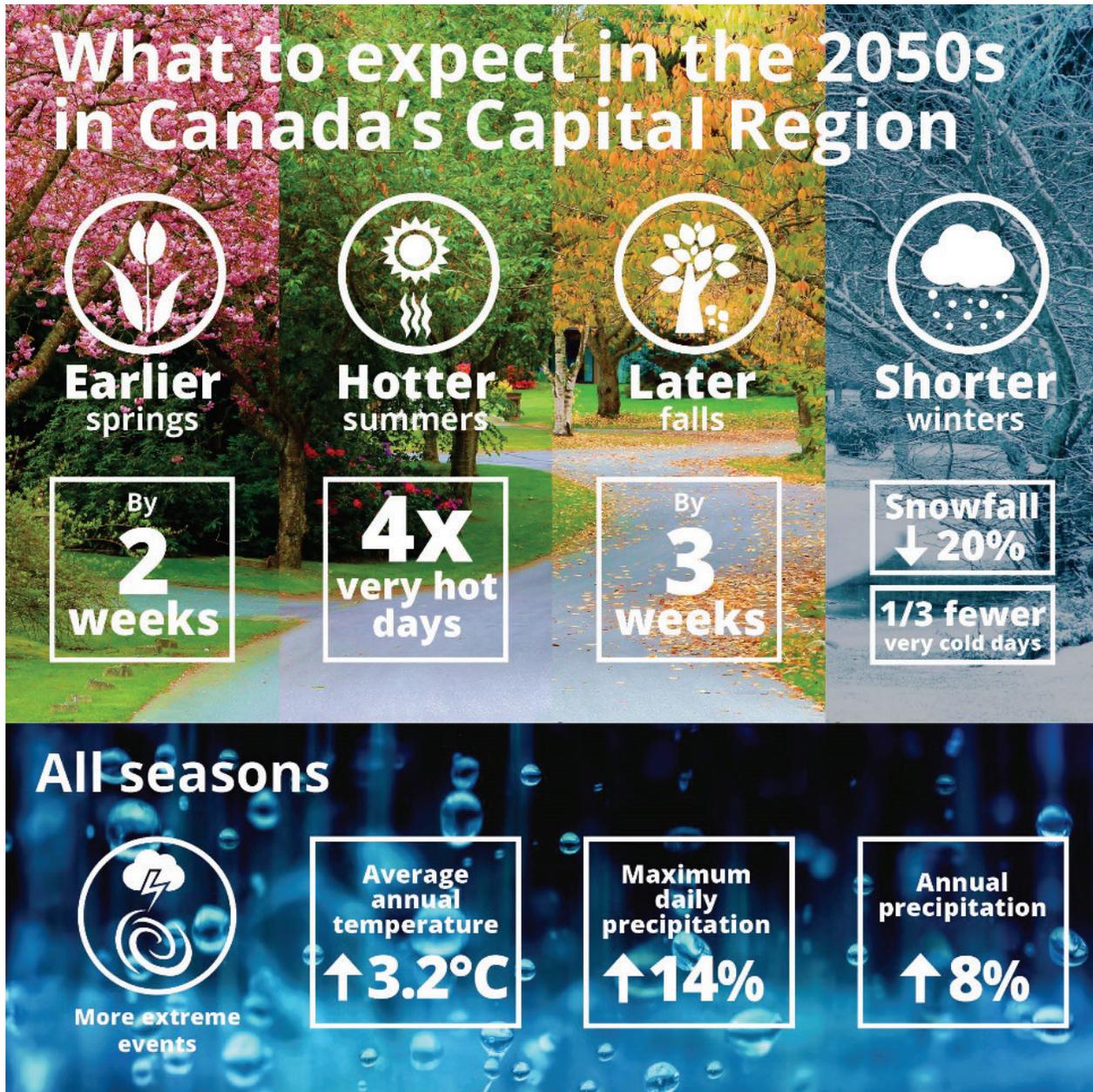


Source: City of Ottawa Community and Corporate Greenhouse Gas Inventories (2020)



The *Climate Change Master Plan* and *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 much 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 (Exhibit 5). Projections also show more frequent and/or severe extreme weather events like floods, freezing rain, tornadoes, and wildfires.⁴

Exhibit 5: Climate change impacts in the National Capital Region in the 2050s



⁴City of Ottawa and National Capital Commission. 2020. *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 snowstorms 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 humidity may increase the health risks for people walking, cycling, and using transit and may discourage the use of sustainable modes.
- Higher average temperatures could contribute to extended use of active transportation in spring and fall but could also result in reduced use during the summer.
- More extreme weather could damage communication and electricity infrastructure, disrupting transportation services such as traffic signals and O-Train operations.
- Global climate change may cause supply chain instability and/or market failures impacting the availability and cost of fuel, goods, and services.

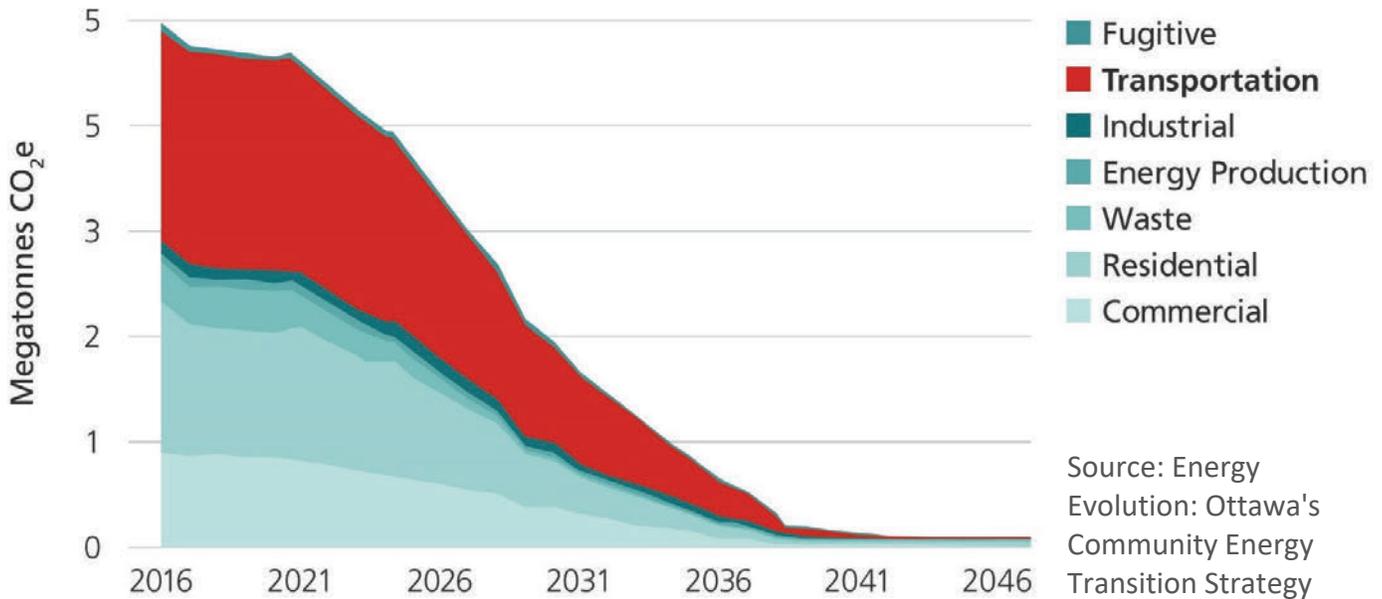
Building on the work to develop a Climate Resiliency Strategy for Ottawa, the TMP responds to these climate risks and includes policies to ensure that transportation is safe and comfortable in future climate conditions.

Policy 1-1 Design the Transportation System to Achieve GHG Emission Reduction Targets

Shifting a large portion of residents' daily trips from private automobile to more sustainable modes of travel 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 walking, cycling and transit. Even with a significant shift to electric vehicles (EV), trips by car will need to drop to 58% of the daily total by 2030 to achieve GHG reduction targets based on modeling developed through the City's *Energy Evolution Strategy*. This aligns with the *Official Plan* objective that the majority of trips in Ottawa should be made by walking, cycling, transit, and car-pooling by 2046, and requires replacing vehicle trips with more sustainable options.



Exhibit 6: Modeled GHG Emissions Reduction to Achieve Targets, by Sector



Note: Fugitive emissions are unintentional emissions of vapours or gases from equipment at facilities such as power plants and factories.

As part of developing the TMP Capital Infrastructure Plan, the City will model one or more transportation scenarios that achieve the required mode shift. These scenarios are expected to include significant new transit and active transportation infrastructure. The TMP analysis will specifically identify the greenhouse gas implications of different infrastructure and mode shift scenarios. While the Capital Infrastructure Plan focuses on new infrastructure, it will also consider interdependencies between infrastructure and other supporting measures from *Energy Evolution* such as increased transit frequencies, and transportation demand management and pricing tools (e.g., car parking fees, congestion charging, car-free zones, etc.). Assumptions about the transition to electric vehicles from the *Energy Evolution* model 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 identify requirements for new funding sources for sustainable transportation infrastructure. The societal costs of not achieving GHG emissions reduction targets will also be considered to the extent that this information is available.

ACTION 1-1A

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



Policy 1-2 Mitigate Flood Risk and Manage Stormwater

Local climate change projections suggest increased risk of “riverine flooding” along rivers and creeks. The City has partnered with local conservation authorities to generate floodplain mapping for climate change flood events for many watercourses. The City will continue to work with conservation authorities and other regional partners to assess and mitigate riverine flood risks, and to assess risks from erosion, landslides and other natural hazards that may affect transportation infrastructure. The TMP Capital Infrastructure Plan will consider climate change floodplain mapping and will avoid planning new transportation infrastructure in the floodplain. The federal and provincial government are responsible for assessing and mitigating risks to federal and provincial infrastructure including inter-provincial bridges, the National Capital Commission pathway network, and 400-series highways.

Climate change also increases the risks of “inland flooding” which occurs when intense rainfall overwhelms sewer systems. The City will seek to leverage transportation projects wherever feasible to address stormwater management concerns. Project scoping should assess stormwater management needs, taking into consideration future projected rainfall, so that designs can include the appropriate measures. Integration of Low-Impact Development (LID) stormwater management features may be required to meet stormwater management objectives; developing design concepts and mapping priority locations for LID features on GeoOttawa will help the City apply LID efficiently and effectively. LID supports water balance, water quality, and erosion control, while also contributing to the quality of the pedestrian environment (Exhibit 8), placemaking, healthy streets, and separation of pedestrians and cyclists from vehicular traffic.





For large transportation projects, such as those subject to Environmental Assessments, it is particularly important to assess relevant drainage issues early in the design process and to ensure that projects are at least "flood neutral" - i.e., that they do not increase the risk of riverine or inland flooding.



Avoid planning new major transportation infrastructure in the floodplain.

ACTION 1-2A

Assess stormwater management needs as part of transportation project scoping, to identify and leverage coordination opportunities.

ACTION 1-2B

Develop technical guidelines with design concepts for integrating LID features into the right-of-way, and specify the transportation project contexts where they should be applied.

Policy 1-3 Mitigate the Effects of Extreme Heat on Transportation System Users

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 up to fourfold by 2050, reaching an average of up to 43 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's health 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 and fully reconstructed transportation infrastructure should include shade trees and/or other infrastructure to provide shade. Road reconstruction projects will generally maintain the existing right-of-way; in some highly constrained contexts, trees may not be feasible. Following from the Official Plan, shade is to be included in the design of transit stops and stations wherever possible. Shade and resiliency measures will also be considered in new City and private parking lots as per Action 5-4D. The City will update key design guidelines and standards such as arterial road cross-sections to create space for canopy trees within street designs.⁵ The City will also encourage the planting of trees as part of retrofit projects wherever space and scope permit; for example, within curb extensions added to local streets for traffic calming.⁶

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

⁵ The 2019 City of Ottawa document, *Designing Neighbourhood Collector Streets*, identifies boulevard widths that support street trees.

⁶ Trees can also contribute to reducing vehicle speeds by providing visual street edge friction – i.e. by making the street feel narrower. When adding trees and/or shade infrastructure, clear sightlines at intersections must be maintained.



existing tree canopy coverage; high urban heat island effect; high concentrations of vulnerable populations⁷; and important routes for walking, cycling and transit. Ease of implementation will also be an important consideration, with screening to ensure that soil volumes will enable tree survival. A new “Shadeways” initiative would supplement existing programs to increase Ottawa’s tree canopy. To support interdisciplinary work to mitigate the effects of extreme heat, citywide heat mapping data will be added to GeoOttawa and Open Data Ottawa.

Maintaining existing mature trees in the City right-of-way remains a high priority. Redevelopment and reconstruction projects will continue to explore a wide range of design options and apply specialized construction techniques to protect existing trees. The Tree Protection By-law identifies the compensation requirements for City trees that cannot be preserved.



Other interdisciplinary efforts to mitigate the effects of extreme heat for transportation system users - for example, creating seasonal water fountains and/or cooling stations using fire hydrants - will also continue to be explored.

ACTION 1-3A

Update design guidelines and standards to incorporate shade trees into new and reconstructed transportation infrastructure.

ACTION 1-3B

Implement shade along priority corridors using urban heat island, tree canopy and equity mapping to inform prioritization of resources.

ACTION 1-3C

Add heat mapping data to GeoOttawa and Open Data Ottawa.

⁷ Annex A identifies TMP Priority Neighbourhoods at the census tract scale with a high concentration of socially and economically vulnerable residents. However, for the purpose of identifying Shadeways, finer-grained demographic data could be used if available.



Policy 1-4 Ensure That Maintenance and Operations Are Resilient to Future Climate Conditions

Changing climatic conditions will require adjustments to how the City maintains its streets and transportation infrastructure—particularly during winter months—to ensure the transportation network functions safely for everyone. For example, with increases in winter freeze-thaw cycles and freezing rain events, icy conditions are expected more frequently. Icy conditions create significant challenges for people walking, cycling and using transit; older adults and people with mobility issues are particularly vulnerable. Winter freeze-thaw cycles also cause damage to asphalt surfaces, creating risks for transportation system users and requiring more maintenance in the spring. Increased winter and spring maintenance requirements are expected to impact the City's operating budgets.

With climate change, more frequent extreme weather events such as tornadoes, high winds or freezing rain will increase the risk of extended power outages. While the City's transportation services are equipped to deal with isolated power outages, the severity and duration of outages could affect the operation of electric vehicles. The City will work with electric utility providers to provide reliable electricity for core transportation and fleet services, and plan for back-up power strategies as needed.

The Climate Resiliency Strategy (under development) and other guidance documents will identify next steps to ensure that the City's operations and maintenance programs are resilient to Ottawa's changing climate.

Policy 1-5 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 will ensure 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.

Environmental Assessment (EA) studies for transportation projects will continue to assess the climate change adaptation and mitigation implications of alternatives, with a view to minimizing environmental impacts and increasing resiliency. This includes greater use of qualitative or quantitative indicators with respect to GHG emissions, impact on carbon sinks, shade, and permeable surface coverage. The value of ecosystem services (e.g., air quality, stormwater management, climate regulation, biodiversity) should also be considered in Environmental Assessments. Similarly, these climate and environmental factors should be considered within other transportation projects that involve comparing alternative cross-sections, including developing quantitative metrics where feasible.⁸

⁸ For example, a square metre of vegetation may have quantifiable environmental benefits relative to a square metre of asphalt, as well as quantifiable lifecycle cost savings to the City.



The City will also seek to monitor and adopt emerging transportation infrastructure design and construction practices that advance climate change mitigation and adaptation. On the design side, infrastructure for all modes should consider resiliency to extreme heat, freeze-thaw cycles, flood risk, and other climate-related risks. For example, transit shelters, platforms and walkways should be designed to ensure resilient and comfortable use in future climate conditions, as funding permits, while also ensuring safe, accessible, secure, and efficient transit operations. On the construction side, the City will continue to explore best practices to reduce lifecycle GHG emissions (i.e. embodied carbon⁹) from construction materials and methods. The City will review associated standards and guidelines from provincial, national and international organizations as they become available.¹⁰ Lifecycle costs and other asset management implications will be an important consideration in reviewing and adopting new design and construction approaches.

ACTION 1-5A Refine evaluation criteria and indicators to better assess the climate change mitigation and adaptation implications of alternative project designs, as well as to consider the health, social and economic value of ecosystem services.

ACTION 1-5B Explore best practices for climate-focused design and construction, including methods to reduce lifecycle GHG emissions (embodied carbon) from construction and build resilient infrastructure.

Policy 1-6 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 bus fleet are identified in the June 2021 report to Transit Commission and Council on *Zero-Emission Buses for OC Transpo*. A long-term Green Fleet strategy is currently under development. 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. Plans for the electrification of the rest of the City’s vehicle fleet are also in early stages of development, and additional funding/financing changes will be needed to support this transition.

⁹ Embodied carbon consists of all the GHG emissions associated with construction, including those that arise from extracting, transporting, manufacturing, and installing materials, as well as the operational and end-of-life emissions associated with those materials.

¹⁰ For example, the Treasury Board of Canada is developing standards for green construction, while the National Research Council is developing guidance on construction of infrastructure that is resilient to future climate conditions.



Within the community, all levels of government, the private sector, and community groups have a role to play in driving greater uptake of electric vehicles among Ottawa residents and businesses. The City, as directed in the *Official Plan*, will be developing a new zoning bylaw that includes EV charging infrastructure requirements for parking spaces, where car parking is provided. The City’s *Personal Vehicle Electrification Strategy* (under development) will call 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 on-street parking, as well as limited off-street parking. The strategy will help to identify priority locations 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. A growing network of public EV charging stations also provides alternate options for personal EVs in case of power outages.

ACTION 1-6A

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 1-6B

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

ACTION 1-6C

Update the Zoning By-law to set requirements for electric vehicle charging infrastructure in new developments.



Policy 1-7 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.

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.



As part of developing the Capital Infrastructure Plan, the City will seek alternatives to adding road capacity through the Greenbelt wherever practical; network development will aim to accommodate travel demand through transit and active transportation. 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. The City will also ensure that the planning, design and

construction of transportation infrastructure minimizes negative impacts on and disturbance of the existing landscape, including, but not limited to, impacts caused by light intrusion, noise and road salt.

In the interests of protecting important ecosystems citywide, the Capital Infrastructure Plan will refrain from identifying new roads through Provincially Significant Wetlands. Project evaluation will consider the impacts of all proposed major transportation projects on the city's natural heritage systems. Where road widenings or major transportation projects are identified through natural heritage features, design enhancements such as wildlife crossings will be required.



To support the Capital Infrastructure Plan, a cumulative effects study will be conducted jointly with the NCC to evaluate the effects of major transportation projects on the Greenbelt. 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. Major transportation projects with significant impacts on the Greenbelt are not expected to proceed to construction until the cumulative effects study has been completed and the Capital Infrastructure Plan may be revised based on the results.

Further, the Official Plan directs low-volume or unopened road allowances within the Greenbelt to be evaluated for permanent closure to restore ecological contiguity. As part of this review, road allowances through the City's Natural Areas and Linkage Areas (Schedule C11) will also be evaluated for closure.



Avoid building new roads through Provincially Significant Wetlands.

ACTION 1-7A

Develop design guidance for major transportation projects within or immediately adjacent to the Greenbelt and Natural Areas to reduce potential environmental impacts and respect the environmental, scenic, agricultural and/or heritage qualities of these areas.

ACTION 1-7B

Conduct a cumulative effects study in collaboration with the NCC to assess the impacts of approved transportation projects identified in the Capital Infrastructure Plan on Canada's Capital Greenbelt.

ACTION 1-7C

Evaluate low-volume or unopened road allowances within the Greenbelt, Natural Areas and Linkage Areas for permanent closure.

Policy 1-8 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 government, 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*. The Federal Government has mandated that all new light-duty vehicles sold in Canada be zero emission by 2035; complementary measures to support this target may also be needed. The City will continue to seek financial support, enabling legislation, and partnerships with other levels of government to address climate change. The City will also work with other levels of government to ensure that provincially and federally owned transportation infrastructure in Ottawa is resilient to future climate conditions.



Theme 2: Create a Healthier and More Equitable Transportation System

POLICY OVERVIEW	
Policy 2-1	Apply an “equity lens” to transit and transportation planning
Policy 2-2	Promote healthy communities through transportation planning
Policy 2-3	Design streets for all people including equity-deserving groups
Policy 2-4	Accelerate investments that benefit priority neighbourhoods
Policy 2-5	Continue to pursue affordable housing near transit stations and along major corridors with frequent street transit routes

Health and equity are central principles of the *Official Plan* and key considerations 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. Following from the City's Equity and Inclusion Lens, this includes considering the mobility needs and constraints of women, children, older adults, people with disabilities, people living in poverty, Indigenous peoples, members of racialized communities, and other equity-deserving groups. For example, in Ottawa, the 2011 Origin-Destination travel survey showed that women are less likely to drive than men and are more likely to be transit users and pedestrians. Women are also more likely to travel off-peak than men, particularly when travelling by public transit. In another Canadian study, it was found that 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 transit¹¹. Women and children are less likely to cycle on facilities that are not separated from vehicular traffic.¹² People with disabilities continue to face numerous barriers as they navigate the built environment.

¹¹ Understanding and Responding to the Transit Needs of Women in Canada. Grisé et al. January 2022.

¹² Aldred, R., Elliott, B., Woodcock, J, et al. (2017). Cycling provision separated from motor traffic: a systematic review exploring whether stated preferences vary by gender and age. *Transport Reviews* volume 37 (1): 29-55.



Transportation-related barriers are amplified when applying an intersectional lens¹³ 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 destination accessibility is poor. When it is safe and convenient for people of all ages and backgrounds to travel using sustainable transportation, this has a ripple effect on many measures of health and well-being, and helps to reduce disparities for equity-deserving groups.

Following from the *Official Plan*, the TMP emphasizes “priority neighbourhoods”¹⁴ 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). In addition, low-income households are less likely to own cars than other households¹⁵ and are therefore less likely to benefit from transportation projects that prioritize personal vehicle travel. Policies in the TMP aim to ensure that investments benefit priority neighbourhoods so that they share in transportation improvements and do not bear the disproportionate costs of transportation decisions.

Accessibility for people with disabilities is a significant focus of the City’s work on equity; associated policies and actions are included in Theme 6 *Maximize Walkability*, and Theme 8 *Expand and Improve Transit City-Wide*. Rural residents are also at risk of experiencing specific types of transportation-related barriers. Rural transportation challenges and policy directions are discussed in Policy 5-4.



¹³ As discussed in Ottawa’s Women and Gender Equity Strategy, intersectionality is the way in which people’s lives are shaped by their multiple and overlapping identities and social locations, which, together, can produce a unique and distinct experience for that individual or group (Ontario, 2020).

¹⁴ See Annex A: TMP Equity Priority Neighbourhoods. Neighbourhoods were identified based on the Ottawa Neighbourhood Equity Index.

¹⁵ Elnaz Yousefzadeh Barri, Steven Farber, Anna Kramer, Hadi Jahanshahi, Jeff Allen, Eda Beyazit. *Can transit investments in low-income neighbourhoods increase transit use? Exploring the nexus of income, car-ownership, and transit accessibility in Toronto*. Transportation Research Part D: Transport and Environment. 2021.



Policy 2-1 Apply an “Equity Lens” to Transit and 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.¹⁶ The City will refine its transportation-related public engagement processes to increase the focus on TMP priority neighbourhoods and equity-deserving groups, including collaboration with community partners who work with these groups. This could take the form of a public engagement toolkit with easy-to-implement options for enhanced engagement on transportation projects and initiatives.

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.

Continuing to monitor and analyze these differences will help the City to plan and deliver equitable infrastructure, services, and maintenance activities. 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 and equity-deserving groups. For example, off-peak destination accessibility by transit is important for some members of equity-deserving groups. Equity metrics used for project and network assessment within the TMP Capital Infrastructure Plan will help create a framework for evaluating and monitoring transportation equity moving forward.

Transit affordability and service frequency are also key equity concerns. In Ottawa, a variety of transit fare discounts are available for many user groups according to age, ability, income, and other factors. 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. Discounts on monthly passes and single use fares are also provided to seniors, children, and youth. However, the cost of transit may still be a barrier for some people. As part of the next transit fare policy review (see Policy 8-2), the City will review the fare reductions for equity-deserving groups with the goal of reducing transportation-related barriers to social and economic participation.

Transit frequencies are very important to residents who use transit for most of their weekly trips, especially where trips are off-peak and/or require transfers between routes. It may therefore be appropriate to add additional transit service to some areas where the ridership does not justify it, but where it is important from an equity and inclusion lens. This will be considered as part of updating the transit service planning policies and guidelines (see Policy 8-2). Going forward, the City will continue to conduct equity and inclusion reviews of planned changes to transit service.

¹⁶ City of Toronto (2021). Equity & Climate Change in Municipal Decision-Making: Transportation Equity in Toronto. Presentation for Clean Air Council, April 13, 2021.

**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.

Policy 2-2 Promote Healthy Communities Through Transportation Planning

The City's *Official Plan* recognizes that Ottawa faces public health challenges that are integrally connected to the physical layout of communities. The built environment shapes people's decisions about how their children get to school, where they shop for groceries, how they commute, how they interact with neighbours, and much more. These decisions, in turn, have impacts on individual and community health and resiliency by affecting physical activity rates, diet, mental health, air pollution, collision rates, and other health risk factors. It is critical that, as Ottawa strives to become the most liveable mid-sized city in North America, its transportation network is designed to foster health and wellbeing.

