

APPENDIX 1

Draft Report #2.2

Brampton Parking Plan – Phase 1 Report



Prepared for City of Brampton
by IBI Group

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ORIGINATOR:	Amjad Dehman, Janice Zhang
REVIEWER:	Stefan Tsang
AUTHORIZATION:	Peter Richards
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1 Introduction

The City of Brampton has experienced tremendous growth over a relatively short period. Between 2016 and 2021, the City added approximately 87,400 people and 19,100 jobs. In 2021, the City's population and jobs were around 703,000 and 210,500 respectively. The City's growth is projected to reach 865,000 people and 273,400 jobs by 2031, and 929,000 people and 314,100 jobs by 2041. In recent years, Brampton has shifted towards greater intensification along transportation corridors that have experienced significant increase in transit ridership. These corridors are also planned for major rapid transit investment.

The private vehicle has remained the primary mode of transportation within the City and multi-generational households have resulted in an increase in the number of vehicles per home. This has placed significant demand on the City's limited supply of on-street parking in residential areas, Downtown, and in areas that are adjacent to major destinations.

In May 2018, City Council endorsed the Brampton 2040 Vision. Vision #4 of the Brampton 2040 Vision states that in 2040, Brampton will be a mosaic of safe, integrated transportation choices and new modes contributing to civic sustainability and emphasizing walking, cycling, and transit. The 2040 Vision identifies the need for a comprehensive Downtown parking strategy. In December 2019, City Council directed staff to undertake a comprehensive citywide parking plan to identify potential actions, programs, and strategies beyond the comprehensive zoning by-law (ZBL) to address on-street and off-street parking.

The Brampton 2040 Vision and the 2018-2022 Term of Council Priorities (TOCPs) set the direction for the Brampton Parking Plan. Several of the priorities identified in the TOCPs, such as Creating Complete Communities, Equalizing All Forms of Transportation, and Streets for People are pertinent to the Parking Plan. The Brampton Parking Plan will help implement the Vision and address the Brampton Plan, the Transportation Master Plan, and other relevant City Department objectives.

This Phase 1 Report summarizes the findings of the following tasks:

- **Background Document Review:** Reviews relevant background documents to understand the Brampton municipal parking context and to help align the Parking Plan with the broader strategic direction;
- **Best Practices Review:** Examines parking policies, strategies, and practices successfully implemented in municipalities that are generally representative of Brampton's development pattern and considers them for adoption;
- **Parking Supply and Demand:** Examines existing and projects future parking supply and demand in Downtown Brampton to identify current and anticipated parking capacity constraints, areas outside the downtown are not analyzed on an area-by-area basis using demand-supply surveys as this can be impractical for the scope of this study and their parking issues and requirements are, however, included under the city-wide parking policy framework and other sections of the report;
- **Public and Stakeholder Consultation:** Engages the public and stakeholders to introduce the study and to collect feedback related to known parking issues and desired study outcomes; and
- **Parking Policy Framework:** Develops a policy framework which will be a key tool to guide the evolution of parking operations throughout the City up to the 2040 horizon year.

1.1 Study Background

In 2009, the City completed a Downtown Parking Strategy to document existing conditions, identify operational issues within the municipal parking system, forecast future development parking demand, and consider the short-term and long-term financial implications of the Strategy recommendations.

Given that significant changes have occurred in Brampton over the 12 years since the study, there is a need to reassess parking operations throughout the City. In response, the City initiated the Brampton Parking Plan which aims to develop a vision and clear path forward for the planning and operation of city-wide parking facilities. This plan will help meet the needs of the significant population and employment growth while also helping support more sustainable modes of transportation. Specific solutions will be required for issues like the limited supply of off-street parking in residential areas, questions around payment-in-lieu of parking, and the inadequate truck parking opportunities. A vision is also required to guide future municipal parking operations in a manner that aligns with provincial and municipal policies such as the Ontario Places to Grow Plan, the 2041 Metrolinx Regional Transportation Plan, the Brampton 2040 Vision, and the 2018-2022 TOCP.

The Parking Plan is divided into two Phases. Phase 1, summarized in this report, examines Brampton's existing parking operations, projects future parking needs, consults stakeholders and the public, reviews parking best practices, and develops a parking policy framework. Phase 2 will assess Brampton's parking finances and develops a parking management plan to help guide Brampton's decision makers.

1.2 Brampton Parking System

The Downtown Brampton parking system consists of 258 on-street spaces, 1802 municipal off-street spaces, and 2,358 privately owned but publicly accessible parking spaces. The Downtown parking system is illustrated in Exhibit 1.1. The downtown off-street parking facilities vary between three main types: underground structures (e.g., City Hall garage, Market Square garage), aboveground structures (e.g., Nelson Square garage), and surface lots (e.g., the Downtown Go Station parking lot). During pay parking operations, on-street parking has different pricing rates and maximum time limits that vary by street. However, most streets use 90 minutes as the maximum time permitted. During periods of free parking, a maximum of three hours is permitted.

Parking outside the downtown typically follows the minimum requirements as set out in the zoning by-law and according to each land use, parking facilities however can be categorized into the following:

- Surface parking lots: e.g., low-rise residential development, commercial plazas, park-and-ride facilities, convention centers, and sport centers.
- Underground parking structures: e.g., high-rise developments including apartments, offices, and institutional uses.
- Aboveground parking structures: e.g., Brampton Civic Hospital.

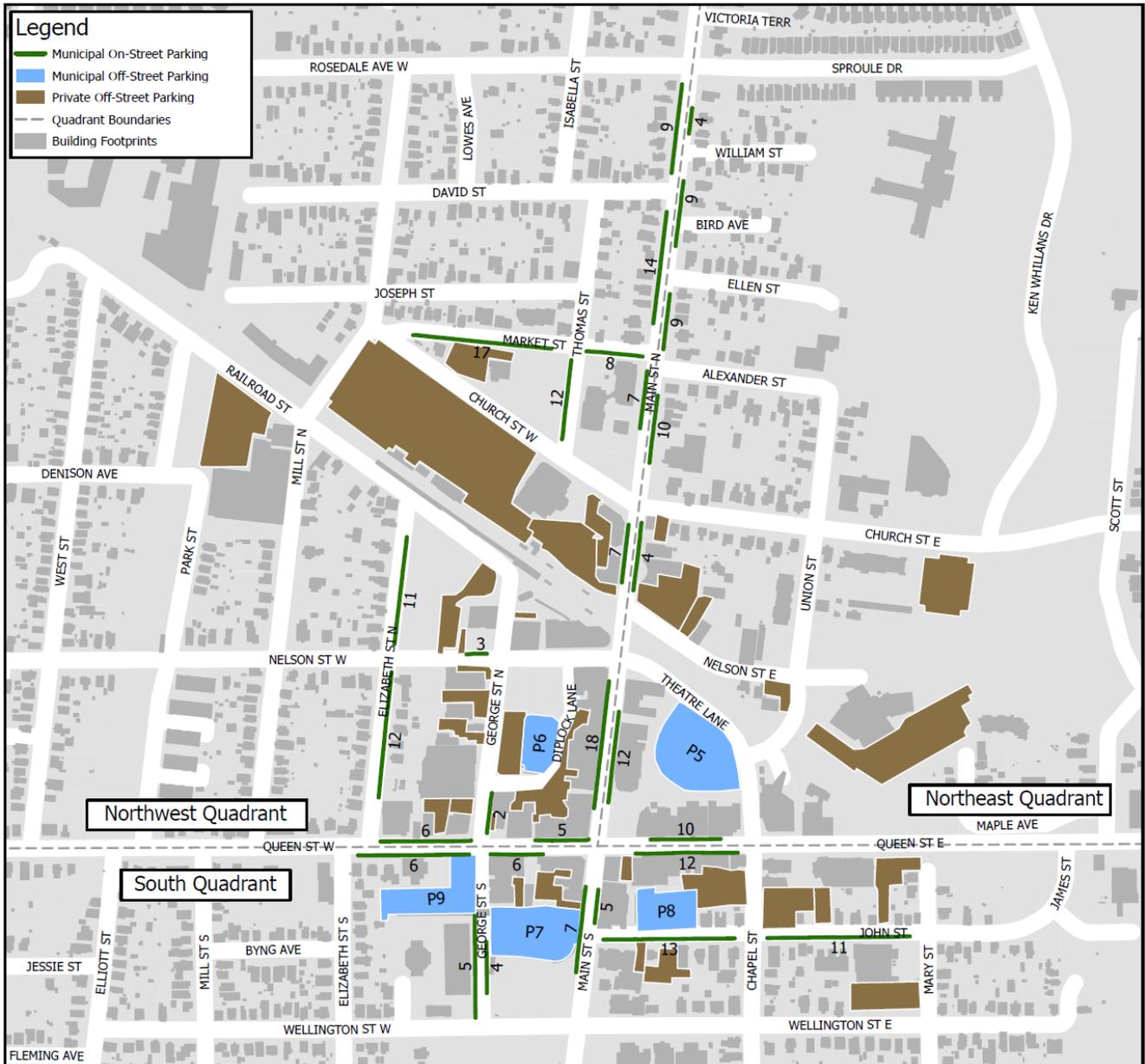
Areas outside the downtown also include park-and-ride and carpool parking facilities (e.g., the Bramalea Go Station aboveground parking structure, the Go Carpool lot, and the Clark Boulevard Carpool lot).

Brampton does not offer a citywide or large-scale residential parking permit programs, only a limited permit program is presently adopted around the Brampton Civic Hospital area serving only few nearby streets.

Parking on the City's streets is not permitted between the hours of 02:00 AM and 06:00 AM on any street and parking cannot exceed three hours outside this time window. However, Brampton offers what is known as the "parking considerations" which accepts requests for parking by

residents to park on the City’s streets for as long as 14 days every calendar year and for each vehicle license plate number. The parking considerations allow vehicles to park between 02:00 AM and 06:00 AM and also to exceed the three-hour time limit.

Exhibit 1.1: Downtown Parking Map



2 Background Document Review

A review of the existing provincial, regional, and municipal plans and policies was conducted first, to better understand the Brampton municipal parking context and to help align the Brampton Plan with the broader strategic direction taken by the City and higher-tier government agencies. This review identified parking issues, policy constraints, and the City's growth, development, and ultimate goals. The following sections summarize the reviewed documents. A more in-depth review of some background documents is included in Appendix A.

2.1 Provincial and Regional Plans and Policies

The Province of Ontario regulates land use planning at the provincial level through the Planning Act and designates areas of growth and intensification. The Region of Peel develops strategies and policies to guide growth in its lower-tier municipalities of Brampton, Caledon and Mississauga. The provincial and regional policy documents guide the strategic direction taken by Brampton in terms of parking management in response to shifting land uses.

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020) outlines Ontario's plan for growth and development in the Greater Golden Horseshoe (GGH) Area, building on the vision, guiding principles, and policy framework. Policy 3.2.2 states the following with respect to Transportation:

1. Transportation system planning, land use planning, and transportation investment will be co-ordinated to implement this Plan.
2. The transportation system within the GGH will be planned and managed to:
 - a. provide connectivity among transportation modes for moving people and for moving goods;
 - b. offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and active transportation;
 - c. be sustainable and reduce greenhouse gas emissions by encouraging the most financially and environmentally appropriate mode for trip-making and supporting the use of zero- and low-emission vehicles;
 - d. offer multimodal access to jobs, housing, schools, cultural, and recreational opportunities, and goods and services;
 - e. accommodate agricultural vehicles and equipment, as appropriate; and
 - f. provide for the safety of system users.
3. In the design, refurbishment, or reconstruction of the existing and planned street network, a complete streets approach will be adopted that ensures the needs and safety of all road users are considered and appropriately accommodated.
4. Municipalities will develop and implement transportation demand management policies in official plans or other planning documents or programs to:
 - a. reduce trip distance and time;
 - b. increase the modal share of alternatives to the automobile, which may include setting modal share targets;
 - c. prioritize active transportation, transit, and goods movement over single-occupant automobiles;
 - d. expand infrastructure to support active transportation; and
 - e. consider the needs of major trip generators.

Downtown Brampton has been designated as an Urban Growth Centre, which aims to achieve 200 residents and jobs combined per hectare by 2031. The Growth Plan requires Major Transit Station Areas (MTSAs) to be planned to provide for secure bicycle parking (section 2.2.4.8 (b)) and alternative development standards such as reduced parking standards (2.2.4.9 (c)). In planning for employment, the Growth Plan seeks to minimize surface parking (2.2.5.4).

Provincial Policy Statement (PPS) (2020) provides direction on province-wide land use planning and development while protecting resources, public health and safety, and the natural and built environment. The PPS includes the following policies with respect to transportation systems:

1. 1.1.3.2 states that land use patterns within settlement areas shall be based on densities and a mix of land uses which:
 - a. efficiently use land and resources;
 - b. are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;
 - c. minimize negative impacts to air quality and climate change, and promote energy efficiency;
 - d. prepare for the impacts of a changing climate;
 - e. support active transportation;
 - f. are transit-supportive, where transit is planned, exists or may be developed; and
 - g. are freight-supportive.
2. 1.6.7.1 Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs.
3. 1.6.7.2 Efficient use should be made of existing and planned infrastructure, including through the use of transportation demand management strategies, where feasible.
4. 1.6.7.3 As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries.
5. 1.6.7.4 A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.

Metrolinx 2041 Regional Transportation Master Plan (RTP) (2018) provides a long-term vision for Regional transportation operations. The RTP has five key strategies and associated priority actions to deliver on its vision, goals, and objectives to 2041. Strategy 4 is to integrate transportation and land use planning. This integration aims to consider enhancing first/last mile multi modal connections at transit stations, and rethinking/addressing parking management within municipal land use planning frameworks. Action 4.8 of the RTP seeks to coordinate the development of a region-wide policy on parking. The RTP notes that, through secondary plans, zoning by-laws, and development applications, the land use planning process can help minimize parking demand by ensuring that residential and commercial sites support walking, cycling, car-sharing, and transit use.

Draft Peel 2051 Municipal Comprehensive Review

The October 2021 draft of the Peel 2051 Municipal Comprehensive Review (MCR) establishes the following hierarchy for which the highest densities and scale of development will be directed as part of the Strategic Growth Areas that are designated on Schedule Z2:

1. Urban Growth Centres
2. Major Transit Station Areas
3. Nodes/Centres
4. Intensification Corridors

Policy 5.4.17.16 requires the local municipalities to delineate and establish minimum density targets for Strategic Growth Areas.

Policies with respect to parking include:

5.6.17.14 - Encourages the local municipalities to adopt parking standards and policies within Strategic Growth Areas to promote the use of active transportation and public transit.

5.9.73 - Encourages the local municipalities to develop alternative development and design standards for affordable housing development including reduced setbacks, narrower lot sizes, reduced parking standards, and on street parking.

5.10.32.11 - Work with the Province, Metrolinx, area local municipalities and the private sector to plan and implement a network of carpool parking lots in Peel Region.

5.10.32.16 - Encourage local municipalities, relevant agencies and the private sector to develop parking management strategies that make more efficient use of parking resources and that encourage the use of sustainable modes of transportation.

5.10.32.17 - Encourage area local municipalities to update their parking and zoning by-laws to support and facilitate transportation demand management measures, inclusive of electric vehicle charging infrastructure.

5.10.32.18 - Encourage parking operators at transportation hubs, MTSAs and major commercial and Employment Areas to provide priority spaces for carpool, car-share vehicles and low or zero emissions vehicles.

Within Brampton, the draft Schedule Z2 designates the Downtown Brampton Urban Growth Centre (UGC). Policy 5.6.18.5 a) directs the City to provide opportunities for compact forms of urban development and redevelopment with high density employment uses such as: commercial, and major institutional - as designated and/or defined in area local municipal official plans.

Primary or Secondary MTSAs are designated along the Queen Street corridor generally including the UGC and environs, and an area between Dixie Road and Bramalea Road. The Bramalea GO Station and the Mount Pleasant GO Station are also designated Primary or Secondary MTSA. Planned MTSAs are designated along the rest of the Queen Street Corridor generally east of the UGC and at Hurontario Street and Ray Lawson Boulevard.

Policy 5.6.19.8 directs the local municipality to plan to achieve the minimum density target for each Primary and Secondary Major Transit Station Area as prescribed on Table 5 (of the ROPA). It is recognized that in some cases, the minimum density may be achieved beyond the planning horizon of the Regional Official Plan.

Policy 5.6.19.13 states that until such time as the local municipality has established MTSA policies in accordance with Section 16(16) of the Planning Act, proposed developments within a MTSA shall be reviewed to ensure the proposed development:

- a) Demonstrates how the development will contribute to transit supportive densities that recognizes the character and scale of the surrounding community;

- b) Supports a compact urban form that directs the highest intensity transit supportive uses close to the transit station or stop;
- c) Provides an interconnected and multi-modal street pattern that encourages walking, cycling or the use of transit and supports mixed use development;
- d) Provides an appropriate mix of land uses and amenities that foster vibrant, transit supportive neighbourhoods;
- e) Considers the provision of bicycle parking, and where applicable, passenger transfer and commuter pick up/drop off area;
- f) Prohibits the establishment of uses that would adversely impact the ability to achieve the minimum density target; and
- g) Supports high quality public realm improvements to enhance the MTSA.

The minimum densities identified in Table 5 for the MTSA's within Brampton are as follows:

	STATION NAME	CLASSIFICATION	MINIMUM DENSITY
Huronario LRT	Ray Lawson*	Primary	160
	Sir Lou*	(Combined with Ray Lawson)	
	Gateway Terminal*	Primary	160
	Charolais	(Combined with Gateway Terminal)	
	Nanwood	Planned	N/A
	Queen at Wellington	(Combined with Brampton GO)	
Kitchener GO	Bramalea GO*	Primary	150
	Brampton GO*	Primary (part of UGC)	200
	Mount Pleasant GO*	Primary	150
Queen Street BRT	Centre St	Primary	160
	Kennedy	Primary	160
	Rutherford	Primary	160
	Laurelcrest	Planned	N/A
	Dixie	Planned	N/A
	Central Park (Bramalea Terminal)	Primary	160
	Bramalea	Planned	N/A
	Glendale Finchgate	Planned	N/A
	Torbram	Planned	N/A
	Chrysler-Gateway	Planned	N/A
	Airport	Planned	N/A
	Goreway	Planned	N/A
	McVean	Planned	N/A

	The Gore	Planned	N/A
	Highway 50	Planned	N/A
407 BRT	Winston Churchill	Planned	N/A
	Mississauga Rd	Planned	N/A
	Mavis	Planned	N/A
	Dixie	Planned	N/A
	Bramalea/Torbram	Planned	N/A
	Airport	Planned	N/A
	Goreway	Planned	N/A
	Transit Hub	Steeles at Mississauga	Planned
Bramalea Terminal		(Combined with Central Park (Bramalea Terminal))	
Trinity Common Terminal		Planned	N/A

MTSAs identified as priority transit corridors on Schedule 5 of the Growth Plan.

Hurontario-Main Street is designated as a Regional Intensification Corridor (Conceptual) from Queen Street to the south City limit and Local Intensification Corridor (Conceptual) from Queen Street to the north City limit. As well, Queen Street from Mississauga Road to Highway 50 is designated Local Intensification Corridor (Conceptual). Policy 5.6.18.9 states that the Regional Intensification Corridor (Conceptual) along Hurontario corridor will provide prime opportunity for intensification, and a high intensity, compact urban form with an appropriate mix of uses including commercial, office, residential, recreational and major institutional.

Nodes/Centre (Conceptual) are designated at Queen Street and Main Street, Bramalea City Centre, Bramalea GO, Kennedy and Steeles Avenue, Bram West, Heritage Heights, Trinity Common and Bram East (north of Castlemore Road, between The Gore Road and Clarkway Drive).

Region of Peel Goods Movement Strategic Plan 2017-2021 is a five-year action plan to facilitate goods movement and logistics planning coordination around the Region, adapt to advancements in e-commerce, and understand and manage the impact of goods movement on local communities.

2.2 Brampton Planning Documents

A comprehensive review was conducted of the City's plans and policies in relation to the way they shape the Parking Plan. The City's plans and policies outline local visions and priorities, including the intensification in existing built-up areas, revitalization of Downtown Brampton, and supporting a multi-modal transportation network and goods movement system. These documents allude to the way parking management can address the City's priorities and broader goals.

Brampton Official Plan (2006) guides the City's land-use, transportation, and environmental decision-making to 2031. *Section 4.5.5: Parking Management* summarizes policies that address the location, quantity, and price of parking to ensure adequate and accessible parking is provided. The plan supports an efficient transportation system through the promotion of transportation demand management (TDM) strategies.

Brampton Plan – Transportation and Connectivity Discussion Paper (2022)

This discussion paper provides new visions and ideas to improve Brampton’s transportation network over the next 30 years while meeting sustainability objectives and providing a network that is accessible by everyone. The paper promotes using transit as the primary mode of travel and expects that this will reduce the need for large parking lots. The paper supports more electrification of the transportation network and emphasizes on the need to provide more priority parking spaces for low and zero emission vehicles. The adoption of automated vehicles will potentially reduce parking demand but will increase the demand of drop-off and pick-up zones, according to the paper.

Living the Mosaic - Brampton 2040 Vision (2018) sets out the long-term vision for Brampton to the horizon year 2040. Vision #4 of the Brampton 2040 Vision states that in 2040, Brampton will be a mosaic of safe, integrated transportation choices and new modes contributing to civic sustainability and emphasizing walking, cycling, and transit. The vision identified the need for a comprehensive parking strategy in Downtown Brampton.

Major Transit Station Areas Framework (2022 – ongoing) - to develop a comprehensive policy and regulatory framework to strategically guide future growth and investment for Brampton’s MTSA’s to 2051 and beyond. Land uses, policies and zoning by-law directions for the “Primary” MTSA will be prepared in accordance with the established density targets and general policies that will be implemented as part of the Peel 2051 MCR ROPA. Brampton’s MTSA Framework will enable the City to develop a clear vision and the required planning tools for the future of each of its MTSA’s. The goal is to support the achievement of complete communities through a compact built form and mix of land uses that are planned and designed to be walkable and transit-supportive.