One of the primary ways in which the transportation system can support public health goals is by encouraging active transportation as a form of physical activity. Chronic diseases such as cancer, heart disease and diabetes are the leading causes of death in the city, and this trend is only expected to grow as the population ages. Physical inactivity is known to contribute significantly to these diseases, yet more than one third of Ottawa adults and 78% of grade 7-12 students do not get the daily recommended levels of physical activity¹⁷. These figures highlight the importance of creating 15-minute neighbourhoods where active modes are safe and convenient.

The built environment also plays a role in mental health. Challenges such as social isolation and loneliness are a significant concern, particularly as we continue to manage the effects of the COVID-19 pandemic. Street design can help promote mental and social health, with streets providing important places to socialize. For example, studies have found that residents on streets with light vehicular traffic had three times more friends and two times as many acquaintances as residents on streets with heavy vehicular traffic¹⁸. In addition, residents who bike to work are 22% more likely to enjoy their commute than those who drive¹⁹. Complete, inclusive 15-minute neighbourhoods contribute to healthy communities by promoting physical activity, mental health, social interaction, and community-building. Other public health connections to transportation planning include health risks due to vehicular traffic collisions, vehicular traffic-related air pollution, exposure to extreme heat, and winter weather hazards.

Many public health objectives are already being advanced through the City's work on other transportation planning objectives, such as encouraging sustainable mode choices or improving road safety. Nonetheless, public health should be consistently and explicitly considered within transportation planning processes.

¹⁷ Ottawa Public Health, Physical Activity Data, 2017.

¹⁸ Transport Canada, Active Transportation in Canada; a resource and planning guide, 2011.

¹⁹ Transport Canada, Active Transportation in Canada; a resource and planning guide, 2011.



Within the Capital Infrastructure Plan, scenario and/or project evaluation will consider public health implications. Public health benefits of project alternatives will be considered within Environmental Assessments. Finally, there is an opportunity to apply a health lens to design guidance such as the *Multi-Modal Level of Service Guidelines*; this will ensure that design guidance captures healthy street features and that public health is considered when making trade-offs within the right-of-way.

ACTION 2-2A

Apply a health lens within the TMP Capital Infrastructure Plan, Environmental Assessments for transportation projects, and within updates to Complete Streets design guidance such as the *Multi-Modal Level of Service Guidelines*.

Policy 2-3 Design Streets for All People including Equity-Deserving Groups

Street design must consider the needs of all people – including equity-deserving groups – so that everyone can safely and conveniently move around the city. This includes ensuring that there are barrier-free options for people who use mobility aids and that people with visual and auditory impairments can safely navigate the city. Inclusive design also means accounting for different needs when designing infrastructure. For example, some people may require more buffer space between vehicular traffic and the sidewalk/bike lane to feel comfortable and safe, while others may require seating²⁰ 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 volumes, number of lanes, and separation from traffic. If a person's travel choices are limited by safety concerns, then their access to destinations has been restricted.

The security²¹ of the walking and transit environment—including lighting, passive supervision, and other elements of environmental design—is also critical for equity-deserving groups including women and racialized people. Finally, maintenance of the City's transportation infrastructure has equity implications; for example, women and caregivers are more likely to face barriers when traveling in the winter with strollers. Prioritization of maintenance activities should therefore consider the needs of equity-deserving groups. The City will continue to advance existing "complete street" 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 Policy 6-1 and Policy 8-4 respectively.

²⁰ The City of Ottawa's Older Adult Plan calls for installing additional accessible benches on existing sidewalks and pathways. This is being implemented through the Integrated Street Furniture Program.

²¹ Safety refers to reduction of fear or risk due to traffic collisions; security refers to reduction of fear or risk due to crime or harassment.



Policy 2-4 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 equity priority neighbourhoods”. These neighbourhoods have high concentrations of vulnerable residents who are more likely to face mobility poverty than people living in other areas of the city. Some TMP priority neighbourhoods, such as Foster Farm and Pinecrest Terrace, have lower sidewalk coverage than the city average. Others are divided or bordered by high-volume roads such as Carling Avenue, Walkley Road or St. Laurent Boulevard that create barriers to walkability. These neighbourhoods require special attention in meeting Official Plan objectives for 15-minute neighbourhoods (Theme 5).

Transportation-related investments in TMP priority neighbourhoods can be implemented through existing programs that deliver projects citywide. This may include efforts through the *Strategic Road Safety Action Plan*, active transportation programs, Neighbourhood Traffic Calming program, New Traffic Control Devices 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 built. Where existing programs deliver projects in TMP priority neighbourhoods, efforts should be made to include small-scale public realm improvements in the vicinity of the project through modest increases to project scope, as funding permits.

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

**ACTION 2-4A**

Accelerate transportation investments in TMP equity priority neighbourhoods, while continuing to pursue bundling opportunities to maximize the number of projects delivered citywide, as funding permits.

Policy 2-5 Continue to Pursue Affordable Housing Near Transit Stations and Along Major Corridors with Frequent Street Transit 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 major corridors with frequent street transit routes²². This includes encouraging the redevelopment of surplus public lands as affordable housing in line with the work of the Interdepartmental Taskforce on Affordable Housing near Transit Stations. It also includes exploring the use of air rights²³ over O-Train stations and other transit facilities for affordable housing; and creating requirements for affordable housing as part of new developments in Protected Major Transit Station Areas²⁴ near O-Train and Transitway stations (i.e., inclusionary zoning²⁵), as per the *Official Plan*. These and other initiatives to support affordable housing near transit are important to the creation of an equitable city.

ACTION 2-5A

Continue efforts to establish inclusionary zoning in Protected Major Transit Station Areas or wherever permitted.

²² OC Transpo's street transit routes provide the next highest frequency of service after rapid transit. These routes operate seven days a week and play a structural function in the overall transit system.

²³ Air rights refers to owning or renting the "space" above a piece of property or building.

²⁴ 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.

²⁵ 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.



Theme 3: Advance Regional Competitiveness

POLICY OVERVIEW	
Policy 3-1	Prioritize sustainable transportation options for improving regional mobility
Policy 3-2	Support a regional approach to goods movement and delivery
Policy 3-3	Pursue solutions to interprovincial goods movement
Policy 3-4	Support air, rail and bus connections to Ottawa
Policy 3-5	Create lively, people-friendly streets
Policy 3-6	Encourage temporary street reallocations for placemaking

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 *Official Plan* highlights the need for a sustainable transportation network that makes Ottawa an attractive place to live, work and visit.

Ottawa is Canada's capital and a regional centre for services in Eastern Ontario and Western Québec; it is part of a regional economy that includes the Ville de Gatineau and is closely linked to surrounding municipalities in Ontario and Québec. Given that economic activity is increasingly concentrated in large economic regions, Ottawa’s future opportunities are also tied to its connections with Toronto and Montreal, and its resulting ability to compete internationally as part of the mega-region. The TMP aims to leverage Ottawa's strategic location within the region and mega-region to improve local supply chains, while also mitigating negative impacts from goods movement.

Policies throughout the TMP support regional competitiveness by promoting a healthy, efficient and dependable transportation system that contributes to quality of life and liveability. In Theme 3, the focus is on inter-city, inter-regional, and international connections for economic development. Theme 3 emphasizes that strengthening our role as a major metropolitan centre will require ongoing cooperation with partner agencies on key files such as transit and goods movement. Finally, the TMP policies in this section emphasize the creation of vibrant, walkable streets where businesses can thrive.



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 transit mall along Wellington Street, and there are a range of interrelated proposals involving Confederation Boulevard. The City will continue to work with other agencies that are leading, implementing and financing these regional transit improvements. 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 Chief William Commanda Bridge multi-use pathway project is nearing completion and 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 continuing to provide active transportation facilities. The City is also involved in the NCC- Public Services and Procurement Canada (PSPC) project to replace the Alexandra Bridge. It is expected that the new bridge will include enhanced space for active mobility as well as space that can be adapted in the future for shared personal vehicle and transit use, or a dedicated transit-only connection (tram or light-rail).

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 corridor with transit and active transportation facilities and an enhanced public realm.





Policy 3-2 Support a Regional Approach to Goods Movement and Delivery

Ottawa is a hub that connects to land, air and sea ports in the Greater Toronto Area. It also connects with US border crossings in the west; and, Montréal, Cornwall, the Maritimes, and other US border crossings in the east. Goods travel to and from Ottawa primarily by truck, via Highways 417, 416, and to a lesser extent Highway 7. Goods also travel between Ottawa and western Québec markets, with inter-provincial goods movements from Ottawa to Gatineau using King Edward Avenue and the Macdonald-Cartier Bridge to access Quebec Highways 5 and 50.

In recent years, there have been dramatic changes in regional goods movement with the growth of e-commerce purchases and 'anytime-anywhere' deliveries, and the emergence of new logistics technologies such as automated storage and retrieval systems and e-cargo bikes. Although many Ottawa businesses are served directly from warehouses in the Greater Toronto Area, Montréal, Cornwall and elsewhere, new high-tech warehouses are now being built in and around Ottawa to provide local storage and retrieval. These large logistics facilities are usually located at the edge of the urban area and are designed to store high volumes of mobile inventory and accommodate frequent movement of smaller loads. This provides an opportunity for final delivery using smaller urban freight distribution centres and smaller, zero-emission vehicles. These changes mean that Ottawa can continue to be supplied with a wide variety of competitively priced goods, to maintain our quality of life and economic vitality.

However, there are some challenges. For example, growth in the demand for goods increases the number of vehicles circulating in the city, adding to competition for use of scarce space on the City's streets, at intersections and at the curbside. The "doorstep-delivery era" has meant a rapid increase in the number of last-kilometre deliveries - and marked and unmarked smaller delivery vehicles - in urban areas. Large and heavy vehicles can be incompatible with some land uses, creating noise, safety, and air quality concerns, as well as road design challenges; these are explored further in Theme 10. Finally, Ottawa may not be immune from climate-generated disruptions in supply chains that other parts of the country have experienced. To address these challenges and leverage opportunities, the City of Ottawa is committed to working with other levels of government and the private sector to support efficient regional goods movement while also creating vibrant, complete streets that support local businesses and healthy communities.

One aspect of this effort is to collect commercial vehicle data and monitor trends. 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.).

Other key initiatives to support regional goods movement include the following:

- Advance options to better connect Highway 417 in Ontario and Highways 5 and 50 in Quebec (Policy 3-3);



- Ensure that land use and transportation planning support regional needs for warehousing, microfulfilment, and other supporting facilities and infrastructure;
- Work with partner agencies and the private sector to monitor changes in the goods movement industry and to respond collaboratively as technologies and delivery models evolve; and,
- Pursue options to reduce and/or mitigate truck impacts in urban areas and villages, including the use of new technologies & delivery models such as smaller urban freight distribution centres, electric cargo bikes and low-speed vehicles (Policy 10-1 and 10-3).

ACTION 3-2A

Work with the freight industry and partner agencies to advance goods movement policies, technologies, and practices that can reduce community impacts, improve efficiency, and enhance regional economic development.

Policy 3-3 Pursue Solutions to Interprovincial Goods Movement

The volume of truck traffic passing through Ottawa's downtown between Highway 417 and the Macdonald-Cartier Bridge has substantial negative impacts on local neighbourhoods and businesses. Many non-local trucks currently travel along Rideau Street and King Edward Avenue through the Byward Market Special District and Design Priority Areas, creating concerns about noise, safety and air pollution. Concerns also stem from large trucks making turns onto Besserer, Rideau and Cumberland to connect to King Edward; these intersections are not well-suited to accommodating large trucks because of the high volumes of active users and constrained urban contexts.

The City will continue to work with other governments and the private sector to explore options to better connect Highway 417 in Ontario and Highways 5 and 50 in Quebec, and reduce negative 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 options. In the short-term, the NCC's *Long-Term Integrated Interprovincial Crossings Plan* calls for initiatives such as conducting a joint regional truck route and goods movement study and establishing a regional goods movement forum with the goods movement industry. Going forward, a wide variety of options and combinations of options should continue to be explored, including hard infrastructure such as a tunnel or bridge, pricing strategies, modifications to truck routes and restrictions by context, as well as mitigation strategies to minimize impacts on surrounding communities.

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. This will occur as part of a comprehensive review of the City's truck route network (further discussed in Policy 10-1).

ACTION 3-3A

Work with federal, provincial, municipal and private sector partners in the National Capital Region to provide an appropriate connection for trucks between Highway 417 and Highways 5 and 50.



Policy 3-4 Support Air, Rail and Bus Connections to Ottawa

Travel between Ottawa and other regions is important for the local economy and tourism. Ottawa's MacDonald-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 year²⁶. This area has been identified as a Special Economic District in the *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. The City will also collaborate with service providers to facilitate intercity bus operations and will support efforts to establish a new intercity bus terminal. As per the *Official Plan*, all new passenger terminals are to be located along the O-Train network and preferably within the Downtown Core or Inner Urban transects. Through the *Official Plan*, the City has also protected all rail corridors that could potentially be used in the future for regional and inter-regional transit. Existing rail connections to Ottawa play an important role in supporting passenger movement, and the City will support improvements to such connections where opportunities exist, such as through the federal government's High Frequency Rail project. This project - covering Toronto, Peterborough, Ottawa, Montréal, Trois Rivières, and Québec City - is expected to deliver an enhanced passenger experience on an electrified network with service that is more frequent, faster, more reliable, and eco-friendly.



²⁶ City of Ottawa Official Plan, 2021.



Policy 3-5 Create Lively, People-Friendly Streets

While many policies in the TMP address walkability, this section specifically addresses the creation of lively streets that support placemaking and local business success.²⁷ One of the key focus areas for such efforts is Downtown Ottawa. Building on initiatives including *Downtown Moves* and the *Byward Market Public Realm Plan*, the City will aim to make walking, cycling and transit use in the downtown more comfortable and convenient by re-allocating road space and improving the streetscape environment. Street design features that support temporary or permanent vehicle restrictions - for example, using removable bollards - should also be considered. Downtown street closures may be helpful for special events, protests, and/or security purposes.

There are some streets across Ottawa 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. The *Official Plan* recognizes certain key areas through the designation of "Design Priority Areas" including "City-defining Special Districts" and "Special Economic Districts" that shape the image of the City through cultural heritage, tourism attraction, and/or economic generation. The *Official Plan* also defines specific transportation and mobility priorities for many of these areas; for example, recommendations for the Kanata North Economic District include increasing reliance on sustainable transportation as redevelopment occurs; prioritizing the quality of pedestrian spaces on March Road and Legget Drive; and creating better connections between future rapid transit and the rest of the district.

In Design Priority Areas, including Special Districts and other key locations, the design of the street needs to prioritize "placemaking". The City (and partners) will incorporate placemaking concepts into street design 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 shade and shelter, places to rest, interesting things to see and do, and infrastructure that is well-maintained. Elements that contribute to 15-minute neighbourhoods and the quality of the pedestrian environment (Exhibit 9 in Policy 5-3) should also be encouraged including buffering between sidewalks and vehicle lanes, and minimizing the number and width of driveways. For road reconstruction projects, placemaking features will generally need to be accommodated within the existing right-of-way.

As part of road reconstruction projects, there is often interest in burying overhead wiring to gain space and improve the public realm. As per the *Official Plan*, burying overhead wiring as part of



²⁷ For example, the New York City Department of Transportation (2012) evaluated the economic benefits of street redesigns and found that adding walking and/or cycling facilities increased local business retail sales and reduced commercial vacancies relative to borough-wide trends. Research from Living Streets in the UK (2018) also supports the link between streetscape improvements and existing business performance, as well as benefits for urban regeneration.



development or capital projects will be prioritized within select Design Priority Areas where financially viable or as otherwise directed by Council.

ACTION 3-5A

Advance City projects to create more vibrant, inclusive, safe, secure, and accessible downtown streets.

ACTION 3-5B

Develop design guidance to incorporate “placemaking” into street design and development review.

Policy 3-6 Encourage Temporary Street Reallocations for Placemaking

The *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 shade and greenery, allow for creativity and cultural expression, support local businesses, promote tourism, and provide opportunities for rest and play. According to the *Official Plan*, repurposing streets for placemaking is most appropriate for streets that 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 pedestrian and cyclist health measures. More recently, street reallocations have focused on economic recovery. For example, the City has worked with partners to implement lane or road closures in locations such as York Street from Byward Market Square to Sussex Drive, with programming provided by Business Improvement Associations (BIAs). Such initiatives can be expanded and evolved going forward, including encouraging new types of amenities and/or programming that further enhance the user's experience.²⁸ The City will encourage businesses and community groups to use streets for temporary or seasonal placemaking activities such as patios or parklets, and will provide City support for these efforts. This could include developing a toolkit to assist in planning and implementation. Greater City involvement may be required to ensure that these initiatives are also implemented in and around TMP equity priority neighbourhoods. In expanding seasonal or temporary reallocation of space, a number of considerations need to be addressed, including requirements for transit and para-transit service. Lessons learned from temporary or seasonal placemaking interventions may help to inform permanent street redesigns.

ACTION 3-6A

Encourage businesses and community partners to use streets for temporary or seasonal placemaking activities such as patios or parklets, and provide City support for these efforts.

²⁸ Examples include art installations, planter boxes, lighting, umbrellas, gazebos, drinking water stations, wayfinding signage, play structures, seating areas, and interpretive installations.



Theme 4: Respond to Change

POLICY OVERVIEW	
Policy 4-1	Monitor and respond to changing travel patterns
Policy 4-2	Harness the power of data generated by new technologies
Policy 4-3	Improve performance and adaptability of the transportation system
Policy 4-4	Leverage the shared mobility marketplace to achieve City objectives
Policy 4-5	Prepare for vehicle automation

Technology has changed rapidly in recent years, 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 activity. The rapid pace of change is expected to continue, with new shared mobility options and Mobility as a Service (MaaS)²⁹ on the horizon. Fully automated vehicle technology continues to progress and has the potential to transform the transportation system. While it is unclear how rapidly this technology will become part of our daily lives, the City must prepare for its eventual arrival.

The TMP’s policies aim to help the City harness data to improve transportation planning and operations, and leverage technology and innovation to enhance the safety, convenience, and reliability of Ottawa's transportation system. 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 City goals related to climate change, the economy, healthy communities, safety, and equity. Despite changes in technologies, existing sustainable modes - walking, cycling and transit - and combinations of these modes are expected to remain central to creating a healthy, liveable, and sustainable city.

The TMP also emphasizes the importance of a nimble transportation system that can mitigate risks related to future uncertainty and respond rapidly to changes in the mobility environment using a data-driven approach. This will increase the city's resiliency to a range of disruptors such as pandemics, extreme weather events, economic changes, or emergencies.

²⁹ Mobility-as-a-Service is the provision of complete multimodal trips as a service rather than selling vehicles or individual trip segments.



Policy 4-1 Monitor and Respond to Changing Travel Patterns

The COVID-19 pandemic significantly altered travel behaviour in Ottawa, and travel patterns continue to evolve. The pandemic accelerated online shopping trends and has caused a re-thinking of traditional work arrangements. Today, many office workers continue to work from home at least some of the time, and public transit ridership has not yet returned to pre-pandemic levels. However, vehicle counts in many locations have rebounded, especially in the afternoon peak period. While the long-term impacts of the pandemic are not yet known, the City will continue to monitor vehicular traffic, transit ridership, active transportation usage, and other indicators to understand how daily travel patterns are evolving and to optimize the transportation system accordingly. The City will seek not just to respond to changes, but to shape travel patterns in support of city objectives, with a particular focus on encouraging trips by sustainable modes.

Accordingly, the City will seek opportunities to repurpose peak road capacity to provide additional space for pedestrians, cyclists, transit and/or placemaking. This is particularly important in locations such as the



downtown core, main streets, existing/emerging 15-minute neighbourhoods, 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. Projects that repurpose roadway space should be evaluated following implementation, to better understand their impacts. The City will also continue to monitor transit ridership and travel patterns to inform ongoing transit service planning, recognizing the important connection between transit service levels, network design, and the competitiveness of transit as a travel mode.

In the fall of 2022, the City and its partner agencies conducted an Origin-Destination (OD) Travel Survey to collect detailed information about residents' trips over the course of a typical day. While the data is still being analyzed, the 2022 OD Survey will establish a new baseline for travel in Ottawa, and is a key input for forecasting travel demand and assessing network requirements within the TMP Capital Infrastructure Plan. With recent changes in travel patterns, some projects may become more critical while others become less important. Given the uncertainty in post-pandemic travel patterns and other mobility trends, the Capital Infrastructure Plan will assess the sensitivity of the network recommendations to potential variations in travel demand.³⁰

Recognizing the importance of up-to-date data for transportation planning, the City and its partner agencies are also exploring the option of conducting the OD Survey on an annual or semi-annual basis (with a corresponding adjustment to the sample size), rather than every 5 to 10 years as has traditionally been the case.

³⁰ For example, the sensitivity analysis could consider how performance metrics for each investment scenario would change if work-from-home levels are higher or lower than projected.

**ACTION 4-1A**

Monitor evolving traffic levels, identify opportunities to repurpose excess road capacity for other uses, and evaluate projects following implementation.

ACTION 4-1B

Undertake surveys and other data collection initiatives to monitor and assess travel trends, update forecasting tools, and support transportation planning activities; and consider increasing the frequency of Origin-Destination Survey data collection going forward.

Policy 4-2 Harness the Power of Data Generated by New Technologies

The City of Ottawa's transportation data collection has become increasingly advanced. New data collection techniques using sensors and cameras have replaced manual traffic surveys and counts. Advanced multimodal count technology is being piloted, with plans to implement new permanent count stations at select locations city-wide. City fleet vehicles are being outfitted with telematics to generate real-time data that can be used for operational improvements. Anonymized location-based data purchased from third parties provides the City with an invaluable new source of information on trip patterns as well as corridor speeds. The City receives reported collision data from police services in the National Capital Region and also uses crowd-sourced data on cycling collisions, near misses and hazards. The City also shares transportation datasets with the public through Ottawa Open Data, thereby fostering transparency and encouraging innovative use of data.

Data is a public good. The City requires access to data from mobility service providers operating in the public right-of-way to ensure positive outcomes for safety, equity, and mobility. In particular, new data and analytics will be required to understand changes in travel patterns as well as the evolving role of new mobility services. Without mandating City access to this data, the City risks overseeing a transportation network it does not fully understand. The City will ensure that agreements with new mobility companies provide the City with vehicle and trip data as a requirement for operating on City streets, while ensuring appropriate safeguards are in place to protect residents' personal information.

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. This will include seeking new datasets, implementing new information technology solutions, and enhancing analytical capabilities within the organization. It will also include sharing additional data as Open Data, following municipal best practices for standardized open data formats.³¹ The City's work to advance data collection, analytics and management will be led by an inter-departmental Transportation Data Working Group and guided by a Transportation Data Strategy. Collaboration with other regional partners on transportation data will also continue to be pursued.

³¹ Providing real-time transit service information and up-to-date cycling facility information as open data are further discussed in policies 8-3 and 7-11, respectively.



Finally, the City will formalize its process for reporting on the performance of the transportation system. Already, various groups have established performance metrics that track progress on key objectives.³² As part of annual reports to Council on progress on the Official Plan, the City will develop a set of metrics that reflect the state of the transportation system and progress towards mobility objectives.

- ACTION 4-2A** Ensure that agreements with mobility providers allow for appropriate data access for monitoring and transportation planning purposes.

- ACTION 4-2B** Establish a Transportation Data Working Group and develop a Transportation Data Strategy to encourage effective and innovative mobility data collection and analysis.

- ACTION 4-2C** Report to Council regularly on the state of the transportation system in Ottawa and progress toward the objectives of the *Official Plan* and TMP.

Policy 4-3 Improve the Performance and Adaptability of the Transportation System

Transportation system management (TSM) optimizes the efficiency of existing transportation infrastructure, increasing people-moving capacity and reducing the need to build new streets or widen existing ones. TSM measures can be applied across the entire transportation system, along major corridors, or at individual locations. In 2012, the City adopted a *TSM Strategy and Action Plan* that provides a detailed blueprint for action in several areas, including incident management, traveller information, maintenance, and innovation. In the coming years, the City will update the *TSM Strategy and Action Plan*, including a focus on reducing delay for sustainable modes.

Advanced traffic management systems (ATMS) are an example of TSM. ATMS applies computer, sensor, communications, and other technologies to improve the safety and efficiency of the movement of people and goods on the existing road network. ATMS can be used to improve mobility 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 about half of road congestion delays are a result of “non-recurring” sources, such as collisions, vehicle breakdowns, special events, adverse weather, and construction³³. 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.

³² For example, OC Transpo recently released a Performance Monitoring Framework for transit, and the City's annual GHG emissions inventory quantifies community and corporate GHG emissions from transportation.

³³ Federal Highway Administration, U.S. Department of Transportation.



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 multimodal safety and performance of the transportation system.



ACTION 4-3A Update the *TSM Strategy and Action Plan*, including a focus on reducing delay for sustainable modes, while continuing to implement recommendations from the existing plan.

ACTION 4-3B Continue to deploy traffic cameras that provide visual confirmation of conditions at key intersections.

ACTION 4-3C Implement dynamic message signs at strategic locations to inform travellers of traffic conditions and incidents.

Policy 4-4 Leverage the Shared Mobility Marketplace to Achieve City Objectives

Shared mobility allows users to access transportation services on an as-needed basis, rather than using a personally-owned vehicle or device. In recent years, shared mobility has grown to encompass a variety of transportation modes including carsharing, ridehailing, and "micro-mobility" services such as bike sharing, e-bike sharing and e-scooter sharing. It also includes "mobility-as-a-service", whereby users can access multiple public and private mobility services (e.g. public transit, ridehailing, taxis, carshare, bike share, scooter share) on demand, through a single platform and payment channel. While shared mobility may be 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 *Official Plan*.



Shared mobility services complement public transit and facilitate a lifestyle where all types of trips can be made without the need to own a car. Bike share, 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. Based on research in other cities, approximately 10-35% of bike share users are typically attracted from auto modes³⁴. Similarly, ridehailing and carsharing can be used to connect to public transit, and also facilitate trips for which public transit may not be a viable option (e.g. a late-night trip or a trip to a destination outside the city); in some studies, carsharing has been shown to reduce overall car ownership rates³⁵. However, shared mobility services can also have negative impacts. For example, fleets of shared bikes or e-scooters require space in the street furniture zone and can create accessibility barriers if incorrectly parked on sidewalks. Ridehailing has been shown to increase congestion and the amount of vehicular travel in major cities.³⁶



The City will play 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 to minimize any negative impacts of shared mobility.

The City will continue to explore opportunities to provide bike share and other shared micro-mobility services in Ottawa, including through partnerships with private companies, recognizing these services as a critical link to the City's rapid transit system. Where warranted, pilots may be undertaken to ensure such services meet the City's objectives prior to more widespread adoption. Further, the City will support carshare use citywide, such as providing dedicated carshare spaces at transit stations, recreation facilities, and other City facilities as appropriate. New service models such as free floating carshare³⁷ will also be enabled where feasible, to support more residents in living car-free or car-light. Finally,



³⁴ Hamilton Shared Micro-Mobility, Appendix A: Assessment of Operating Models, Funding Sources, and Role of Not-For-Profit Organizations. 2020.

³⁵ Martin, Elliot & Shaheen, Susan. (2011). The impact of carsharing on household vehicle ownership. *Access* 38, 22-27.

³⁶ Heno, A., Marshall, W.E. (2019). The impact of ride-hailing on vehicle miles traveled. *Transportation* 46, 2173–2194. Also, SFCTA (October 2018) TNCs & Congestion.

³⁷ Free-floating car-sharing is a service for sharing vehicles without fixed stations; users can return a vehicle anywhere within the designated service area and can therefore use vehicles for one-way trips.



collaboration between the City of Ottawa, Ville de Gatineau, and National Capital Commission on shared mobility services and their regulation will enable more efficient and coherent regional mobility systems.

ACTION 4-4A

Explore opportunities to provide shared micro-mobility services in Ottawa, recognizing these services as a critical link to the rapid transit system, and ensure safety, comfort, and accessibility are prioritized for both users and non-users.

Policy 4-5 Prepare for Vehicle Automation

Automated vehicles (AVs) are a technology that could revolutionize the way travellers move around cities. As the home of the Area X.O AV facility³⁸ and strong technology and innovation sectors, Ottawa is uniquely positioned to be a Canadian leader in AV technology development and deployment. Ottawa has already hosted several first-in-Canada AV trials, led by public and private sector partners including Invest Ottawa, Transport Canada, and the Kanata North Business Association. At the same time, with much uncertainty on the timelines for technology deployment, societal acceptance, and impacts on communities, the City must be diligent in preparing for a range of possibilities. While AVs could bring positive changes by adding new options to the mobility landscape, they could also introduce challenges such as empty cars traveling on busy roads during peak periods.

A core City of Ottawa objective related to AVs is to avoid increases in vehicle travel and the associated negative impacts, such as congestion, increased demand for new vehicle infrastructure, and air pollution. To achieve this, high-capacity public transit must remain the backbone of the transportation system, with walking and cycling to enable shorter trips and trips to transit. AV technology can be used to complement and support public transit and active transportation, for example, by providing connections to high-capacity transit. Related policy objectives include: promoting higher vehicle occupancies within new AV-driven mobility services; maintaining street designs that prioritize active transportation; disincentivizing empty cars on the road; mitigating any potential negative impacts on urban form; advancing public health; improving road safety and accessibility for all users; and ensuring that the benefits of new AV-driven mobility services equitably reach Ottawa residents.

In recent years, companies have also shown an interest in the potential use of drones (also known as unmanned aerial vehicles, or UAVs) for commercial deliveries. UAVs have many potential applications; for example, elsewhere in Canada they have been shown to provide an efficient option for time-critical deliveries, deliveries to difficult-to-reach rural areas, and deliveries of emergency supplies. The federal and provincial regulatory frameworks for UAVs are evolving in response to the potential applications and technological advancements, while seeking to address safety, privacy and air traffic control challenges. In addition, companies are proposing the use of sidewalk robots for last-mile deliveries, amidst concerns about safety and accessibility.

³⁸ Area X.O is a facility designed to safely and securely create and test new mobility technologies including AVs.



The City will create an AV readiness working group with leaders from key City departments that will collaborate with federal, provincial, regional, and local partners to leverage the opportunities and address the challenges. The working group will consider both policy and technology implications, including monitoring AV technology safety, federal and provincial regulations, and performance as it matures.

The City will also support the Kanata North Business Association in its efforts to implement an AV transit network and other AV initiatives that promote Ottawa as a leader in AV technology. This will include working with other levels of government to allow AV transit services on City roadways within the Kanata North Economic District, once the safety and reliability of the technology has been proven.

Finally, the City will evaluate and enable the use of other automated transportation technologies such as drones and sidewalk delivery robots on a case-by-case basis, to support innovation while also ensuring that new technologies advance City objectives and do not compromise safety for vulnerable users.

ACTION 4-5A

Create an automated vehicles readiness working group to monitor the forthcoming emergence of automated vehicle technologies, and to advance policies, regulations, design guidelines and infrastructure that maximize the potential advantages of AVs while mitigating potential negative impacts.



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	Encourage sustainable transportation through community planning and design
Policy 5-4	Incorporate Official Plan “transects” into transportation planning
Policy 5-5	Align development tools to support targets for travel mode shares
Policy 5-6	Update land protections for transportation corridors to support city-building
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 *Official Plan* sets direction to accommodate 47% of new dwellings within the existing built-up urban area of the city. With this scale of growth and intensification, demand on the transportation system will increase and the City will need to accommodate this demand through more space-efficient modes. The *Official Plan* also 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 *Official Plan* emphasizes 15-minute neighbourhoods where many daily needs can be met within a 15-minute walk from home³⁹.

The *Official Plan* provides further policy direction on sustainable mobility, context-sensitive planning, transit-supportive land use, and defining streets based on their function as either “access” or “flow and capacity”. Finally, the *Official Plan* emphasizes the connections between transportation and quality of life objectives such as health, safety, well-being, and affordability. For example, residents living in 15-minute neighbourhoods and near rapid transit can more easily live car-light or car-free and achieve physical activity through transportation. To achieve the *Official Plan* objectives, new communities must be designed to encourage walking, cycling and public transit from the outset, through coordinated land use and transportation planning. Transportation networks in existing communities must evolve to support higher density housing, including enhanced public transit and healthy, complete streets. The TMP supports the policy directions in the *Official Plan* and aims to foster the evolution of transit-supportive development, 15-minute neighbourhoods and a more liveable city.

³⁹ As walking speed varies according to the person, 15-minute neighbourhoods are based on an average adult walking speed of 5 km per hour; however, the principles behind 15-minute neighbourhoods are designed to make communities more liveable for all residents regardless of age, ability, or chosen travel mode.



An “access” street has a close relationship to its surrounding land-uses and exhibits slow vehicle speeds. In contrast, a “flow and capacity” street plays a structural role in the overall street grid by virtue of its role in moving people and goods over longer distances, between different areas of the city. Both “access” and “flow and capacity” streets prioritize sustainable and space-efficient modes.

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:

- Everyone should be able to get to and from all properties and amenities in the city.
- People using all travel modes should be able to safely navigate the city in a connected manner.
- The travel modes people choose (e.g., walking, cycling, transit, driving, etc.) are largely a result of relative competitiveness.⁴⁰ Modes to be encouraged should be given a competitive advantage through time, cost, distance, comfort, or other factors.
- The sustainable travel modes have different ideal trip distances. Walking is most likely to be used for trips of up to 15 minutes (1 to 1.5 km), while transit is best suited for trips that are longer than this. Cycling is most likely to be used for trips that are up to 8 km, although e-bike technology may extend this ideal trip distance.
- To encourage sustainable modes, network design should consider the unique needs and characteristics of these modes. 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.⁴¹ These characteristics are summarized in Exhibit 7.
- Transportation and land use influence each other and must be considered concurrently. Areas of dense land use require a focus on spatially efficient transportation modes (e.g., walking, cycling, and transit), as these areas are not compatible with high-speed vehicular travel.
- 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.

These network principles connect to the TMP Guiding Principle (Annex B) of reducing automobile dependence by making walking and cycling more attractive than driving for short trips; and making transit more attractive than driving for long trips.

⁴⁰ A person's choice of travel mode depends on the characteristics of the transportation network, such as travel time, cost, comfort, and reliability. Together, these factors determine the relative competitiveness (or attractiveness) of each mode for a given trip. People's mode choices are also linked to social, economic, cultural, and environmental factors.

⁴¹ Miller, E., Shalaby, A., Diab, E. *et al.* (2018). Canadian Transit Ridership Trends Study.



Exhibit 7: Importance of Trip Characteristics for Different Travel Modes

Travel Mode	Route Directness	Trip Time ¹	Quality of Travel Environment	Ease of Wayfinding
Pedestrian	Extremely Important	Important	Extremely Important	Very Important
Cyclist²	Very Important	Important	Very Important	Very Important
Car	Somewhat Important	Important	Somewhat Important	Important
Truck	Important	Important	Somewhat Important	Important
Transit	Important	Very Important	Important	Extremely Important

1. Includes travel time reliability and time spent waiting for a bus, train, taxi or ridehail vehicle; evidence suggests that riders view wait time as a much more onerous burden than an equivalent amount of time spent in travel ⁴²

2. These characteristics will differ for cyclists using e-bikes; in particular, they will be less sensitive to route directness

To encourage greater use of active modes, pedestrian and cycling networks should be denser and more direct than motor vehicle travel for short trips, and therefore pedestrians and cyclists should be accommodated on all roadways and at all intersections within the Urban Area and Villages (excluding highways and transit-only roads). In contexts where road networks are not very dense, additional crossing opportunities for active users are required. Dense crossings are particularly important on arterial and collector roads where there are destinations such as housing, bus stops, parks, retail, or other amenities on both sides. Where major barriers exist (such as rivers or highways), pedestrian and cycling facilities should be provided on all crossings - and at a greater density than the road network where feasible. Within local street networks, physical modifications can be applied to create filtered permeability⁴³, resulting in shorter and more direct routes for active modes, and a safer and more comfortable travel environment. Multi-use pathway shortcuts, contraflow facilities on one-way roads, and other measures to reduce stops and delays can also contribute to the objective of shorter trips for active modes.

In contrast, efforts to promote transit use should focus on improving "door-to-door" trip times relative to driving. This includes improving travel time reliability and minimizing total travel time, especially waiting time. Land use and street design are critical to enable direct transit routes with ridership demand that

⁴² Lam W., and Morrall J. F.. Bus Passenger Walking Distance and Waiting Times: A Summer-Winter Comparison. Transportation Quarterly, Vol 36, No. 3, 1982, pp. 407–421.

⁴³ Filtered permeability involves “filtering out” through-vehicles on selected streets (i.e. vehicles without an origin or destination on the street) to create a more safe, comfortable and attractive environment for walking and cycling, while maintaining access for local traffic. Residents living in neighbourhoods with street networks with filtered permeability were found to have higher walking mode shares than residents living in similar neighbourhoods but with different street networks (Frank, L.D. and Hawkins, D., 2008. Giving Pedestrians an Edge—Using Street Layout to Influence Transportation Choice. Ottawa: Canada Mortgage and Housing Corporation.) The City will need to review area traffic impacts and conduct public engagement before implementing any permanent vehicle restrictions to create filtered permeability.

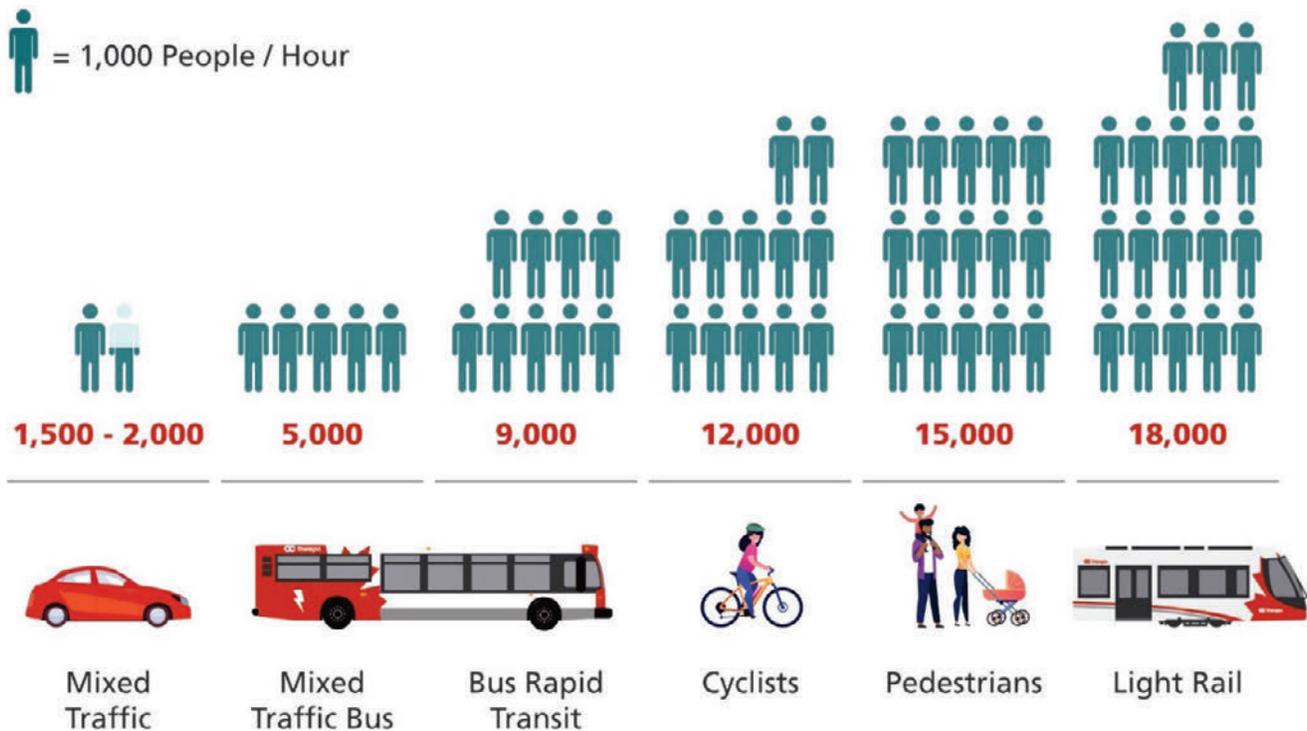


supports high frequencies (see Policy 5-3). The directness and connectivity of active transportation networks should be a particular focus around transit stops and stations, since this determines how many properties fall within the catchment area of the stop by walking and cycling (see Policy 8-5).

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 8, 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 period travel demand is financially and spatially 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. Further, adding road capacity to address peak period congestion usually results in "induced demand" or "latent demand". By making driving more attractive, residents are encouraged to shift modes, travel times, or destinations to take advantage of the new capacity, and may even be encouraged to travel more frequently. This means that congestion often returns to previous levels despite the extra vehicle capacity⁴⁴. In urbanized areas, destination accessibility and multimodal mobility will therefore be the priority over peak period vehicular capacity; this will require additional investments in walking, cycling, transit, and "complete streets".

Exhibit 8: People Moving Capacity per Hour on a 3.5 m wide space



Adapted from the Transformative Urban Mobility Initiative

⁴⁴ Hymel, K. (2019). If you build it, they will drive: Measuring induced demand for vehicle travel in urban areas. *Transport Policy*, 76, 57-66.



As noted in Policy 9-2, projects to add road capacity will still be required in certain contexts - for example, to complete the transportation network in new or growing areas of the city. Dedicated roadway space may also be required to support a convenient and reliable public transit system.

The *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 requires "complete street" upgrades to existing streets to encourage the use of sustainable modes. 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 without a corresponding increase in vehicles requires measures to increase the relative attractiveness of transit and active modes compared to driving. Policies and actions to achieve this are embedded throughout the TMP.

Policy 5-3 Encourage Sustainable Transportation Through Community Planning and Design

The *Official Plan* recognizes that land use and transportation systems are interconnected and strongly influence public health and quality of life. The *Official Plan* emphasizes the development of compact, integrated land uses to encourage walking, cycling and transit ridership. 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 and transit-supportive development patterns also enable more efficient transit service and help to attract higher ridership. Transit and walkability are mutually supported by many of the same built environment factors, such as a vibrant public realm and higher-density housing located near commercial uses. Walkability is among the best predictors of demand for transit, with transit users more than three times as likely as non-users to achieve recommended levels of daily physical activity.⁴⁵

The *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. The *Official Plan* aims to create high quality pedestrian environments featuring the key elements noted in

Exhibit 9. 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

⁴⁵ Translink (2012). Transit-Oriented Communities Design Guidelines.



and creating “Healthy Streets”⁴⁶ that are welcoming places to be, rather than simply move through. These objectives and key elements apply to both new and existing communities.

Finally, the *Official Plan* emphasizes the importance of coordinating new subdivisions with the provision of transit service and transit infrastructure.⁴⁷ Early transit service 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 or starting a new job) and are difficult to change once established.⁴⁸ Providing transit service early in the life of new developments enables new residents to use transit from the outset.



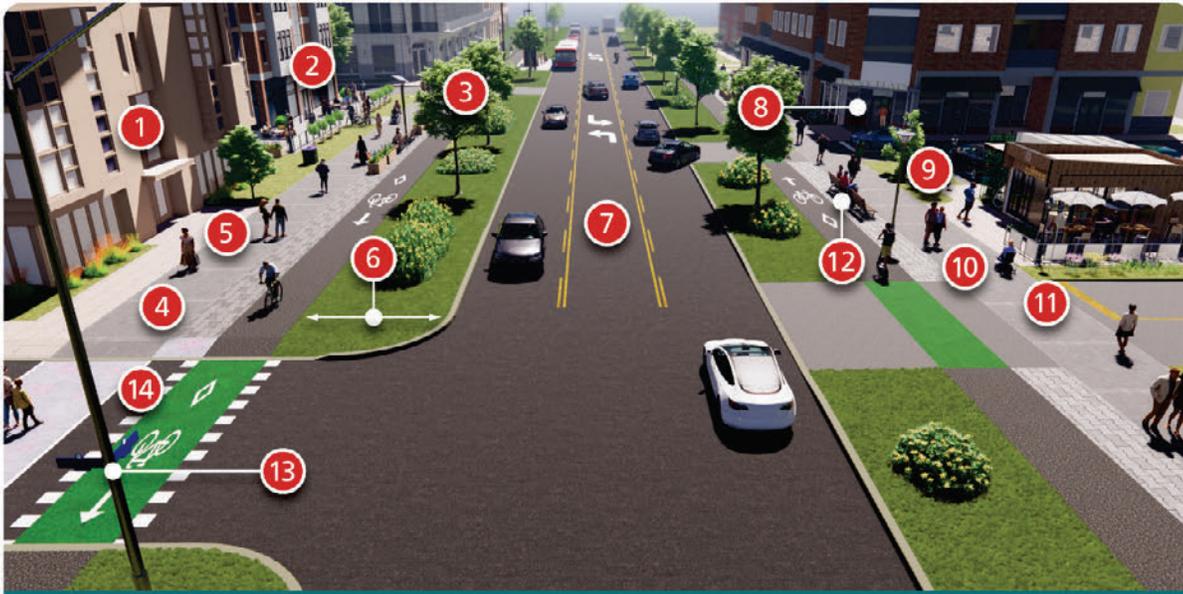
⁴⁶ Based on research by Lucy Saunders, the 10 indicators of Healthy Streets are: everyone feels welcome; easy to cross; shade & shelter; places to stop & rest; not too noisy; people choose to walk & cycle; people feel safe; things to see & do; people feel relaxed; and clean air. For more information see www.healthystreets.com

⁴⁷ See *Official Plan* section 5.6.2.1 policy #3 that applies to the Future Neighbourhood Overlay, as well as section 4.1.2 policy #16 that addresses the timing and phasing of development.

⁴⁸ Clark, B., Chatterjee, K., & Melia, S. (2016). Changes to commute mode: The role of life events, spatial context and environmental attitude. *Transportation Research Part A: Policy and Practice*, 89, 89-105.



Exhibit 9: Elements that Contribute to the Quality of the Pedestrian Environment⁴⁹



- | | |
|--|--|
| <ul style="list-style-type: none"> ① Building height and massing that fits the neighbourhood ② Passive supervision ③ Street trees that provide shade ④ Absence of sidewalk cycling/scooting ⑤ High quality and wide sidewalks ⑥ Buffering from traffic ⑦ Few traffic lanes and low traffic speeds ⑧ Active frontage ⑨ Adequate lighting | <ul style="list-style-type: none"> ⑩ Presence of other people walking ⑪ Minimal driveways and surface parking lots ⑫ Benches ⑬ Wayfinding and signage ⑭ Safe intersections <p>Also:</p> <ul style="list-style-type: none">  Adequate winter clearance of ice and snow  Public art and places for children to play  Midblock crossing opportunities |
|--|--|

Source: Adapted from the City of Ottawa 15-Minute Neighbourhoods Baseline Report (September 2021)

⁴⁹ Passive supervision includes the concept of Crime Prevention Through Environmental Design (CPTED). CPTED is a multi-disciplinary approach of crime prevention that uses urban and architectural design and the management of built and natural environments. CPTED strategies aim to reduce victimization, deter offender decisions that precede criminal acts, and build a sense of community among inhabitants so they can gain territorial control of areas, reduce crime, and minimize fear of crime. CPTED measures include lighting, adjacent buildings with windows facing the street, avoidance of blind corners, and sufficient population density to increase the proportion of “casual eyes on the street”.



Community Design Plans (CDPs), Secondary Plans, and site design are important tools for advancing 15-minute neighbourhoods and transit-supportive development in both new and existing communities. In new growth areas, planning land use and transportation together is critical to ensure that walking, cycling and transit are the most attractive modes from day one. In existing neighbourhoods, CDPs and Secondary Plans will help to identify transportation network changes to support intensification and enable car-free or car-light lifestyles. Theme 6 and Theme 7 discuss the provision of walking and cycling infrastructure through development and redevelopment, while the policies below address other opportunities to support sustainable transportation more broadly through community and land use planning.

- **Road Network Design.** New neighbourhood 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, 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 wide streets and intersections that tend to act as barriers between neighbourhoods. As per the *Official Plan* (policy 5.4.4), fine-grained and fully-connected grid street networks with short blocks will encourage connectivity and walkability. A Street Planning Manual for New Neighbourhoods will provide further details on road network design (including the design of new private roads) to create 15-minute neighbourhoods.
- **Transit-Supportive Design.** The *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 direct and convenient access to transit, including station connectivity where appropriate. Redevelopment should improve connectivity to the surrounding urban fabric, including through extending or creating new public streets, establishing mid-block connections, and providing sidewalks and pathways. Traffic impact assessments (TIAs) in both new and established communities should include connectivity maps of pathways and active transportation connections to transit; this should be established as a requirement as part of the next update to the TIA Guidelines (see Action 5-5B).
- **Pathways, Bridges and Access to Green Space.** Local off-street trails, parks, natural features, and other green spaces contribute to health and well-being and also support sustainable transportation. Secondary Plans and Community Design Plans will identify off-road pathways through new communities and major redevelopment sites that provide access to green space and/or follow riverine corridors. These Plans will also identify multi-use pathways and active transportation bridges that shorten trip distances relative to the road network, as needed, following the network principles in Policy 5-1.
- **School Sites and Surrounding Streets.** Schools are a significant community destination; walking or cycling to school helps to establish healthy lifestyles from a young age. Siting and design of new schools must facilitate safe walking and cycling as the primary means of travel to and from school, as per the *Official Plan* (section 4.10). This includes avoiding the creation of new "hazard zones" - i.e. parts of neighbourhoods from which walking to and from school is deemed unsafe. Measures will also be pursued in existing communities to prioritize active trips to school, reduce vehicular stopping/idling related to student drop-off and pick-up, and



improve safety along school frontages (see Policy 11-2). Walking and cycling connectivity between schools and neighbourhood greenspace should be provided where feasible.