Transportation Master Plan (TMP) Update (2015) establishes a strategic transportation policy direction to achieve a balanced transportation network and address the City’s growth to a 2041 horizon year. Strong emphasis on transit, cycling, walking, and carpooling was provided. The strategy aims to extensively improve the transit system and active transportation networks and to achieve the following modal split targets by 2041: 16% Brampton transit, 6% active Transportation, 28% auto passenger, 50% single-occupancy vehicles.

In February 2021, a City staff report to Planning and Development Committee with respect to a review of the 2015 TMP identified the following achievements of past TMPs:

- The 2004/2009/2015 plans empowered the City’s transit portfolio, seeing major increases in ridership, the implementation of the Züm network, service coordination with other transit providers and early planning for the Hurontario/Main Light Rail Transit (LRT).
- The 2015 TMP developed a city-wide candidate cycling network and recommended a more detailed study, the Active Transportation Master Plan, to rationalize and refine the implementation of the network, which was endorsed by Council in 2019.
- The 2015 TMP recommended that the City undertake a review of its roadway and design standards to ensure that all roadways are designed and planned for all road users with a focus on pedestrians and cyclists. In this regard, staff has undertaken the development of a Complete Streets approach/guidelines, which is currently in progress.

An important consideration in a review of the 2015 TMP is the recognition that accommodating levels of service for automobiles based on traditional transportation modelling for suburban development has impacts to neighbourhoods and sustainable travel modes that need to be acknowledged and addressed.

The key drivers informing the current TMP Review are alignment of the City’s long-range transportation strategy with the 2040 Vision more broadly, and more specifically through the guiding principles of Complete Streets.

The staff report states that the TMP Review's Guiding Principles are to:

- Enhance Mobility and Travel Options for People and Goods
- Advance Multi-Modal Transportation Equity
- Integrate Transportation and Land Use Planning
- Protect Public Health and Safety
- Improve Environmental Sustainability
- Leverage Technology
- Emphasize Community Engagement and Collaboration

The TMP Review will kick-off in early 2021 with an 18-month work plan. Among the multi-modal issues that the TMP Review will address are road widenings from 4 to 6 lanes that had been proposed in previous plans. While the TMP Review is underway, Planning and Capital Works staff will develop an interim approach to address 6 lane road widening projects that are already in advanced stages of planning or design.

Term of Council Priorities (TOCP) (2018-2022) identified 22 shared priorities grouped into five strategic directions, such as equalizing all forms of transportation by prioritizing active transportation, transit, and non-auto modes.

Active Transportation Master Plan (ATMP) (2019) provides the active transportation network plans, policies, and programs to support the vision set out in "Living the Mosaic". The ATMP provides recommendations with respect to the location and type of bike parking, as well as the mechanisms for delivering bike parking (on both public and private property). The ATMP includes a Design Compendium which gives, in Chapter Five, a guidance on suitable types of bike parking (short-term and long-term) and space requirements.

Housing Brampton – Housing Strategy and Action Plan (2021) facilitates the creation of safe, affordable, and diverse housing for its residents and help achieve the Brampton 2040 Vision of complete communities. Relevant action items include identifying parking innovations through this Parking Plan and committing to Brampton-specific incentives for affordable and purpose-built rental housing such as reducing parking rates and shared parking arrangements for mixed use developments. The strategy also commits to removing barriers, including restrictive parking requirements, to the development of gentle infill and intensification through missing middle housing (duplexes, triplexes, additional residential units, lodging houses, single room occupancy housing, etc.) **Our 2040 Energy Transition - Community Energy and Emissions Reduction Plan (2018)** establishes an integrated strategy that allows Brampton to benefit economically from reductions in energy use and energy-related emissions.

City-wide Community Improvement Plan (2021) aims to attract additional employment development and redevelopment in Brampton's key sectors. One strategy related to parking is the exploration of a capital grant program to offset underground parking costs.

2.3 Downtown Brampton Plans and Policies

Parking operations in Downtown Brampton are unique considering the high development densities and the availability of alternative modes of transportation (transit, micromobility, active transportation, etc.).

Downtown Parking Strategy (2009) documented existing conditions, identified operational issues within the municipal parking system, forecasted future development parking demand, and considered the short-term and long-term financial implications of the Strategy recommendations. The study recommended various short-term strategies intended to increase on-street and off-street opportunities, such as:

- Given the relatively small on-street parking supply and the large amount of monthly parking provided in the City garages, specific measures should be provided to increase the availability of convenient short-term customer parking.
- To maintain a reasonable occupancy level in the municipal parking system, at least 160 stalls should be provided as part of the City Hall expansion project.
- To break even on an operating basis, begin to generate surplus funds to finance future parking needs and reduce existing debt charges, adopt measures such as increasing employee parking permit costs from \$240 to \$440 per year, and increase employee parking permit rates by \$110 per year over the next six to eight years (from 2009).
- The City should implement approximately 36 paid on-street parking spaces on Market and Thomas Streets in the vicinity of the GO Station from 7 AM to 6 PM Monday to Friday with rates of \$0.50 per half hour or a flat rate of \$4.00 with no maximum duration of stay.
- Plan to provide an additional 200 public parking stalls in the core area to facilitate future development (over and above the amount required for the City Hall Expansion project employees).
- To facilitate long-range redevelopment along Queen Street West and Main Street North, the City should consider acquiring property or working with existing owners to lease property and provide municipally operated shared public parking resources.
- Maintain the existing boundaries of the parking requirement exempt area. However, development sites outside the exempt zone should be allowed to apply for cash-in-lieu of providing parking, but only in cases where the City has vacant public parking available or plans to provide additional public parking within a reasonable walking distance of the site and reasonable timeframe. The cash-in-lieu amount should be set at 50% of the estimated cost of providing the parking. These funds, along with user fees should be utilized to provide public parking outside the exempt zone.
- To reduce the demand for expensive parking facilities, the City should implement a formal TDM program focused on the Downtown area. This program should include a formal car/van pool program including reduced parking rates, a guaranteed ride home service, reduced cost transit pass program, and provision of secure bicycle parking facilities in convenient locations.

Integrated Downtown Plan (IDP) (In-Progress) is a roadmap for action - coordinating Downtown Brampton's many ongoing initiatives and infrastructure projects in alignment with the Brampton 2040 Vision and the 2018-2022 Term of Council Priorities. As the historic urban city centre, Downtown Brampton (Secondary Plan Area 7) showcases a unique natural, cultural, and built heritage. Transportation and Connectivity is one of the eight components of the IDP.

The IDP is anticipated to guide future growth and strategic investment till the year 2051. The Region has forecasted 30,000 residents within 12,500 households, and 15,500 jobs within Downtown by 2051. How this growth impacts the Downtown is being considered by the IDP.

The *Meanwhile Strategies* are a part of the IDP – way to realize mutually beneficial activities that not only bring vitality to dormant, city-owned spaces but easily implementable improvements to citywide services. This can include projects such as frequency improvement to the new Züm corridor service, new pay and display parking meters, waiving of Downtown parking fees during the pandemic and under consideration during the Region's Downtown water and wastewater infrastructure project, Downtown Revitalization Program to include streetscape improvements, removal and replacement of existing curbs, gutters, and sidewalks, pop-up on-street patios and parklets.

Major existing and planned projects expected to drive redevelopment and growth within Downtown include the Innovation District, post-secondary institution attraction and retention, a new transit hub that will integrate the future Hurontario-Main LRT and the Queen Street BRT, the development of a Centre for Innovation, and new private high-density developments.

Downtown Brampton Special Policy Area Comprehensive Flood Risk and Management Analysis (2014) plans for the development and revitalization of Downtown Brampton while mitigating risks of flooding.

Riverwalk aims to create a healthy, sustainable, and resilient Downtown Brampton. The first step is to develop, through the Downtown Brampton Flood Protection Class Environmental Assessment, an innovative solution to flood risk that will enhance and protect the natural, social, and economic environment. The Urban Design and Land Use Study, completed as part of the Downtown Etobicoke Creek Revitalization Study, includes a Vision and a Master Urban Design Plan for the area, provisions for high quality, significant urban public spaces, an expanded and revamped Rosalea Park, a river promenade, a proposed pilot project walkaway, development opportunities, environmental improvements, wayfinding and public art. Under the banner “*The City Faces the River/The City Rediscovered the River*”, this vision identified and visualized opportunities for one of the catalyst projects for downtown revitalization, a major attraction for the downtown, for redevelopment while at the same time resolving river issues.

Main Street North Development Permit System is a land use control tool that streamlines the planning approval process and facilitates redevelopment along the Main Street North area.

2.4 Brampton Secondary Plans

Secondary Plan Areas (SPAs) are land use, urban form, environmental, transportation, and infrastructure policy plans for various neighbourhoods or districts of the City that indicate in greater detail than the Official Plan how the objectives, policies, and land use designations of the Official Plan are to be implemented. The City is currently updating and consolidating the existing older SPAs that apply to the built-up areas of the City. Many of these SPAs date back to the mid-70s. Phase 1 was completed in 2018 and consolidated 18 of the 54 former secondary plans into 5 new plans.

In December 2021, additional SPAs and a small portion of SPA 5 were consolidated into the Airport Intermodal Secondary Plan (SPA 4) including a consistent set of policies for this large employment area. SPA 4 represents the core of the City’s existing employment lands. Outside storage, such as truck parking, is not permitted within the Prestige Industrial designation except for lands that are zoned for industrial uses and directly abut the Canadian National Railway right-of-way, north of Queen Street East, and for the properties municipally known as 7900 Airport Road, 750 and 850 Intermodal Drive.

Phase II of the Secondary Plans update will include a review of some secondary plans within the greenfield area that have not been significantly updated since their adoption. A review of the Bram East (SPA 41) and Goreway Drive (SPA 39) Secondary Plans has been initiated.

As part of the comprehensive Zoning By-Law Review, WSP has stated that there is significant emphasis within the Secondary Plans examined, on enforcing minimum parking requirements to avoid parking spillover risk. On the other hand, several secondary plans express a broad policy desire to deviate from the default minimum parking requirements. Some SPAs reference less stringent parking standards, exemption(s), policy support for shared parking, and an acknowledgement that reduced parking requirements may be warranted.

- **SPA 7 Downtown Brampton Secondary Plan** specifies various provisions that stipulate the location and quantity of parking on specific sites.
- **SPA 36 Queen Street Corridor** supports transit and alternative modes of transportation and minimizes parking requirements through strategies such as exemptions, reduced parking minimums, and off-site parking.

- **SPA 37 Airport Road and Highway 7 Business Centre** supports shared parking facilities that serve multiple land uses in the business centre.
- **SPA 54 Kennedy Road South** makes extensive use of the Urban Design and Sustainability Guidelines to influence the form and location of parking.
- **SPA 55 Hurontario Main Corridor** provides land use, transportation and urban design policies to support the principles and objectives needed to transform this section of the Corridor from the present auto-oriented, single uses to a Mixed-Use, compact, vibrant, transit-oriented development.

The Secondary Plan includes detailed policies with respect to automobile and bicycle parking. The Plan generally discourages surface parking and encourages parking structures and underground parking. Bicycle parking is required to be provided by all residential, commercial, institutional, employment, recreational, and civic buildings.

- **SPAs 52/53 Heritage Heights Community** in northwest Brampton is largely undeveloped and includes a new town centre proposed by the Brampton 2040 Vision. On March 21, 2022, Planning and Development Committee approved the Heritage Heights Secondary Plan (HHSP), which has been designed to maximize social and economic exchange by creating a mixed-use community that is compact and connected. This will create a community that maximizes short trips that can be made on foot or on bicycle, rather than long trips that must be made by car.

The staff Recommendation Report states that the HHSP places the human being at the centre of the planning and decision-making process and not the automobile. This fundamental change affects the plan's street network, scale, and multimodal nature, as well as the land use placement, mix, density, and value. The plan recognizes the economic, environmental, health, equity, and quality of life shortfalls of conventional planning that is primarily concerned with vehicle throughput, and, instead, employs practices that are proven to achieve better outcomes on all fronts. In other words, the HHSP diverges from a suburban, low-density, dendritic street hierarchy-based plan to promote an urban, network-focused approach to transportation and human mobility.

The Brampton Parking Plan, directed by the 2040 Vision and the 2018-2022 Term of Council priorities, will recommend parking policies that will inform updates to the appropriate secondary plans.

2.5 Brampton Zoning and Other By-laws

The following Zoning By-law (ZBL) documents and amendments were examined.

Comprehensive ZBL is Brampton's ZBL in effect, which regulates development details such as parking requirements, lot size, type of buildings, etc.

Comprehensive Zoning By-law Review process is required to address current progressive planning practices that will conform with Brampton's new Official Plan (Brampton Plan). The goal of the City's ZBL is to create harmonious neighbourhoods and communities by ensuring that adjacent land uses are compatible and by setting regulations that govern built form.

A Parking and Loading Standards Review Technical Paper (December 2018) addressed key issues with respect to the existing ZBL and associated parking standards, contemporary approaches to parking management, and emerging trends that would impact the demand for parking.

In order to determine the most appropriate ways to address the parking issues in Brampton, the Technical Paper identified the need for a larger study, such as the preparation of a parking master plan that would include a data-driven evaluation of the current context, a community-based

consultation to determine the parking needs of residents, visitors and businesses, and a financial analysis to provide a cost/benefit comparison.

Traffic and Parking By-law (By-law 93-93) regulates traffic and parking on Brampton streets including parking prohibitions, provision of accessible parking spaces, and the design and operations of municipal parking lots.

Modernizing City-wide Parking Standards (By-law 259-2020) amended the parking requirements for some residential, commercial, and office uses throughout the City. New regulations include bicycle parking space requirements, maximum surface parking requirements for apartment dwellings in the Central Area, and a parking exemption for commercial and office uses in the Downtown.

Zoning By-Law Amendment 45-2021 rescinded the minimum parking requirements for most uses in the City's planned intensification areas (Downtown, Central Area, and the Hurontario-Main Corridor) except for single detached, semi-detached, duplex, triplex, double duplex, street townhouse dwelling, two-unit dwellings, lodging houses and senior citizen residences. Minimum visitor parking requirements are still required for apartment dwellings and multiple residential dwellings located in the Downtown, Central Area, and the Hurontario-Main Corridor.

Queen Street Community Planning Permit System By-law (currently on-hold) seeks to expedite planning approvals for proposed developments in the Queen Street East precinct area including the parking requirement reductions. A Preliminary Precinct Plan for the Queen Street East Corridor that provides high-level planning and design principles for guiding change in Brampton's Central Area was endorsed by Council in January 2020.

Draft Comprehensive ZBL Update (2020) updated City of Brampton's regulations on land uses, structures and buildings, parking and loading, and zoning requirements. The Parking and Loading section outlines the minimum and maximum parking space requirements, loading space requirements, and special parking provisions for different vehicle types on different land uses.

2.6 Other Relevant Studies, Projects and Proposals

The following additional studies and projects relevant to the Parking Plan were also reviewed, and are summarized below.

Queen Street Bus Rapid Transit Initiative (2020) aims to advance rapid transit along the Queen Street-Highway 7 corridor between Helen Street in York Region and Mississauga Road in Brampton. With improved public transit services, personal vehicle mode share can be expected to decrease resulting in decreases in parking demand as well.

Urban Community Hub Design Concepts and Initiation of Pilots at Uptown Brampton and Queen Street East (2021) envisioned the "community hub" to provide a one stop offering of facilities for recreation, education, health, and social cohesion that promote sharing and flexibility in terms of space use. The opportunity to implement a pilot Urban Community Hub in Uptown has been advanced through the Shoppers World Redevelopment Development Application Review process. The second concept design will be advanced through the planning work currently underway for the Preliminary Queen Street East Precinct Plan. The community hub is key to supporting a 20-minute walkable, transit-supportive, mixed-use community along the Hurontario-Main and Queen Street rapid transit corridors. The Uptown Brampton hub and Queen Street corridor along with other intensification areas will be given special consideration when developing the Parking Policy Framework.

Light Rail Transit (LRT) Extension Study is examining and recommending a preferred Main Street alternative to extend LRT service from the Brampton Gateway Terminal to Brampton GO station in Downtown Brampton. In June 2021, Council unanimously directed that staff move forward with two preferred alignments one surface and one tunnel for the 30% preliminary design and draft environmental project report for the LRT extension from Steeles Avenue to Downtown Brampton. As well, Council unanimously supported the tunnel option as the preferred alignment

to advance funding advocacy with the current provincial and federal governments. With improved public transit services, personal vehicle mode share can be expected to decrease resulting in decreases in parking demand as well.

Hurontario LRT from Port Credit in Mississauga to the Gateway Terminal in Uptown Brampton is expected to be completed in 2024. The 18-kilometre LRT will bring reliable, rapid and environmentally friendly transportation to a growing region. The LRT will feature 19 stops, including three within Brampton, and connect to major transit systems including GO Transit (Milton and Lakeshore West lines), the Mississauga Transitway, Brampton Transit, Züm and MiWay. The Hurontario-Main Street Corridor Secondary Plan provides the policy framework to guide the transit-supportive development that is expected along the corridor. With improved public transit services, personal vehicle mode share can be expected to decrease resulting in decreases in parking demand as well.

A Shared Electric Kick Scooter (Micromobility) Pilot Program was approved by City Council in February 2022 to permit and regulate the use of personal electric kick scooters in the City of Brampton in accordance with the Pilot Project – Electric Kick Scooters (O. Reg. 389/19). Through the pilot program, the City will assess the uptake and impact of an electric kick scooter-share system in the City. The pilot program will permit electric kick-scooters on highways with a posted speed limit of 50km/h or less, as well as on designated bicycle lanes and multi-use paths. With improved micromobility infrastructure, personal vehicle mode share can be expected to decrease resulting in decreases in parking demand as well.

3 Best Practices Review

The best practices review examines parking policies, strategies, and practices successfully implemented in municipalities that are generally representative of Brampton's development pattern and considers them for adoption. The list of comparator municipalities was determined in collaboration with City staff. Winnipeg and Windsor were added as IBI Group is familiar with their parking practices and they are generally comparable to Brampton. The comparator municipalities are:

- Buffalo
- Hartford
- San Francisco
- Seattle
- Cleveland
- Columbus
- Austin
- San Antonio
- New Orleans
- Edmonton
- Ottawa
- Calgary
- Winnipeg
- Windsor

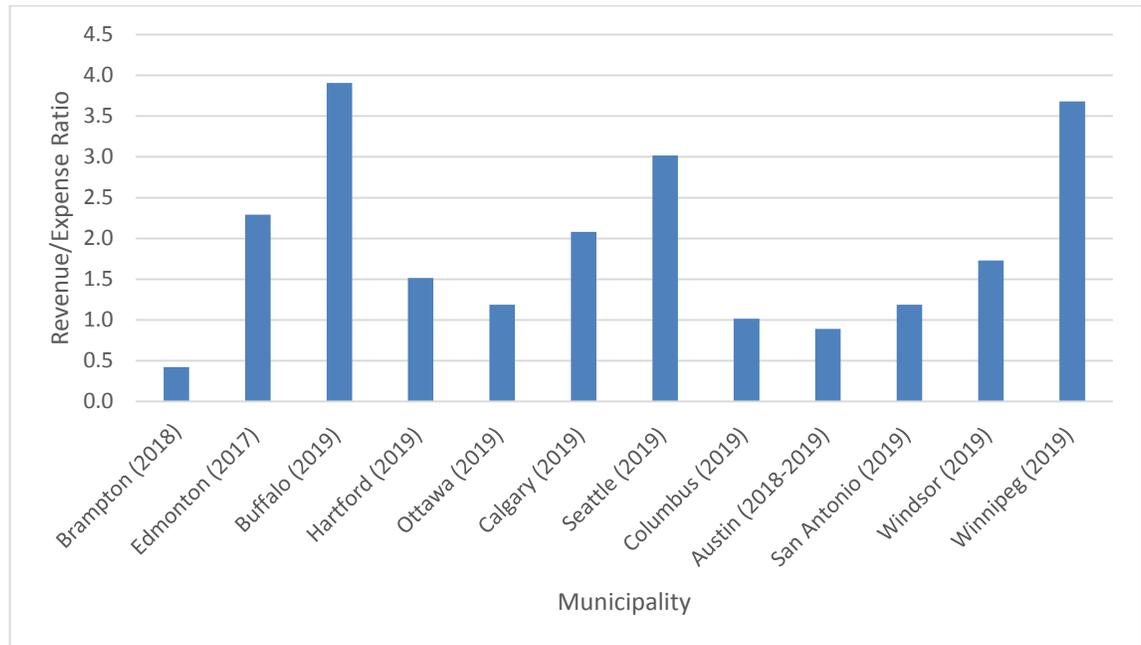
3.1 Financial Best Practices

The financial best practice review aims to develop an understanding of the comparator municipality's parking revenues and expenditures, as well as examine their long-term financial strategies.

3.1.1 Financial Sustainability Review

Financial sustainability is achieved when the collected parking revenues are sufficient to fund parking expenses. The sustainability model is a common approach to parking financial management. An alternative approach is tax subsidization where parking revenues are not sufficient to fund parking expenses and additional funding is collected through City taxes. Tax subsidization is generally not preferred as all City residents fund parking operations, whereas only parking users pay for parking under the financial sustainability model. Exhibit 3.1 displays the parking revenues to expense ratio of Brampton and the comparator municipalities. A value greater than 1 indicates that parking revenues exceed expenses.

Exhibit 3.1: Parking Revenues and Expenses



As illustrated in Exhibit 3.1, Brampton’s parking revenues are not sufficient to fund parking expenses. All comparator municipalities, excluding Austin, have achieved financial sustainability. These findings indicate that parking prices in Brampton may not reflect market value.