- **Seniors' Centres.** Many older adults rely on walking and public transit for transportation and may struggle to reach their destinations if sidewalks are absent, uneven, or covered in ice and snow. Safe, comfortable, accessible, and well-maintained transportation infrastructure is therefore critical on the streets surrounding seniors' centres and connecting to key destinations for older adults. Seniors' centres should also be sited for easy access to neighbourhood amenities. The City will consider the needs of older adults in planning new communities and in seeking to improve mobility in existing neighbourhoods.
- **Parking Lot Design.** Where new surface car parking lots are required as part of private developments or public sector projects, they should include shade, stormwater management features (including LID), and facilities that accommodate safe cycling and pedestrian movements across parking lots and to building entrances. Opportunities to incorporate renewable energy generation into new surface parking lots should be explored where the size of the lot is significant. Car parking lots should be located at the rear of sites wherever feasible and include regular spacing of tree islands, as described by the *Official Plan*.
- **Redevelopment of Surface Parking Around Transit Stations.** Surface car parking lots within Protected Major Transit Station Areas (PMTSAs) detract from the pedestrian environment, contribute to the urban heat island effect, 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.
- **Park-and-Ride Facilities.** A new Park-and-Ride Strategy is under development to identify existing and future needs and determine how the City can use park-and-ride facilities to support transportation network objectives. The Strategy will include pricing strategies and considerations related to conversion to transit-supportive development, following from the *Official Plan*.
- **Fifteen-minute neighbourhoods:** New neighbourhoods must be designed and built as 15-minute neighbourhoods from the outset, considering the network principles in Policy 5-1. In existing communities, 15-minute neighbourhoods can be advanced by actions such as: reallocating space on commercial streets to provide public realm amenities and strategically support local businesses; providing cycling facilities and wider sidewalks; increasing buffering of pedestrians and cyclists from vehicular traffic; adding street trees and greenery; reducing vehicle speeds; and improving maintenance standards for commercial streets. The 15-Minute Neighbourhoods Baseline Report provides more details on existing neighbourhood characteristics by transect and opportunities for improvement.

**ACTION 5-3A**

Complete the Street Planning Manual for New Neighbourhoods as part of the Building Better and Smarter Suburbs initiative to ensure that new road networks create 15-minute neighbourhoods and encourage sustainable transportation.

ACTION 5-3B

Develop a strategy to redevelop or encourage redevelopment of large publicly owned surface car parking lots within Protected Major Transit Station Areas.

ACTION 5-3C

Complete the new Park-and-Ride Strategy for Ottawa, considering existing and future Park-and-Ride demand.

ACTION 5-3D

Update requirements for new or redeveloped large surface parking lots (including City-owned lots) to ensure that appropriate measures are included for shade, stormwater management features (including LID), and facilities that accommodate safe cycling and pedestrian movements.

Policy 5-4 Incorporate Official Plan “Transects” Into Transportation Planning

The *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. The transects are shown in Exhibit 2. Drawing from the *Official Plan* and 15-minute Neighbourhoods Baseline Report, key mobility characteristics and policy directions for each transect are summarized below. The transects will inform transportation planning, including whether streets should be designed for “access” or “flow and capacity” (see Policy 9-3). Transect-specific considerations for intersection redesigns are discussed in Policy 10-3. Sidewalk and cycling facility requirements by transect are identified in Policy 6-2 and Policy 7-2, respectively. Transects will also be considered as part of the update to the City’s *Multi-Modal Level of Service Guidelines* (see Policy 9-1), along with other *Official Plan* designations such as Design Priority Areas. In the Capital Infrastructure Plan, mode share targets are expected to be established by transect.

Downtown Core and Inner Urban

The Downtown Core features a mature built environment with high-density, mixed uses. It is a key employment node for the city, including government and private sector employers alike. The Inner Urban Transect includes the pre-World War II neighbourhoods that surround the Downtown Core and have an urban built form, as well as the earliest post-World War II areas directly adjacent to these neighbourhoods that have a more suburban built form. The Downtown Core is the transect with the highest sustainable mode share, followed by the Inner Urban transect. While many existing streets in these transects act as traditional main streets with attractive, pedestrian-supportive environments, street-facing shops and low traffic speeds, others are used as high-volume commuter routes with limited tree canopy and passive building frontages. In both transects, automobile-oriented development, such as drive-throughs and



surface parking lots, are prohibited or discouraged, and vehicular private approaches (i.e. curb cuts for driveways) are to be minimized.

Residents in the Downtown Core and Inner Urban Area tend to have smaller dwellings with less private amenity space than in other transects. As a result, streets in these transects are particularly important for placemaking – to foster gathering spaces, culture, community identity and local economies, and to provide opportunities for recreation and even respite from extreme heat. Similarly, measures to ensure climate resilience such as shade, tree planting, and urban greening are important to offset the dense built environment and the high proportion of hardscaped land. Wider sidewalks and boulevards are also important to improve walkability as these transects intensify over time, putting pressure on existing infrastructure.

Outer Urban and Suburban

In the Outer Urban and Suburban transects, the road network is generally automobile-oriented but many residents enjoy the pathway networks through green spaces for active transportation and recreation. The existing built form is suburban, characterized by the separation of land uses, lower densities, and low-rise buildings. Many stretches of commercial streets are characterized by car-oriented retail with streetscape elements that negatively impact the pedestrian environment: inward facing shops, large surface parking lots, many lanes of traffic, low lot coverage, wide driveways, and lack of tree canopy.

Throughout these transects, there are opportunities to increase the sustainable mode share by creating complete and healthy streets, improving access to rapid and frequent transit, and enhancing street connectivity, while acknowledging the existing reality of automobile-dependent built form. Focus areas include maximizing direct pedestrian access from residential areas to public transit, and introducing mid-block connections to, from and within residential areas. Initiatives to advance 15-minute neighbourhoods in these contexts include addressing gaps in the sidewalk network, rebalancing space in the right-of-way, adding seating and shelter at bus stops, identifying opportunities for traffic calming, and providing wider sidewalks and expanded landscaped boulevards on streets with commercial services. The opportunities for sustainable transportation improvements are particularly significant in the areas where the built form is transitioning away from automobile-focused design - i.e., Town Centres, Hubs, Mainstreet Corridors and Evolving Neighbourhoods.





Greenbelt

The Greenbelt is comprised of approximately 20,000 hectares of land, most of which is owned by the National Capital Commission or other public agencies. While it has a rural and natural character, these lands are within the Urban Boundary and separate the Suburban transect from the Outer Urban, Inner Urban and Downtown transects; many residents therefore travel across the Greenbelt as part of their regular trips. Protection of the natural environment is a primary objective in the *Official Plan*. Given the long travel distance, transit is the most viable option to reduce car trips across the Greenbelt; active transportation facilities should also be provided for recreational and utilitarian trips. Roads in the Greenbelt Transect should be designed to a rural standard, while providing safe active transportation facilities, to maintain the rural character of the Greenbelt, and should minimize the fragmentation of farmland and natural areas.

Rural

The Rural transect includes Villages as well as the large geographic area outside of Villages. Many Village main streets have built form characteristics that support pedestrians, similar to traditional main streets in urban areas. Villages may also feature low-traffic streets framed by attractive natural features and green space. However, other Village streets lack street-oriented buildings and tree canopies, and are instead characterized by high-speed vehicular traffic and surface parking lots. Within Villages, street designs should support walking, cycling, and slower vehicle speeds, while also considering the movement of goods. Active transportation shortcuts should be introduced from residential areas to transit stops and community destinations.

Outside of Villages, most roads facilitate traffic flow as their primary function and personal vehicles have historically been the main form of transportation. Long trip distances and low densities of destinations make it challenging to enable increases in walking, cycling and transit. However, the City can seek innovative and affordable transportation solutions for the rural area inside and outside of Villages, in support of rural economic development (see Policy 8-2). The City will also continue to invest in active transportation facilities such as paved shoulders (see Policy 7-5) and in rural road safety improvements (see Policy 9-8).



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 development to pay for growth-related infrastructure. Infrastructure needs and corresponding DC rates are updated every five years; DCs fund new road, transit, active transportation and "complete street" infrastructure to support growth and



intensification. Although DCs do contribute to new 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 active transportation facilities that are required because of growth and intensification, including but not limited to: "complete street" modifications to existing roads, and upgrades that transition streets in the urban area from rural cross-sections with ditch drainage to urban cross-sections with active transportation facilities and lighting. As noted in Policy 5-7, it is expected that the TMP Capital Infrastructure Plan will increase the percentage of funding allocated to sustainable transportation projects compared to previous plans; this same shift is expected to apply to the collection of DC funding for transportation infrastructure to support growth and intensification. Policy 5-2 further describes the rationale for this shift.



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 programming. As noted in Policy 8-1 and 9-4 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 and structure of front-ending agreements to support 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 TIA process and Guidelines for new developments must ensure that appropriate mode share targets are set and that sufficient measures for all modes are implemented to enable achievement of these targets. Traffic impact assessments (TIAs) in both new and established communities should include walking and cycling connectivity maps. The monitoring and verification process for large developments should also be strengthened, where a need for monitoring is identified through the TIA process.

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* to ensure that appropriate mode share targets are set, and that the necessary measures to achieve the targets for all modes are implemented, with monitoring and verification as required.



Policy 5-6 Update Land Protections for Transportation Corridors to Support City-Building

The City-owned land along streets and transportation corridors is called the public “right-of-way” (Exhibit 10). The City uses this land to provide infrastructure such as vehicle lanes, sidewalks, boulevards, bus stops, public amenities, and utilities including electricity, gas, water, and communications infrastructure. Through the *Official Plan Schedule C16*, the City identifies requirements for a wider right-of-way along some corridors where additional space is required for future transportation infrastructure. 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 10: Right-of-Way



The City will update its road right-of-way requirements for specific arterial roads to reflect city-building goals. This requires considering transportation needs and street design objectives, as well as land use and development objectives—and trade-offs between these objectives. Along some roads, additional right-of-way may be required to accommodate infrastructure needs. In other locations, it may be possible to reduce right-of-way protections, supporting more “human-scaled” streets. This review may also consider right-of-way protections for intersection improvements to reflect new design guidance for “protected intersections”. As transportation projects proceed through planning and design, right-of-way requirements will be reviewed and refined.

ACTION 5-6A

Review and update right-of-way protections in Schedule C16 of the Official Plan for selected arterial road corridors where increases or reductions may be warranted.

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 optimize the use of scarce resources and deliver the infrastructure and services that residents and businesses require for success, both now and in the future. The TMP Capital Infrastructure Plan will identify the projects that are affordable within the City’s long-range financial plans (LRFPs), while also identifying additional network



needs and opportunities for other sources of funding. Specifically, the Tax-Supported Capital LRFP informs the affordability assessment of the non-transit components of the TMP, including “complete streets” investments and pedestrian and cycling infrastructure. The Transit LRFP informs the affordability of the transit components of the TMP. The affordability analysis will establish the envelope for growth projects based on current policies and revenue sources. This will include identifying capital growth projects to be included in the Development Charges Background Study based on the affordable envelope.

The City recognizes that there are different possible approaches to working within affordability constraints by prioritizing investment in different areas. The Capital Infrastructure Plan will explore alternative investment scenarios that feature different levels of funding for different project types, considering the City’s mobility needs, GHG reduction targets, and sustainable mode share targets. It is expected that the Capital Infrastructure Plan will shift funding from vehicle capacity projects to projects that support sustainable modes, compared to previous plans.

Affordability includes consideration of capital (construction) costs as well as operations, maintenance, and renewal costs. Once transportation infrastructure is built, there are “lifecycle” costs 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 example, reducing the total area of paved surfaces can reduce costs while adding protected intersections and green thermoplastic treatments may increase costs. The City will continue to apply a long-term affordability lens to planning, designing, implementing and maintaining transportation infrastructure, recognizing these factors. The TMP Capital Infrastructure Plan will identify the lifecycle costs of the proposed transportation infrastructure investments.

In addition, the City’s long-range financial plans must ensure that transportation assets can be maintained at an acceptable level of service. Asset maintenance and renewal needs are identified in the City’s *Transportation* and *Transit Asset Management Plans*. These plans use 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. Also inherent to a discussion of affordability is the assessment of the City’s total debt position and future outlook on revenues, costs and interest rates. All of these factors will be considered in developing the TMP Capital Infrastructure Plan and associated LRFPs.

ACTION 5-7A

As part of the TMP Capital Infrastructure Plan, develop investment scenarios that feature different levels of funding for different project types, considering affordability constraints and the achievement of City objectives.

ACTION 5-7B

Use lifecycle costing to evaluate transportation projects within the TMP Capital Infrastructure Plan.

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 6: Maximize Walkability

POLICY OVERVIEW	
Policy 6-1	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 the 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. Walking, including travel with a wheelchair or other mobility aid, is essential for community connectedness, and is a part of all trips. It is the most affordable mode of travel, and can be enjoyed by all ages and all abilities. 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 city for pedestrians.

Recognizing that not everyone can walk, the term “walking” encompasses traveling with the use of mobility aids such as a wheelchair, cane, or walker. Likewise, the term “pedestrian” is inclusive of people using mobility aids. These terms also include caregivers, babies and children who are traveling with the use of strollers, baby carriers, or other child carrying devices.

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 significant benefits for both physical and mental health, including the reduction of chronic diseases such as heart disease, cancer, dementia and diabetes, and mitigation of social isolation and loneliness.
- Social and Equity Benefits:** Walking 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 cannot 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 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 active and sustainable modes reduces air pollution, greenhouse gas emissions, traffic noise, and other environmental impacts associated with parking and road infrastructure.

Inadequate or poorly maintained sidewalks and pathways create barriers to walking, especially for persons using mobility aids or strollers. The City of Ottawa will pursue 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 to meet the needs of pedestrians of all ages and abilities. 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 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 developed 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, 86% of all signalized intersections are now equipped with accessible pedestrian signals (APS).

The City also has several programs that help to improve accessibility through localized investments. Examples include programs to rebuild bus stops, add curb ramps and install tactile walking surface indicators, as well as upgrades to signalized intersections as part of active transportation “retrofit” projects. Some of these improvements are required under AODA legislation, while other programs have discretion over location and/or project scope. The City will consider input from residents and stakeholders on where accessibility upgrades should be prioritized. Existing programs can then be targeted, where feasible, to address the most significant accessibility barriers. Building on recent advances in accessibility design, the City will also encourage provincial and regional consistency in design standards.

ACTION 6-1A

Continue to work with the accessibility community, provincial government, federal government, regional partners and Ontario municipalities to advance consistent standards for universal accessibility design.

ACTION 6-1B

Consider input from the public and stakeholders on where accessibility upgrades should be prioritized, in order to focus accessibility investments for maximum benefit.

ACTION 6-1C

As part of the TMP Capital Infrastructure Plan, review opportunities to increase funding for localized upgrades to pedestrian facilities that address the most significant accessibility barriers.

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 following guiding principles apply to the expansion of the pedestrian network:

- **Create no new deficiencies** – Build new communities and develop sites with an adequate density and quality of pedestrian facilities to create walkable neighbourhoods from day one.
- **Maximize opportunities through construction** – Build sidewalks when roads are being reconstructed or redeveloped, as this is cost-effective and less disruptive, and connect new sidewalks to existing sidewalks wherever possible.



- Retrofit by priority** – Undertake stand-alone projects to fill gaps in the walking network at priority locations that address safety concerns and best support increases in walking and transit mode shares (see Policy 6-3).

The *Official Plan* includes policy direction for where sidewalks are required at the time of development, redevelopment, and reconstruction, as detailed in Exhibit 11 below. Accordingly, new roads shall be built with an urban cross-section in most locations within the urban boundary or village boundaries. Existing Local streets are generally subject to the same requirements as new Local streets, with sidewalks to be provided at the time of road reconstruction subject to the practical considerations noted. Where space is limited in the Downtown Core, the Pedestrian Easement Policy⁵⁰ will continue to allow the City to secure additional pedestrian space at the time of redevelopment. On streets with ditch drainage, sidewalks may be added at the time of reconstruction or redevelopment in high priority locations based on pedestrian safety and connectivity needs⁵¹ – as well as in other lower priority locations where they can be added cost-effectively – while also meeting stormwater management requirements.

Outside the Urban Area and Village boundaries, paved shoulders will be provided at the time of resurfacing where specified by the Rural Active Transportation Network and at bus stops as pads to assist with boarding and alighting. Half-height curbs will continue to be added to bus stops on roads with rural cross-sections where warranted and where feasible within project contexts and budgets.

The *Official Plan* also states that 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. In addition, for multi-use pathways with bi-directional cycling, safety measures must be in place to allow for bi-directional cycling through signalized intersections; this further reduces the number of situations where multi-use pathways will be preferable to separated walking and cycling facilities.



⁵⁰ Ottawa's Central Area Pedestrian Easement Policy requires that new developments along certain streets provide additional space for pedestrians along the property's frontage. This can be achieved through a setback, cantilever/overhang or colonnade/arcade.

⁵¹ Recognizing the potential additional costs of adding sidewalks to streets with ditch drainage, funding opportunities will be reviewed through the TMP Capital Infrastructure Plan.



Exhibit 11: Policies for Sidewalks and Multi-use Pathways

Sidewalk Policy

Arterials, Major Collectors and Collectors

- ✓ In the Urban Area and Villages (excluding the Greenbelt), sidewalks are required on both sides of all new and reconstructed arterials, major collectors, and collectors.
- ✓ In the Greenbelt, sidewalks or multi-use pathways are required on at least one side of all new and reconstructed arterials, major collectors, and collectors, and on both sides where required to provide connectivity or connect to adjacent facilities.

Local Streets

- ✓ 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 and in Villages, 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 number of active users expected, a high ratio of cyclists to pedestrians, and infrequent intersections;
 - 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 cyclists.



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 several programs and mechanisms to add new sidewalks, pathways, and pedestrian crossings in existing communities; for example, most new sidewalks on existing streets are delivered through road reconstruction as part of the City's Complete Streets policy. The pedestrian projects delivered through the TMP complement facilities delivered through other planned works, with a focus on gaps where no other major works are planned in the near-term. However, the number of projects far exceeds the funding available.

A prioritized list of TMP “retrofit” pedestrian projects has been developed to address targeted missing links in the walking network, considering factors such as community connectivity, availability of alternative routes, actual and perceived safety, equity, implementation constraints, and cost. Sidewalks along school frontages and in close proximity to schools were given extra consideration. Linked to the objective of improving safety relative to existing conditions, sidewalks on streets without pedestrian facilities were prioritized over streets with one existing sidewalk (with limited exceptions). Feasibility studies have also been identified where technical solutions to address priority missing links are not known. Projects were identified and evaluated based on criteria including community connectivity; network contribution; improvement to existing conditions; equity; and implementation considers including cost. These TMP pedestrian projects will be implemented from 2024 onwards and will be carried forward in the development of the TMP Capital Infrastructure Plan. The implementation schedule will be based on project evaluation results, coordination opportunities, and timelines set by external funding agencies, as well as equity and geographic considerations. Some of the TMP cycling projects (discussed in Policy 7-3) add multi-use pathways or active transportation crossings that will also benefit pedestrians.

ACTION 6-3A

Implement the TMP pedestrian projects 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. Crossing-related barriers are particularly significant for vulnerable populations including children, older adults, people with disabilities, and caregivers, decreasing the safety and viability of walking. The City addresses these barriers by adding pedestrian crossovers, signalized pedestrian crossings, median refuge islands, and traffic calming through various programs and projects. For example, over 210 new pedestrian crossovers (PXOs) have been installed since they were first introduced to Ottawa in 2016. At the same time, there are ongoing opportunities to make it easier to cross the road. Most pedestrian crossing improvements are expected to be delivered through the City's Complete Streets policy in conjunction with other planned works. The program to deploy pedestrian crossings as stand-alone projects will continue to use the prioritization methodology approved in 2019.



On “access” streets, the City will prioritize pedestrian crossing opportunities over traffic flow. Local streets and other two-lane “access” streets should enable uncontrolled crossings where feasible based on engineering guidance.⁵² Where pedestrian desire lines exist and vehicle speeds and lane configurations do not allow for uncontrolled crossings, cost-effective measures such as pedestrian refuges, traffic calming measures, and PXOs should be used where they meet minimum engineering criteria.



The City has a Council-approved PXO Program. The installation of PXOs aligns with the *Ontario Traffic Manual - Book 15: Pedestrian Facilities*. It also allows for flexibility and use of professional judgment based on context. For example, the PXO Program will also aim to install PXOs at all pathway systems severed by a roadway. These will be installed along a given pathway or between a pathway’s logical start and end points for continuity and consistency for those using it. In evaluating proposed PXOs, considerations also include latent or projected pedestrian demand and the reasonableness of alternative walking routes.

At signalized intersections, long wait times for pedestrians can disincentivize walking and increase the risk of unsafe crossing behaviour. Pedestrian crossings should be provided on all signalized intersection legs unless no feasible solution can be identified. Short cycle lengths can also be used to reduce pedestrian delay, while recognizing that many factors influence signal timing. The City will also explore other ways to reduce wait times and prioritize pedestrians at signalized intersections, such as half-cycles at minor intersections; reduced cycle lengths during off-peak periods; leading pedestrian intervals; joined-ped feature whereby walk display appears when a vehicle has triggered detection and push-button was not activated; and continued application of automatic pedestrian walk cycles. As part of making it safer and easier to cross the road, the City will also continue to pursue intersection designs that reduce pedestrian exposure to vehicular traffic. This includes seeking additional opportunities to implement “no right turn on red” restrictions as per the *Strategic Road Safety Action Plan*.⁵³

ACTION 6-4A Continue to look for opportunities to provide safe pedestrian crossings, including crossing opportunities to link new and existing pedestrian facilities.

⁵² An uncontrolled crossing is a crossing that does not have any traffic control measure. Pedestrians must wait for a safe gap to cross the roadway or wait for vehicles to stop before crossing. Uncontrolled crossings do feature depressed curbs and can feature curb extensions or centre medians with refuge islands. Ontario Traffic Manual Book 15 identifies requirements for uncontrolled crossings such as sightlines and vehicle speeds.

⁵³The *Strategic Road Safety Action Plan* calls for implementing no right turn on red restrictions to address various safety concerns including: in locations with a history of right turn collisions with pedestrians, cyclists or vehicles; inadequate sightlines; high speed traffic on intersecting roadways; or where heavy pedestrian volumes cross perpendicular to the right turn movement.



Exhibit 12: Summary of Policies to Encourage Walking to School



“Walking to school is a simple, hopeful, powerful act. It is an indicator of what we believe and what we value. Of the health of our children, the health of our environment and the health of our communities.”

- Jennifer Keesmat, former Chief Planner, City of Toronto

The policies throughout the TMP support the City's ongoing work to encourage walking and cycling to school. For example:

- ✓ Children often require more separation from vehicular traffic when walking and cycling; street design should consider these needs (Policy 2-3).
- ✓ All new local streets will be built with sidewalks on at least one side (Policy 6-2); local streets that lead directly to schools will be considered for dedicated cycling facilities (Policy 7-2).
- ✓ Children and caregivers are more likely to face barriers when traveling in the winter, especially when traveling with strollers; the hierarchy of pedestrian routes for winter maintenance should consider routes to school (Policy 6-6).
- ✓ Programs to implement pedestrian crossings (Policy 6-4) and traffic calming (Policy 9-7) will continue to consider a street's use by children and vulnerable users.
- ✓ New schools should be sited to facilitate safe walking and cycling to school; new schools and surrounding street design should prioritize pedestrians and avoid the creation of "hazard zones" (Policy 5-3).
- ✓ TMP walking projects and cycling projects (Policy 6-3 and Policy 7-3) considered routes to school as part of project identification; implementing the projects near schools will help to improve the safety and comfort of walking and cycling to school.
- ✓ Enhanced bike parking requirements for new developments (Policy 7-9) are expected to make it easier to use strollers and children's bicycles regularly.
- ✓ Operational changes and infrastructure improvements will continue to be pursued to reduce vehicle stopping/idling and improve safety along school frontages (Policy 11-2). The City will continue to work with partners on successful programs to encourage walking to school, including the Active School Travel Planning program and the Walking School Bus Program (Policy 11-2).



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 multi-use pathway “shortcuts” within existing neighbourhoods that provide more direct pedestrian routes from residential streets to collector or arterial roads where services and amenities are found. Shortcuts should be sought where block lengths exceed 250-300m, with shortcuts to rapid transit stations being the highest priority (also discussed in Policy 8-5). In certain locations, implementing efficient pedestrian routes may require property agreements or land acquisition. Shortcuts may also be negotiated through the development review process. This policy applies to existing neighbourhoods, since new neighbourhoods will be designed for direct, barrier-free pedestrian access from day one, as per Policy 5-3.

Exhibit 13: Walking Distance to a Transit Station in a Neighbourhood with and without Shortcuts



Note: Figures are not to scale

There are also valuable neighbourhood shortcuts citywide that are not available for use 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 multi-use pathways can be winter maintained given the cost implications; selection criteria may include: additional walking distance without the shortcut; connectivity to transit; peak user volumes; and/or type of destination. The City will identify the most important shortcuts for pedestrian connectivity and add them to the winter pedestrian network. If needed, these will be upgraded at the time of renewal to allow winter



maintenance. As pathways are winter maintained, this information will be added to “GeoOttawa”⁵⁴, the City’s online mapping system. Council can expect to see pressures associated with this policy reflected by the Public Works Department through the budget process. Winter maintenance of National Capital Commission (NCC) pathways that function as community connectors should also be explored in partnership with the NCC. Multi-use pathways that are used for winter recreation (e.g. cross-country skiing, snowshoeing, fatbiking) will not be winter maintained.

ACTION 6-5A Map existing multi-use pathways that provide important shortcuts for pedestrians and identify funding to winter maintain them.