3.1.2 Parking Prices

The comparator municipality’s parking prices were assessed to understand how Brampton’s prices compare to other municipalities. Additional municipalities were included to provide a Canadian context. The average Downtown on-street hourly price, average non-Downtown on-street hourly price, average off-street hourly price, and average off-street monthly permit prices of the comparator municipalities are displayed in Exhibit 3.2.

Many comparator municipalities have adopted variable pricing strategies (such as location-based, time-based, and performance-based), therefore an average price was calculated for the comparison. San Francisco for example, has significant off-street price variations (both hourly and monthly) given the numerous facilities they operate over a large area.

Note that Brampton’s non-Downtown hourly price is for Thomas, Market, and Elizabeth Streets. While these streets are still within Brampton’s Downtown boundary, this hourly price was used since it is lower than the hourly price on the other streets in Downtown Brampton and parking is free in other areas.

Exhibit 3.2: Parking Price Comparison

Municipality	Downtown On-street Hourly Price	Non-Downtown On-street Hourly Price	Off-street Hourly Price	Off-street Monthly Permit Price
Edmonton	\$3.50	\$1.00	\$4.66	\$315.00
Hartford	\$2.00	\$1.00	\$3.00	\$165.00
San Francisco	\$4.50	\$2.00	\$3.00	\$310.00
Ottawa	\$3.50	\$1.50	\$2.60	\$140.00
Calgary	\$4.50	\$1.50	\$4.86	\$237.74
Windsor	\$1.75	\$1.75	\$1.50	\$69.68
Winnipeg	\$2.75	\$1.75	\$3.00	\$171.67

Municipality	Downtown On-street Hourly Price	Non-Downtown On-street Hourly Price	Off-street Hourly Price	Off-street Monthly Permit Price
Mississauga	\$1.00	\$1.50	\$1.50	\$65.00
Toronto	\$5.00	\$2.00	\$4.00	\$130.00
Montreal	\$3.00	\$1.50	\$3.00	\$90.00
Hamilton	\$2.00	\$2.00	\$1.00	\$70.00
London	\$2.25	\$1.25	\$2.00	\$70.00
Average	\$2.98	\$1.56	\$2.84	\$152.84
Brampton	\$2.00	\$1.00	\$2.00	\$44.00
Difference (Brampton vs Average)	(\$0.98)	(\$0.56)	(\$0.84)	(\$108.84)

Based on Exhibit 3.2, the following can be concluded:

- The hourly price for on-street parking in Downtown areas are generally higher than the prices outside of Downtown areas, which is expected as urban cores typically experience higher parking demand.
- There is significant variability in the cost of off-street monthly permits between municipalities.
- Brampton’s parking prices are significantly lower than the average of comparator municipality prices. This indicates that Brampton’s parking prices may be below market value and that price increases could be justified on this basis.

3.1.3 Parking Price Strategies

IBI Group reviewed the parking price strategies adopted by comparator municipalities, including:

- **Location based parking prices** where parking prices vary by location. This strategy improves the distribution of parking demand by promoting traditionally underutilized parking facilities through parking prices lower than the more popular facilities. Prices are pre-set and only adjusted during the price revision process.
- **Time based parking prices** where parking prices vary by time of day. Higher parking prices are adopted during the periods of peak parking demand than all other periods to manage parking demand. A higher parking price increases the appeal of alternative forms of transportation (transit, cycling, and walking). This strategy can also be used to promote specific areas or parking lots. Prices are pre-set and only adjusted during the price revision process.
- **Performance based parking prices** where parking prices are adjusted based on observed demand to maintain a desired utilization. This strategy requires the regular collection of parking occupancy data, typically using automated technologies. Prices can be updated in near real-time with appropriate technology and delegated authority or via a regular review-based process, e.g. monthly or quarterly.

The comparator municipality review findings are summarized in Exhibit 3.3.

Exhibit 3.3: Comparator Municipality Pricing Strategies

Municipality	Location Based Pricing	Time Based Pricing	Performance Based Pricing
Edmonton	✓	✓	X
Buffalo	✓	✓	X
Hartford	✓	✓	X
San Francisco	✓	✓	✓
Ottawa	✓	✓	X
Calgary	✓	✓	✓
Seattle	✓	✓	✓
Cleveland	✓	X	X
Columbus	✓	✓	✓
Austin	✓	✓	X
San Antonio	✓	✓	X
New Orleans	✓	X	X
Windsor	X	X	X
Winnipeg	✓	X	X
Brampton	✓	✓	X

Brampton along with most comparator municipalities were determined to use location based and time based pricing, with higher prices during daytime peak hours and in popular parking facilities. Performance based pricing is an emerging strategy that has been adopted in four comparator municipalities.

An in-depth overview of each comparator municipality’s parking price structure is in Appendix B.

3.1.4 Graduated Parking Fines

Parking fines are intended to disincentivize violations. The cost of a fine and the probability of receiving a fine should not be more appealing than paying the required parking price. However, studies have shown that a small number of repeat offenders often generate a disproportionately large share of parking violations. For example, in 2009, 8% of license plates generated 29% of all violations in Los Angeles and 14% of license plates generated 47% of all violations in Winnipeg.

To address this issue, the graduated parking fines system (also known as progressive parking fines) was developed where the fine increases as a function of the number of violations received. This strategy was implemented in Claremont, California, and is being considered in Winnipeg. For example, the overtime parking fines in Claremont is \$35.00 for the first ticket, \$70.00 for the second ticket, and \$105.00 for the third ticket. To implement the graduated parking fines system, enforcement officers carry a handheld ticket-writing machine that wirelessly connects to the city’s traffic violations database. Officers can use the devices to assign the proper fine for each violation based on the number of previous violations. Graduated parking fines is an emerging strategy and has yet to see widespread adoption to date.

3.2 Permit Programs

The comparator municipalities typically offer two types of parking permits including residential and visitor parking permits.

- **Residential Parking Permits** are generally approved in neighbourhoods with limited on-site parking. Residents within the approved area are provided with on-street parking permits exempting the holder from certain parking regulations such as maximum parking time limits and no overnight parking.

- **Visitor Parking Permits** are temporary on-street parking permits exempting the holder from overnight parking restrictions allowing residents to host overnight guests. Visitor parking permits are available upon request and are generally limited up to a predetermined maximum per address per year (ex: 5 to 10 requests).

Residential and visitor permits vary in price and are often implemented to provide parking opportunities to residents living in neighbourhoods with limited off-street parking. The permit programs adopted by each comparator municipality is outlined in Exhibit 3.4.

Exhibit 3.4: Comparator Municipality Parking Permit Programs

Municipality	Residential Permit Program	Visitor Permit Program
Edmonton	✓	✓
Buffalo	✓	X
Hartford	✓	✓
San Francisco	✓	✓
Ottawa	✓	✓
Calgary	✓	✓
Seattle	✓	X
Cleveland	✓	✓
Columbus	✓	✓
Austin	✓	X
San Antonio	✓	X
New Orleans	✓	X
Windsor	✓	X
Winnipeg	✓	X
Brampton	X	✓

All comparator municipalities were determined to offer residential parking permits (at varying prices and locations), which are currently unavailable in Brampton. Although a citywide or large-scale residential parking permit program is unavailable in Brampton, it is to be noted that the City is regulating a limited program, i.e., the Authorized Resident Parking Zone (ARPZ), which is limited to the homeowners living in close proximity to the Brampton Civic Hospital. Under this program, owners or residents can register up to two vehicles at a cost of 25\$/vehicle, the permit must be renewed on annual basis. Reviewing residential parking operations throughout Brampton is a key Parking Plan task.

Visitor permit programs were less common among the comparator municipalities (only available in 7 of 14 comparator municipalities). In Brampton, parking considerations are available up to fourteen days per year per license plate granting exemptions to overnight and the 3-hour maximum parking restrictions

3.3 Parking Payment Technologies

This section examines various pay parking technologies that could be adopted in Brampton.

3.3.1 Smart Parking Meters

Smart meters are parking meters that can be connected to a centralized management system. Common features include the ability to:

- Remotely control parking fees;
- Accept credit cards and smart cards;

- Provide alerts to the operating party;
- Remotely collect and check historic utilization data.

Single-space and double-space smart meters are typically priced between \$500 and \$1,000, depending on the specific meter and the included features. Multi-space smart meters can manage multiple parking spaces and are typically priced between \$8,000 and \$15,000, depending on the features included and proof of payment system (i.e., pay-and-display, pay-by-plate, or pay-by-space). Some suppliers require an additional monthly or yearly subscription fee for smart meters. Although, smart meters are more costly than traditional coin meters, they can facilitate the existing parking system's transformation into a connected and intelligent system. Cities often install a combination of single-space and multi-space meters to serve the on-street and off-street parking systems. Most comparator municipalities have implemented smart parking meters for on-street parking.

When implementing smart parking technologies on-street, an efficient mix of single-space, double-space, and multi-space smart meters should be used. For longer street blocks, multi-space meters should be placed in a manner that maintains a walking distance between vehicles and the machine to ideally a 50 metre maximum. Parking lots should be equipped with a multi-space smart meter in a centrally located area. For parking facilities with more than one floor or entry-access point, multiple meters typically should be implemented to improve user convenience. Pay-by-plate meters are often preferred, as the system integrates well with license plate recognition payment and enforcement systems, to increase efficiencies.

3.3.2 Pay-by-Plate Technology

Pay-by-plate technology allows motorists to use their license plate as a proof of payment. Users enter license plate information through a parking app (discussed in the next section) or smart meters (typically multi-space meters). By implementing the pay-by-plate system, parking enforcement can leverage license plate recognition technology to improve enforcement efficiency.

Pay-by-plate technology also manages accessibility concerns with the traditional pay-and-display system, as users do not need to return to their vehicles to display proof of payment.

Pay-by-plate can also be applied to parking permits. Motorists are required to register their license plates with the City, either in-person or online, to obtain parking permits. Using license plates as proof of payment for parking permit also inhibits the illegal resale or transfer of permits as they are tied to specific license plates. Most comparator municipalities were determined to use pay-by-plate technology.

3.3.3 Smartphone Parking Apps and Cloud Services

Smartphone parking apps allow parking users to pay for parking using smart phones. Parking apps can be integrated with existing and future multi-space systems. Users enter payment information (e.g. credit card) and license plate information into their profile. On-street and off-street parking prices can be loaded into the app and users can pay for parking by selecting the appropriate facility. Monthly parking permits can also be loaded onto a user's profile through their payment and license plate information.

In recent years, both apps and websites (cloud services) have shown how versatile they are, with various technologies able to be integrated to provide a range of features (without the specific integration of payment), including:

- **Map of the overall system:** Interactive parking network map can be incorporated that identifies on-street and off-street parking facility locations, displays parking zones, and assists in parking wayfinding.
- **Parking restrictions and events:** When selected, parking locations can display daily and weekly schedules, restrictions, and time limits in a user friendly format.

Additionally, notifications regarding special event operations can be incorporated, notifying users of temporary parking restriction changes.

- **Parking occupancy information:** Parking occupancy technologies, such as smart gate technology and block sensors, can be integrated to display real-time occupancy data for each parking facility. This feature can be used to list available parking spaces by type (e.g. general, accessible, electric vehicle, etc.).

Pay-by-phone provides benefits such as paying for the parking spot without needing to leave the car and walk to a meter (this is helpful especially during the winter), extending parking time remotely, and receiving alerts when a parking session is about to expire. However, there are some limitations to pay-by-phone. Not all users have access to smart phones, and some users may not have data. Providing pay-by-voice/text services in addition to pay-by-phone can mitigate this issue. Such a feature allows registered users to call or text a predetermined number and enter a location ID to pay for parking, removing the need for Wi-Fi or data. Many Canadian municipalities, including all comparator municipalities, have adopted smartphone parking apps. The app features vary by municipality; however, all apps can process parking payments. Most comparator municipalities provide the app through a third party service. The same account can be used in City's with the same service provider.

Third party parking apps also have the potential to integrate with license plate recognition (LPR) enforcement technology. Most third-party parking app providers can offer a complete LPR service by partnering with LPR enforcement companies. The services typically include providing LPR technology (hand-held devices and cameras), integrating the LPR system with the mobile app and permitting system, and providing training to municipal enforcement officers. Enforcement LPR technologies are growing in popularity among municipalities. The most common LPR technology is Automated License Plate Readers (ALPR), which allows the ALPR cameras to be mounted on to enforcement vehicles or street poles and automatically capture license plates. ALPR significantly increases the efficiency of enforcement, as ALPRs can process license plates approximately ten times faster than traditional LPR technologies.

3.3.4 Parking Occupancy Technology

Occupancy technology tracks a parking facility's utilization in real time, allowing users to view parking availability and operators to perform analysis and make data driven decisions.

For on-street parking, occupancy technology typically involves individual sensors, utilizing app data, or leveraging smart meters to communicate when in use. Loop sensors, although sometimes inaccurate, are traditionally used for off-street parking. Loops or cameras are placed at the entrances and exits of a parking facility to activate the gates as well as keep a running tally of the number of vehicles in the parking facility. Loops are an outdated method of collecting utilization data for parking garages as data errors arise when vehicles enter or exit in quick succession. This could cause multiple vehicles to be counted as one, skewing the utilization data.

Individual parking space sensors can be used in multi-level parkades with multiple ramps and entry/exit points for more accurate occupancy information and improved internal wayfinding. Alternatively, parking gates could be installed at the entrance and exit points and track occupancy through the number of times the gates are activated. Block sensors at EV parking spots can provide information even when non-EV vehicles are occupying EV spots. Block sensors are in-ground sensors that can detect the real time occupancy of several parking spaces on a street block.

Due to parking system complexity and the multiple payment options (i.e. through apps or a meter), multiple occupancy technologies are typically required. To capture reliable utilization for an entire parking system, multiple streams of occupancy data should feed into a central system.

By integrating occupancy technology with other smart parking technologies, real-time parking data can be displayed in an app-based platform or through variable message signs (VMS). When paired

with static wayfinding signage, VMS displaying real-time occupancy data can help quickly guide users to an available parking space.

The adoption of parking occupancy technologies is growing among Greater Toronto Area municipalities (ex: Burlington and Oakville). San Francisco, Calgary, and Seattle all use parking occupancy technology, as this information is required to adjust parking prices based on utilization. Both Columbus and Austin also implemented parking occupancy technology, although they do not currently use a performance-based pricing model.

3.3.5 Electric Vehicle Charging Stations

While electric vehicles (EV) do not reduce parking demand, they support broader sustainability and environmental goals and improve air quality by managing pollutant emissions. EV charging stations also help attract short-term visitors who may support local establishments while charging vehicles. Many municipalities provide EV charging stations in off-street parking facilities. The City of Brampton currently has EV charging stations at 14 locations throughout the City.

In addition to public charging stations, some municipalities require private developments to provide EV infrastructure as part of the development application process. For example, the City of Toronto Green Standards require that 20% of a new development's parking supply be equipped with EV charging equipment with the remaining spaces designed in a manner that allows for future EV charging equipment. A recommendation is presented recently to City of Mississauga's council to consider a requirement to provide EV-ready parking spaces as follows: 20% of parking spaces for new medium and high density developments, 10% of structured parking spaces for new non-residential buildings, and one space for street-level dwellings with dedicated garages.

3.4 Parking Requirements

Parking minimums are often included in zoning by-laws for various land uses. However, parking minimums can result in an excess supply of parking, which results in low parking utilization and prevents the emergence of market-based pricing. Removing parking requirements in strategic parts of a City is gaining popularity in North America, some comparator municipalities have removed their minimum parking requirements (Exhibit 3.5). The approach aims to avoid excess parking, that has negative environmental, financial, and traffic implications, by providing flexibility to developers and property owners to decide how much, if any, parking to provide.

Parking minimums can be rescinded citywide, or in a targeted manner where specific areas and/or land uses are exempt from parking requirements. These areas typically have higher densities such as near rapid transit stations, inner urban areas, Downtown areas, and historic core districts. In addition, reduced or waived parking minimums can be part of inclusionary zoning policy and used as an incentive to offer affordable housing units and create mixed-income housing.

Similarly, parking maximums can be applied on an area-specific or citywide basis, which limits the total amount of parking that can be supplied per land use. While parking maximums are not as common as the removal of parking minimums, they can be a very effective tool for: (1) limiting the oversupply of parking, (2) reducing the number of large parking lots which adversely impact the City landscape, (3) saving more lands and spaces that can be used for other land uses (ex: parks, housing, commercial), and (4) balancing the needs of parking with the other sustainability goals (ex: reducing emissions and the reliance on private auto, promoting active transportation).

Exhibit 3.5: Parking Minimums & Maximums

Municipality	Parking Minimums			Parking Maximums		
	None	Area-Specific	Citywide	None	Area-Specific	Citywide
Edmonton	✓				✓	
Buffalo	✓			✓		
Hartford	✓					✓
San Francisco	✓					✓
Ottawa		✓			✓	
Calgary		✓		✓		
Seattle		✓			✓	
Cleveland		✓		✓		
Columbus			✓			✓
Austin		✓			✓	
San Antonio		✓				✓
New Orleans		✓				✓
Windsor		✓		✓		
Winnipeg			✓	✓		
Brampton		✓		✓		

Notes:

1. None: citywide parking requirements are rescinded
2. Area-Specific: parking requirements are rescinded in strategic areas
3. Citywide: uniform citywide parking requirements

As illustrated in Exhibit 3.5, most comparator municipalities including Brampton have rescinded parking minimums in targeted areas of the City. Additionally, most municipalities have started adopting parking maximums, either in strategic areas or citywide.

3.5 Truck Parking

Truck parking is a key issue throughout North America. Most private truck parking facilities operate at capacity during the night and sometimes during the daytime. The lack of sufficient supply often results in illegal truck parking on freeway interchange ramps and highway shoulders.

Historically, truck parking operations have been overlooked by many municipalities as suggested by the limited truck parking strategies adopted by the comparator municipalities. This section discusses emerging strategies and best practices related to truck parking.

- **Shared Lots:** Existing carpool and park-&-ride lots have a high demand during business hours due to commuters but are largely underutilized overnight and on weekends, which provides an opportunity for shared truck parking. An added benefit is that park and ride lots are often located near major highways. The U.S. Federal Highway Administration, Florida State, and Washington State have recommended these shared parking agreements.
- **Off-Peak Use of Large Venues:** Truck parking can be permitted at underutilized parking facilities such as sports venues and convention centres during their off-peak

hours. This strategy has been recommended by the U.S. Federal Highway Administration and Lehigh Valley in Pennsylvania.

- **Truck Parking Permits in Industrial Areas:** Truck parking could be gained in industrial areas by permitting on-site and on-street truck parking through zoning by-laws. Permit systems could also be applied for on-street parking to better manage truck parking. This can help with queueing issues for trucks that arrive early for a delivery or pick-up. Industrial area truck parking has been applied in Seattle, where there is a free overnight truck parking facility near a port cargo terminal.
- **Truck Parking Availability System:** Electronic signs that display real-time truck parking availability can be deployed along roads and highways. This strategy helps truck drivers make informed decisions about where and when they can make rest stops. Truck parking variable message signs have been implemented in Tennessee, California, Minnesota, and Michigan.
- **Improving Zoning Policies:** ZBLs can include the provision of minimum truck parking spaces similar to the minimum parking requirements. The minimum required parking spaces may be estimated based on the number of loading docks, square footage, and/or number of employees. In addition, truck parking can be incorporated into parking justification studies for industrial developments to ensure sufficient truck parking is provided to meet the demand generated. Improving zoning policies to accommodate truck parking requirements has been recommended by the U.S. Federal Highway Administration.
- **Public-Private Partnerships (P3s):** P3s can be used to increase truck parking supply. Developers could be encouraged to provide truck parking facilities through special incentives, tax abatements, and/or low-cost loans. Common staging lots could also be shared by multiple private shippers and receivers in a similar geographic area. The strategy has been recommended by Virginia, Surrey (British Columbia), and Texas.
- **Brownfield Redevelopment:** Existing brownfields land can be redeveloped to provide truck parking and staging capacity near freight activity centres. This strategy has been recommended by the U.S. Federal Highway Administration.
- **Weigh Stations:** Many truck drivers currently park at weigh stations for longer than legally permitted and/or when weigh stations are closed. Parking at closed weigh stations and/or extending permitted parking time at open weigh stations could be legalized to provide drivers more opportunities for the mandatory rest breaks. This strategy has been recommended by Washington State, Virginia, and Texas.
- **Residential Areas:** Truck parking can be approved in low density residential areas on private properties larger than 1 acre. This strategy has been recommended by Surrey, British Columbia.
- **Off-Peak Delivery:** To reduce congestion and emissions, truck activity could be shifted to occur outside of peak traffic hours. However, this strategy faces challenges such as federal hours of service requirements, pay premiums for unionized drivers, and longer loading facility hours. The off-peak delivery strategy is being tested in Los Angeles and New York City.

3.6 Emerging Trends

The emerging trend review aims to identify new strategies that are anticipated to play a large factor in shaping future parking operations across North America.

3.6.1 Shared Mobility

Shared mobility is an emerging trend that includes transportation modes and services shared by users. Examples include rideshare, car share, bikeshare, micromobility, and mobility-as-a-service (MaaS).

Ridehailing and ridesharing services, such as Uber and Lyft, have grown rapidly on both a global scale and in North America. While many providers offer both ride-hailing, where vehicles make direct trips for individual users, and ridesharing, where multiple riders share the vehicles, ride-hailing trips comprise the majority of trips for transportation network companies. These services are preferred due to the convenience of on-demand transportation at affordable prices. Ridehailing and ridesharing trips can replace both automobile and public transit trips. However, shared mobility has faced regulatory barriers in some cities due to their impact on the taxi industry, safety concerns, and worker classification.

Carsharing is a growing service in North America, with multiple large operators that include Enterprise, Zipcar, and CommunAuto. Fleet-based carsharing services, where the service providers own and rent vehicles, are experiencing challenges related to the high capital cost of purchasing the vehicle fleet. However, peer to peer carsharing, where users share their personal vehicle with other users, may grow in the future due to lower financial requirements. While carsharing can lead to a reduction in auto ownership, many car share users still own personal vehicles. Public transit agencies can integrate scootersharing, bikesharing, and carsharing into train stations and other mobility hubs.

Micromobility is defined by the Institute for Transportation & Development Policy as “a range of small, lightweight devices operating at speeds typically below 25 km/h and is ideal for trips up to 10km”. This commonly includes electric scooters, bikeshare, and electric bikeshare. These services have experienced rapid growth and adoption in many North American cities over the last decade. However, they have faced key challenges such as safety regulations and curbside management (particularly for electric scooters). Micromobility trips are most likely to replace walking, ridesharing, and public transit trips versus automobile trips.

Mobility-as-a-service (MaaS) is an integrated approach where users can plan, book, and pay for multi-modal trips, involving multiple transportation service providers, in a single online platform on demand. MaaS provides a high level of convenience for users, as it avoids multiple ticketing and payment requirements while providing easy access to multi-modal trips that use multiple independent providers. MaaS is an emerging trend in transportation planning globally. The Whim app in Finland is one of the most integrated and implemented MaaS examples globally. The Whim service operates a tiered subscription model that offers plans that vary in available modes and credits per mode. MOVE PGH is the first fully integrated MaaS example in North America. The service is a two-year pilot program in Pittsburgh, USA, that integrates six mobility services (including public transit, micromobility, car share, and ridesharing) into a single app. The MOVE PGH service charges prices based on the modes used and duration of travel instead of a tiered subscription pricing model.

3.6.2 Connected and Automated Vehicles

Connected and automated vehicles (CAVs) have the potential to significantly impact parking patterns in the near future. While the exact magnitude is subject to debate, most industry experts agree that parking demand will decrease. In addition to reduced parking demand, CAVs are anticipated to increase parking capacity as the required parking stall width can be reduced (passengers do not need to enter and exit the vehicle when parked) and the amount of tandem parking will be increased as CAVs can be summoned. However, additional curbside space for pick-up/drop-off spaces is anticipated to be required. Further, there is a risk of increased vehicle travel because of induced demand which would result in increased traffic congestion and urban sprawl. The City of Edmonton and the City of Calgary have implemented autonomous shuttle pilots

to gather feedback about CAVs and conduct cold weather testing. Policies and strategies related to CAVs were determined to be limited in the comparator municipalities.

3.6.3 Partnerships

Some municipalities have been investigating the opportunity to include public parking in new developments through coordination with the developer. The public parking spaces would be in addition to the development's Zoning By-law parking requirements.

Partnerships is an emerging practice and has not yet seen widespread implementation. However, many Parking Master Plans are beginning to recognize the strategy. For example, the City of London Parking Strategy Study recommended that the City grant density bonuses to the existing zoning by-laws (ex: extra dwelling units, or increased building heights) if developer agrees to add on-site public parking.

In some cases, municipalities partner with existing parking facility owners to convert a portion of the parking facility to public parking. These agreements require case-by-case considerations. However, in general, the municipality takes over maintenance and operations including revenue collection. The municipality first recovers its costs, and the profit is shared 50/50 with the private parking owner. In Oak Park Illinois for example, the Village has agreements with nearly 30 different private parking lot owners in the Village Centre. These leases are typically no more than three years.

3.6.4 Future Proofing New Parking Facilities

Future proofing parking facilities refers to the practice of designing new facilities in a manner that, should parking demand decrease in the future as anticipated, part of or the entire structure can easily be converted to an alternative land use.

This extra flexibility typically requires parking structures to be designed to higher standards with increased costs. For example, the ceiling height in traditional parking structures are lower than the ceilings in offices and shopping malls. Other design considerations that would need to be considered include structural loading capacity (parking loads are generally the lowest when compared to other land uses), environmental concerns, core/circulation design, natural lighting, different column spacing, grading and slope, and pedestrian access.

Above grade parking structures are preferred over below grade garages as they are less expensive and easier to convert into alternative uses. This concept has been applied in the City of Calgary, where a few recent office and residential developments include above grade structured parking rather than underground.

3.7 Summary of Best Practices

The best practices review covered a wide range of strategies successfully adopted in the comparator municipalities. Based on the review findings, the following conclusions are drawn:

- Brampton's parking price rates, both inside and outside the Downtown, are significantly lower than all other comparator municipalities.
- Most comparator municipalities use location based and time based pricing, with the performance based pricing model gaining popularity.
- Graduated parking fines has seen limited adoption to date but provide an opportunity to target repeat offenders if a small amount of offenders represent a disproportionately high amount of violations.
- Parking permits are commonly available for residential and visitor uses. Prices and conditions were determined to vary significantly between municipalities.

- Many of the comparator municipalities use parking technologies to improve the parking system's efficiency and user friendliness. Common technologies include smart parking meters, pay-by-plate technology, smartphone parking apps, parking occupancy technology, and electric vehicle charging stations.
- Some municipalities are requiring private developers to provide EV infrastructure as part of the development application process. The requirement can be such as a ratio of the total number of parking spaces is to be equipped with EV charging equipment. In addition, the remaining spaces may be designed in a manner that allows for future EV charging equipment.
- Removing parking minimums can be implemented in high density areas to increase parking system efficiency while providing flexibility to developers and land owners.
- Adopting parking maximums provide several benefits such as limiting the oversupply of parking, preserving the urban landscape, offering lands for other uses, reducing the reliance on private autos, and promoting the use of alternative and more sustainable modes of transport.
- A lack of truck parking supply is a key issue, and a wide range of strategies have been recommended across North America.
- Key emerging trends related to parking include future proofing new parking facilities, shared mobility, connected and automated vehicles, and private public partnerships.

4 Existing Parking Conditions

4.1 Parking Inventory (Downtown Brampton)

The downtown area plays an essential role in the social, employment, and economic development of the City, and parking in the downtown is especially important. The analysis of this section therefore focuses on Downtown Brampton and its parking operations. The rest of the City consists of a large number of areas having different land uses, and these are not analyzed using parking demand-supply surveys as this can be impractical for the purpose of this study given the size of these areas. However, parking issues and requirements for areas outside the downtown are still addressed and discussed under the citywide parking policy framework and other sections of the report.

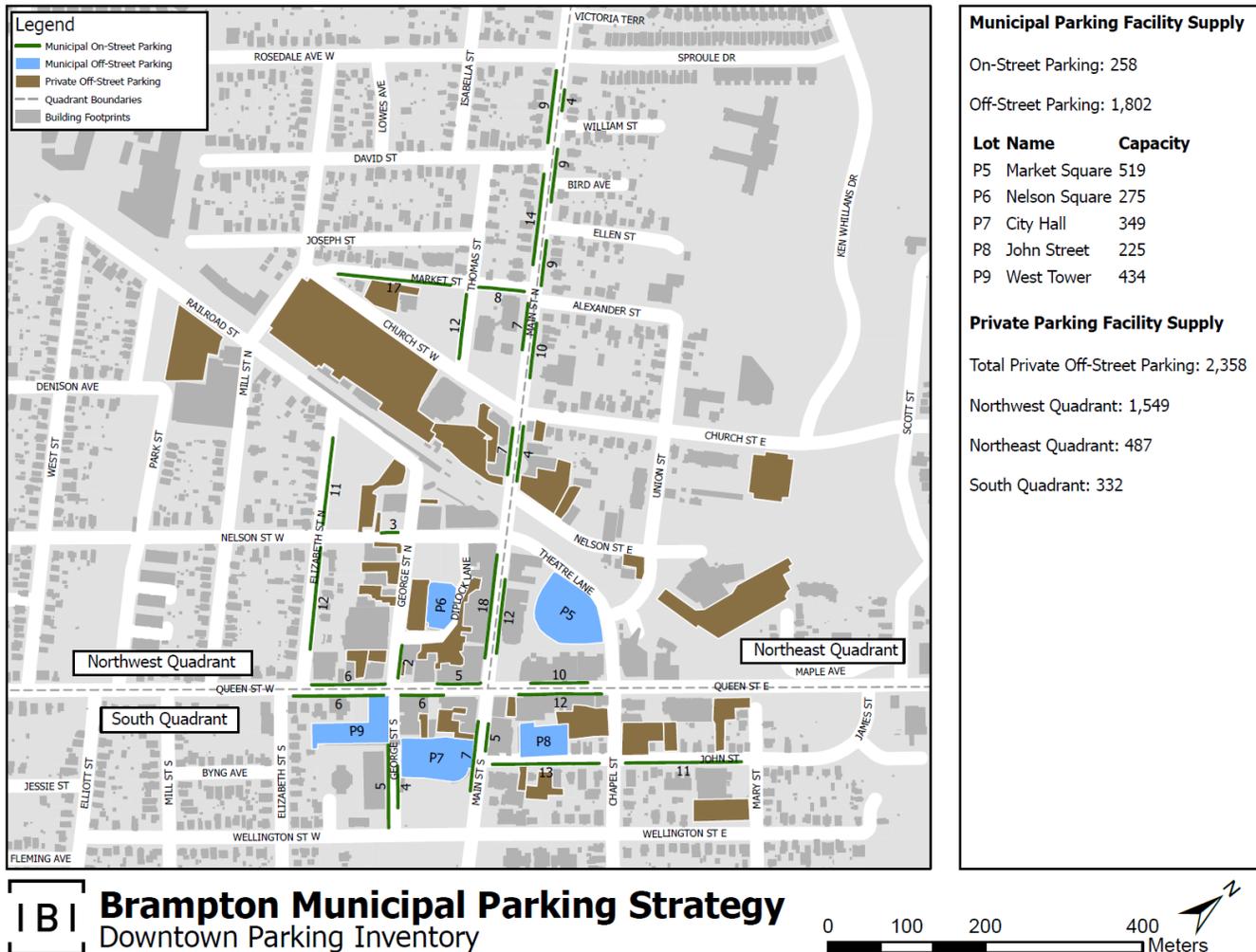
The Brampton municipal parking supply consists of on-street and off-street parking in the downtown area. Paid off-street parking at lots and garages is in effect between 9:00 AM and 7:00 PM Monday to Friday. The first hour of parking is free, while each subsequent half hour of parking costs \$1.00 up to a daily maximum of \$9.00. Annual and monthly parking permits are available for \$308 and \$44, respectively. There is no charge for parking on evenings, weekends, and holidays.

The on-street parking system includes metered parking opportunities which are in effect between 9:00 AM and 6:00 PM Monday to Saturday at a rate of \$2.00 per hour and a maximum duration of 90 minutes on most streets. A few streets permit on-street paid parking between 7:00 AM and 6:00 PM Monday to Friday at a rate of \$1.00 per hour or a flat rate of \$4.00. A maximum parking duration of 3 hours is permitted during free parking periods.

As shown in Exhibit 4.1, Brampton's municipal parking supply consists of 4,518 parking spaces divided in the following manner:

- 258 municipally-owned on-street metered parking spaces;
- 1,802 municipally-owned off-street parking spaces; and,
- 2,358 privately-owned off-street parking spaces.

Exhibit 4.1: Brampton Downtown Parking Supply



4.2 Parking Operations (Downtown Brampton)

A parking utilization analysis was conducted using parking demand data provided by the City of Brampton. Parking systems are considered “effectively full” at an occupancy of approximately 85-90%, depending on lot size and other characteristics. This represents the point where finding a space is challenging for drivers, resulting in an increased likelihood of a driver having to search for an available parking space. Private lots often functionally operate closer to 95% occupancy, but again, this depends on user experience desired and lot size, for example.

Exhibit 4.2 shows the change in overall utilization for Brampton’s downtown municipal parking system from 2009 to 2019 (7:00 AM to 7:00 PM), while Exhibit 4.3 compares hourly parking utilization between 2009 and 2019 (7:00 AM to 7:00 PM).

Exhibit 4.2: Brampton Annual Downtown Municipal Parking Utilization (Systemwide)

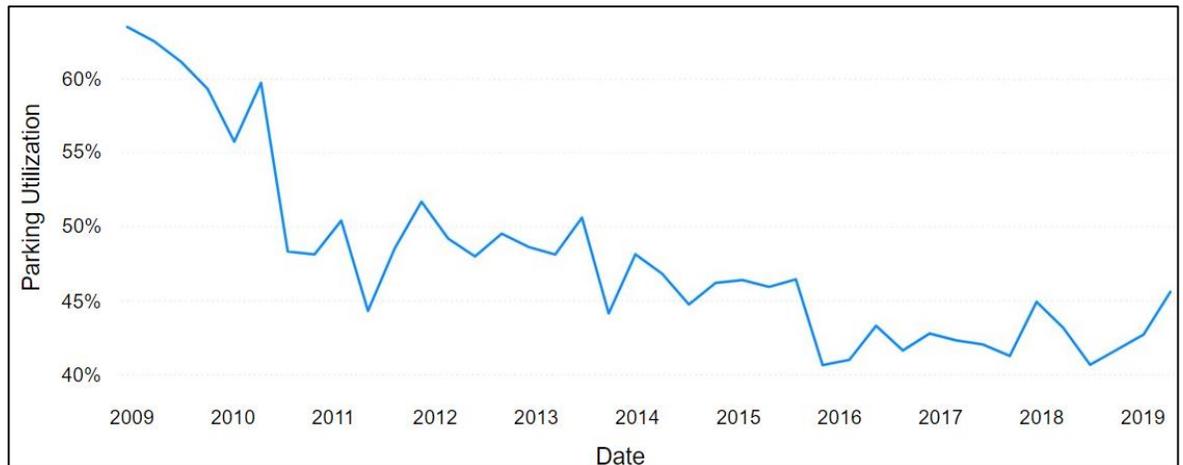
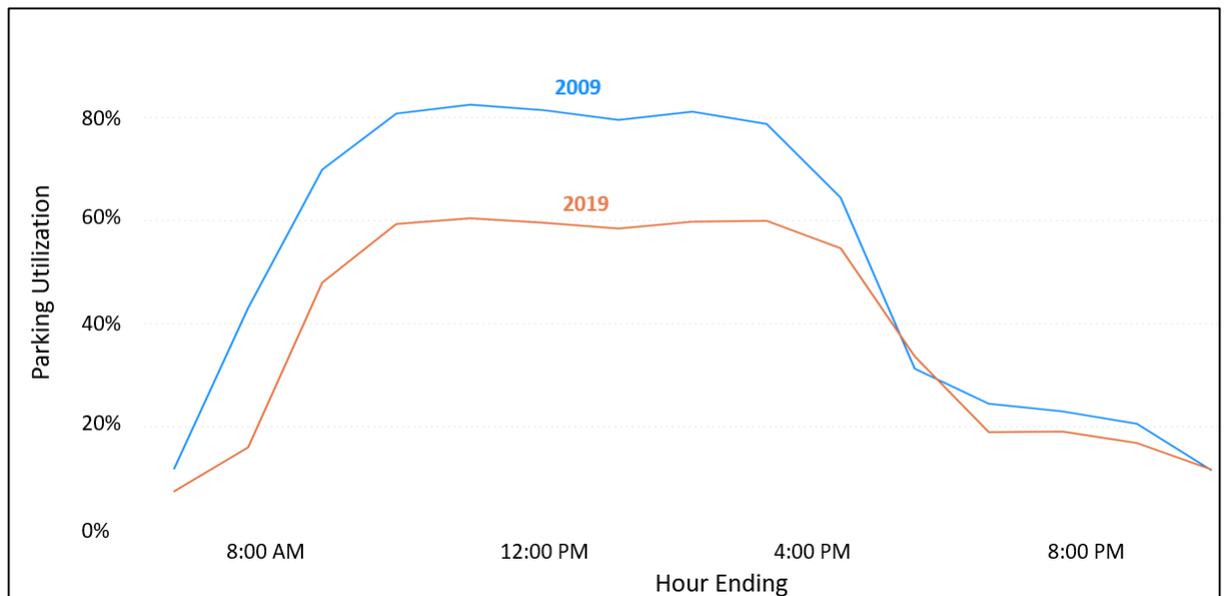


Exhibit 4.3: Brampton Hourly Downtown Municipal Parking Utilization (Systemwide)

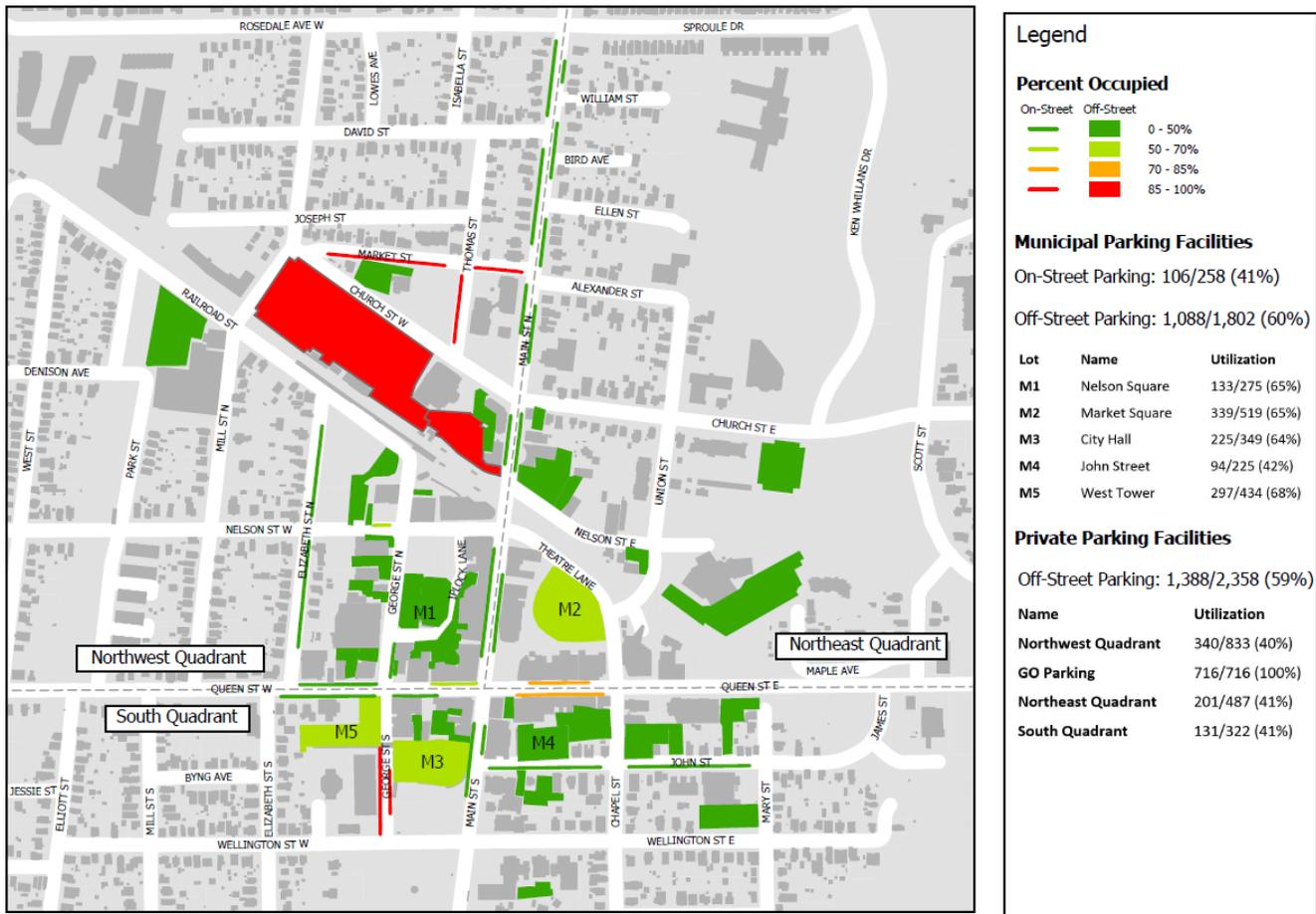


Some observations from the Downtown Brampton parking utilization results:

- Parking utilization has been declining over time, and has decreased by over 15% between 2009 and 2019;
- Maximum parking utilization is sustained during the daytime hours, with the peak period lasting from approximately 8:00 AM to 6:00 PM; and,
- Parking utilization levels have significantly decreased in the morning and daytime hours between 2009 and 2019, however parking utilization levels in the evening hours are similar between 2009 and 2019.

While sufficient parking opportunities are provided system-wide, individual lots and street segments are often observed to operate near or at capacity. Exhibit 4.4 geographically displays the lot-by-lot and street-by-street parking utilization observed during the systemwide peak hour, which occurred at 10:00AM.

Exhibit 4.4: Brampton 2019 Downtown Parking Utilization (10:00 AM)



IBI Brampton Municipal Parking Strategy
 2019 Downtown Parking Utilization

0 100 200 400 Meters

Based on the results displayed in Exhibit 4.4, the following conclusions are drawn:

- Systemwide parking utilization is 58%, which is below the 85-90% effectively capacity threshold;
- Municipally owned off-street parking facilities have higher utilization levels compared to privately owned off-street parking spaces, particularly in the West Tower, Market Square, and City Hall facilities;
- The Brampton GO Station off-street parking facility is operating at almost 100% utilization, with parking demand spilling into the adjacent southeast private lot and the nearby streets; and
- Out of the 29 on-street segments that were surveyed, five segments are operating above 85% capacity, with two of these segments located next to Brampton City Hall and three of these segments located next to Brampton GO station.

Overall, the Downtown Brampton parking system is underutilized with only a few individual parking facilities operating at capacity. While the GO Station lot is under the jurisdiction of Metrolinx, Brampton can help manage parking demand by reducing commuter personal vehicle mode share between places of residence and the GO Station lot and by promoting shared parking within nearby underutilized lots.

4.3 Strengths, Weaknesses, Opportunities, Threats (SWOT) Assessment (Citywide)

Based on the best practices review and existing conditions analysis, a strengths, weaknesses, opportunities, threats (SWOT) assessment was completed. The four categories are defined as:

- **Strengths:** what is done well?
- **Weaknesses:** what are the existing issues, what is missing?
- **Opportunities:** what areas can be improved through technology upgrades and other means for efficient parking management?
- **Threats:** what are the obstacles for deploying technology upgrades?