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 intensity of use of sidewalks often does not align with the intensity of use of adjacent roadways, the City is updating the hierarchy of pedestrian routes to give greater priority to sidewalks around important walking destinations such as major transit stations, schools, the downtown, and other high density, high activity areas. Important walking routes from an equity perspective will also be considered for higher priority of winter maintenance, since some equity-deserving groups (such as women, children, people living in poverty, seniors, and people with disabilities) are more likely to rely on walking and public transit for everyday transportation. This includes important routes within TMP equity priority neighbourhoods, along with routes to childcare centres, recreation centres, schools, seniors’ residences, and community health services.



⁵⁴ <https://maps.ottawa.ca>



Sidewalk and pathway quality—the absence of bumps, lips and cracks—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, as part of the Capital Infrastructure Plan, the City will review opportunities to fund enhancements to the walking environment in select locations where asset renewal is already occurring. For example, landscaped curb extensions for traffic calming could be added to a sidewalk reconstruction project on a residential street, or lighting could be added to an existing pathway. Within the TMP Capital Infrastructure Plan, the City will consider establishing a dedicated pool of funding for these additional improvements, subject to affordability; the design and delivery implications of this change also require further review (see Policy 9-1).

ACTION 6-6A

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

Policy 6-7 Improve the 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 and public realm; the speed and volume of traffic; driveway crossings; and absence of sidewalk cycling/scooting. Security of the walking environment and public realm—including lighting, “eyes on the street”, and other elements of environmental design—can contribute positively to equity goals and can also help create a welcoming 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, landscaped curb extensions, and context-appropriate street furniture, with a focus on Mainstreet and Minor Corridors and other Design Priority Areas. Pedestrian security will continue to be a focus of internal design review processes and public consultation on street and pathway designs.





Multi-use pathway lighting along active transportation routes is also important to support year-round walking and cycling for commuting and community trips. In alignment with the National Capital Commission's lighting policy, lighting should be provided on multi-use pathways in dense urban areas with high- to medium-volumes of commuter or utilitarian trips, as well as on multi-use pathways that provide a significant shortcut relative to the road network and provide access to important evening and nighttime destinations, such as schools, community facilities, and transit. Lighting for safety and security purposes should be provided in tunnels and underpasses that do not receive adequate daytime or ambient lighting and where required at potential conflict points with major roadway intersections and crossings. New multi-use pathways that meet the above criteria will be built with lighting where feasible. Pathways through City parks may need to meet other criteria, as per the Park Pathway Lighting Policy. Dark zones will protect environmentally sensitive areas such as woodlands and shorelines, where light trespass may have adverse effects on plants and wildlife.

Where existing multi-use pathways meet the above criteria, lighting may be added at the time of renewal as per action 9-1C. Multi-use pathways with lighting should also be added to the winter-maintained network, to maximize the benefit of the City's investment in lighting.

ACTION 6-7A

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

ACTION 6-7B

Add lighting to new multi-use pathways as per the criteria in TMP Policy 6-7.

Policy 6-8 Deliver Pedestrian Safety and Promotion Programs

As the most vulnerable road user group, pedestrian safety is key to ensuring that users feel comfortable walking. The City's *Strategic Road Safety Action Plan* focuses resources on targeted efforts to reduce collisions that result in serious injury or death. The *Strategic Road Safety Action Plan*, Pedestrian Safety Evaluation Program and pedestrian safety awareness campaigns, such as Be Safe Be Seen, support pedestrian safety improvements and educational awareness. 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	Provide safe, comfortable, direct and connected cycling facilities and routes
Policy 7-2	Improve and expand the cycling network
Policy 7-3	Retrofit by priority to improve connectivity
Policy 7-4	Target major barriers and other challenging missing links
Policy 7-5	Develop and promote the rural cycling network
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 education 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 on delivering a city-wide, connected cycling network. Approximately 260 kilometres of cycling facilities have been added by the City since 2013, including 22 kilometres of physically separated cycling facilities along roadways and 70 kilometres of off-road pathways. Ottawa built its first “protected intersection” (an intersection design that promotes safety for all road users) in 2015. Since then, 14 protected intersections have been completed or are under construction, with many more in the planning stage. The City has also advanced the citywide, connected network of Cross-Town Bikeways, and works closely with the NCC to plan an interconnected cycling network that leverages the NCC's extensive network of multi-use pathways.



Exhibit 14: Expansion of Cycling Facilities from 2013 to 2022



+63%
Total km of cycling facilities
(~260 km added)



+70 km
Major pathways and pathway links built



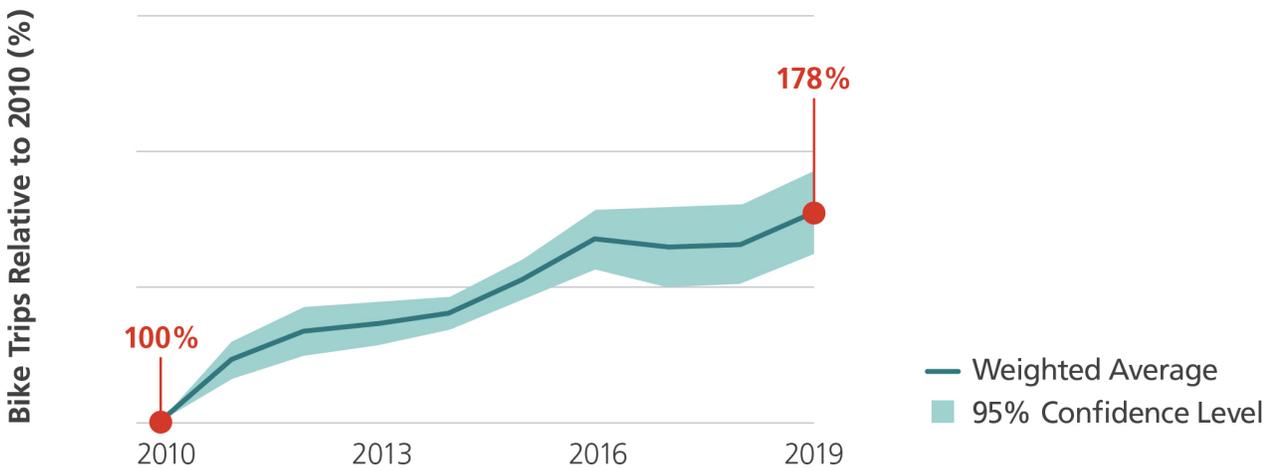
+22 km
10x increase in cycle tracks and
separated bike lanes



35+ protected intersections
Ottawa's first built in 2015

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 15: 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 will not ride on roads with a high level of vehicular traffic stress⁵⁵; many destinations therefore remain inaccessible to them by bike. This disproportionately impacts women, children, and older adults who tend

⁵⁵ 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).



to be more sensitive to the level of vehicular traffic stress. Expansion and improvement of the cycling network also supports walkability by discouraging the illegal use of sidewalks for cycling and scooting.

The *Official Plan* recognizes the importance of cycling to healthy, equitable, and inclusive communities. It also recognizes that achieving the City’s climate change and mobility targets will require a dramatic increase in the proportion of trips made by cycling and other active and zero emission modes. 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, comfortable, and convenient cycling as a critical element of a healthy and sustainable city.

Policy 7-1 Provide Safe, Comfortable, Direct, and Connected Cycling Facilities and Routes

Ottawa’s *Official Plan* states that all road corridors 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. As the City works toward this ultimate objective, short-term expansion and improvements to Ottawa’s cycling network will be guided by the principles of safety, comfort, directness and connectivity.

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” (Exhibit 15). This is the largest category of cyclists, and individuals in this category have a strong preference for separated cycling facilities or very low-volume and low-speed streets. Designing for this group aligns with the objectives of creating facilities that appeal to the widest number of residents; attracting new cyclists; recognizing equity needs; and enabling most community trips to be made by active modes.



Cycling facility design and implementation follows the facility selection nomograph⁵⁶ for the urban/suburban context within *Ontario Traffic Manual - Book 18: Cycling Facilities*, with additional refinement based on the road context, network context, and project context. Physical separation and/or space to buffer cyclists from vehicular traffic will be sought where warranted by the nomograph, recognizing the attractiveness of separated cycling facilities to the “interested but concerned” group of cyclists. Providing low-stress facilities with adequate physical separation

⁵⁶ 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.



and appropriate safety measures at intersections is particularly important along Cross-Town Bikeways⁵⁷.

Notwithstanding the above, the City will place a high priority on reducing the level of vehicular traffic stress relative to current conditions, even in situations where the ideal solution may not be achievable in the short term. Incremental improvements should be pursued where they improve safety and comfort relative to existing 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 space for cycling, increase separation of cyclists from motor vehicles, and/or reduce vehicle speeds to reduce the level of traffic stress.

In Ottawa’s rural area outside of Villages, cycling facility selection will be guided by the rural nomograph within *Ontario Traffic Manual - Book 18* (see Policy 7-5).

Exhibit 16: Types of Cyclists from *Ontario Traffic Manual - Book 18*

DESIGN CYCLIST		
Interested but Concerned	Somewhat Confident	Highly Confident
<ul style="list-style-type: none"> • Strong preference for separated cycling facilities or very low-volume and low-speed streets • Cycling frequency depends heavily on having a network of low-stress facilities • Can generally negotiate simple low-speed interactions with motor vehicles at intersections 	<ul style="list-style-type: none"> • Comfortable cycling on-street and interacting with moderate-speed traffic • Preference for separated cycling facilities or low-volume and low-speed streets • Cycling frequency increases as network of low-stress facilities expands 	<ul style="list-style-type: none"> • Comfortable cycling on-street and interacting with higher-speed traffic • Preference for cycling facilities that allow for easy overtaking and efficient movement • Cycling frequency not necessarily affected by network

⁵⁷ 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 aim to provide direct routing and a consistently high level of comfort for their entire length; Cross-Town Bikeways are also prioritized for maintenance.



Policy 7-2 Improve and Expand the Cycling Network

The City of Ottawa's approach to improving and expanding the cycling network follows the same principles as for the pedestrian network (Policy 6-2), in line with the policy that all streets in the Urban Area and Villages are part of the City's ultimate cycling network:

- **Create no new deficiencies** – Build new communities and develop sites with an adequate density and quality of cycling facilities.
- **Maximize opportunities through construction** – Build and/or upgrade cycling facilities when roads are being resurfaced, reconstructed, or redeveloped, as this is cost-effective and less disruptive.
- **Retrofit by priority** – Undertake stand-alone projects to fill gaps in the cycling network at priority locations that best support increases in cycling modal share (see further discussion of retrofit projects in Policy 7-3).

In line with the *Official Plan*, cycling facilities are to be provided on all new collector, major collector, and arterial streets within the Urban Area and Villages. Existing collectors, major collectors, and arterials (including bridge spans) are to be upgraded to include dedicated cycling facilities in both directions at the time of reconstruction and redevelopment⁵⁸, and where feasible during resurfacing, in line with the City's Complete Streets policy.

Where cycling facilities are required approaching an intersection on these roadways, these facilities are to be continued through the intersection using crossrides, and preferably through protected intersections. The City may consider limiting crossrides and protected intersections where connectivity is not required or where safe cycling crossings can be provided in another way.

The City will add cycling facilities to certain local roads following the network principles in Policy 5-1 and facility selection guidance from *Ontario Traffic Manual - Book 18: Cycling Facilities*. Dedicated cycling facilities are expected to be warranted on local roads with high vehicle volumes and on local roads adjacent to schools, parks, libraries, community centres, and other important destinations for children and youth. Where local roads are one-way for vehicles, contraflow cycling facilities (or other options to enable two-way cycling) should be considered, in support of cycling network density and connectivity.

Finally, the City will increase its focus on design and construction details that can help reduce the potential for cycling collisions 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

⁵⁸ Localized improvements to active transportation facilities are not captured by Development Charges and are instead intended to be delivered as local services, on all classes of roads. This includes pedestrian and cycling facilities along development frontages, as well as those that are external to a development and are necessary to connect the development short distances to adjacent active transportation facilities, public transit, or public spaces. This approach will be clarified and formalized with the next Development Charge Background Study and Bylaw Update. The provision of local services is considered to be a direct developer responsibility under s.59 of the DCA and will (or may) be recovered under other agreement(s) with the developer. The City will develop further guidance on localized improvements to cycling facilities through redevelopment, to support the addition of useful segments of facilities; avoid creating 'missing links'; and align requirements with the scale and frontage of the development.



the ride. Improving these design details requires a concerted effort but has minimal impact on project costs and delivers significant benefits to cyclists.

ACTION 7-2A

Advance design and construction standards for cycling facilities, including a focus on surface quality.

Policy 7-3 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 TMP cycling retrofit projects are distinct from cycling facilities that are delivered through major transit projects, road renewal, or road resurfacing. TMP cycling projects were identified based on the priorities that emerged from public consultation. These priorities included enabling community trips by active transportation; facilitating connections to transit; and addressing short missing links to improve network continuity.

TMP cycling projects aim to cost-effectively add new facilities that improve safety and comfort relative to existing conditions. For example, buffered or flex post-protected bike lanes may be implemented instead of cycle tracks to increase a project's length. Examples of typical retrofit projects include:

- Restriping a roadway to add painted or buffered bike lanes;
- Implementation of vehicular traffic calming or diversion measures to create neighbourhood bikeways;
- 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.



These projects will be implemented from 2024 onwards and will be carried forward in the development of the TMP Capital Infrastructure Plan. The implementation schedule will be based on project evaluation results, coordination opportunities, and timelines set by external funding agencies, as well as equity 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 goal of connecting neighbourhoods to and through green space.

**ACTION 7-3A**

Implement the TMP cycling projects and seek opportunities to accelerate implementation through additional funding from all levels of government.

ACTION 7-3B

Work with the National Capital Commission, Parks Canada, Agriculture Canada and other stakeholders to improve active transportation access to and through federal facilities and green space.

Policy 7-4 Target Major Barriers and other Challenging Missing Links

Across the city, many rail corridors, waterways, and highways create major barriers to cycling. Existing roadway bridges, underpasses, and on-ramps often have a high level of vehicular traffic stress for cycling with no alternative routes available. City reconstruction and rehabilitation of existing crossings will need to assess options to improve the safety and comfort of active transportation, considering project technical and financial constraints. In some cases, the City must work with external stakeholders to improve crossings over major barriers, including the Ontario Ministry of Transportation (MTO), Ontario Traffic Council, federal authorities managing interprovincial bridges, rail companies, etc. The City's role may include identifying and advocating for needed changes, providing connections to the City's wider cycling network, co-funding projects, or working with stakeholders to improve active transportation design standards. Where solutions to improve active transportation crossings of major barriers are not apparent, a feasibility study may be pursued to ensure a thorough investigation of all possibilities.



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 on-street parking. Feasibility studies can help to evaluate options and trade-offs within the framework of multimodal level of service. If a street can't accommodate active



transportation within the existing lane arrangement, consideration should be given to reallocating space to protect pedestrians and cyclists as the most vulnerable road users. Pilot projects can also be used to assess the potential impacts of re-allocating space in the right-of-way to accommodate active modes, where the pilot can accurately emulate the proposed permanent solution.

The City has identified a list of feasibility studies and active transportation major structures projects that will be pursued from 2024 to 2046 to address missing links and major barriers. Several involve improving (or adding) cycling facilities over Ministry of Transportation highway bridges, across access ramps, and into adjacent communities. Where feasibility studies identify viable solutions, additional funding may be needed for implementation, considering their importance and the cost-effectiveness of the identified solution.

ACTION 7-4A

Pursue feasibility studies and projects to address missing links and major barriers.

ACTION 7-4B

Work with the MTO to reduce connectivity barriers posed by urban highways and to improve design standards for crossings involving highway interchanges and bridge spans.

Policy 7-5 Develop and Promote the Rural Cycling Network

The *Official Plan* calls for providing cycling infrastructure in the Rural Transect where feasible to support rural tourism and sustainable modes of transportation. The Rural transect outside the Urban and Village boundaries covers a large geographic area, with a low density of residences and destinations, long trip distances, and a lower prevalence of utilitarian cycling. Cycling facilities will therefore reflect the *Ontario Traffic Manual – Book 18* guidance for the rural context. The rural nomograph in *Book 18* is based on a confident target cyclist who is traveling longer distances. Notwithstanding Policy 7-1, design standards for the rural context will also be applied in select locations within the urban boundary (e.g. within the Greenbelt) where proposed facilities would not lead to significant destinations and would not connect to any other planned cycling infrastructure.

The ultimate Rural Active Transportation Network will include a mix of quiet secondary roads with shared operating space, paved shoulders along busy roads, and "rail trails" (long off-road pathways along unused rail corridors) that are expected to be used primarily for recreational purposes. The Rural Active Transportation Network focuses investments on connections between Growth Villages, to the Urban Area, and to recreational destinations including rail trails. Quiet, secondary roads are used for connectivity as an 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.



The City's Rural Active Transportation Network considers connectivity to adjacent municipalities as well as the Province-wide Cycling Network developed by the MTO. The City will continue to co-ordinate cycling routes with its neighbors to facilitate longer regional routes of interest to cycling tourists, and will work with Ottawa Tourism to promote them.

Rural cycling improvements will continue to leverage roadway renewal to provide new connectivity. Paved shoulders will be added to select roads at the time of resurfacing where technically feasible if they are on the Rural Active Transportation Network, and off-road pathways will be pursued along available corridors as identified in the cycling retrofit project list (Policy 7-3).



ACTION 7-5A

Continue to work with external partners to promote cycling tourism, with a particular focus on rural tourism.

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

Active transportation comes in many shapes and sizes. This is increasingly true as micro-mobility devices such as electric bikes (e-bikes)⁵⁹, e-scooters, cargo bikes, and e-cargo 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 adults⁶⁰. 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 e-cargo 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 e-bike, increasing the number of vehicle trips that can potentially be replaced by cycling. This in turn has the potential to reduce greenhouse gas emissions.⁶¹

Not all styles of electric bikes are well-suited to using Ottawa's multi-use pathways and separated cycling facilities. Electric bikes can be separated into two categories, both of which fall under Ontario's current definition of an e-bike. Pedal-assisted e-bikes (or "pedelecs") have a motor that is only engaged while pedaling; they are visually difficult to distinguish from a regular bicycle. Power-assisted e-bikes are larger,

⁵⁹ The MTO currently defines an e-bike as a bicycle with an electric motor not exceeding 500 watts that has: a handlebar for steering; working pedals; two or three wheels; braking systems; a maximum assisted speed of 32 km/h; and a maximum weight of 120 kg.

⁶⁰ Dill, Jennifer & Rose, Geoffrey. "E-bikes and Transportation Policy: Insights from Early Adopters." 2012.

⁶¹ McQueen, M., MacArthur, J., Cherry, C. (2020). The E-Bike Potential: Estimating regional e-bike impacts on greenhouse gas emissions. Transportation Research Part D: Transport and Environment, Volume 87. <https://doi.org/10.1016/j.trd.2020.102482>.



heavier, faster and wider than a traditional bicycle; they resemble mopeds and have the potential to interfere with other users of cycling facilities or multi-use pathways. The City will continue to advocate for a provincial or federal definition of pedelecs, so that municipal by-laws can restrict the larger, power-assisted e-bikes on cycling facilities where they create safety risks for other users.

The emergence of new types of bicycles and micro-mobility devices may also require modifications to cycling infrastructure design and highlights the importance of separate cycling and pedestrian facilities. The City's cycling facilities are now used by conventional bikes, e-bikes, cargo bikes, and bikes with trailers for children, as well as e-scooters under the Province's pilot program. 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. Future updates to OTM Book 18 and/or to City design guidance should consider cargo bikes, trailers, and other emerging users of cycling facilities. Secure bike parking will also become more important given the high cost of e-bikes and cargo bikes.

ACTION 7-6A

Request through the provincial or federal government that the current e-bike category be split, to establish standards for a pedelec category.

Policy 7-7 Deliver Supportive Maintenance and Renewal

Surface condition is an important determinant of cycling safety and comfort. While a pothole or protruding storm sewer grate 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.⁶² 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 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. For multi-use pathways through green space and off-road corridors, the City will develop criteria for widening pathways at the time of renewal and/or separating them into distinct pedestrian and cycling spaces, in locations with high peak volumes and a high ratio of pedestrians to cyclists (following from the Multi-Use Pathway Policy in Policy 6-2). Policy 6-5 discusses pathway upgrades at the time of renewal to allow winter maintenance, where feasible and where funding permits.

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

⁶² Tesche, K., Frenedo, 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,



improvements to existing facilities. However, modifications beyond the roadway curbs or resurfacing limits can rarely be accommodated within the scope of resurfacing projects. As part of the Capital Infrastructure Plan, the City will review opportunities to fund additional cycling improvements as part of existing works such as through road resurfacing projects in select, high priority locations. For example, a jug-handle approach could be added to eliminate an existing "floating bike lane"; a curb extension could be modified to accommodate cycling; or a cycling facility could be extended a short distance beyond the resurfacing project limits to connect to an adjacent facility. Within the TMP Capital Infrastructure Plan, the City will review the opportunity to establish a dedicated pool of funding for these additional improvements, subject to financial affordability and project delivery considerations (see Policy 9-1).

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, and develop criteria for widening or separating at the time of renewal..

Policy 7-8 Enable Winter Cycling

The 2013 *Ottawa Cycling Plan* guided the establishment of the City's first winter cycling network and identified a network of routes that are cleared of snow through the winter. Since its inception, the winter cycling network has grown to include approximately 40 km of connected facilities in the Downtown core and Inner Urban transects, where there is the highest density 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. Municipalities across Ontario look to Ottawa as an example of a city that successfully supports winter cycling despite significant snowfall.

As a cold-weather city with heavy snowfall each year, Ottawa does not expect to maintain summer cycling levels during the winter months. However, experience from other cities with similar climates shows that significant winter cycling mode shares can be achieved where safe, comfortable cycling facilities are properly maintained and kept clear of ice and snow. In addition, Ottawa cyclists who forgo cycling in the winter months often switch to other sustainable modes such as walking or transit⁶³. By supporting a strong cycling option year-round, the City will enable residents to make a variety of sustainable travel choices based on daily weather conditions and other factors, extending the full-year impacts of cycling well beyond daily winter cyclists.

From the creation of the winter cycling network in 2015 until pandemic-related disruptions in 2020, Ottawa saw significant growth in winter cycling trips. For example, mid-winter trips in January and February increased by more than 50% along Laurier Avenue between 2015 and 2018. In order to maintain cycling as a viable mode of travel year-round, the City will continue to expand winter cycling with new segments that connect to the existing winter network. The City will also establish secondary networks in

⁶³ Ottawa Cycling Plan, 2013.



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 facilities⁶⁴;
- Route has moderate to high summer volumes (250+ users over 12 hours for two-way facilities); and
- Route connects to the existing winter network, to a winter-maintained interprovincial link, 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. Extensions to the winter network will continue to be identified and implemented under existing delegated authority, with public-facing mapping of the winter network modified accordingly. Council can expect to see pressures associated with this policy reflected by the Public Works Department through the budget process.



ACTION 7-8A

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

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 it⁶⁵. 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

⁶⁴ Separated facilities include multi-use pathways, cycle tracks, pinned curb bike lanes and buffered bike lanes.

⁶⁵ Riecko, 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.



secure bike parking in existing multi-residential buildings is often over capacity, difficult to access or simply does not exist.⁶⁶

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 experience in other cities.⁶⁷ 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. Requirements 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. 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 bike 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 and expensive. Secure indoor bike parking, when incorporated into the initial design and construction, requires substantially less financial and spatial investment than underground car parking; in some cases it can be provided at 1/10th the cost.^{68, 69} Developers will also be encouraged to build flexibility into their parking floor plans to allow for conversion of car parking spaces into bicycle parking spaces in the future. Policy 10-5 discusses public bike parking and bike parking for existing buildings.

ACTION 7-9A

Update the Zoning By-law to require an adequate quantity of short-term and secure long-term bicycle and stroller parking in new developments suitable for a range of bicycle types.

ACTION 7-9B

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

⁶⁶ Bell, P.J. (2015). All Ages and Abilities Bicycle Parking in New and Existing Development.

⁶⁷ 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). 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.

⁶⁸ Benni, J., Macaraig, M., Malmo-Laycock, J., Smith Lea, N. & Tomalty, R. (2019). Costing of Bicycle Infrastructure and Programs in Canada. Toronto: Clean Air Partnership.

⁶⁹ City of Toronto Report. (2021). Recommended Parking Requirements for New Development. <https://www.toronto.ca/legdocs/mmis/2021/ph/bgrd/backgroundfile-173150.pdf>



Policy 7-10 Deliver Cycling Safety Education and Promotion Programs

The City and its partners deliver a number of cycling safety education and promotion programs to help residents gain cycling skills and to encourage more cycling. For example, the Cycling Safety Awareness Program provides site-specific education to increase safety and awareness, often in conjunction with the opening of new cycling facilities. Other key initiatives include bike safety training, public messaging through radio ads, workplace cycling safety outreach, information on cycling to transit, and Bike Month. In addition, 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. “Share the Road” brings together external partners and various City departments, such as Public Works, Planning, Public Health and Emergency Services, to incorporate cycling safety into their work.

The City’s *Strategic Road Safety Action Plan* focuses resources on targeted efforts to reduce collisions that result in serious injury or death. The *Strategic Road Safety Action Plan* recommends a number of safety and promotion programs including the Cycling Safety Evaluation Program, expansion of the Be Safe Be Seen initiative, cycling safety campaign blitzes at schools, and implementation of enforcement measures delivered by the Ottawa Police Service.



The City of Ottawa recognizes the importance of cycling safety education and promotion to bring safe cycling to all users. Interdepartmental efforts to enhance cycling education may include enhancements to the City website to help residents find cycling education programs within the community; advocacy to encourage the Ministry of Education to incorporate cycling education into school curriculums; advocacy to encourage the MTO to update driver training; and/or new City-delivered programs. Education and 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	Continue to work across City departments and encourage external organizations such as the Ontario Ministry of Transportation and Ministry of Education to provide cycling education and promotion programs.
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**ACTION 7-10B**

Continue to work with external partners to enable cycling in Equity 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"⁷⁰) 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. City staff will continue to update GeoOttawa as new facilities are completed, including updating recommended routes and adding pathway lighting and winter maintenance information to the map. The City will also continue to support the NCC in issuing printed and online cycling maps 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.

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 implement targeted wayfinding improvements where warranted, focusing on connections to rapid transit stations and routes with known wayfinding challenges. The City will also add wayfinding signs as significant sections of the Cross-Town Bikeways are completed.

The City uses automated pedestrian and cyclist counters to collect data on active transportation usage for planning and monitoring purposes. This data is shared with the public on "Open Ottawa", the City's open data website. The City will install additional automated counters in key locations, including temporary rotating counters to increase coverage, focusing on locations outside the Downtown and Inner Urban transects. All City projects that add major active transportation crossings will also include automated counters.

ACTION 7-11A

Provide up-to-date cycling facility information as open data for use by Google and other third parties, and update GeoOttawa as facilities are completed.

ACTION 7-11B

Review wayfinding on Cross-Town Bikeways and in other high-priority locations, and implement improvements where warranted.

ACTION 7-11C

Install automated counters as part of new or significantly rehabilitated active transportation structures.

⁷⁰ <https://maps.ottawa.ca>



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	Prioritize transit improvements that meet riders' needs and attract new riders
Policy 8-3	Focus on reliability
Policy 8-4	Deliver convenience, comfort, and accessibility
Policy 8-5	Expand the catchment of rapid transit through improved walking and cycling connections to stations
Policy 8-6	Avoid adding new road or highway capacity that competes with rapid transit

A convenient and reliable transit system is a vital public good that is essential for the functioning of a city. Improvements to public transit can help Ottawa meet its greenhouse gas emission reduction targets, attract economic development opportunities, and enhance access to amenities, services, and jobs. A high-quality public transit is also critical for achieving the City's equity goals, since many members of equity-deserving groups depend on transit for their daily trips. 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 and Line 4 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.

As more people live car-free or car-light in keeping with *Official Plan* objectives, transit will have to support a wide range of travel needs for more people throughout the day. The City will therefore strive to make public transit the “first-choice” mode of travel for trips that cannot be made by walking and cycling. This will require the City to continue to improve all aspects of the customer experience. In addition to expanding the Rapid Transit and Transit Priority (RTTP) network, focus areas will include service frequency, reliability, travel speed, use of technology to improve service, accessibility, and direct active transportation connections to stations. The City will also pursue the goal of enhancing service integration and providing a seamless travel experience throughout the Ottawa-Gatineau region by working with other governments on regional transit initiatives (Policy 3-1).

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 *Official Plan* as well as Policy 5-3 above. There are strong links between intensification, transit service improvements, and the evolution towards 15-minute neighbourhoods; as more households are added along major transit corridors, transit frequencies can increase, and it becomes more attractive to live car-free or car-light.



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

Continued expansion of the Rapid Transit and Transit Priority (RTTP) network is a critical element for achieving the City's transit objectives. The RTTP network includes the O-Train system, Transitway network (i.e. bus-only roadways and median busways), and on-road transit priority measures (i.e. curbside bus lanes, queue jump lanes and bus priority signals at intersections). RTTP projects improve the reliability, speed and/or comfort of transit, thereby increasing its attractiveness.⁷¹ Since 2013, significant progress has been made in implementing the core of the O-Train system, Transitway projects such as the Chapman Mills median busway, and transit priority projects such as bus lanes 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/Stittsville (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 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, once funding is secured.



⁷¹ Increasing the speed and reliability of transit also reduces operating costs, requiring fewer vehicles and operators and less fuel at a given headway.



The Capital Infrastructure Plan will identify the 2046 RTTP 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. Once the backbone of the O-Train and Transitway system is in place, investments will focus on improving service within and between communities. Developing new transit infrastructure on corridors within the Core and Inner Urban transects is expected to be a priority, to improve service in areas with supportive development patterns and significant existing ridership.

RTTP projects from the 2013 TMP that have not yet been implemented will be carried forward for evaluation within the Capital Infrastructure Plan. Project identification, scoping, and costing will be informed by the City’s experience implementing transit projects since 2013 as well as experience in other jurisdictions. Evaluation and prioritization of transit projects within the Capital Infrastructure Plan will consider quantitative and qualitative measures to assess the relative benefits of projects. Key factors to be considered include ridership growth, transit service improvement, contribution to city-building objectives such as equity and economic development, and cost. The City's capital investments must be affordable. As discussed in Policy 5-7, the Capital Infrastructure Plan will identify the projects that are affordable within the City’s long-range financial plans, while also identifying additional network needs to meet the City's mobility, climate, and equity objectives. 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.

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 Identify, scope, and cost RTTP projects considering lessons learned in Ottawa and in other jurisdictions since 2013.

Policy 8-2 Prioritize Transit Improvements that Meet Riders’ Needs and Attract New Riders

In the wake of the pandemic, transit travel demand and trip patterns may look different than they have in the past. Meeting the needs of existing riders and attracting new riders may require different tools and approaches. The City will engage with transit riders and prospective riders to understand their needs and priorities for transit system improvement. This will enable the City to prioritize finite funding. Engagement with equity-deserving groups will be a particular focus. The results will be used to inform planning for infrastructure (Policy 8-1), service planning policies and guidelines (discussed below), as well as other initiatives to attract new riders and meet the needs of existing riders (Policy 8-4).



Frequent transit service is among the best ways to make transit convenient to riders and attract new riders. When buses or trains arrive frequently—every 15 minutes or less throughout the day—there is less waiting and connections between routes can be made more seamlessly. Frequent service also reduces the requirement for customers to plan their travel schedule around the bus or train schedule, and it reduces the burden of a late or missed transit vehicle. As noted in Policy 5-1, evidence suggests that riders view wait time as a much more onerous burden than an equivalent amount of time spent in travel. However, there are trade-offs between frequency and service coverage. With the same resources, a transit agency can provide a smaller number of routes with higher frequencies, or they can provide a larger number of routes at lower frequencies, covering more of a city’s geography. Both frequency and coverage are important goals for an effective transit system.

The City of Ottawa has a set of policies and guidelines that provide important parameters for transit network design, including standards for service coverage and frequencies. Examples include:

- System-wide revenue-cost ratio target (i.e. the proportion of operating costs covered by customers’ fares)
- Service coverage requirements for all-day and peak period service (i.e. the percentage of urban residents within an 800m or 400m walk of transit service)
- Service hours, minimum frequencies, and performance standards for increasing or reducing frequencies.

The City will update its service planning policies and guidelines, considering post-pandemic travel patterns, the results of public engagement, and the impacts of O-Train Stage 1 and Stage 2 construction. As part of this future action, the City’s revenue-cost ratio and transit fare policies should also be reviewed, with a particular focus on the needs of equity-deserving groups (as noted in Policy 2-1).



Concurrently, the City will continue to seek additional operating funding for transit from other levels of government. Transit budgets are stretched; more operating funding is needed to provide transit service levels that meet the growing city’s needs. While the City has been successful in attracting funding from other levels of government for transit infrastructure, funding for operating costs is also required to build ridership and leverage the full benefits of transit infrastructure investments.



As part of its work on service planning, the City will 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.⁷² Recognizing the transportation-related challenges that some residents of the Rural Transect may face, the City will review the demand for transit outside of the Urban Area and Villages and seek affordable solutions to meet demand, including the potential use of new service models. More broadly, the City will continue to adapt its transit services to leverage opportunities and respond to risks related to new mobility options such as automated vehicles and mobility-as-a-service.

- ACTION 8-2A** Identify a prioritized set of actions and initiatives to attract new riders and meet the needs of existing riders.
- ACTION 8-2B** Update transit service planning policies and guidelines, including a review of fare policies.
- ACTION 8-2C** Review opportunities for on-demand transit to enhance service.
- ACTION 8-2D** Seek additional operating funding for transit from other levels of government.



⁷² First mile / last mile connections by active transportation are discussed in POLICY 8-5. Connections by shared mobility are discussed in POLICY 4-4.



Policy 8-3 Focus on Reliability

Even on routes where it is not feasible to run frequent service, the convenience of transit can be enhanced by ensuring that the service is reliable and that real-time transit information is consistently available to customers. Reliability means that vehicles arrive at each stop at the scheduled time; this allows customers to reduce the time they spend waiting for transit and contributes to seamless transfers between routes.

As part of the focus on reliability, the City can use transit priority measures to address the congestion “bottlenecks” that contribute to bus delays. Transit priority measures include infrastructure changes such as the construction of new curbside bus lanes along existing road corridors or the addition of queue jump lanes at intersections. These projects are identified in the City's transit priority network, as described in Policy 8-1. However, transit priority measures can also include operational changes where buses operate in mixed traffic and experience delays. Potential measures include parking restrictions, through or turning movement restrictions for general vehicular traffic, or 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.

Finally, the City will review opportunities to improve the quality and availability of real-time transit information to ensure that users know when buses will arrive. When customers have access to mobile real-time information, this reduces both the actual wait time and the perceived wait time – i.e. they arrive at the bus stop closer to the actual bus arrival time, and the minutes spent waiting for the bus feel shorter compared to customers using traditional schedule-based information.⁷³

ACTION 8-3A

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

Policy 8-4 Deliver Convenience, Comfort and Accessibility

The City can use a variety of tools to deliver convenient, comfortable and accessible transit service. For example:

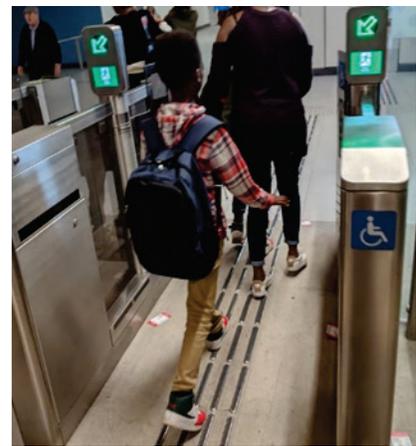
- The City has initiated upgrades to allow riders to pay by credit card and smartphone mobile wallet. System-wide rollout of digital payment alternatives will make it easier for residents and visitors to use transit without advance planning. The City will continue to keep up-to-date with the digital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

⁷³ KE Watkins, B Ferris, A Borning, GS Rutherford, D Layton. (2011). Where Is My Bus? Impact of mobile real-time information on the perceived and actual wait time of transit riders. *Transportation Research Part A: Policy and Practice* 45 (8), 839-848.



- Existing “TransSecure” programs such as the Safe Stop and Night Stop programs should be maintained and/or enhanced to ensure that all residents including equity-deserving groups feel comfortable and secure using transit for trips at all times of day.
- Shade, bus shelters, amenities, and winter maintenance of transit stops and stations are critical to year-round comfort, convenience, and accessibility; existing programs could be strengthened.
- Coordinated regional mobility planning and transit operational planning will further help to deliver convenient transit service to residents of the National Capital Region.

The results of public engagement on priorities for transit service improvements should be used to hone the City’s work on improving the convenience, comfort and accessibility of the transit customer experience.



Finally, a core requirement of Ottawa’s transit service is 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 online 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 in accordance with the City’s *Accessibility Design Standards*, and will continue to upgrade bus stops to meet the City’s accessibility standards.

Policy 8-5 Expand the Catchment of Rapid Transit Through Improved Walking and Cycling Connections to Stations

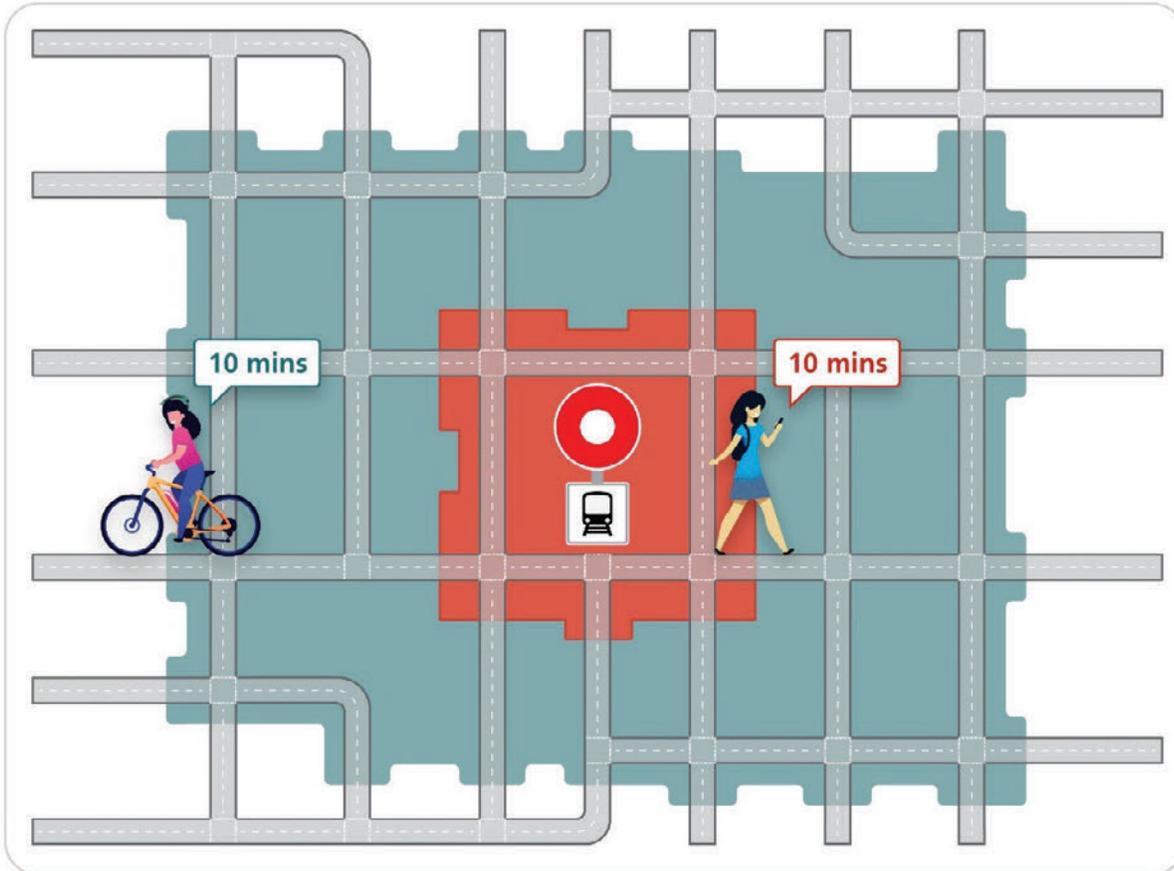
The “walkshed” and “bikeshed” of a rapid transit station refers to the surrounding area where people can comfortably access the station by foot or bike in less than 10 minutes using “low stress” routes⁷⁴. This is approximately an 800 m walk or a 2.5 km bike ride, as illustrated in Exhibit 17. These areas vary in size

⁷⁴ “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).



depending on the layout and design of the community and transportation network, as well as the proximity of nearby stations. 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



-  = Transit Station
-  = 10-Minute Walking Radius (800 m)
-  = 10-Minute Cycling Radius (2.5 km)

A 10-minute bike ride reaches **3 times farther** away from the station and it covers an **8-11 times larger** area than a 10-minute walk, illustrating the importance of supporting cycling mobility.

Increasing the number of residents within the walkshed and bikeshed of rapid transit stations builds 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 active transportation routes between the station and adjacent land uses. In turn, higher ridership supports more frequent transit service, further increasing the attractiveness of transit as a travel mode. The City will continue to analyze 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 high-priority locations, the City could consider acquiring property to create these shortcuts. Winter maintenance of walking and cycling facilities to enable year-round access to transit is also important and is discussed in Policy 6-6 and Policy 7-8. To be effective, connections to stations must be safe, accessible, comfortable, and maintained year-round.

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 afterwards. 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 O-Train construction, new rapid transit stations and corridors should also include active transportation facilities between rapid transit stations and the adjacent neighbourhoods, extending to and including the nearest intersections. The inclusion of active transportation connectivity enhancements will generally be proportional to the scale of the rapid transit project. Where desired active transportation facilities cannot be implemented through a rapid transit project, a phased implementation plan should be developed to facilitate and protect for their future implementation. Designs will strive to deliver high quality walking and cycling environments, including emerging best practices, along station frontages and on streets adjacent to stations, while also ensuring efficient local bus connections to stations.

Secure bicycle parking at rapid transit stations is another important measure to enable multimodal trips. The City recently launched “Bikeseure” parking at Fallowfield, Greenboro, St-Laurent and Strandherd stations and will build on these initial rollouts in the coming years. As demand for Bikeseure increases, capacity will also be expanded where feasible. 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 8-5A

Identify high-priority opportunities to improve active transportation connections to stations, associated funding needs, and funding source(s).

ACTION 8-5B

Expand Bikeseure parking at rapid transit stations.

Policy 8-6 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 address long-term travel demands, including enhancements to sustainable transportation and transportation demand management, have been exhausted. It is acknowledged that, in some instances, road projects that are parallel to rapid transit corridors may be proposed for different purposes. For example, road projects may aim to address flood risks, safety and operational needs, cut-through traffic, or goods movement challenges. Localized improvements such as the addition of auxiliary lanes at intersections will continue to be pursued where required, including to reduce delays for transit vehicles.



Avoid road or highway widenings that compete with rapid transit corridors unless all reasonable alternatives to address long-term travel demands have been exhausted.





Theme 9: Provide Safe, Multimodal Streets

POLICY OVERVIEW	
Policy 9-1	Implement "complete streets" to create streets for everyone
Policy 9-2	Advance "complete street" design standards
Policy 9-3	Implement the concept of "access" and "flow and capacity" streets
Policy 9-4	Identify future road network needs
Policy 9-5	Ensure that modifications to the road network foster "human-scaled" streets
Policy 9-6	Optimize traffic signal operations for multimodal safety and efficiency
Policy 9-7	Minimize traffic impacts in neighbourhoods
Policy 9-8	Implement the Strategic Road Safety Action Plan to reduce fatal and major injury collisions
Policy 9-9	Reduce operating speeds through changes in street design
Policy 9-10	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 - moving buses, bikes, vehicles, and pedestrians - but they also act as entry points to businesses, parks, schools, and homes. Streets are social places where residents can explore their neighbourhood, exercise, meet friends, or enjoy a patio. They also provide space for goods movement, trees and greenery, utilities, vehicle and bicycle parking, stormwater management features, and the drop-off and pick-up of people and goods. 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. Complete streets support neighbourhood liveability; they accommodate a variety of modes and incorporate context-sensitive design principles. Complete streets may look different based on the surrounding context. For example, a complete street on a rural collector will vary in appearance and function from one on an urban local road. For this reason, the complete streets approach does not prescribe a specific design, but rather refers to a



process to balance trade-offs and ensure the safety, comfort, and mobility needs of all users are met. Complete street designs also need to consider maintenance and operational costs and requirements for all four seasons, most notably winter, and deliver infrastructure that is resilient to future climate conditions.

In 2015, City Council approved the *Complete Streets Implementation Framework*. According to the framework, the City leverages planned construction—including road construction, reconstruction, and major transit projects—to implement road designs that consider the needs of all users. The framework calls for using every transportation project as a catalyst for improvements within the scope of that project to enable safe, comfortable, and barrier-free access for everyone. 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 will eventually provide shade.

As part of the *Complete Streets Framework*, the City also 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 (MMLOS) Guidelines* 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.

Alongside its work on complete streets, the City has updated the *Strategic Road Safety Action Plan* (SRSAP) to align with the principles of a safe systems approach. The Plan focuses efforts and resources where they are needed most to have the greatest impact on reducing collisions resulting in serious injury or death. Other recent City initiatives in support of road safety and complete streets include design guidance for arterial roads and neighbourhood collector streets, the *Local Residential Streets 30km/h Design Toolbox* (an initiative of the *Strategic Road Safety Action Plan*), the *Traffic Calming Design Guidelines*, and the *Protected Intersection Design Guide*. The City is also updating guidance for cycling in construction zones as part of ensuring that temporary conditions accommodate all users. In the coming years, the City will continue to implement these plans and guidelines and will create new tools as necessary to advance safe and complete streets.

Policy 9-1 Implement Complete Streets to Create Streets for Everyone

Ottawa’s *Complete Streets Implementation Framework* and *MMLOS Guidelines* have been successful in advancing sustainable transportation objectives and have been used as an example by many other North American cities. The majority of active transportation improvements in Ottawa are built as part of other projects through the Complete Streets process, accelerating the pace of implementation compared to what could be accomplished through standalone initiatives. At the same time, there are opportunities for refinements to the *Framework*, *Guidelines* and supporting business processes based on lessons learned since 2015. As discussed in Policies 6-6 and 7-7, there are situations where it may be appropriate to add scope to planned projects in support of complete streets – rather than working only within existing scope, as per the current framework. For instance, project limits could be extended to connect a new cycling



facility to an existing route, or landscaped curb extensions could be added to a sidewalk renewal project. A clear and consistent process will be needed to identify and prioritize these enhancements.

Adding scope to existing projects is cost-effective compared to initiating standalone projects to make the same improvements. However, there are still costs associated with this approach. The TMP Capital Infrastructure Plan will seek to identify funding for complete street improvements that go beyond the scope and/or limits of the planned construction works. This is particularly important given asset management budget pressures. The *Transportation Asset Management Plan* presents the estimated costs of keeping all transportation infrastructure assets in their present state for the next 10 years; already, the estimated costs are greater than the funding identified in the City’s current Long Range Financial Plan. Experience has shown that the existing *Complete Streets Implementation Framework* adds pressure to asset renewal budgets without additional funding to compensate for the higher costs.



As part of updating the *MMLOS Guidelines*, the City will consider the Healthy Streets approach, direction from the *Official Plan*, new provincial MMLOS guidance, evolving best practice, and the City’s practical experience. The Healthy Streets approach emphasizes the importance of creating a safe, welcoming, and relaxing environment by considering elements such as noise, air quality, lighting, rest areas, shade, and placemaking; targets may be established for corridor shade, linked to targets for walking and cycling level of service. The updated *Guidelines* will also aim to provide clearer guidance on how to make trade-offs in the face of space constraints, cost constraints, and competing objectives for the right-of-way, and how to document design decisions and trade-offs. In the face of budget pressures, there may be situations where complete street improvements are prohibitively expensive (for example, due to land acquisition costs), and funding would be more effectively spent in other corridors. Finally, the *Guidelines* will provide revised level of service targets, including updates to reflect the new transect designations in the *Official Plan*.

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* and corresponding level of service targets, including the development of systematic approaches for documenting trade-offs.



ACTION 9-1C

Within the TMP Capital Infrastructure Plan, review opportunities to fund complete street improvements that go beyond the scope and/or limits of the planned construction works.

Policy 9-2 Advance "Complete Street" Design Standards

Since 2013, the City has made significant progress in developing “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 draft *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* that emphasize compact roundabouts for slower vehicle speeds and improved integration of pedestrians, cyclists and transit riders. Work is ongoing to document the City's current design practices and guidelines for complete streets, including pedestrian facility design guidelines. Given the rapid rate of change in design practices, it is important to document and update design guidelines and standards regularly for clarity and consistency across programs and projects. Operational needs (e.g. snow clearing) and asset management implications must also be considered prior to adopting new complete street designs.



Source: City of Nanaimo

Continuous Sidewalks/Cycle Tracks



Source: Virginia DOT

Centreline Hardening

The City will continue to be a leader in working with organizations such as the Ontario Traffic Council and Transportation Association of Canada to adopt global best practices in facility design and share lessons learned from their implementation. Provincial approval of bike crossovers is particularly important to allow cycling across roundabouts. Other examples of emerging measures include continuous sidewalks/cycle tracks, nearside bike signals, and centreline hardening.⁷⁵ Guidance for designing and

⁷⁵ A continuous sidewalk/cycle track is a design feature for intersections where a major road crosses a low-volume local street; the sidewalk and cycle track continue across the side street uninterrupted with no change in elevation or materials, creating a space where pedestrians



implementing landscaped curb extensions and LID stormwater management measures will also be advanced. Finally, wherever possible, the City should “ground truth” its design work. This will involve conducting pilots and documenting results; engaging with residents on designs; developing educational materials for new emerging measures; comparing user behaviour before and after project implementation; and updating design guidance accordingly.

To support place-making and healthy streets, the City also has an opportunity to pilot designs such as “woonerven” or “bicycle streets” on low-volume, low-speed local streets. These concepts are still emerging in Ottawa; developing design guidance and conducting a pilot would help to gain experience with these street designs. In conducting a pilot, a number of considerations would need to be addressed, including any requirements for transit and para-transit service.