The SWOT assessment findings are presented in Exhibit 4.5.

Exhibit 4.5: SWOT Assessment

Strengths	Weaknesses
<ul style="list-style-type: none"> • Existing Municipal Parking Facilities: There is adequate parking capacity to meet systemwide parking demand. Parking utilization has been decreasing over time. As such, new pricing strategies and shared spaces can be implemented. • Area-Specific Elimination of Parking Requirements: Brampton has removed parking minimums in the Downtown, Central Area and Hurontario/Main corridor, with some exceptions, which helps manage excess parking supply. • Transit Network and Ridership: Brampton has a robust transit network that includes regional rail, regional bus, conventional bus, and bus rapid transit. Both the network scale and ridership are growing over time. • Progressive Plans and Programs: Brampton has a strong policy framework that clearly outlines the municipality's vision and goals, such as the 2040 Vision and Active Transportation Master Plan. 	<ul style="list-style-type: none"> • Residential Parking Capacity: Some neighbourhoods do not provide sufficient on-site supply to meet the residential parking needs. Second units, and large household sizes have exacerbated off-street parking demand. • Truck Parking: There is a lack of truck parking supply in the City of Brampton. Warehousing and distribution centres are becoming more dominant increasing the demand for truck parking. • Land Uses: The dominant land use in the City of Brampton is low-density residential. This increases auto-dependence and the demand for automobile parking.
Opportunities	Threats
<ul style="list-style-type: none"> • Major Transit Station Areas: MTSAs provide an opportunity to implement targeted TDM measures and parking strategies by way of amendments to existing Secondary Plans. • Truck Parking: Industry best practices can be applied to better meet truck parking needs. • Targeted Pricing Strategies: Strategies such as location and time based pricing can be used to achieve financial sustainability and maintain desired parking utilization. • Enforcement Technology: New technologies can be implemented to improve the efficiency and efficacy of parking enforcement. 	<ul style="list-style-type: none"> • COVID-19: The future of work, permanent loss of transit users, shifting land-use patterns, and new corporate office practices add uncertainty related to future transportation and parking demand. • Population Growth: Brampton's population is expected to grow by 44% between 2021 and 2051. This population change may result in an increase in parking demand. • Ecommerce: Ecommerce is growing rapidly in North America. This trend may result in an increased demand for goods movement and cause further strain on Brampton's truck parking system.

- **Illegal Truck Parking:** illegal truck parking is very unattractive for urbanized areas and creates damage to the road network; and when it gets too close to primary urban boulevards, attracting the intended development and small businesses becomes hard.

4.4 Existing Conditions Summary (Downtown Brampton)

Findings for the existing conditions analysis for the Downtown Brampton parking system were informed from quarterly parking utilization surveys conducted by City staff in 2019. Based on findings of those surveys, the Downtown parking system experienced peak parking demand of 58%, which is well below the 85-90% effective capacity threshold. The on-street parking system was observed to be 41% utilized; some individual segments operated above 85% utilization but there were adjacent street segments nearby that could accommodate the excess demand. The municipal off-street parking lots and private off-street parking lots experienced very similar utilizations (60%) during the peak period. Only the GO Transit parking lot experienced more than 85% utilization.

4.5 Data Gaps

Based on the findings from the existing conditions summary, several data gaps have been identified to be collected to better inform parking demand throughout Brampton. The data gaps consist of the following:

- Downtown private parking utilization by individual lots;
- On-street parking turnover and duration; and
- Identify designated short-term and long-term truck parking supply.

While the City currently conducts parking utilization surveys of private parking facilities, they are aggregated on a quadrant basis, divided by Queen Street and Main Street. This provides a high-level summary of parking demand but does not allow for individual lots that experience higher demand to be clearly identified. An example of this can be seen from the northwest quadrant, which contains the GO Transit lots. Overall, the quadrant was 68% utilized which suggests that there are no supply issues. However, the GO Transit lot has been observed to be completely full during working hours, which is not reflected when parking demand is summarized on a quadrant-wide basis.

The City currently conducts parking utilization surveys on a quarterly basis which gives a snapshot into the on-street parking demand. While the parking utilization tells us how many parking spaces were occupied at the time the surveyor was present, it does not provide insights into parking turnover and duration. These metrics are important measures that help identify the parking operations of on-street segments. These parking spaces should generally be used for short-durations to maximize the number of users served daily. Long-term parking demand (ex: employees) should be encouraged to park in off-street facilities. The LPR vehicles purchased by the City for enforcement activities should be able to provide greater insights into turnover and duration, but may have limitations based on the patrol schedules and routes.

One challenge identified from consultation with City staff and stakeholders was that locations of designated short-term and long-term truck parking supply are not known. Many of the best practices categories for truck parking rely on having an accurate and accessible inventory of designated parking facilities. A truck parking availability system is recommended as part of the Parking Policy Framework, further discussed in Section 7.

5 Future Parking Assessment in Downtown Brampton

The Future Parking Assessment projects the 2040 future parking operations in Downtown Brampton. The results of the assessment will be used to inform general principles and policy recommendations to help guide Brampton in meeting long-term parking needs.

5.1 2040 Parking Forecast

Brampton's 2040 future parking supply and demand was estimated based on the existing conditions demand with consideration for the following factors:

1. Existing parking patterns;
2. Parking demand growth due to population growth;
3. Parking demand decreases due to reduced mode share of personal vehicles; and
4. Municipal parking supply losses and gains.

It should be noted that the future parking projections are estimated based on the best data available at the time of this study. Brampton is recommended to continue collecting new parking supply and demand data on a quarterly basis to evaluate the resulting parking demand. Between the time of writing and the horizon year, many changes are anticipated to take place within Brampton that can significantly alter parking demand within Brampton. The findings and recommendations made as part of this study are intended to be updated by the City on an as needed basis to reflect the parking demand achieved.

5.1.1 Population Growth

Parking demand in Brampton is expected to grow in the future, both due to population growth creating a larger customer base for businesses, and due to general commercial and retail growth in the responding to the needs of the City's future residents. The following population data was obtained:

- 2016 population data from the Transportation Tomorrow Survey (TTS); and
- 2019 and 2040 population data for Brampton and Peel Region from City of Brampton staff.

The TTS is a comprehensive travel survey and is among the largest travel surveys ever undertaken anywhere. Funded by The Ministry of Transportation, Metrolinx, the Toronto Transit Commission, and 19 municipal governments, the 2016 survey presents travel patterns and travel behaviour information obtained from 162,708 validated surveys.

Population growth is not anticipated to be consistent across Brampton. Some areas such as the Downtown core are anticipated to experience larger growth than the outer areas of the City. Therefore, simply growing the observed parking demand linearly to Brampton's citywide population growth is not considered appropriate. To calculate unique growth projections for the Downtown area, the areas were divided to match the TTS zones.

Population growth was divided into three different areas: Downtown, Rest of Brampton, and Peel Region. Population growth was separated, since the rates at which Brampton residents travel to parking in the Downtown core differ based on the area of the City they live. Residents living in the Downtown, due to proximity to amenities, are expected to be more likely to travel via alternative modes of transportation that do not require a parking space. Residents living in the rest of Peel Region are more likely to complete errands such as grocery shopping near to their residence, and are therefore less likely to drive to the Downtown to some of the new retail attractions (compared to the local amenities).

Technical Sample Calculation

To provide a more technical overview of the background growth factor methodology, a sample calculation is provided.

Weighted population growth factors were calculated by indexing each zone's population growth using the *Auto Trips per Person per Day* data obtained from the 2016 TTS. To calculate the weighted population of Downtown Brampton, the weighted population of each Downtown zone are added together. This approach was applied since population growth in the zones generating a larger proportion of auto trips is anticipated to result in a larger impact on parking demand than that same growth in zones generating less trips. The following formula was applied to calculate the weighted population for each zone:

$$\text{Weighted Pop} = (\text{Non Weighted Pop}) \times \frac{\text{Each Zone's Auto Trips}}{\text{Max Auto Trips in any Zone}}$$

By applying the above formula to each zone, we can calculate that zone's weighted population growth projection that has been adjusted to consider the zone's respective trip generation rates. A sample population growth projection calculation is outlined below.

Sample calculation: Zone 3490 Downtown Brampton

Zone 3490 trips/person/day: 0.10171

Max trips/person/day of all Downtown zones: 0.19275

Zone 3490 Pop (2040): 4,038

Zone 3490 Weighted Pop (2040) = Pop (2040) x $\left(\frac{\text{Zone 3490 trips/person/day}}{\text{Max trips/person/day in any zone}}\right)$

Zone 3490 Weighted Pop (2040) = 4,038 x $\left(\frac{0.10171}{0.19275}\right)$

Zone 3490 Weighted Pop (2040) = 2,130

Using this methodology, the 2019 and 2040 weighted population for Downtown is calculated. The 2040 weighted population is indexed to the 2019 weighted population to calculate a growth rate of 1.38.

City of Brampton Staff noted that Rogers Communications Inc. has submitted a Minister's Zoning Order to construct a large campus co-located with the Downtown Brampton GO Station. The development is planned for the block bounded by Railroad Street, Elizabeth Street, Nelson Street, and George Street. In addition, the development was noted to be transit-oriented since it is near many transit facilities such as the GO Station, surface transit routes, and future LRT station. While this is a major development within the Downtown, the City project team agreed that the project population impacts would already be considered as part of the population growth forecasts. No additional impacts were included as part of the future parking assessment. A similar approach was taken for the proposed University of Guelph – Humber satellite campus.

5.1.2 Modal Split Reduction

One of the Transportation Master Plan's parking-related objectives is to promote and facilitate alternative modes of transportation such as rail, transit, cycling, and walking. In support of this, Brampton is committed to constructing dedicated bicycle lanes and improving the transit network. Considering this goal and these commitments, the future single occupant personal vehicle mode share is anticipated to be slightly lower than today, resulting in reduced parking demand.

Based on the Transportation Master Plan, 71.5% of trips in 2011 were completed by SOVs. By 2041, the City is targeting a SOV mode share of 50%. Through interpolation, the SOV mode share is anticipated to decrease by approximately 1.15% annually. For the purposes of this future

conditions assessment, a 1.15% annual decrease in SOV mode share is anticipated to result in a 1.15% annual decrease in parking demand. An annual parking demand decrease of 1.15% represents a total decrease of 21.5% between 2019 and 2040.

5.1.3 Municipal Parking Supply Changes

Through discussions with City staff, it was noted that the Nelson Square Garage may be closed to accommodate a future development. The Nelson Square Garage contained 275 parking spaces and was observed to be 42% occupied during the peak period of demand. Since the status of the garage is still in question, a sensitivity analysis will be conducted for the 2040 year to determine the potential impacts of the closure on the nearby parking supply.

5.1.4 Analysis Results

This subsection presents the analysis results of the 2040 parking assessment based on the inputs summarized in the previous subsections. To calculate the 2040 net growth factor that will be applied to the 2019 observed parking demand, the population growth factor (1.38) was multiplied by the modal split reduction factor (0.79). Exhibit 5.1 shows a summary of the growth factors.

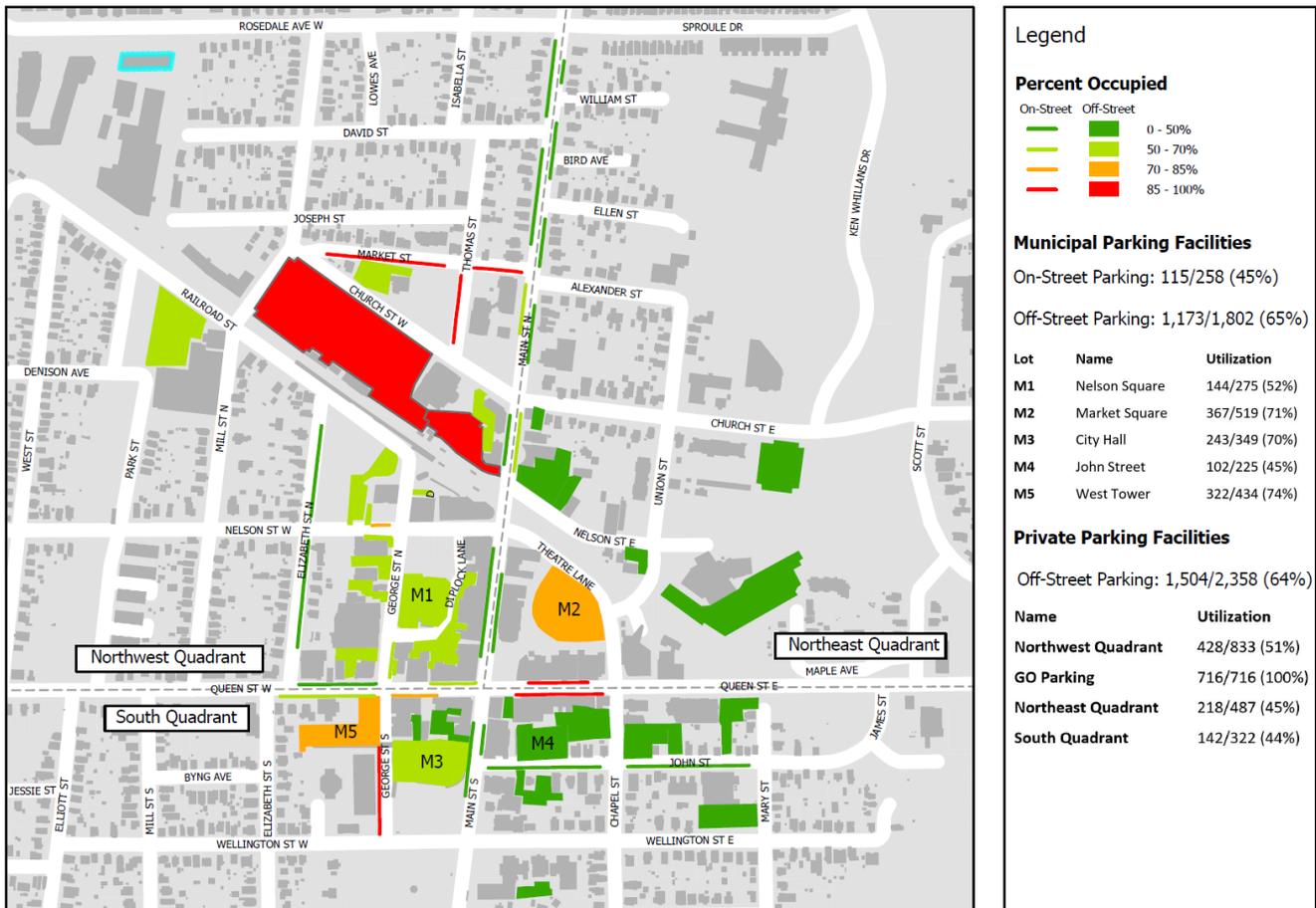
Exhibit 5.1: 2040 Growth Factor

Component	Growth Factor
Population Growth Factor	1.38
Modal Split Reduction Factor	0.79
Net Growth Factor	1.08
COVID-19 Sensitivity Assessment	0.80

2040 Parking Demand – Base Conditions

Exhibit 5.2 shows the estimated parking demand for Downtown Brampton in the 2040 horizon year. These values were calculated by applying the net growth factor shown in Exhibit 5.1 to the existing 2019 peak hour of demand (10:00 AM).

Exhibit 5.2: 2040 Downtown Parking Demand (Base Conditions)



Brampton Municipal Parking Strategy 2040 Downtown Parking Utilization



Based on the results shown in Exhibit 5.2, the following conclusions can be drawn:

- System-wide parking utilization is anticipated to be 63%, which is below the 85-90% effective capacity threshold;
- Municipal off-street parking is operating at 65% utilization and privately owned off-street facilities are operating at 64% utilization. The GO Transit parking lot is anticipated to continue operating at 100% capacity; and
- On-street parking is anticipated to operate at 45% capacity, with 6 out of 29 on-street segments operating above the effective capacity threshold. There are on-street parking segments on adjacent blocks that can accommodate the excess demand.

Overall, the Downtown Brampton parking system appears to be operating below effective capacity, and no major supply challenges are anticipated.

2040 Parking Demand – COVID-19 Sensitivity Analysis

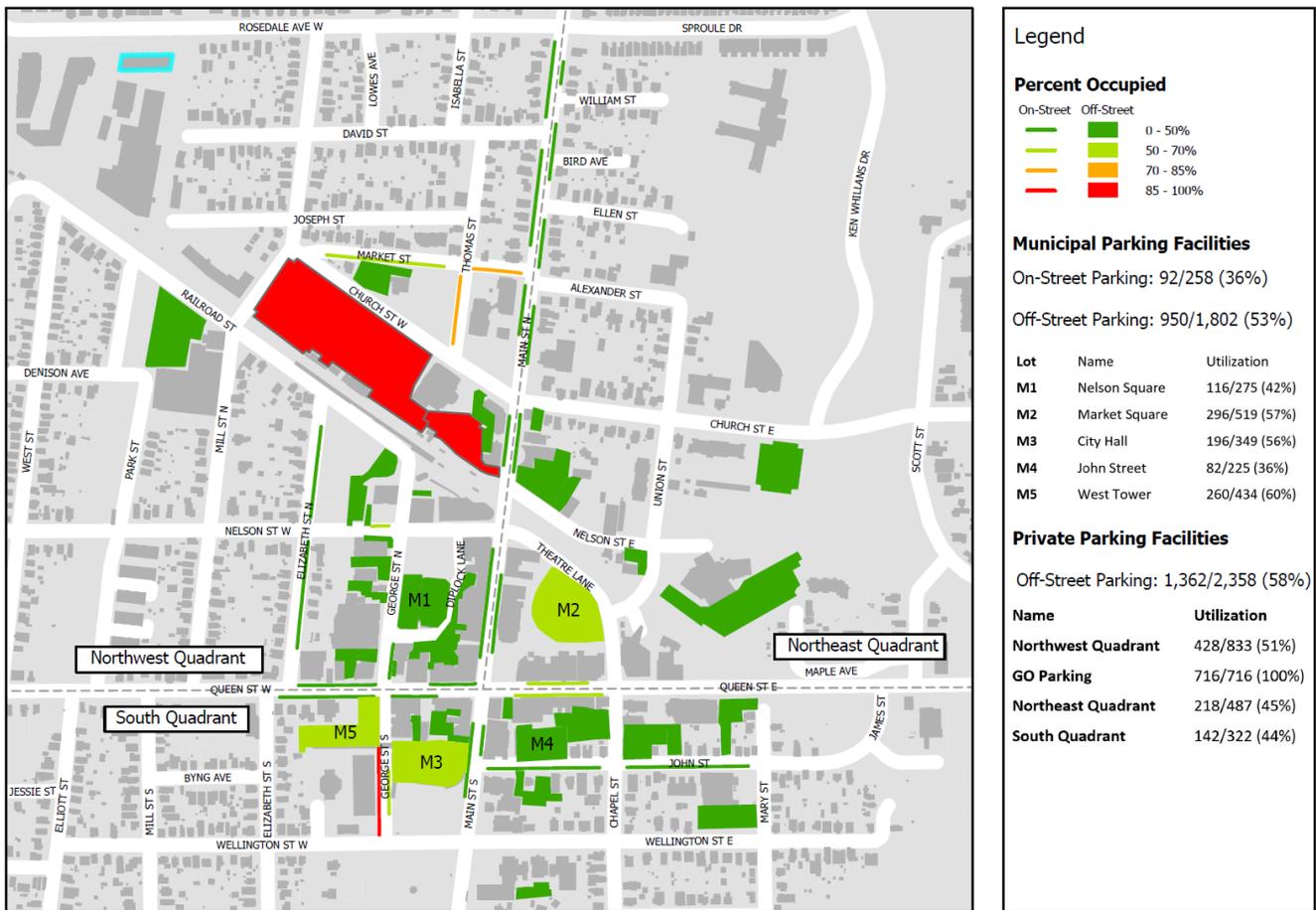
Over the last two years COVID-19 related impacts have dramatically changed travel patterns and parking demand as in-person gatherings were restricted and many workers were required to work remotely. Overall parking demand has decreased, with far fewer people travelling across Brampton for work or leisure.

At the same time, the changes brought by the pandemic have provided an opportunity to re-think the role that a parking space plays in a city. Across Canada, on-street parking spaces have been repurposed to serve as expanded outdoor dining areas or dedicated pick-up spaces to support local businesses. In Calgary, surface parking lots have been converted to parks, and in Hamilton the York Parkade was re-imagined as an open-air concert venue. While it is not clear what the long-term impacts of COVID-19 will be on parking operations, what is clear is that cities like Brampton can adapt and leverage parking facilities in new and creative ways to support their communities even in the face of significant challenges.

The analysis presented in this section assumes that parking demand will rebound following the COVID-19 pandemic but given that many employers are adopting hybrid telecommuting models, parking demand is not anticipated to rebound to pre-pandemic levels. Given the uncertainty associated with post-pandemic parking operations, a sensitivity assessment is completed assuming that post-COVID demand returns to 80% of pre-COVID conditions. This value was agreed upon with Brampton staff.

To calculate the parking demand for the COVID-19 scenario, a factor of 0.8 was applied to the 2040 Base Condition. A parking demand reduction was applied given that a considerable portion of Downtown employees are anticipated to continue working from home in the future as many employers are adopting the hybrid telecommuting business model. To remain conservative, the GO parking lot was still assumed to be operating at 100% utilization. The findings of the COVID-19 assessment are shown in Exhibit 5.3.