Woonerf on Cambridge Street N in Ottawa



Bicycle Street in the Netherlands

ACTION 9-2A Document City design guidelines, standards and best practices for complete streets and update regularly as these evolve, including finalizing the *Roundabouts for Complete Streets Guidelines* and developing design guidance for "woonerven" and landscaped curb extensions.

ACTION 9-2B Pilot street designs that function as “places” such as the “woonerven” concept for low-volume, low-speed local streets, as opportunities arise.

and cyclists clearly have priority. A nearside bike signal is a traffic signal head for bicycles that is mounted on the nearside of the intersection, where the cyclist is waiting. Centreline hardening involves adding features like bollards or rubber curbs to the center line at the approach to an intersection, to prevent drivers from cutting across intersections at a diagonal.



Policy 9-3 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 people and goods 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 car parking spaces will require slow traffic speeds and 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.



Access Street Example



Flow and Capacity Street Example

The *Official Plan* provides direction about how “access” and “flow and capacity” designations align 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. Exhibit 17 illustrates the way these designations interact. Streets identified as Mainstreet and Minor Corridors within the *Official Plan* will generally be designated as access streets, although it is recognized that some exceptions will exist.

To advance this concept, the City will develop a framework for designating individual streets according to their major function as either “access” or “flow and capacity”. This framework will consider the role of the corridor in the mobility network as well as factors such as the surrounding land use, density of adjacent development, street frontage and urban design, network connectivity, and mix of users. Streets will be designated as “access” or “flow and capacity” as part of a future exercise, following the completion of the TMP.

The City will also advance the use of "multiway boulevard" road typologies for roads whose structural role in the transit network or street grid requires a "flow and capacity" function, but whose immediate land



use also necessitates an "access" function. A "multiway boulevard" is split into a central throughway to serve its flow and capacity function, and parallel frontage roads to serve its access function. For example, Chapman Mills Drive in Barrhaven uses this typology to provide "flow and capacity" for transit along an access street. A similar design could be used to provide "flow and capacity" for vehicles on a street that also needs to serve an important access function. However, it should be noted that these multiway boulevard roads require a wide right-of-way to accommodate the separation of the access lanes from the typical median transit flow/capacity lanes. They also increase the width of intersections, thereby increasing the pedestrian exposure to traffic and creating a situation where pedestrians may need two cycles to complete a crossing.

Exhibit 18: Road Classification and Function by Transect

Transect / Planning Framework	Downtown Core & Inner Urban	Outer Urban & Suburban			Greenbelt & Rural	
	All Areas	Town Centre, Hubs, Corridors	Overlays ²	All Other Areas	Villages	All Other Areas
Provincial + City Highway	Flow	Flow	Flow	Flow	Flow	Flow
Federally Owned Roads ¹	Access or Flow	Flow	Flow	Flow	Flow	Flow
Arterial	Access or Flow	Access or Flow	Access or Flow	Flow	Access or Flow	Flow
Major Collector	Access or Flow	Access or Flow	Access or Flow	Access or Flow	Access or Flow	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)

Note 1. Federally Owned Roads are under the jurisdiction of the National Capital Commission and are separate and distinct from the municipal road network.

Note 2: Overlays is an Official Plan term that applies to Transforming Neighbourhood and Evolving Neighbourhood designations

As envisaged in the *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. This review will consider the street design elements that differentiate “flow and capacity” versus “access” streets. For example, on “flow and capacity” streets, speeds will be higher. On “access” streets, frequent pedestrian crossing opportunities will be desired and speeds will be lower.

ACTION 9-3A	Develop a framework for designating streets as either “access” or “flow and capacity” streets.
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**ACTION 9-3B**

Update design guidance such as the *Regional Road Corridor Design Guidelines* (2000) to reflect the design implications of “access” versus “flow and capacity” streets, and explore the use of “multiway boulevard” road typologies that can provide both access and flow where required.

Policy 9-4 Identify Future Road Network Needs

The Capital Infrastructure Plan will identify the needs and priorities for Ottawa's road network to support travel demand to 2046, considering the policies and objectives of the *Official Plan* and the TMP's vision and guiding principles. Road projects proposed in the Plan will include new roads, road widenings, isolated measures such as intersection modifications, and complete street upgrades to existing roads.

The *Official Plan* calls for the majority of trips to be made by walking, cycling, transit, and carpool, and policies throughout the TMP give priority to these modes. As a result, the Capital Infrastructure Plan will aim to make the most efficient use of existing road capacity and increase the use of sustainable modes before considering the addition of new capacity. For network planning purposes, a target volume-to-capacity (v/c) ratio⁷⁶ of 1.0 will be adopted citywide. This target will apply to travel over the entire peak period to optimize the City's investment in road infrastructure and ensure space is used as efficiently as possible. Peak hour v/c targets will continue to be used for operational planning.

Throughout the city, new roads and road widenings are expected to be reserved for select circumstances such as to provide access to new communities. New road and road widening projects will be considered where transit alternatives are infeasible or have been exhausted, and where they align with the City's objectives for human-scaled streets (Policy 9-5). Isolated measures such as intersection modifications will be considered before pursuing larger-scale road projects. Intersection modifications will also continue to be implemented to address safety concerns. Phased implementation of large projects will be explored, as this allows mobility improvements to be achieved sooner, in more locations across the city. In the Downtown Core and Inner Urban transect, it is recognized that road widening is not a viable solution to peak period congestion. Where vehicular volumes exceed the road capacity in these locations, mitigation may be limited to shifting travel to other modes or less congested travel times or the optimization of traffic signals using intelligent transportation systems such as advanced traffic control systems to maximize efficiency (discussed further in Policy 9-6).

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

⁷⁶ 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 used 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.



change targets. This work will build on projects that have already been defined through Council-approved Local Plans such as Secondary Plans and Community Design Plans.

In developing the Capital Infrastructure Plan, previously identified projects from the 2013 TMP which have not yet proceeded through the design process will be reviewed to confirm project need and justification, and new projects will be identified to accommodate anticipated growth - in accordance with the policies outlined above. Network performance will be evaluated using metrics such as travel time, modal share, and greenhouse gas emissions. Prioritization of projects will consider quantitative and qualitative measures to assess the relative merit of each project and the priority for implementation. Prioritization criteria consider safety; access to development; existing and future congestion reduction; city-building considerations including equity, natural systems protection, and healthy streets (and associated safety benefits); and lifecycle costs. The highest scoring projects will be used to develop a phased implementation plan for various levels of investment, considering the City’s GHG reduction targets, sustainable mode share targets, and affordability constraints.



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 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 and approval of the Capital Infrastructure Plan, the City will continue to advance projects identified in the 2013 TMP.

 Pursue major road projects to add peak capacity only in select circumstances, such as where transit alternatives are infeasible or have been exhausted and where isolated measures are insufficient to address congestion bottlenecks or safety concerns.

ACTION 9-4A Adopt a target volume-to-capacity ratio of 1.0 for vehicular traffic during peak periods for network planning purposes.



ACTION 9-4B In the TMP Capital Infrastructure Plan, identify projects to reconfigure existing streets as "complete streets", in support of intensification and modal shift.

ACTION 9-4C Continue to leverage Intelligent Transportation Systems to operate the traffic signal network in the most safe and efficient manner possible.

Policy 9-5 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 slower 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. Maintaining human-scaled streets is particularly important on streets identified as Design Priority Areas, Mainstreet Corridors and Minor Corridors in the *Official Plan*. To contribute to maintaining a human scale, the City will avoid widening streets beyond four midblock general-purpose lanes. When roads that exceed four midblock lanes are being reconstructed, opportunities to reduce them to four lanes should be explored.

To accommodate transit priority, alternative measures to improve transit operations will be considered before widening a four-lane road to provide dedicated transit facilities. Such measures include turn restrictions for general vehicular traffic, conversion of vehicle lanes to bus lanes, and isolated transit priority measures at intersections. Compared to road widening, lane conversion dramatically reduces project costs, allowing more transit delay reduction measures to be implemented with available funding. Projects nonetheless require site-specific review and network analysis because these measures may not always be feasible or effective.



At intersections, human-scaled streets are achieved by limiting intersection size and crossing distance. In Design Priority Areas (and where feasible in other areas of the city), intersections should rarely be widened beyond five lanes on any given approach except as part of rapid transit or transit priority projects. Throughout the city, where new lanes are required at intersections to implement protected signal phasing, transit priority measures, or to accommodate turning vehicles, median refuge islands may be provided along pedestrian crossings and/or cycling cross-rides to reduce the number of travel lanes that vulnerable road users must cross at any given time.



Avoid widening streets beyond four midblock general-purpose lanes.

In Design Priority Areas, avoid widening intersections beyond five general purpose lanes on any given approach, wherever possible.

Policy 9-6 Optimize Traffic Signal Operations for Multimodal Safety and Efficiency

Traffic signal optimization plays an important role in improving the safety and efficiency of all modes. 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. Related activities include data collection and analysis, signal maintenance, and equipment upgrades.



As traffic volumes change over time, signal timing and coordination need to be revisited to ensure they remain optimal for current conditions. The primary objective is to provide a safe travel environment for all modes while minimizing person-delay. Additional measures to support pedestrian, cycling, and transit movements may be considered in certain contexts (for example, see Policy 6-4 for pedestrian signal treatments). The City will continue to pursue traffic signal optimization on an ongoing basis. To further improve traffic performance and prepare for the future, the City will continue to lead in the innovation and evaluation of advanced technologies for traffic signal operations for all modes of transportation and future communication of traffic signal information to connected and automated vehicles (CAVs). For example, new tools and detection technologies being explored may be capable of identifying pedestrians or cyclists waiting to cross through the intersection, thereby forgoing the need to press the push-button for pedestrians or be located on the 3 yellow dots for cyclists.

ACTION 9-6A

Continue to lead in the innovation and evaluation of advanced technologies for traffic signal operations for all modes of transportation and future communication of traffic signal information to connected and automated vehicles (CAVs).



Policy 9-7 Minimize Traffic Impacts in Neighbourhoods

Motor vehicle use in neighbourhoods can have undesirable effects including excessive vehicle 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. Prioritization considers a variety of factors such as severity of speeding; risks to vulnerable users (e.g. proximity to schools, parks, seniors centres, etc.); and existing conditions (e.g. presence or absence of appropriate active transportation facilities and crossings).

The City also has a Temporary Traffic Calming Measures Program that facilitates the installation of effective, low-cost traffic calming measures that are temporary and/or seasonal in nature. These can be installed quickly and offer safety solutions for areas that often do not meet criteria for permanent roadway modifications. Each Ward Councillor is allocated an annual budget for Temporary Traffic Calming.

The City will continue to address concerns about vehicle speeds and aggressive driver behaviour in existing neighbourhoods through the Neighbourhood Traffic Calming program and Temporary Traffic Calming program, as well as through other new road infrastructure, road renewal projects and redevelopment as per the *Complete Streets Framework*. For new neighbourhoods, the City has a number of practices and guidelines that are applied during community planning to prevent vehicular 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 9-8 Implement the Strategic 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.



The *Strategic Road Safety Action Plan* serves as a comprehensive and proactive strategy for making Ottawa roads safe for all users. Though the plan calls for a 20% reduction in the average annual rate of fatal and major injury collisions by 2024, the City's longer-term goal is for zero fatalities on streets by 2035. The plan was developed based on historical collision data and includes four main emphasis areas where countermeasures are expected to have the greatest impact on reducing fatal and major injury collisions: Vulnerable Road Users, Rural Areas, Intersections, and High-Risk Driver Behaviour. Examples of recommended countermeasures include upgrading rural road signage and lighting, implementing fully protected left turns, implementing leading pedestrian intervals, modifying intersections identified in the *Cycling Safety Review of High-Volume Intersections*, developing a motorcycle safety strategy, and implementing automated speed enforcement (i.e. speed cameras) in certain community safety zones near schools and parks. The City will continue to focus on eliminating fatal and major injury collisions by implementing the recommendations from the *Strategic Road Safety Action Plan*.

Policy 9-9 Reduce Operating Speeds through Changes in Street Design

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. Based on the *Official Plan* and recent Council policy, local residential streets shall be designed for a 30 km/h operating speed at the time of construction or reconstruction. 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 less than 50km/h, with some exceptions based on context. To support this, design speeds should be aligned with the desired operating speed and posted speed limit. This design philosophy is consistent with best practices from other municipalities.

"Flow and capacity" streets inside the Urban Area and Villages should be designed to achieve operating speeds of 60 km/h or less, with some exceptions such as roads travelling through the Greenbelt (e.g. Woodroffe, Innes), the Airport Parkway, and certain roads in the Suburban Transect. Slower speeds should be considered where this can reduce lifecycle costs. Roads and bridges designed for faster speeds are typically wider and more expensive to build and maintain than roads and bridges designed for slower speeds; decisions on design speeds will therefore consider both capital and lifecycle costs. In all situations, protection for pedestrians and cyclists from vehicles (i.e. crash barriers and buffer space) will be based on the design speed rather than the posted speed. For new and fully reconstructed "access" and "flow and capacity" streets, fewer roads are expected to be designed with mid-block medians, in support of slower operating speeds, although medians will continue to be used in certain contexts to address safety and operational needs.

Design features to achieve desired operating speeds should be integrated into the City's design guidelines for "access" streets and for "flow and capacity" streets (see Policy 9-3) and incorporated into designs for new roads. Operating speed reductions on existing streets will be pursued through physical changes to road design; changes to posted speed limits on their own are not an effective strategy to achieve speed reduction. Changes can be implemented at the time of reconstruction, and where feasible at the time of resurfacing or other planned works.

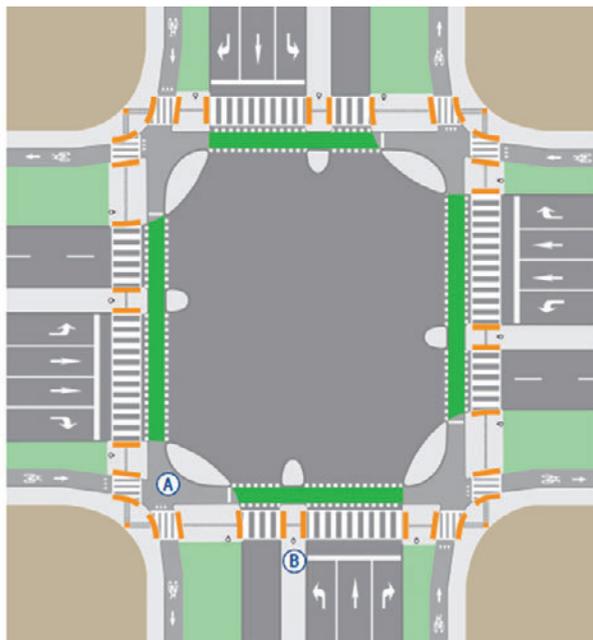


Design “access” streets to achieve operating speeds of less than 50km/h, with some exceptions based on context. For “access” streets, the design speed should align with the desired operating speed and posted speed limit.

Policy 9-10 Advance the Implementation of Protected Intersections and Other Designs That Can Improve Safety

The City recently developed detailed guidelines for the design of “protected” intersections—an intersection design which has been 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 separate space for pedestrians, bicycles, and motor vehicles.

Exhibit 19: Bird's eye view of a protected intersection



Design Features

- (A) Standard protected corner
- (B) Median pedestrian refuge



Source: City of Ottawa Protected Intersection Design Guide

The City has made considerable progress, installing more than a dozen protected intersections in recent years with more in the planning stage. Moving forward, protected intersections will be the City’s preferred option when constructing or reconstructing signalized intersections where dedicated cycling facilities are warranted on at least one of the intersecting streets, as per the *Official Plan* and *Protected Intersection Design Guide*.⁷⁷ In the interim, the City will continue to improve intersection safety for vulnerable users at strategic locations using a variety of measures. This includes standalone “retrofit” projects to build protected intersections (if road reconstruction is many years away), as well as other lower-cost solutions that provide dedicated space for vulnerable users and improve safety relative to existing conditions.

⁷⁷ Protected intersection designs are also applicable at some unsignalized intersections, as per the *Protected Intersection Design Guide*.



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

POLICY OVERVIEW	
Policy 10-1	Maintain an efficient truck route network
Policy 10-2	Encourage and enable the use of smaller, human-powered, and electric vehicles for goods movement
Policy 10-3	Design streets to accommodate trucks and active users
Policy 10-4	Develop a strategy to modernize how curbside space is allocated and managed
Policy 10-5	Leverage parking to support economic activity and encourage sustainable travel

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 that 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. Accommodating the movement of goods is critical to Ottawa's economic competitiveness. Businesses require an efficient system for regional and local goods movement; residents likewise rely on access to goods and services, whether at retail stores or through online commerce with home delivery.

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, car parking has been the primary use of the curb, along with truck loading and unloading. Alternative and emerging uses include bus and bike lanes, street-side patios, food truck stands, electric vehicle charging stations and stormwater management features. Curb space management is a powerful tool to support economic activity and help encourage sustainable modes while continuing to provide access to businesses and homes.

Policy 10-1 Maintain an Efficient Truck Route Network

Ottawa maintains a comprehensive network of truck routes to balance the needs of goods movement with the desire to minimize the impacts of trucks on sensitive land uses. 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 identifies the most suitable roads where trucks are allowed



to travel without restriction; on all other roads, trucks are permitted, but only to the extent necessary to pick up goods or make a local delivery. The purpose of the truck route network is to define the roads that can safely accommodate large vehicles; support local and regional commerce; provide interconnectivity between various areas of the City; and provide capacity and design features to accommodate the size and weight of trucks.⁷⁸



Ottawa's truck route network consists of highways, arterial roads, and select collector or local roads that serve site-specific purposes to provide access to industrial and commercial areas. These roads are designed to withstand use by heavy vehicles, as 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. When routing options are reduced, truck operations become less efficient, increasing costs for freight providers. As a result, 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.

Residents have expressed concerns about truck traffic in the downtown, along streets with high pedestrian and cycling activity, through rural villages, and near schools. There have also been concerns about the impacts of truck traffic from new warehouses on adjacent residential areas. As noted in Policy 3-3, the City will work with 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 examine the appropriateness of existing truck routes from a safety and complete street lens, while balancing the need for a well-connected network of truck routes to support efficient goods movement and regional competitiveness, considering trends in warehousing, logistics, and deliveries (see Policy 3-2). The review will consider major transit and active transportation corridors, schools and sensitive land uses, and streets running through Special Districts; and will seek opportunities to reduce the number of large trucks in proximity to these areas. Time of day permissions may 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 final destinations.

Ontario's *Highway Traffic Act* defines a commercial motor vehicle as a truck with a gross weight of over 4.5 tonnes (as well as tow trucks and buses with a seating capacity of 10 or more passengers).⁷⁹ The City's truck route network is intended to accommodate vehicles meeting this weight-based definition. However, from a street and intersection design perspective, vehicle size is critical. In constrained contexts, safer intersections for active users often mean tighter curb radii and more difficult manoeuvres for large trucks. The City would like to work with the provincial government to explore opportunities to create a two-tier

⁷⁸ Ontario Trucking Association. (December 2011). Local Truck Routes: A Guide for Municipal Officials.

⁷⁹ Following from the *Highway Traffic Act*, the City's Traffic and Parking By-Law defines a “heavy truck” as any vehicle with a gross weight of more than 4.5 tonnes, excluding public transit buses, ambulances, and school buses.



network for large versus smaller trucks. Designating certain roads as truck routes for smaller trucks only would allow the City to accommodate active modes while still supporting local truck movements; this is particularly relevant in the downtown and inner urban areas. Similarly, the City would like the ability to restrict turns by specific classes of larger trucks, where reasonable alternatives exist.

While the truck route network focuses on trucks traveling through Ottawa for commercial purposes, all roads will continue to accommodate heavy vehicles such as school buses, waste management vehicles, emergency response vehicles, and construction vehicles that provide important local services.

From a land use planning perspective, the *Official Plan* locates industrial lands (i.e., goods-generating industries) near 400-series highway interchanges. The City will consider Long-Combination Vehicles⁸⁰ while planning for highways, industrial areas, and the streets and intersections that connect them. The City will also aim to protect existing rail lines and sidings that provide freight service to existing industrial uses or planned industrial lands, to maintain freight rail as a goods movement option for the future.

ACTION 10-1A

Update the City's truck route network following the implementation of solutions to address interprovincial truck traffic in the downtown.

ACTION 10-1B

Work with the provincial government and other municipalities to explore opportunities to create a two-tier network for large versus smaller trucks and to enable the City to restrict turns by specific classes of larger trucks where reasonable alternatives exist.

Policy 10-2 Encourage and Enable the Use of Smaller, Human-Powered, and Electric Vehicles for Goods Movement

Given current trends towards "anytime-anywhere deliveries", it is expected that there will be an increase in the use of smaller urban freight distribution centres, where goods are transferred from larger vehicles to smaller vehicles before being delivered to their final destinations. This change supports increased use of smaller, more sustainable vehicles for last-mile deliveries and reduced use of larger trucks in city neighbourhoods. The City will update its by-laws and regulations as needed to permit urban distribution centres. Stand-alone pickup facilities may also be provided and should be located for easy transit and active transportation access.⁸¹



The City will also continue to support sustainable and space-efficient delivery methods, including through enabling by-laws, curbside

⁸⁰ Long-Combination Vehicles are tractors that pull two full-length semi-trailers. They can only drive on certain divided, multi-lane, controlled access highways (primarily 400-series highways) and access destinations on approved routes within a 5-km radius of highway interchanges.

⁸¹ Stand-alone pickup facilities are currently classified as "click and collect facilities" in the City's Zoning By-law.



management practices, and support for pilot projects by goods movement companies. Commercial e-cargo bikes, electric delivery vans, low-speed vehicles, and delivery robots are among the emerging innovations in urban goods movement that may help to reduce greenhouse gas emissions, noise, and air pollution. In fall 2021, the City established a by-law to allow e-cargo bikes to operate in Ottawa.

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, safer and greener vehicles for City operations without compromising operational requirements. This applies to both City fleets and contractor vehicles.

ACTION 10-2A

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

ACTION 10-2B

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

ACTION 10-2C

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

Policy 10-3 Design Streets to Accommodate Trucks and Active Users

From a road design perspective, requirements for heavy trucks often conflict with design objectives for pedestrians and cyclists. For example, where corners are designed with large curb radii so that large trucks can safely make the turn without encroaching onto the sidewalk, pedestrian crossing distances are longer, and vehicles of all types tend to make turns at faster speeds. Providing large curb radii also limits the space available at intersection corners for pedestrians and cyclists. At the same time, where inadequate space is provided on the roadway, large trucks may encroach onto sidewalks as they turn and create safety issues for pedestrians.

The City does not currently have design standards for "right-sizing" curb radii, although some guidance is provided in the *Protected Intersection Design Guide*. A formal set of design standards should be adopted to create consistency in determining corner radii requirements. Following Toronto's *Curb Radii Guidelines*, Ottawa's design standards need not be "one size fits all". The "design vehicle" and "control vehicle", the two design elements that determine intersection corner needs, may vary by transect and between "access" and "flow and capacity" streets. Design requirements should also consider the frequency of turning trucks. It is expected that in many contexts, the largest vehicles that occasionally travel the corridor will need to navigate intersections slowly and carefully. Exhibit 19 provides transect-specific considerations for intersection redesign, and highlights the need to consider a variety of context-appropriate solutions within design processes.



Finally, the City will continue to pursue and evaluate the use of “truck aprons”, following the guidance in the *Protected Intersection Design Guide*. Truck aprons allow intersection corners to be designed for smaller vehicles and slower turning speeds, while still accommodating turns by large trucks.

ACTION 10-3A

Develop and document design standards for intersections that accommodate trucks and active users, building from the City of Toronto's *Curb Radii Guidelines*.

Exhibit 20: Transect-Based Approach for Intersection Redesign to Accommodate Trucks & Active Modes

Redesigning intersections in the Downtown and Inner Urban transects is challenging for the following reasons:

- ✓ Turning movements for trucks and other large vehicles are often poorly accommodated under existing conditions, with large vehicles needing to encroach into adjacent lanes, affecting the ability of vehicles in other lanes to progress through the intersection.
- ✓ Improvements to walking and cycling facilities are required throughout these transects to achieve the City's objectives for sustainable transportation and 15-minute neighbourhoods. These transects already feature high volumes of pedestrians and cyclists, and these volumes are expected to increase in the future.
- ✓ Efforts to improve active transportation facilities frequently require reallocation of roadway space and this is generally incompatible with improving the level of service for large vehicles making turns.
- ✓ The City right-of-way in urban environments is generally constrained with limited opportunity for land acquisition; and the City does not have the ability to regulate the size of trucks that use different streets (see Policy 10-1).

In light of these challenges and constraints, the following transect-based approaches will be pursued:

- ✓ In the Urban Area and in Villages, intersection redesigns will aim to provide at least the minimum required active transportation facilities while also accommodating truck turns. Further improvements to achieve multimodal level of service targets will then be sought where they can reasonably be achieved within the project context.
- ✓ Notwithstanding the above, at locations in the Downtown and Inner Urban Transects where existing truck maneuverability does not meet current standards, intersection redesigns will not seek to geometrically improve truck turn accommodation unless there is a documented safety issue related to truck movements.
- ✓ In all transects, solutions for truck turns will prioritize safety over the efficient movement of vehicles through intersections. Where trucks cannot safely turn, restrictions may be pursued.
- ✓ In all transects, intersection redesigns will need to allow transit vehicles to make turns where required based on the transit network.