Exhibit 5.3: 2040 Parking Demand (COVID-19 Scenario)

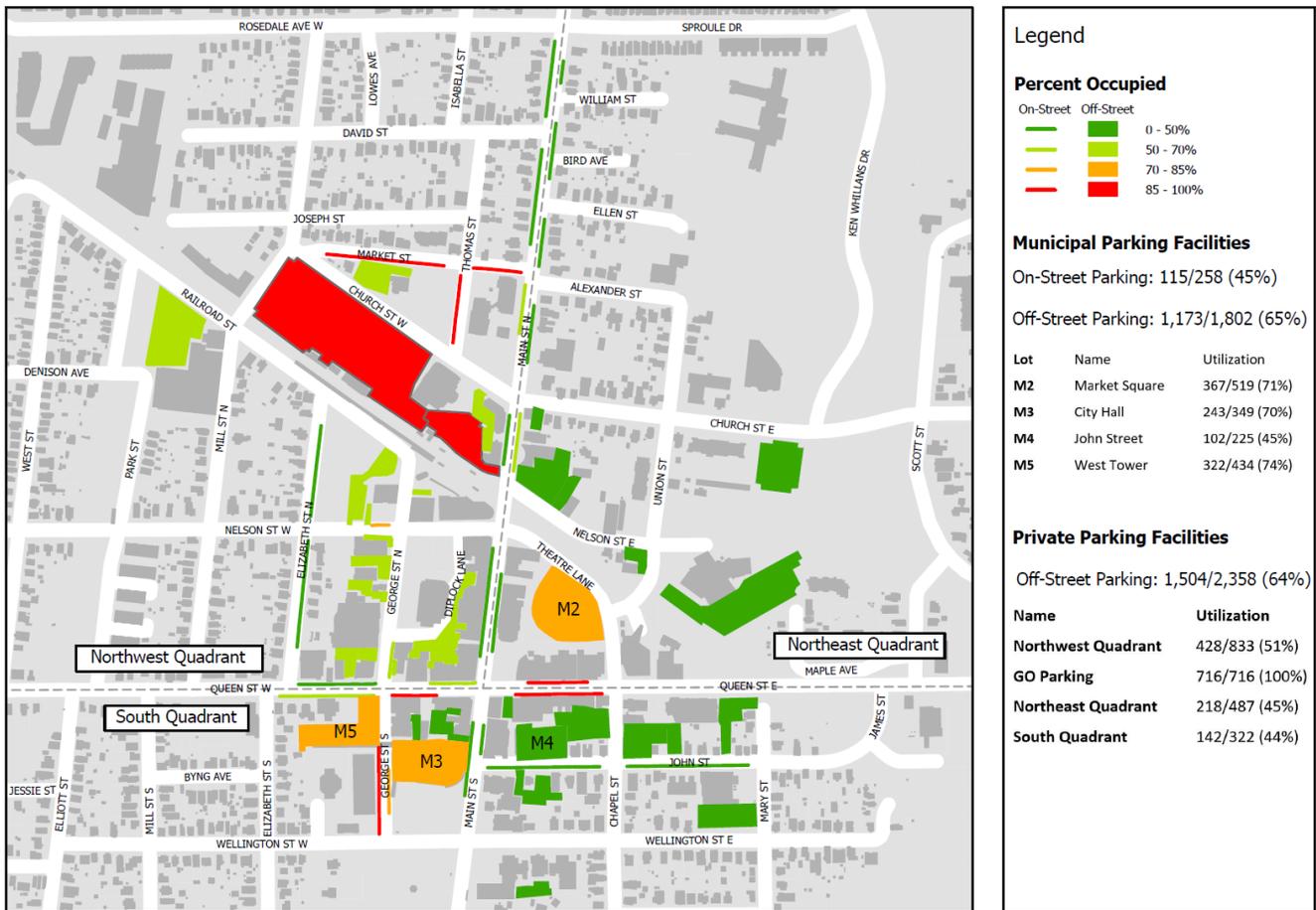


Based on Exhibit 5.3, the overall Downtown Brampton system is projected to be operating at 54% utilization, which is well below the 85-90% effective capacity threshold. Aside from the GO parking lot, all lots are operating below 70% utilization. There is only one on-street segment that is operating above effective capacity. The COVID-19 sensitivity analysis shows that the Downtown Brampton parking system would operate with significant excess capacity.

2040 Parking Demand – Nelson Square Garage Closure

To forecast parking demand for this scenario, the Nelson Square Garage was removed from the Downtown Brampton parking system. From the 2040 base scenario, there are estimated to be 144 vehicles parked (52% utilization). These vehicles were distributed to the Market Square Garage, City Hall Garage, and West Tower Garage. This distribution of parking demand represents a worst-case scenario for municipally owned parking facilities since no vehicles were reallocated to the privately owned parking spaces, which will likely occur in the event of a parking facility closure. The estimated parking demand for the Nelson Square Garage closure scenario is presented in Exhibit 5.4.

Exhibit 5.4: 2040 Parking Demand (Nelson Square Garage Closure)



Compared to the 2040 base scenario, the Downtown utilization increased slightly to 68% occupied. The Market Square Garage, City Hall Garage, and West Tower Garages experience an increase in parking demand to accommodate drivers that would otherwise park in the Nelson Square Garage. While all three lots experience an increase in parking demand, they are all still operating below the 85-90% effective capacity threshold. It should be emphasized that some drivers would find parking at nearby privately owned parking lots instead of all moving to other municipal lots as shown in this scenario.

5.2 Future Parking Assessment Summary

The future parking assessment consisted of three scenarios that were calculated based on the existing parking demand. Factors considered to estimate the future parking demand included population growth, modal share targets, municipal supply changes, and COVID-19 impacts to trip-making patterns. A description of the different scenarios and their results are as follows:

- 2040 Base Scenario: this was estimated by applying growth factors outlined in Exhibit 5.1 to the parking demand observed in March 2019. Overall, the Downtown parking system was 63% occupied, with the on-street and off-street system 45% and 65% occupied, respectively. There are various on-street facilities that operate above the 85-90% utilization threshold, but nearby parking facilities can accommodate the excess demand;
- 2040 COVID-19 Scenario: this was estimated by applying a 20% reduction to the 2040 Base Scenario demand to account for the possibility of increased remote working arrangements in the future. The resulting parking system was operating at 54% utilization, and the on-street and off-street systems were 36% and 56% occupied, respectively. There was only one on-street segment that operated above the effective capacity threshold;
- 2040 Nelson Square Closure Scenario: this was based on the 2040 Base Scenario but included the removal of the Nelson Square Garage. All of the forecasted demand from the Nelson Square Garage was reallocated to nearby municipal garages. The Downtown parking system was estimated to be 68% utilized, and off-street facilities increased to 69% utilized. The Market Square, City Hall, and West Tower Garages experienced increases in parking demand, but still operated below the effective capacity threshold;
- On-street parking supply may be impacted by future streetscaping projects. Due to the streetscaping and sidewalk widening work on Main St. and Queen St., it is anticipated that approximately 100 on-street parking spaces will no longer be available on Main St., from Wellington St to Nelson St W, and Queen St, from Mill St S. to Theatre Lane. The parking demand forecasts are current as of March 2022 and are subject to change as project details are finalized. It is recommended that the City continuously monitor impacts to Downtown Brampton's parking inventory to determine if it can meet the demands for Downtown visitors, employees, and residents;
- Based on the analysis findings noted above, there does not appear to be major supply concerns associated with the future parking demand analysis in Downtown Brampton.

6 Public and Stakeholder Engagement

6.1 Engagement Plan Objectives and Design

An essential study task is the engagement of stakeholders and the general public to help shape the Brampton Parking Plan. The intention was to give the public and stakeholder the chance to express their concerns and opinions, which serves as a valuable source of information to better understand Brampton’s parking challenges. Specifically, the public and stakeholder engagement aimed to:

- Provide the public and stakeholders with an overview of the on-going tasks and up-to-date key findings;
- Understand the public and stakeholder perceptions on Brampton’s parking issues and identify parking concerns and potential solutions; and
- Educate the public and stakeholders about on-going parking initiatives, evolving parking technologies, the cost of parking, and the role of parking requirements in a growing City.

The public and stakeholder engagement plan was carefully designed such that it:

- Reaches as many stakeholders and members of the public as possible;
- Leverages the many digital tools available in light of the on-going COVID-19 pandemic;
- Relies on user-friendly and progressive education tools to launch surveys that are informative and convenient as much as possible; and
- Thoroughly documents the received feedback to inform the study objectives.

6.2 Engagement Activities

As part of Phase 1 consultation, seven different engagement activities were undertaken as outlined in Exhibit 6.1. Two online surveys (general public survey and truck parking survey) were hosted and accessed through the Brampton webpage and were active for 25 days. In addition to the surveys, five different sessions were organized to meet with the public and specific focus groups (Truck, Institutional, and Development). Due to the impact of COVID-19 on social gatherings, all sessions were hosted virtually.

Exhibit 6.1: List of Public and Stakeholder Activities

No.	Activity	Date and Time	Targeted Outcome
1	Public parking survey	January 4 to 28, 2022	General data from the public regarding Brampton’s parking issues (e.g., parking challenges, opportunities, modal shift).
2	Truck parking survey	January 4 to 28, 2022	General data from truck drivers about truck-specific parking issues and potential solutions.
3	Public Engagement Session #1	January 13, 2022 (6:00 to 8:00 PM)	General feedback from the public regarding Brampton’s parking issues.
4	Ward 3 & 4 Town Hall	January 25, 2022 (7:00 to 8:30 PM)	General feedback from the Ward 3 & 4 residents regarding parking issues.

No.	Activity	Date and Time	Targeted Outcome
5	Truck Focus Group Meeting	January 31, 2022 (11:00 AM to 12:00 PM)	The perception of trucking stakeholders concerning truck-specific parking issues.
6	Institutional Focus Group Meeting	February 2, 2022 (11:00 AM to 12:00 PM)	The perception of institutional stakeholders concerning Brampton’s parking issues.
7	Development Focus Group Meeting	February 2, 2022 (3:00 PM to 4:00 PM)	The perception of developers concerning parking requirements and challenges.

The public and stakeholder engagement activities were extensively promoted through various communication tools as outlined in Exhibit 6.2.

Exhibit 6.2: Communication Tools Used by Engagement Activity

Engagement Activity	Communication Outlets and Channels
Citywide public parking survey, truck parking surveys, Public Engagement Session #1	<ul style="list-style-type: none"> City of Brampton Webpage. City of Brampton Media Release. Social Media Platforms (Facebook, Twitter, Instagram, and LinkedIn). Public notice in the online and print edition of the Brampton Guardian. Public notice in ethnic media (Canadian Punjabi Post). Radio advertisement on Des Perdis Radio AM 530 (Punjabi, Hindi). Presentations at several public-facing (virtual) events. Email blast outreach to more than 1,000 individuals and groups.
Ward 3 and 4 Town Hall	<ul style="list-style-type: none"> Social Media Platforms. Mailing Lists.
Focus Group Sessions	<ul style="list-style-type: none"> City of Brampton Webpage. Downtown Brampton Business Improvement Area Member News - e-bulletin. Email blast outreach to more than 200 stakeholders and groups.

6.3 Key Messages

This section summarizes the feedback and the key takeaways received from the various engagement activities. Appendix C provides further information for activities 3 through 7.

6.3.1 Citywide Public Parking Survey

The online public parking survey included questions about topics such as residential parking, work-related parking, assessment of potential parking solutions, assessment of incentives aiming at promoting alternative modes of transportation, and assessment of tactics aiming at improving parking wayfinding. A total of 686 responses were received. The main takeaways are as follows:

Residential Parking

- The majority of the respondents live in single-family or private homes (67%, 17%, and 12% of the respondents live in single-detached, semi-detached, and townhouse dwellings, respectively).

- 19% of all respondents indicated having a difficulty finding parking at their place of residence. Most difficulty is experienced in areas beginning with L7A and L6R postal codes, where 33% and 29% of responders identified the challenge.

Work-Related Parking

- Businesses rely heavily on municipal and public parking for their employees, customers, and deliveries. Only 24% of the respondents indicated having an on-site parking provision at their businesses or organizations.
- The vast majority of respondents indicated that their parking costs are not subsidized by their businesses or organizations.

Parking Solutions and Opportunities

- 36% of the participants supported a seasonal on-street parking program (i.e., outside the winter) whereas 31% were unsure and 33% did not support such a program.
- The most popular residential parking solution was to “limit parking to three hours” with almost half of the respondents supporting this solution. Approximately one third of the respondents supported other solutions such as “reserving parking to nearby residents only” and “allowing overnight parking for all users.”
- 56% of respondents supported assigning City funding to improve parking operations, 20% were unsure, and 25% did not support such a plan. The most popular suggestion to raise funding was “to charge for residential parking”. Other selected but less popular suggestions were increasing parking prices, converting more streets from free to paid parking, and supporting parking through property taxes.

Incentives and Tactics

- When considering incentives to promote alternative modes of transportation, the “improved transit service” and “increased teleworking” solutions received the highest rankings (greater than 3.5 on a five-point scale). Other incentives such as free transit passes, improved cycling infrastructure, and carsharing services received an average rating between 2.4 and 3.0.
- When assessing how to improve parking wayfinding, tactics such as a smart-phone parking application, improved wayfinding, and electronic signage all were highly rated and received a rating higher than 3.5 on a five-point scale.

6.3.2 Truck Parking Survey

The online truck parking survey included questions about the truck sizes, length of work trips, common short-term and long-term parking locations, common days and times when finding parking becomes difficult, existing truck parking adequacy, and potential truck parking solutions. A total of 23 responses were received with the following key takeaways:

- Most respondents use trailers 12.3 m (40.4 ft) or longer. Most respondents also operate within the GTA with only few travelling outside the GTA.
- For short-term parking, the most commonly used parking sites were shipping and receiving facilities, commercial plazas, and on-street. For long-term parking, the most common parking location was dedicated off-street truck parking lots, followed by parking in commercial plazas and in shipping and receiving facilities.
- The respondents predominantly reported insufficient safe and secure truck parking for both short-term and long-term purposes.
- The respondents indicated that they experience the most difficulty in finding parking on weekdays’ between 7:00 PM and midnight.

- When assessing several truck parking solutions, the highly rated solutions were increasing the amount of off-street truck parking that shippers and receivers are required to provide, a smartphone truck parking application, and a real-time truck parking information system.

6.3.3 Public Sessions and Focus Group Meetings

As discussed in Section 6.2, two public sessions and three focus group meetings were conducted. These activities started with a presentation introducing the study and its background, which was followed by an open discussion period where attendees could provide comments and ask questions. The following are the key messages heard:

Public Engagement Session #1

- Some neighbourhoods experience off-street parking capacity constraints, especially in neighbourhoods with relatively high persons per household. Attendees suggested that an on-street parking permit system be implemented in these neighbourhoods to increase parking availability.
- Concerns with respect to the amount of illegal on-street parking and support for increasing parking enforcement .
- Personal vehicles and delivery vehicles often park in bicycle lanes, which impedes cyclist flow and creates a safety hazard.
- Truck traffic has increased in Brampton over the last decade and truck parking constraints have resulted in demand spilling into residential areas. Safe and secure truck parking locations need to be increased.
- Support for removing minimum parking requirements or adopting maximum parking requirements in intensification corridors or near MTSA's. The impact of parking requirements on providing affordable housing was also noted.
- Lack of safe and secure micromobility parking (bicycles, e-bikes, electric scooters, segways, etc.), especially in Downtown Brampton. Parking requirements for EVs were also noted.
- Transit service is insufficient to meet transit demand, especially in newer neighbourhoods. Attendees also expressed support for walkable communities, intensification plans (ex: Shoppers World), and transit improvements (ex: Hurontario LRT) as strategies to reduce personal vehicle mode share.
- Concerns were raised about the Brampton GO's parking lot capacity.

Ward 3 and 4 Town Hall

- Strong desire for improvements to alternative modes of transportation including transit, carsharing, and cycling.
- Concerns over the appropriateness of parking prices. It is to be noted that the best practice review concluded that Brampton's parking prices are lower than similar municipalities.

Truck Focus Group Meeting

- Concerns regarding significant small courier delivery truck traffic within high rise residential areas. They also highlighted the conflict between delivery trucks and bike lane users at the curbside.
- Trucking companies should provide for their own long-term truck parking as part of their businesses.

Institutional Focus Group Meeting

- Concerns about inadequate transit service in new development subdivisions and recognition that improved transit results in increased ridership and reduced parking demand.
- Importance of considering demographic data in the parking plan, as Brampton has relatively large household sizes.
- Parking is underutilized in the City's Downtown parking facilities. As such, the City could raise funds by selling overnight parking permits and by providing carsharing services. The parking capacity constraints at the GO parking lot was also identified
- Parking planning should consider affordable and transitional housing, active transportation, and EV charging stations.

Development Focus Group Meeting

- Suggestion to adopt shared parking as a strategy.
- Parking requirements impact development. The parking supply that developers propose is generally based on City requirements and market demand.

7 Parking Policy Framework

The parking policy framework will be the key tool that guides the evolution of parking operations throughout the City of Brampton to the 2040 horizon year. The framework is informed by the relevant Provincial, Regional, and Municipal level policies and plans (ex: 2040 Vision, Transportation Master Plan, Ontario Growth Plan, and 2018-2022 Term of Council Priorities), public and stakeholder feedback, analysis of background data, best practices review and SWOT analysis.

The framework consists of the following components:

- **Vision Statement:** An overarching statement intended to set an aspirational goal for citywide parking operations;
- **Guiding Principles:** A set of principles or precepts, that when combined with the vision statement, help guide Citywide parking policy decision making.
- **ZBL Review:** A review of Brampton's in-progress comprehensive ZBL update.
- **Parking Policies:** A comprehensive set of parking policy recommendations tailored to Brampton's local planning, access, mobility, affordability and urban design objectives. The parking policies are divided into two sets of policy areas acknowledging that different parking policies are appropriate for existing and planned Intensification Areas (Downtown, Central Area, Hurontario-MainCorridor, MTSA's, Urban and Town Centres, and Urban Boulevards) that would be characterized by relatively high population and employment densities and low vehicle ownership, and the Rest of City where densities are lower and vehicle ownership is higher. It is to be noted that some of the planned MTSA's and intensification centres/corridors will achieve their high-density characteristics over time.
- **Truck Parking Policies:** Policies and strategies tailored to Brampton's local context intended to increase the supply of truck parking opportunities, as well as awareness of where the spaces are located.

7.1 Vision Statement

Based on the findings of Tasks 2 through 5 (Background Document review, Best Practices assessment, Parking Supply and Demand assessment, and Public and Stakeholder engagement findings), the following key overarching themes were identified:

- Prioritize alternative modes of transportation;
- Sustainable forms of development;
- Future parking needs;
- Innovative parking policies and strategies;
- Affordability; and
- Accessibility.

Using these key themes, the following vision statement tailored to Brampton's identified needs and opportunities was developed:

To manage parking provision in a rapidly growing City through the adoption of forward thinking and innovative parking policies and strategies consistent with Brampton's planning objectives and priorities. Parking is envisioned to strike a just balance between affordability and accessibility, and support for sustainable forms of development and transportation.

7.2 Guiding Principles

Building upon the vision statement, a set of 10 guiding principles was developed to help guide Brampton's parking decisions. These guiding principles are also based upon the key themes identified through Tasks 2 through 5.

1. Align parking improvements with these guiding principles, and support Brampton's broader policies, objectives, and initiatives.
2. Manage parking provision, including accessible parking, while prioritizing and promoting alternative modes of transportation such as transit, walking, cycling, and shared economy.
3. Prepare to accommodate different types of vehicles such as micromobility vehicles and expand the EV charging supply.
4. Explore opportunities to consolidate surface parking facilities into structured parking to support redevelopment and intensification; and integrate structured parking facilities into the urban fabric to complement the surrounding area's character through the development approval process and public private partnerships.
5. Balance curbside access between the many user groups (parking, transit, micromobility, cycling, pick-up/drop-off, etc.).
6. Encourage innovative parking strategies that optimizes a facility's utilization and performance such as shared, off-site, and unbundled parking.
7. Establish an on-street residential parking permit program for neighbourhoods experiencing on-site parking capacity constraints and to address barriers to strategic, gentle densification through missing middle housing typologies
8. Explore opportunities to increase truck parking supply and to improve truck parking wayfinding.
9. Implement practices and strategies aimed at financially sustainable parking operations where revenues are sufficient to fund expenses.
10. Strategically set parking prices at rates that are affordable, in-line with market value, and promote alternative modes of transportation and the distribution of parking to available nearby locations.

7.3 Comprehensive Zoning By-Law (ZBL) Review

Brampton's Comprehensive Zoning By-Law (ZBL) Review that was undertaken by WSP is currently on-hold until Council adoption of the City's new Official Plan – the Brampton Plan. This section reviews *Part 5: Parking and Loading Requirements* of the latest draft ZBL (June 2020) prepared by WSP with the intent of informing the Parking Policy Framework development. The recommendations provided in this section will require further discussion and evaluation by the City and WSP prior to being implemented, should the City wish to proceed.

7.3.1 Parking Minimum and Maximum in Residential Areas

Minimum and maximum parking requirements define the number of parking spaces that are required to be provided or the maximum number of spaces permitted for a specific use.

This review focuses on the draft ZBL's residential parking requirements to rationalize and optimize the rates. The draft ZBL proposes updated parking minimums that are intended to better align with the demand generated throughout Brampton. Additionally, parking maximums are proposed for various land uses excluding residential.

When comparing the draft ZBL with the existing ZBL (By-law 270-2004), the following key conclusions are noted:

- The draft ZBL maintains the single detached, semi-detached, duplex, triplex, double duplex, street townhouse, and two-unit dwelling land uses as well as the associated requirements; and
- For the apartment dwelling units, By-law 270-2004 specifies different parking requirements according to the number of bedrooms in each unit. The draft ZBL simplified the requirement and only requires 1.25 parking space per dwelling unit and 0.25 for visitors. This requirement is comparable to existing requirement for one-bedroom units.

The proposed draft ZBL residential parking requirements are also compared to the parking requirements of the 14 comparator municipalities to evaluate their appropriateness, which is summarized in Exhibit 7.1.

Exhibit 7.1: Comparator Municipality Parking Requirement Comparison – Residential Land Uses

Land Use	Unit	Brampton (Draft ZBL)	Ottawa	Calgary	Seattle	Cleveland	Columbus	Austin	San Antonio	New Orleans	Windsor	Winnipeg	Edmonton, Buffalo, Hartford, San Francisco
Apartment dwelling unit	Dwelling unit	1.25 + 0.25 for visitors	0.50 + 0.10 for visitors	0.90 to 1.25 + 0.10 to 0.15 for visitors	1.0 for each two efficiency units + 1.0 per other units	1.0	1.50	Efficiency unit: 1.0 1 bedroom unit: 1.0 0.5 for each additional bedroom	1.50	1.0	1.25	1.50 per unit (10% must be guest parking)	None
Back to Back Townhouse Dwelling	Dwelling unit	2	N/A	N/A	1.0	1.0	2.0 per unit if < 4 units 1.50 per unit if ≥ 4 units	N/A	1.0	1.0	1.0 if ≤ 4 units 1.25 if >4 units	1.0	None
Cluster Townhouse Dwelling	Dwelling unit	2 + 0.25 for visitor	N/A	N/A	1.0	1.0	2.0 per unit if < 4 units 1.50 per unit if ≥ 4 units	N/A	1.5	1.0	1.0 if ≤ 4 units 1.25 if >4 units	1.50 per unit (10% must be guest parking) Common parking	None
Duplex Dwelling	Dwelling unit	1.50	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0 each unit (2.0 for both)	1.0	None
Group home	Dwelling unit	2.0	1 per 100 m2 GFA, min 1	N/A	N/A	N/A	N/A	Case-by-case To be specified by the respective department	1.0 per 375 ft ²	N/A	1.0	N/A	None
Linked dwelling	Dwelling unit	2.0	1.0	N/A	1.0	1.0	2.0	N/A	1.0	N/A	1.0	1.0	None
Live Work Townhouse Dwelling	Dwelling unit	2.0 + 1 for visitor	none	0.90 to 1.25 per unit + 0.50 for visitor	0 for units ≤ 1500 ft ² 1.0 for units >1500 ft ² & < 2500 ft ² 1.0 for units > 2500 ft ² + parking for non-residential activity	N/A	N/A	N/A	N/A	N/A	N/A	1.0	None
Lodging House	varies	2.0 per dwelling + 0.50 lodging unit	0.25 per rooming unit	1.0 per guest room + the required spaces for the dwelling	1.0 per dwelling unit + 1.0 for each two guest rooms	1 for each four beds + 1.0 for the owner + 1.0 for each other expected employee	1.0 per 400 ft ²	N/A	1.0 per 4 rooms	N/A	1.0 for each six beds	N/A	None

Land Use	Unit	Brampton (Draft ZBL)	Ottawa	Calgary	Seattle	Cleveland	Columbus	Austin	San Antonio	New Orleans	Windsor	Winnipeg	Edmonton, Buffalo, Hartford, San Francisco
Second unit	varies	none	none	1 + the min required per dwelling 0 if the dwelling has 2 parking spaces	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None
Semi Detached Dwelling	Dwelling unit	2.0	1.0	1.0 to 2.0 Based on the area and lot dimensions	1.0	1.0	2.0	N/A	1.0	1.0	1.0	1.0	None
Single Detached Dwelling	Dwelling unit	2.0	1.0	1.0 to 2.0 Based on the area and lot dimensions	1.0	1.0	2.0	2.0	1.0	1.0	1.0	1.0	None
Stacked townhouse dwelling	Dwelling unit	1.50 per dwelling + 0.25 for visitors	0.50 + 0.10 for visitor	N/A	1.0	1.0	1.50	N/A	1.0	1.0	1.0	1.0	None
Street Townhouse Dwelling	Dwelling unit	2.0	0.75	1.0 to 1.25 + 0.15 for visitor	1.0	1.0	2.0	2.0	1.0	1.0	1.25 (1.0 if with garage)	1.0	None
Triplex Dwelling	Dwelling unit	1.50	0.50	1.0	1.0	1.0	2.0	N/A	1.5 Cluster parking allowed	1.0	1.0	1.0	None

Notes:

1. Edmonton, Buffalo, Hartford, and San Francisco have rescinded citywide minimum parking requirements
2. Some municipalities did not establish requirements for some residential land uses Brampton has included. These requirements are filled in as "N/A"

Based on Exhibit 7.1, the following conclusions are drawn:

- Brampton is among the cities with the highest parking requirements for residential land uses. Only three cities have parking requirements that are similar to Brampton's requirements (Austin, Columbus, some zones in Calgary);
- The remaining eleven cities have lower residential parking requirements. Residential parking requirements in Ottawa, Seattle, Cleveland, San Antonio, New Orleans are approximately half of Brampton's requirements; and
- Edmonton, Buffalo, Hartford, and San Francisco have rescinded citywide parking minimums.

While citywide reduced and/or rescinded parking minimums may be appropriate in the municipalities where they have been adopted, the parking requirements in Brampton should be tailored to local parking patterns. For example, multi-generational households have resulted in an increase in the number of vehicles per home in Brampton. This has created significant parking demand challenges in some of the City's residential areas. Therefore, policies that are tailored towards specific land-uses and areas should be explored first. Based on knowledge of parking operations throughout Brampton and the comparator municipality review findings, the following conclusions and recommendations are drawn:

- Increasing the draft ZBL parking minimums to mitigate the known residential parking challenges is not recommended. The draft ZBL minimums are already high when compared to the comparator cities. Additionally, this would result in an oversupply of parking in neighbourhoods without parking capacity challenges.
- Reducing citywide parking minimums would need to be supported by significant investments in sustainable strategies such as active transportation improvements, transit improvements, and shared parking. These strategies would provide alternative parking opportunities and reduce personal vehicle ownership. Brampton is recommended to periodically update the parking requirements as the City improves alternative modes of transportation and residents become less reliant on personal vehicles.
- Strategic parking requirement reductions are appropriate in Brampton's Downtown, intensification centres and corridors, and MTSAs where population and employment densities are higher and vehicle ownership is lower. Parking policies and strategies for these areas are further discussed in Section 7.4.
- Some forms of dwellings' conversion also deserve some attention in the draft ZBL. For example, if a house is adding a second unit and a garden suite, it may only be required to add one parking space. However, if the same single dwelling unit is converted into a triplex, then six parking spaces may be required. Relaxing parking requirements for some forms of converted dwellings will result in a larger supply of housing in residential areas with high housing demand and this will also promote house affordability.
- Brampton is recommended to consider maximum parking requirements for residential land uses as well, in order to prevent oversupply, promote alternative sustainable modes of travel, support house affordability, and allow for smaller parking lots and greener space.

7.3.2 Parking Requirements for Non-Residential Land-Uses

This review focuses on some key non-residential land-uses in the draft ZBL's, including offices, restaurants, retails, shopping centres, warehousing, and manufacturing. Similar to the analysis done in Section 7.3.1, the proposed draft ZBL non-residential parking requirements are also compared to the parking requirements of the 14 comparator municipalities to evaluate their appropriateness, which is summarized in Exhibit 7.2.

Exhibit 7.2: Comparator Municipality Parking Requirement Comparison – Non-residential Land Uses

Land Use	Unit	Brampton (Draft ZBL) ¹	Ottawa	Calgary	Seattle	Cleveland	Columbus	Austin	San Antonio	New Orleans	Windsor	Winnipeg	Edmonton, Buffalo, Hartford, San Francisco ²
Office	100 m ²	NFA: 6.7	1	1	1.1	2.1	2.4	3.9	3.6	2.1	2.2	1.40	None
Medical Office	100 m ²	NFA: 10	2	4	2.1	7.2	3.6	5.4	2.7	1.50 per exam room	7.40	4.3	None
Restaurant	100 m ²	NFA: 12.5	5	28.50	4.3	10.8 plus 1 for each employee	14.4 if >465 m ² 6.2 if <465 m ²	14.4 if >232 m ² 10.8 if <232 m ²	10.8	2.1	13.3	10.8	None
Retail	100 m ²	NFA: 4.2	1.25	4	2.1	4.8	4.3 if <929 m ² 3.9 if between 929 and 9290 m ² 3.60 if >9290 m ²	3.9	3.6	2.1	4.4	N/A ³	None
Recreation Centre	100 m ²	NFA: 5.6	2 per alley, court, ice sheet, game table or other game surface plus 5 per 100 m ² of GFA	4	2.1	7.2 plus 1 for each employee	4.3	2.1	1.60	4 spaces plus 3.6 per 100 m ²	2.8	10.80	None
Warehouse	100 m ²	4 regardless of area	0.4	N/A	N/A	1 for each 2 employees or total parking area equivalent to 10% of GFA, whichever is greater	1 per motor vehicle used in the business plus 1.1 per 100 m ² for the first 1858 m ² plus 0.20 per 100 m ² for (1858 to 11148 m ²) plus 0.10 per 100 m ² (>11148 m ²)	1.1	0.22	0.05	1	N/A	None
Distribution Centre	100 m ²	4 regardless of area	0.4	1	0.50	N/A	N/A	N/A	N/A	1.1	2.2	N/A	None
General Manufacturing and Industrial	100 m ²	NFA: 2	0.40	1	0.50	1 for each 3 employees or total parking area equivalent to 25% of GFA, whichever is lesser	1 per motor vehicle used in the business plus 1.4 per 100 m ² for the first 1858 m ² plus 0.70 per 100 m ² (1858 to 11148 m ²) plus 0.40 per 100 m ² (>11148 m ²)	1.1	2.1	1.1	2.2 per 100 m ² for the first 2,700 m ² and 0.56 per additional 100 m ²	1.1	None

¹ Brampton is the only municipality that provides parking requirements on a basis of net floor area (NFA). All other comparator municipalities prescribe parking requirements based on gross floor area (GFA). It should be noted that NFA can range from 60% to 95% of GFA, based on land use and building design.

² Edmonton, Buffalo, Hartford, and San Francisco have rescinded citywide minimum parking requirements

³ Some municipalities did not establish requirements for some specific land uses Brampton has included. These requirements are filled in as "N/A"

Based on Exhibit 7.2, the following conclusions are drawn:

- Brampton's draft ZBL rate outlines parking requirements based on net floor area (NFA). All other municipalities prescribe parking requirements based on gross floor area (GFA). To calculate a GFA based rate in the comparison table, Brampton's NFA rate could be divided by 0.6 to 0.95, which assumes that NFA is 60% to 95% of GFA. This results in Brampton's draft ZBL rates being even higher than what is shown in Exhibit 7.2.
- For office, medical office, restaurant, retail, recreation centre, and general manufacturing land-uses, Brampton's rates were significantly higher compared to most of the comparator municipalities.
- For warehouse and distribution centre land-uses, Brampton's draft ZBL requires a fixed number of parking spaces (i.e., 4 spaces) regardless of the area. It was therefore hard to compare this requirement with other municipalities which use an area-based rate. However, it is recommended that an area-based rate to be used to better relate the parking provision to the actual development area and needs.

Based purely on a comparison of parking requirement rates between Brampton's Draft ZBL and the comparator municipalities, the rates proposed for Brampton are significantly higher. Since Brampton is moving towards less reliance on private auto and promoting sustainable modes of transportation, it is recommended to reconsider the proposed parking rates that are significantly higher compared to other municipalities. To better inform local context in the proposed ZBL rates, parking demand surveys should be conducted to determine peak parking rates across multiple properties of the same land use. By collecting and analysing the observed parking demand for each land use, data-informed ZBL rates can be proposed that are appropriate for Brampton's context.

7.3.3 Additional Parking Considerations

This section briefly reviews several parking provisions in the draft ZBL. The provision is summarized, and updates are proposed where appropriate.

7.3.3.1 Cash-In-Lieu (CIL) of Parking

CIL of parking grants developers an exemption from meeting parking requirements in exchange for a payment, which is then used to construct municipal parking facilities to supplement the exempt spaces. The draft ZBL recognizes the possibility of using CIL of parking and exempts developers from all or a portion of the minimum parking requirements.

The feasibility of the CIL of parking policy will be assessed as part of Task 7: Financial Assessment. Note that a CIL of parking policy is redundant in areas where parking minimums are rescinded since contributions will never be made.

7.3.3.2 Special Provisions for Central Area and MU1 Zone

The reduction or the elimination of the minimum parking requirements in strategic zones is in line with best practices. Eight of the fourteen comparator municipalities have special parking exemptions in intensification areas, four municipalities have rescinded citywide parking minimums, and only two still have fixed citywide parking requirements.

The City has recently passed two ZBL amendments (By-law 259-2020 and By-law 45-2021) which further reduce or eliminate parking minimums in strategic areas as well as other updates intended to promote alternative modes of transportation (ex: cycling).

When providing parking exemptions or provisions, the draft ZBL focused on the downtown and the central area. Since the draft ZBL was prepared, City Council enacted ZBL 45-2021 that eliminated minimum parking requirements for most uses in the downtown and central area. It is

recommended that Parking reductions also be considered for other future intensification areas (future MTSAs, Urban and Town Centres, Urban Boulevards). Some of the planned MTSAs and intensification areas/corridors will achieve their high-density characteristics over time, but pre-zoning their lands from now would better achieve the targeted sustainability and intensification goals.

7.3.3.3 Parking Requirement Reductions

Developers can adopt various TDM strategies to promote alternative modes of transportation and reduce the ZBL parking requirements. The draft ZBL includes parking requirement reductions for shared parking, dedicated carshare spaces, and additional bicycle parking.

- **Shared parking** allows one parking facility to be used by multiple developments taking advantage of the differences in time-of-day parking patterns between those developments. The biggest benefits are realized with mixed-use developments, where users have different peak demand times. For example, a restaurant and an office can share a parking facility with fewer total parking spaces than would otherwise be required for two separate parking facilities. As a result, shared parking encourages more efficient use of the parking supply. The consideration of shared parking requires an assessment of typical occupancy rates during different times-of-the-day for each development included in the shared parking scheme. It is to be noted the shared parking was among other promoted strategies in the public and stakeholder engagement events.

The draft ZBL includes provisions for shared parking, which is in-line with best practices. Shared parking can be used for office, restaurant, residential dwelling units, theatre, and retail land uses. The calculations of the shared parking are detailed in the draft ZBL's Section 5.4.1 and they shall consider three analysis periods (morning, afternoon, and evening). Shared parking should not be used towards changing the maximum parking requirements.

- **Car share** is a type of car rental service that provides users with convenient access to a vehicle for short periods. Including car share in developments typically reduces parking demand by providing non-personal vehicle owners with access to a vehicle should there be a need. For example, the residents of apartment buildings are less likely to own a vehicle if they know a car share vehicle is available for use in their building (or nearby). Based on the draft ZBL, two parking spaces can be reduced for each dedicated car sharing space up to a maximum reduction of 10%. Typically, a contract between the developer and car share company is desired so there is documented commitment once the building is occupied.
- **Additional bike parking** allows developers to install more bike parking spaces than required by the draft ZBL in exchange for parking requirement reductions. One vehicle parking space can be reduced for every four bicycle parking spaces in excess of the minimum required bicycle parking spaces, up to a maximum reduction of 25%.

To build upon the parking requirement reductions included in the draft ZBL, Brampton is recommended to develop a point-based TDM checklist that expands the strategies that developers can incorporate and obtain larger parking reductions, based on what has typically been proven to be more impactful measures. Strategies can include: flexible working hours, teleworking, on-site paid parking, unbundled parking, quality-of-service measures of the nearby transit, pedestrian, and cycling networks. The Region of Waterloo has adopted a TDM checklist which can be referenced as a best practice, and the City of Vaughan is adopting a new point-based checklist, too. The City of Vancouver also does this and includes innovative solutions (such as online parking and mobility maps) in their checklist.

7.3.3.4 Off-site Parking

Off-site parking allows developers to provide all or a proportion of the required minimum parking in a nearby off-site location. Off-site parking needs to be within a reasonable walking distance from the development, which is defined as 250m in the draft ZBL. This strategy allows the shared parking principle to be applied to nearby developments and is in-line with the best practices as it better utilizes existing parking facilities.

7.3.3.5 Bicycle Parking Requirements

The draft ZBL includes new bicycle parking requirements for several land use categories, which are divided into mixed-use zones and all other zones. The bicycle parking minimums in the draft ZBL for the mixed-use zones are similar and comparable to those included in Brampton’s Active Transportation Plan. The draft ZBL specifies that a minimum of 50% of bicycle parking spaces must be located in-door for residential developments where the requirement exceeds 50 bicycle spaces. Indoor bike parking spaces are typically for long-term uses whereas outdoor spaces usually meet short-term demands (typically visitors, depending on the land use).

To build upon the draft ZBL requirements, the City is recommended to define long-term and short-term bicycle parking proportions that is based upon the land use. This approach recognizes that different land uses have different long-term and short-term demands. For example: a higher proportion of long-term bicycle parking spaces are appropriate in residential developments than in retail or restaurant land uses. Brampton’s Active Transportation Plan emphasizes on the need to select suitable types of bicycle parking racks depending on the parking duration (long-term versus short-term storage).

As part of a wide electrified transportation network, the Transportation and Connectivity Discussion Paper promotes the use of electric bicycles. If more pilot e-bike programs prove successful, an additional provision for electric bicycle parking spaces will be needed in the future.

7.3.3.6 Additional Parking Provisions

The draft ZBL provides additional parking requirements including but not limited to parking space dimensions, appropriate locations, aisle widths, driveways, and loading spaces.

7.3.3.7 Truck Parking Requirements

Given that long-term and short-term truck parking supply has been identified as a major issue in Brampton, creative solutions are required to help meet truck parking demand. One solution identified through the truck parking surveys and focus group meeting is including truck parking requirements, i.e., minimum number of truck parking spaces, for industrial land uses as part of the ZBL. The United States Federal Highway Administration (FHWA) is preparing a truck parking handbook to specify on-site truck parking minimums that must be provided by developers of industrial land-uses based on the number of loading docks, square footage, and/or employment level. The FHWA provided examples of ordinance language such as “*one 10-foot by 80-foot parking space for truck staging for every two loading docks. Parking shall be maintained and available for truck parking prior to or after a scheduled delivery or pickup.*” It is to be noted that this is just an example of the possible zoning language and the FHWA truck parking handbook is still under preparation.

Brampton is recommended to consider adding truck parking minimums for industrial land uses to the draft ZBL.

7.3.3.8 Accessible Parking

The draft ZBL does not include a provision for accessible parking requirements. However, Section 20.3.2 (f) of the existing ZBL states that accessible parking spaces shall be provided in accordance

with the Traffic By-Law 93-93, as amended. The Traffic By-Law specifies the minimum number of accessible parking spaces based on the total number of available parking spaces (i.e., a specific number of accessible spaces and/or a percentage of the total spaces). Any ZBL update should include a provision of accessible parking requirements or a reference to the Traffic By-Law. It is also recommended that the provision considers special requirements for some specific land-uses. For example, Toronto ZBL requires a minimum of 10% of the parking spaces to be accessible for medical offices and clinics. In addition, a minimum provision of accessible parking spaces should be maintained in areas where parking minimums are rescinded, Section 7.4.1 of this report further discusses such a requirement.

7.3.3.9 Electric Vehicle Charging Stations

The draft ZBL does not provide a requirement for electric vehicle charging stations. As stated in the best practice review (in Section 3.3.5), municipalities have started requiring that a ratio of the total parking spaces is to be equipped with EV charging equipment. Such a requirement is recommended to be added to future ZBL updates.

7.3.4 Affordable Housing Requirements

The Province of Ontario defines affordable housing as the least expensive of “a unit for which the rent does not exceed 30 per cent of gross annual household income for low and moderate income households; or a unit for which the rent is at or below the average market rent of a unit in the regional market area.” In the case of house ownership, affordable housing is defined as the least expensive of “housing for which the purchase price results in annual accommodation costs which do not exceed 30 per cent of gross annual household income for low and moderate income households; or housing for which the purchase price is at least 10 per cent below the average purchase price of a resale unit in the regional market area.” More detailed definitions tailored towards specific unit types are also being established and updated according to the average market trends.

Setting high parking requirements reduces affordability by increasing developer costs, which often get passed on to the owner or renter. According to Victoria Transport Policy Institute, each parking space is estimated to increase the unit’s cost by 12.5%. Parking policies can support affordable housing by reducing the parking required.

The draft ZBL does not provide special parking provisions for affordable housing. Granting reductions or exemptions to ZBL parking requirements for affordable housing is an emerging trend. Based upon the comparator municipality ZBL review, the following three approaches were identified:

1. **Separate affordable housing parking minimums:** In this approach, the ZBL identified affordable housing as a type of land use and defines parking requirements that are lower than other residential developments. Examples include: Seattle (no minimum parking is required), Winnipeg (one space per five dwelling units), and Austin (only requires accessible parking spaces).
2. **Parking requirement exemptions:** Affordable housing developers apply for a ZBL parking requirement amendment, which is assessed and potentially granted based on a case-by-case review (Columbus follows this approach).
3. **Density Bonuses:** Under this approach, the developer can be approved for an increase in site density (ex: additional units), if a certain percentage of units are designated as affordable housing. For example: if the developer agrees to designate 10% of these units as affordable housing, then the developer is allowed to construct an additional 20% units in excess of the maximum number of units. As an additional incentive, the developer may be granted a reduction in the total required parking spaces.

Based on the above three approaches, the following recommendations are made in order to incorporate parking provisions for affordable housing in the draft ZBL.