Policy 10-4 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 the curb. Rapid growth in e-commerce purchases and ‘anytime-anywhere’ deliveries are putting increasing pressure on the curb for delivery purposes. 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, ride-hailing passenger pick-up and drop-offs, and parking for commercial cargo bikes, personal bikes and e-scooters. Bus and bike lanes are often located in the curb lane as well. Para Transpo loading relies on this space, as do many residents with accessible parking permits. In Ottawa, as in most North American cities, car 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 historical curb allocation is increasingly at odds with current transportation needs, and a new strategy is needed for managing curbside uses.



The City will develop a curbside management strategy that assesses the current state of the curbside and establishes a transparent process for identifying priorities and allocating space. Priority uses are expected to vary based on the type of street, area of the city, time of day, and adjacent destinations and land uses. Pricing, permits, and enforcement are existing tools that could be modified in support of policy objectives. New business processes, data sets, communication tools (including the use of smartphone apps) and operational innovations may also be needed to adapt curb management, improve efficiency, and help residents and businesses understand the

changes. From a goods movement perspective, development of the strategy should include industry engagement and should consider the frequency, type, and timing of deliveries and the ability of adjacent buildings to accommodate these deliveries on-site. Accommodating transit and paratransit operations will remain a priority; accessible parking will also be an important consideration. A guiding principle will be to maximize the social and economic benefit of the curbside space.

Linked to the increased demands for curb space, zoning by-laws and development review processes should continue to ensure that new developments have adequate space available on-site - i.e. off-street - for deliveries, visitor parking, and passenger drop-off and pick-up. To ensure they serve their intended purpose, these spaces should be easy to find and use, reducing pressure on the curb in locations where there is high demand for curbside space.

ACTION 10-4A

Develop a curbside management strategy to respond to emerging uses of the curb and balance competing uses.



Policy 10-5 Leverage Parking to Support Economic Activity and Encourage Sustainable Travel

The *Municipal Parking Management Strategy* (2019) guides the location and function of public parking in the City, and 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 car 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 transportation in locations where the demand for car parking is high.

The City will review its parking pricing and will consider the adoption of demand-based pricing. The review will also consider the cost of car 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 car parking supply should be priced at or above the cost of transit for a typically sized travel group. The City will finalize the *Park-and-Ride Strategy*, including pricing guidelines that align with the *Municipal Parking Management Strategy* and the objective of encouraging the use of sustainable transportation. The City will also continue to advocate for the ability to implement parking pricing tools to correct market distortions that lead to free or underpriced parking; some of these tools are expected to require a change to the *Ontario Municipal Act* (2001).

The City’s *Public Bike Parking Strategy* (2021) 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 essential to allow more people to cycle for transportation more regularly. Secure, long-term public bicycle parking is relatively new to the City of Ottawa; it is most appropriate at destinations where bicycles are expected to be parked for long durations, such as near workplaces, rapid transit stations (Policy 8-4), park and ride facilities, and commuting transfer points. Bike parking for new developments is discussed in Policy 7-9; however, the City can also play a role in encouraging improvements to private bike parking for existing buildings. As part of the *Bike Parking Strategy*’s business collaboration efforts, the City offers incentives to private property owners to purchase and install short-term bike racks for existing buildings; there may be potential to expand this program to include secure bike parking in the future.

ACTION 10-5A

Implement the recommendations of the *Municipal Parking Management Strategy*, with parking pricing that supports economic activity and encourages the use of sustainable modes.

ACTION 10-5B

Implement the recommendations of the *Public Bike Parking Strategy*, including rollout of secure bike parking pilots in strategic locations and continued expansion of short-term bike parking at City-owned facilities and in the right-of-way.



Theme 11: Encourage Sustainable Travel Choices

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

The City uses a variety of techniques to encourage sustainable travel choices to help create healthy communities, reduce greenhouse gas emissions, and make better use of existing transportation infrastructure. These techniques fall within the umbrella of transportation demand management (TDM). 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 multimodal 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, "Let's Bike Month" and "Let's Bike to Transit" promotional campaigns, university transit passes, the TravelWise program that focuses on workplaces, and the TDM Checklist for new developments. Many TDM programs are delivered in coordination with partners to maximize their effectiveness.

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 has been built and is being extended; ride-hailing companies are important players in the mobility landscape; smartphones are widespread; and a global pandemic has shifted travel patterns. Given rapid changes in the transportation landscape and TDM best practices, the City will need flexible, responsive, and dynamic TDM programs which complement and support its investment in transit and active transportation infrastructure. The City will update the *TDM Strategy* to reflect post-pandemic travel patterns and identify new opportunities to change travel behaviour in support of City objectives. As part of the update, a framework for pilot programs will be established, allowing the City to test different strategies and monitor effectiveness as opportunities arise. While TDM programs often focus on incentives, the potential role of disincentives to single-occupant and/or peak period vehicle trips should



also be considered. Partnerships with community organizations, the private sector, and other levels of government will be essential to enabling effective and innovative TDM.

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 facilities can be supported by TDM campaigns and special events. Public health campaigns, libraries, and recreation centre programming also provide opportunities 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 strategies⁸² 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 reflect 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 and developmental benefits of walking and cycling. Walking or cycling to school helps students meet daily recommended levels of physical activity, build lifelong habits of independent and active mobility, and improve mental wellbeing and academic performance⁸³. The Active School Travel Planning program works with interested partner schools that meet program criteria to encourage walking and cycling to school. This helps to improve safety by reducing the number of cars near schools around school start and end times. The program has yielded increases in walking and cycling among students at participating schools. Results have been particularly significant when paired with new pedestrian infrastructure, the Adult Crossing Guard program 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, in collaboration with partners such as the Ottawa Student Transportation Authority (OSTA) and Envirocentre. To support school travel programs, infrastructure improvements and operational changes will be pursued in school zones to ensure safe and comfortable environments for walking and cycling. This could include piloting “School Streets” (car-free zones in front of schools during peak school arrival and departure times) in locations with safety concerns or where there are opportunities to achieve high active transportation mode shares, following from similar initiatives in other Canadian cities. “School Streets” programs require strong commitments from community partners, as well as clear legal frameworks and governance structures.

⁸² 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.

⁸³ Ontario Active School Travel. *Making the Case for Active School Travel*. December 2018.



The *Strategic Road Safety Action Plan* has a program to implement traffic calming measures in the vicinity of schools. OSTA's Walking School Bus Program will also continue to be encouraged. Finally, TDM programs will encourage school staff to walk, bike, or take transit, with the dual benefits of reducing pressure for school parking lot space and contributing to safer walking conditions around schools.



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. The City will continue to encourage active trips by providing secure bike parking and changerooms at new City work facilities, and by upgrading bike parking at existing City facilities. Installation of electric vehicle charging stations at City facilities should be explored. The City will also implement paid car 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.⁸⁴ Exceptions may be made for employees whose work schedules do not align with transit or where their position requires the use of a vehicle. Other TDM initiatives from the TDM Measures Checklist such as transit fare incentives should also be considered; innovative and emerging TDM programs may also be piloted at City facilities.

ACTION 11-3A Develop a framework for paid car parking for City of Ottawa employees in consideration of and where supported by market rates.

ACTION 11-3B Explore implementation of electric vehicle charging stations at City facilities.

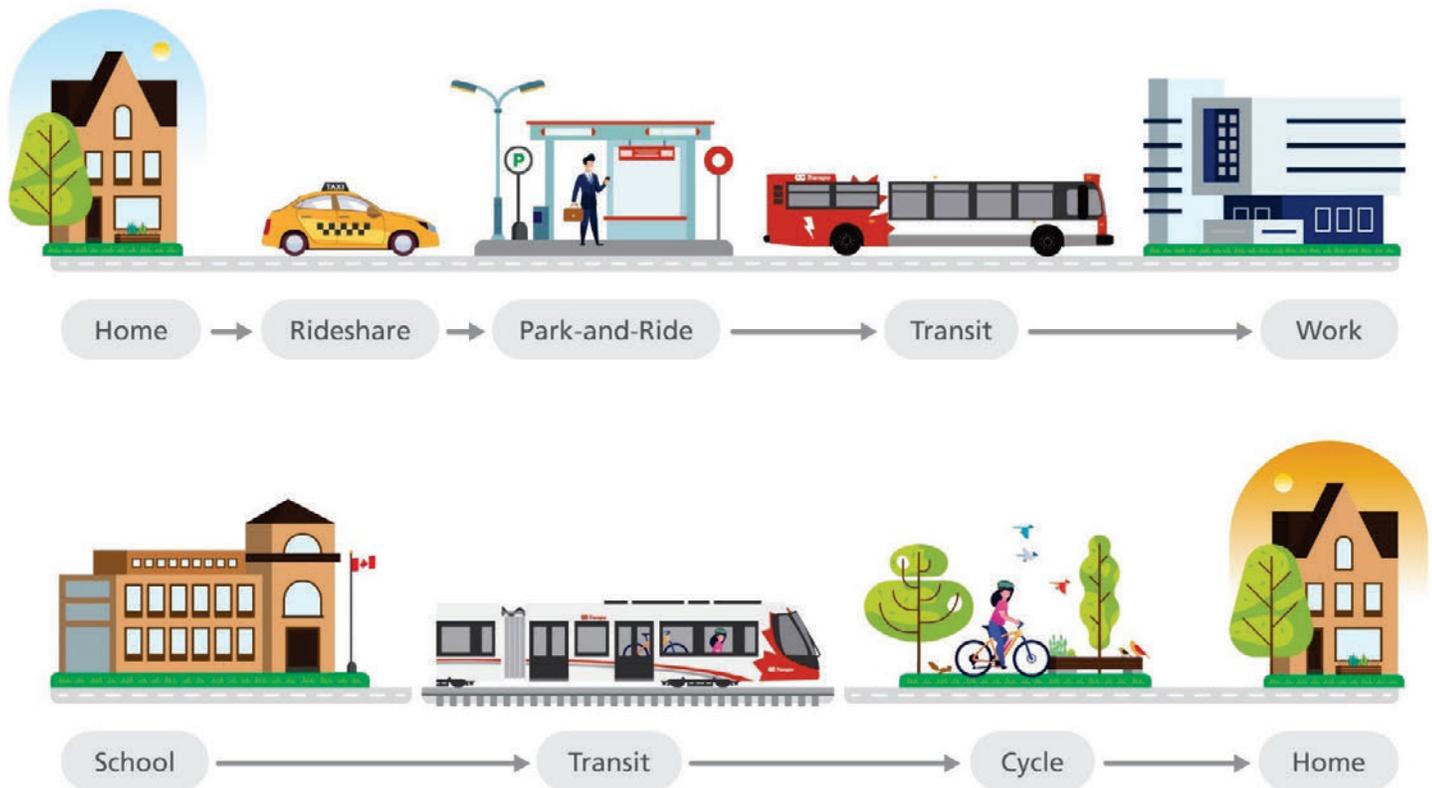
⁸⁴ Free parking is strongly related with the decision to drive to work, even after controlling for the location of a workplace (Hamre, Andrea and Ralph Buehler. 2014. Commuter Mode Choice and Free Car Parking, Public Transportation Benefits, Showers/Lockers, and Bike Parking at Work: Evidence from the 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 by presenting a full range of 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); as well as car share, taxi, 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 support such efforts by providing accurate and up-to-date data to the private sector. The City will also continue to provide real-time transit 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.

Exhibit 21: Examples of Multimodal Trips



Travellers frequently plan trips using online platforms for ride-hailing, transit trip planning, driving directions, and e-scooter sharing. As these services advance, the possibility of consolidation to a mobility-as-a-service (MaaS) platform becomes more realistic. MaaS offers a single travel platform to seamlessly plan and pay for multimodal trips. MaaS also enables the creation of subscription-based packages of services that can enable car-free or car-light lifestyles.⁸⁵ For MaaS to succeed, service between

⁸⁵ For example, in Helsinki, the Whim Mobility as a Service app allows users to plan, book and pay for trips using a variety of transport modes and combinations of modes. It also offers monthly subscriptions to packages of mobility services; public transit is at the heart of these packages, and bike-share and taxi services are priced to provide additional options for connecting to public transit.



independent modes of transportation must be complementary, and numerous service providers with different interests must be accommodated. The City will explore payment and service integration where appropriate. Regional coordination is also critical to supporting seamless multimodal trips.

- ACTION 11-4A** Continue to enhance City-owned tools, such as the Traffic Map website, Ottawa Nav to provide accurate multimodal traveller information.
- ACTION 11-4B** Continue to improve the quality of data streams that can be used to support private sector traveller information tools.
- ACTION 11-4C** Explore the future development of a "Mobility-as-a-Service" platform that allows integrated booking and payment for multimodal trips (e.g. trips that combine transit, ride-hailing, taxis, BikeSecure parking, and/or micro-mobility).





Next Steps in the Transportation Master Plan 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 health and equity goals, and respond to emerging travel trends and technologies.

These policies also set the stage for the next step in the TMP update process: the development of the City's Capital Infrastructure Plan. 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 2022 Origin-Destination Household 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.

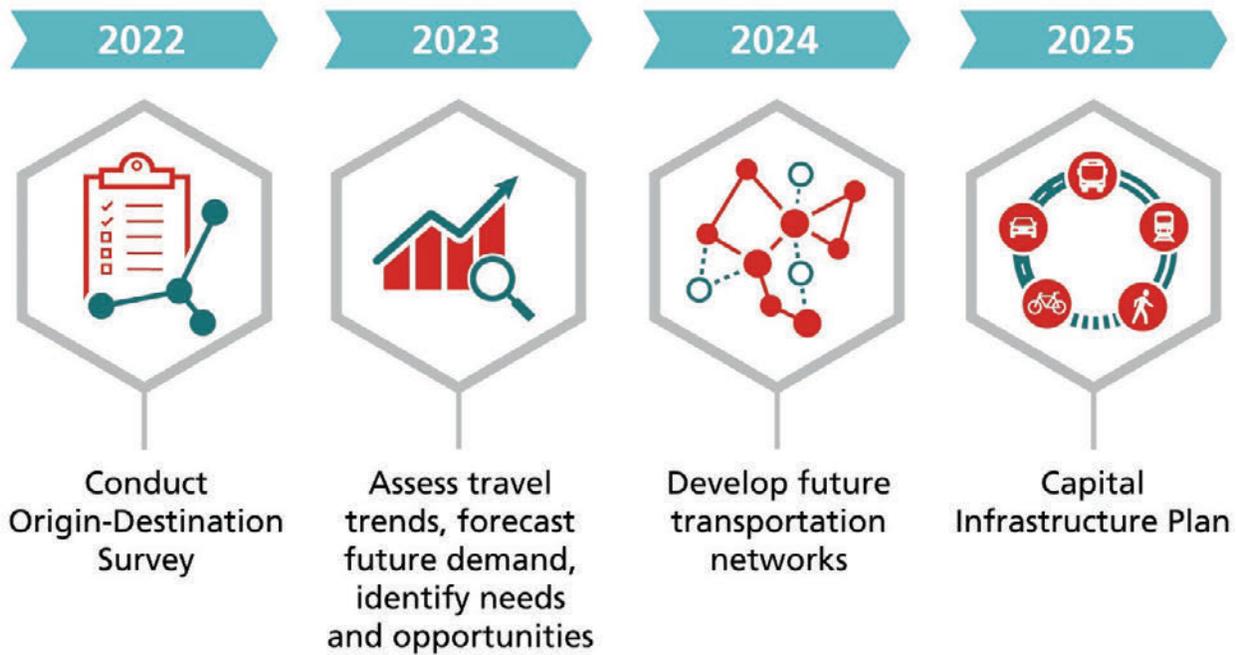
The TMP Capital Infrastructure Plan will set specific mode share targets (i.e., the percentage of people traveling by different modes of transportation) for different areas of the city to achieve the *Official Plan's* goal that at least 50% of trips will be made by sustainable modes by 2046. These mode 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, as well as alignment with the policies laid out in this document. The analysis will generally focus on packages of transportation investments given the interaction between the various elements of the transportation system.

The Capital Infrastructure Plan will also evaluate the infrastructure projects and supporting measures required to achieve the City's GHG emission reduction targets and build climate resiliency. Scenarios will be developed 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, health, 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 Capital Infrastructure 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 completed. Over the course of 2023 and 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 prioritize transportation projects. The targeted date for completion of the Capital Infrastructure Plan is 2025.

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



Together, the Capital Infrastructure Plan combined with this policy document will form the City's TMP. Once approved, minor revisions may be made to the TMP to address grammatical, numbering, mapping, typographical, or similar issues; such changes can be made at any time and will not require Council approval provided they do not change the intent of the TMP.

The TMP is being developed in accordance with the Environmental Assessment process and includes various opportunities for engagement and feedback from stakeholders and the public. Throughout the next steps, the City of Ottawa will continue to listen and respond to the community, leveraging the insights and experience of all residents to develop a transportation network that helps us become the most liveable mid-sized city in North America.



Annex A:

TMP Equity Priority Neighbourhoods





Annex A – TMP Equity Priority Neighbourhoods

Transportation Master Plan (TMP) “equity 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 38 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/>

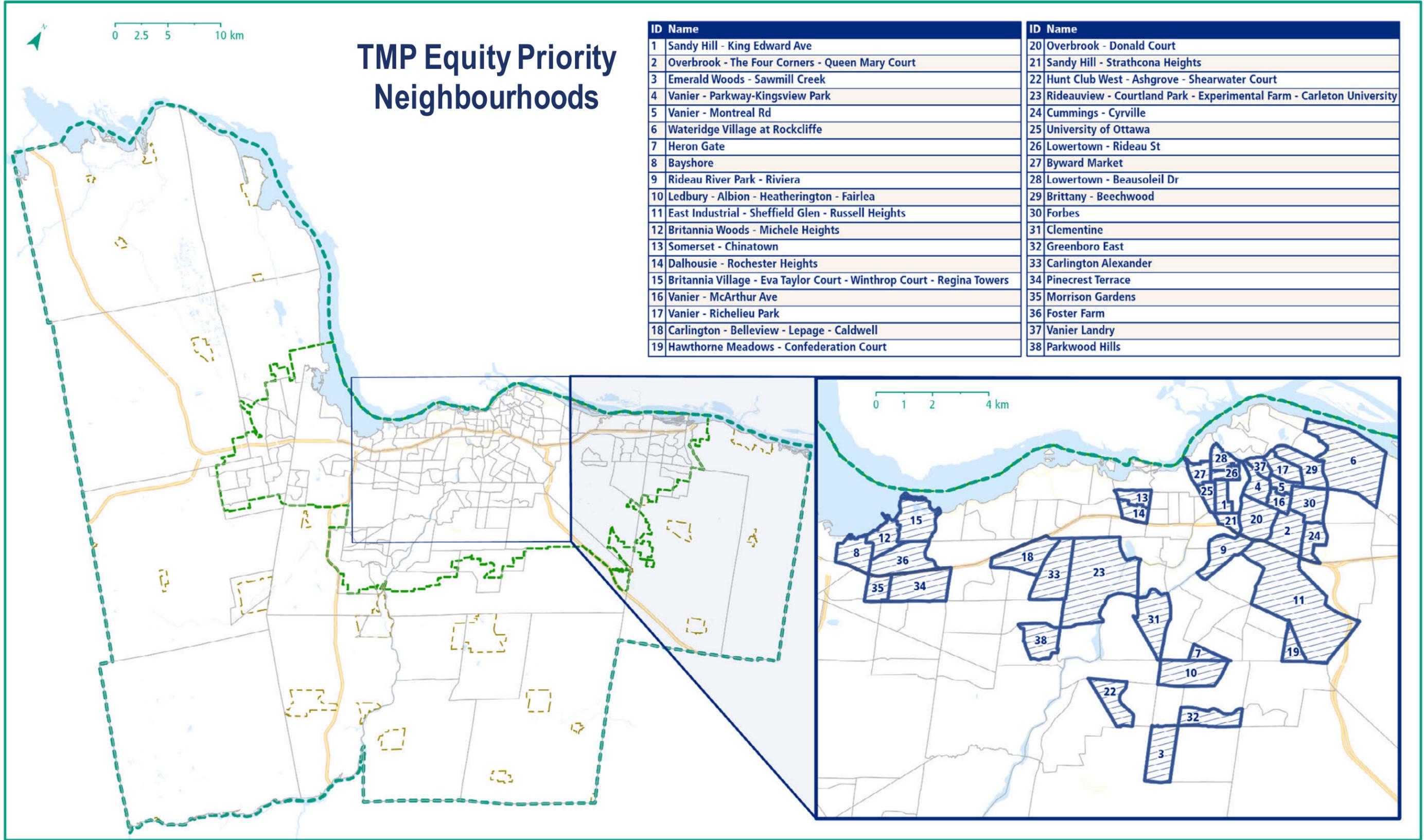


The TMP equity priority neighbourhoods also include seven additional neighbourhoods, or micro-neighbourhoods, with service needs that are the focus of work by the City of Ottawa's Integrated Neighborhood Services Team.

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

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

TMP Equity Priority Neighbourhoods



ID	Name
1	Sandy Hill - King Edward Ave
2	Overbrook - The Four Corners - Queen Mary Court
3	Emerald Woods - Sawmill Creek
4	Vanier - Parkway-Kingsview Park
5	Vanier - Montreal Rd
6	Wateridge Village at Rockcliffe
7	Heron Gate
8	Bayshore
9	Rideau River Park - Riviera
10	Ledbury - Albion - Heatherington - Fairlea
11	East Industrial - Sheffield Glen - Russell Heights
12	Britannia Woods - Michele Heights
13	Somerset - Chinatown
14	Dalhousie - Rochester Heights
15	Britannia Village - Eva Taylor Court - Winthrop Court - Regina Towers
16	Vanier - McArthur Ave
17	Vanier - Richelieu Park
18	Carlington - Belleview - Lepage - Caldwell
19	Hawthorne Meadows - Confederation Court

ID	Name
20	Overbrook - Donald Court
21	Sandy Hill - Strathcona Heights
22	Hunt Club West - Ashgrove - Shearwater Court
23	Rideauview - Courtland Park - Experimental Farm - Carleton University
24	Cummings - Cyrville
25	University of Ottawa
26	Lowertown - Rideau St
27	Byward Market
28	Lowertown - Beausoleil Dr
29	Brittany - Beechwood
30	Forbes
31	Clementine
32	Greenboro East
33	Carlington Alexander
34	Pinecrest Terrace
35	Morrison Gardens
36	Foster Farm
37	Vanier Landry
38	Parkwood Hills



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 where amenities can be conveniently accessed without the need for a car
- 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

- Achieve the City’s climate change mitigation and resiliency objectives
- 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
- Support the transition to cleaner vehicle technologies

Enhance the economy

- 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

- 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

- 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

- 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

- 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

- 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 where daily and weekly needs can be accessed within a 15-minute walk; this includes a range of housing types, shops, services, local access to food, schools and child 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 road

The primary function is to serve travel through the city in conjunction with other roads. The secondary function is to provide access to adjacent lands, subject to restrictions.

Asset management

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

Automated vehicle

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.

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-minute (2.5 km) 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 more frequently 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 highway

The primary function is to provide "through" travel between points not accessed directly from the road itself. Direct access to adjacent lands is prohibited.

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 and 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.

Collector road

The primary function is to serve neighbourhood travel between local and major collector or arterial roads. The secondary function is to provide direct access to adjacent lands.

Complete community

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 street

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 vehicle

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.

Corridor

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 charge

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

Distribution centre

A facility that intercepts and temporarily stores goods transported long distances by air, rail or truck and transfers them to smaller, more energy-efficient vehicles for distribution within the city.



Equity-deserving group

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

Street transit routes identified by OC Transpo that are provided at the next highest frequency after rapid transit, operate seven days a week and play a structural function in the overall transit system.

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).

Headway

The average time interval between two transit vehicles travelling in the same direction on the same route. This is similar to frequency, which is defined as the number of vehicles passing the same point in an hour.



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 street

“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.

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.



Lane

The primary function is to provide secondary access from a public road to abutting lots.

Level of service (LOS)

Indicators of the quality of operating conditions that may be applied to cycling, walking, transit and car travel, as defined by the City's *Multi-Modal Level of Service Guidelines*.

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.

Livable community

Livable 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 street

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.

Local road

The primary function is to provide direct access to adjacent lands. The secondary function is to serve neighbourhood travel to and from collector or arterial roads.

Major collector road

The primary function is to serve travel between collector and arterial roads. The secondary function is to provide direct access to adjacent lands.



Master Plan

A long range plan which integrates 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 lot

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 neighbourhood

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.

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.

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”.

Road reconstruction

Road reconstruction is conducted through integrated renewal, which means that major utility renewals occur at the same time as road reconstruction. This involves major underground works such as sewer and watermain replacement as well as full surface reconstruction.

Safe systems approach

The safe systems 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 measure

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 planning model that is based on the creation of a set of human habitats that vary by their level and intensity of urban character. In the Official Plan, these transects are classified as downtown core, inner urban, outer urban, Greenbelt, suburban, and rural. 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 project

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.

Vulnerable road user

People that are more at risk of injury in the event of a collision with a motor vehicle. These include people walking, including those using a mobility device or stroller, or people using a bicycle, e-bike, scooter, or e-scooter.

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 10-minute (800 m) 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.