- Brampton is recommended to start with the second approach where parking exemptions are granted on a case-by-case basis within areas outside of Intensification Areas as identified in Section 7.4. This is because affordable housing developments may vary widely depending on the resident composition, the type of dwelling (high-rise, low-rise, townhouses, converted dwelling), and the location and its proximity to central areas, high-density streets, and transit routes, and stations. Therefore, setting a citywide parking requirement for affordable housing may not be a feasible option and a flexible approach seems to be more appropriate in the short to medium-term. Evaluation criteria for a case-by-case evaluation of exemption requests should be included in this approach. These may include resident composition and income, proximity to transit routes and stations, and the type of dwelling units. For example, the draft Brampton Plan included a policy that is being developed and intends to consider reducing parking requirements for developments that provide affordable, purpose-built, or accessible housing within a 10-minute walking distance from existing frequent transit.
- Brampton is currently investigating a bonusing approach as part of the upcoming Inclusionary Zoning (IZ) policy. According to Ontario legislations, municipalities are authorized to adopt IZ policies if they meet certain requirements (ex: program assessment, peer-review, program details, frequent reviews or updates). When Brampton adopts the IZ policy and corresponding IZ by-law, incorporating the density bonusing approach in the ZBL becomes essential. Parking may be a key bonus to incentivise the required or desired IZ affordable units. However, if parking requirements are rescinded within Intensification Areas, as recommended in Section 7.4, then parking exemptions will not be a bonus to incentivize affordable housing.
- The same approach may be used in non-IZ situations where a private sector developer provides a portion of units as affordable units in partnership with non-profit agencies.

If more definitive types and areas of affordable housing are established and more on-site parking demand data become available, then designated affordable housing land uses can be added to the ZBL with specific parking requirements. It must be emphasized that affordable housing will benefit from parking requirement relaxations that are area-specific. For example, By-law 45-2021 reduced parking requirements for apartment dwelling units to only those spaces required for visitors in the downtown, central area and Hurontario-main corridor which can benefit all future affordable housing apartment projects in these areas. Similarly, future parking exemptions in other areas will support housing affordability. Therefore, the above mentioned parking provision recommendations for affordable housing are mainly needed in areas of the City that are not granted an area-wide parking requirement exemption. The next section provides recommendations on where an area-wide parking requirement exemption can be applied in Brampton.

7.4 Parking Policies and Strategies

This section develops parking policies and strategies that are in-line with the developed vision and guiding principles. Recognizing that parking patterns vary throughout the City and that a uniform parking policy framework is therefore not appropriate, the City is divided into different policy areas. Based on the review of Brampton and Peel policy documents, the WSP draft ZBL, and recent ZBL amendments, the following parking policy areas are recommended for Brampton:

Intensification Areas (IA) are areas with existing or planned high population and employment densities and low personal vehicle mode share. The parking supply in these areas are minimized and alternative modes of transportation are incentivized and promoted. Several ongoing and future

transit projects will enhance the quality-of-service of the transit lines serving these areas, e.g., new Züm, new LRT and new rapid transit, in addition to the existing BRT, transit lines and the Go stations. The new LRT is intended to serve the southern part of the Hurontario Corridor whereas the new rapid transit lines are planned along the northern side of the Hurontario Corridor, the eastern side of Queen street, and along Steels Street. Several new Züm lines are also planned along urban boulevards and corridors. In Brampton, IAs are recommended to include the following four categories:

First: areas that were already granted parking exemptions as per the recent zoning by-law amendment (By-law 45-2021). These areas include: Downtown, the Hurontario Corridor, and the Queen Street Corridor.

Second: the future planned and primary MTSA's as per the Region of Peel Official Plan (January 2022 Draft Schedule was used).

Third: Urban and Town Centres as per the ongoing Brampton Plan study (Official Plan Update). These centres will serve as the City's principal locations for growth and intensification with a mix of uses. These include three Urban Centres (Downtown, Uptown, and Bramalea) and six Town Centres (Trinity Commons, Bram Go, Bram West, Bram East, Heritage Heights, and Mount Pleasant).

Fourth: Primary and Secondary Boulevards as per the ongoing Brampton Plan study. Urban boulevards will serve as the most prominent and vibrant streets in the City with a mix of uses. Primary Urban Boulevards include: Queen Street (between Downtown and Bramalea), Hurontario Street (between Uptown and Downtown), and Steels Avenue (between Uptown and Kennedy Road). Secondary Urban Boulevards Include:

Queen Street: east of Bramalea;

Bramalea Road: between Queen Street and Steels Avenue;

Dixie Road: between Queen Street and Steels Avenue;

McLaughlin Road: between Queen Street and Steels Avenue;

Kennedy Road: between Queen Street and Steels Avenue;

Hurontario Street: north of Downtown;

Steels Avenue: west of McLaughlin Road and between Highway 410 and Torbram Road; and

Heritage Heights Boulevard.

The first and second categories of IAs are illustrated geographically in Exhibit 7.3, whereas the third and fourth categories are illustrated in Exhibit 7.4. Some of the identified IAs in the two Exhibits might overlap, e.g., some MTSA's overlap with the Urban or Town Centres. Delineating the exact boundaries of the IAs is left for future zoning and planning efforts.

- **Rest of City** are all other areas not included in IAs. These areas have higher vehicle ownership and personal vehicle mode share and are typically lower density areas. Recognizing that personal vehicles remain a primary mode of travel, parking provision should be balanced with improvements to alternative modes of transportation.

Exhibit 7.3: Proposed Intensification Areas: By-Law 45-2021 Areas and MTSA

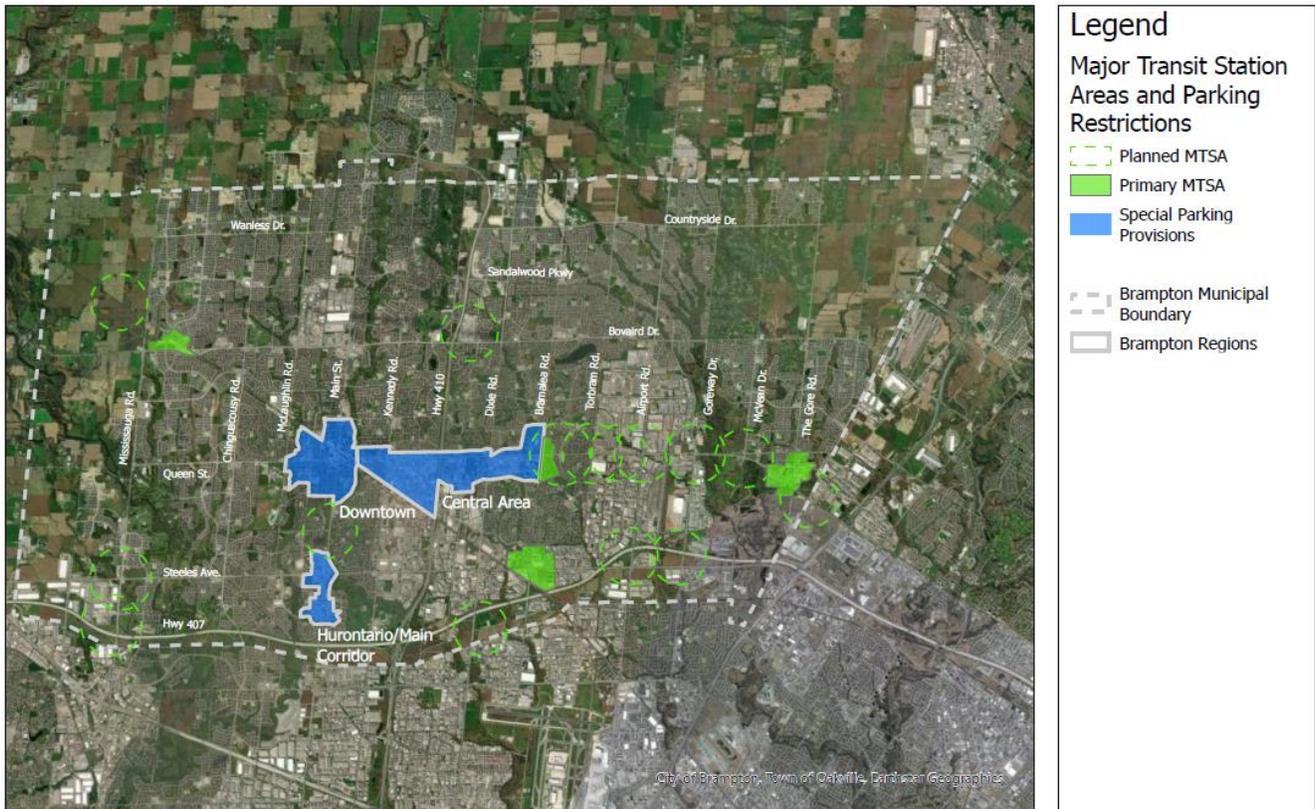
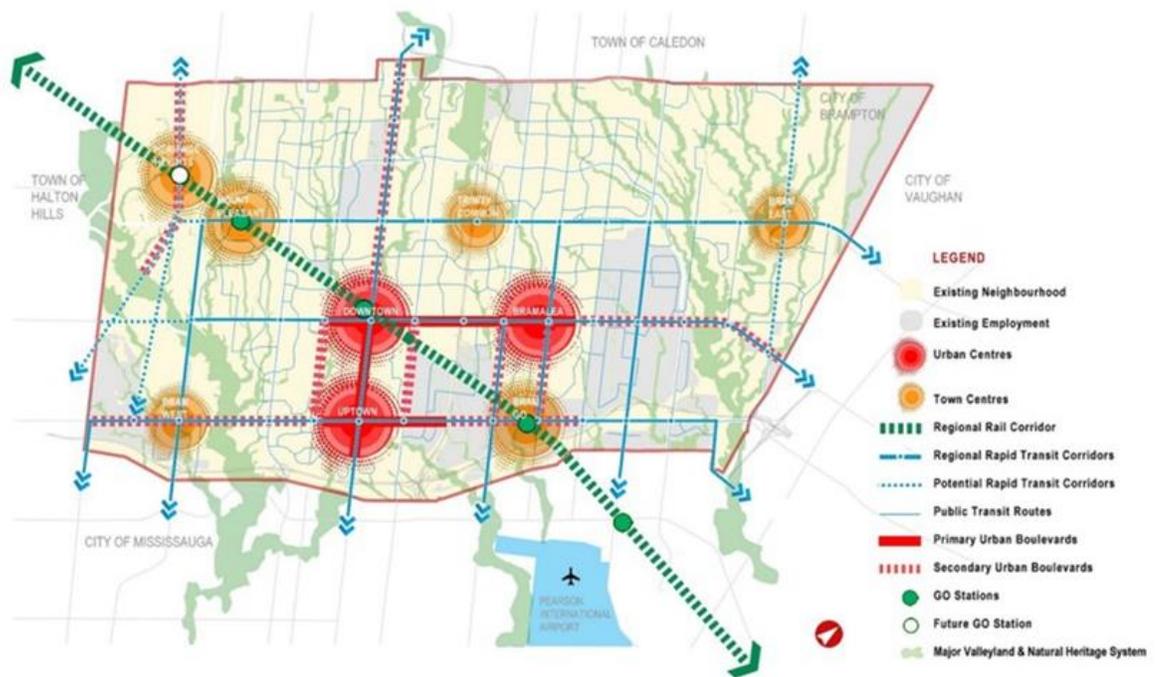


Exhibit 7.4: Proposed Intensification Areas: Urban and Town Centres and Urban Boulevards



7.4.1 Intensification Areas

IAs are the areas of Brampton with existing or planned higher population and employment densities. With higher densities, alternative modes of transportation are typically more accessible, and transit service is more frequent and reliable. Vehicle ownership tends to be lower than the rest of city which results in lower parking demand. Given these trends, parking supply in IAs can be minimized. In Brampton, as illustrated in Exhibit 7.3 and Exhibit 7.4, the IAs include the By-Law 45-2021 central areas, MTSAs, Urban and Town Centres, and Urban Boulevards.

The concept of 15-minute neighbourhoods is an emerging industry principle, which is defined as neighbourhoods where residents can meet most daily needs through walking or cycling, which greatly reduces the need for personal vehicles. Additionally, Brampton and many comparator municipalities have begun adopting policies oriented towards managing parking supply and prioritizing the development and promotion of sustainable modes of transportation. These objectives are most effective in the IAs. To promote sustainable modes of transportation and to increase the efficiency of parking facilities in IAs, Brampton is recommended to adopt the following policies and strategies:

- **Minimize on-site parking through reduced/rescinded parking minimums and consider parking maximums for select land uses.** Brampton has already rescinded/reduced parking minimums in the Downtown core, Hurontario corridor, and Queen Street corridor as part of the recent ZBL amendments. The same practice is recommended for the other IAs. Rescinding parking minimums is key to facilitating affordable housing buildings or affordable units within a market rate building. In addition, setting parking maximums is also an emerging strategy can also further reduce the reliance on private auto and preserve the expensive lands in IAs for more useful uses. Several comparator municipalities selected to only apply parking maximums in strategic areas which highlights the relevance of such a policy to IAs (e.g., Austin (in downtown and central areas), Ottawa (within 600 m of a rapid transit station), and Edmonton (central areas, transit centres, and boundaries of the main streets)). Parking maximums are recommended to be applied at all IAs in Brampton. The exact parking maximum rates and the identification of any exempted land uses can be further sorted out as part of a detailed ZBL update.
- **Consolidate surface parking into parking structures integrated in the urban fabric. Design parking structures in a green and “future proofed” manner.** With higher densities in the IAs, the efficient use of available space is a priority. Surface parking lots occupy a considerable amount of space that can be better utilized through redevelopment. Above and below ground public parking structures can be integrated with new developments in a visually appealing manner.

Additionally, while the exact magnitude is unknown, most experts agree that the emergence of CAV will reduce parking demand while increasing curbside pick-up and drop-off demand. Additionally, parking space dimensions can likely be condensed with vehicle access and egress occurring at the curbside prior to parking. Given these projections, above grade parking structures can be designed in a “future proofed” manner that allows floors to easily be converted to an alternative land use. Note that this would require consideration for lighting, loading, emergency exits, etc. as these design requirements differ between land uses.

- **Prepare to accommodate different types of vehicles.** Given the new modes of transportation such as E-bikes, E-scooters, and other micromobility vehicles, parking facilities should be prepared to accommodate a variety of vehicles.
- **Prioritize alternative curbside uses over parking (transit access, bicycle lanes, ridehailing zones, patios, and passenger pick-up and drop-off).** The curbside is a limited and valuable resource that serves ever increasing demand from numerous user groups. Within IAs prioritizing sustainable forms of transportation, allocating

curbside space for non-parking users should be prioritized. Parking demand in IAs is ideally met in the consolidated off-street parking facilities. Note that some parking spaces can still be provided in strategic areas (ex: accessible parking space adjacent to a health clinic).

- **Expand EV charging station supply.** Electric vehicles are more environmentally friendly when compared to traditional combustion engine vehicles by eliminating tailpipe emissions. Note that the emissions associated with the vehicle's production as well as the generation of electricity is not eliminated. Given Canada's EV sales targets, EV mode share is anticipated to rapidly increase in the near future. To meet the demand, municipalities should begin installing EV charging stations in publicly accessible locations.

In order to accommodate EVs, the design of parking facilities should incorporate several considerations and components, including (1) 240 v quick charging stations in parking garages, lots, and on-street parking areas, (2) garage infrastructure updates to account for potential LIPO battery fires, (3) specialized fire suppression systems to suppress LIPO fires, (4) improved exhaust fans and airflow throughout the underground parking garages, (5) additional cooling/exhaust fans if required to offset the heat generated by multiple vehicles charging, (6) up-to-date construction materials that resist potential LIPO fires and additional heat generation, and (7) enhanced security and surveillance system to protect the infrastructure, vehicles, and users.

- **Provide car share services in municipal parking facilities.** Providing car share services promotes lower vehicle ownership by providing users with convenient access to a vehicle when needed. This strategy is particularly effective in reducing vehicle ownership in 15-minute neighbourhoods where most daily trips can be completed by walking or cycling. Vehicle trips are still anticipated to be needed infrequently, and a car share membership provides a less expensive option to owning and maintaining a personal vehicle.
- **Ensure sufficient accessible parking spaces are provided.** Accessible parking spaces are usually estimated based on the total number of parking spaces, e.g., as a proportion or percentage or as a specific number of spaces that increases with more total parking spaces. If parking minimums are reduced or rescinded, developers may still provide parking for many land-uses to ensure their marketability and serving different types of users, and some of these spaces will have to be accessible. However, to ensure accessible parking spaces are still provided, some Cities that rescinded parking minimums are still requiring the provision of accessible parking spaces. The ZBLs of such cities estimate the required accessible parking spaces based on "theoretical" parking minimums that are calculated merely for the purpose of estimating the accessible parking spaces. For example, Toronto uses the "effective parking rates" and Edmonton the "deemed parking minimums" which only represent a hypothetical total number of parking spaces that is used to estimate the accessible parking spaces. That is, the developer will only be required to provide the accessible parking spaces and the total number of spaces is only used as a calculation baseline.
- **Expand transit network and increase service frequency and reliability.** By improving transit service, Brampton residents are more likely to select transit over personal vehicles for certain trips, which can reduce vehicle ownership. When combined with car share services and improvements to other modes of transportation, the effectiveness of transit improvements in reducing vehicle ownership can be amplified. Note that Brampton is planning significant transit network expansions and service improvements, including a new LRT line, new rapid transit lines, and several new Züm lines.

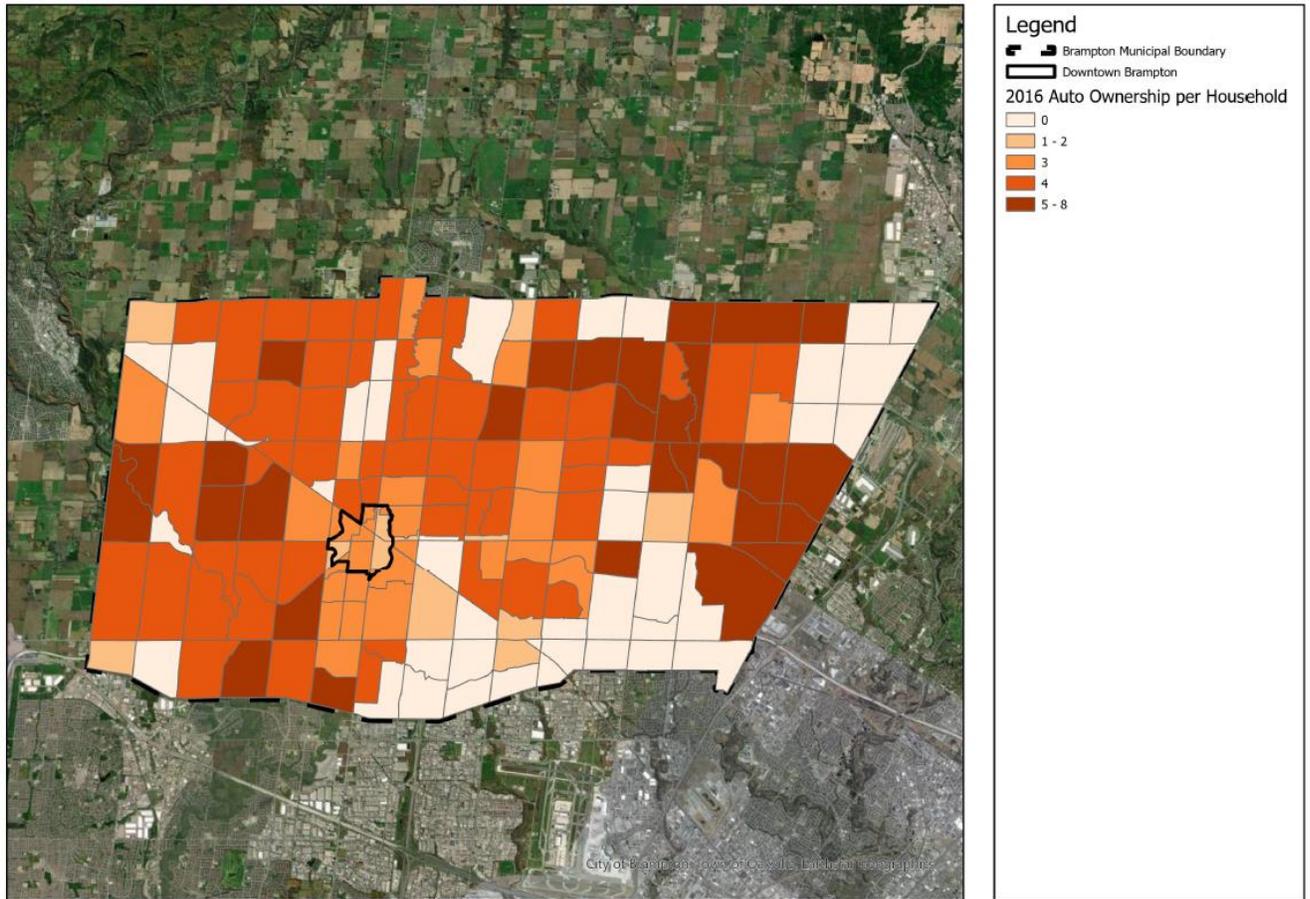
- **Implement shared micromobility services.** Similar to transit improvements, implementing shared micromobility services can help reduce personal vehicle ownership. Efforts are currently underway to proceed with the Brampton’s e-scooter pilot program and assess its impact. The success of this program may pave the way for the adoption of more micromobility and emerging modes of transport in the future (e.g., e-bike, bike share, etc.).
- **Expand bicycle lane network to provide dedicated cycling right-of-way.** Providing dedicated bicycle lanes and a well-constructed network improves cyclist safety, which helps promote this mode of travel and reduce personal vehicle ownership. Brampton’s ATMP provides a detailed description of the proposed future cycling network which included different types of facilities (e.g., protected bike lane, shared roadway, recreational trail, etc.).
- **Support a hybrid telecommuting business model.** The telecommuting business model reduces parking demand by allowing employees to work from home. Not all professions can support a telecommuting model (ex: health care and construction) and employees will likely travel to their place of business occasionally, but the COVID-19 pandemic has shown that many professions can support a telecommuting business model.
- **Consider activating the Citywide Community Improvement Plan (CIP) for Employment.** The City is currently in the process of completing the Citywide CIP, which has included the ability for Council to activate a future capital grant of up to \$25,000 per parking space for projects pursuing underground parking. To maximize the use of limited space, underground parking is considered most appropriate in Brampton’s Intensification Areas. Note that the cost of such a program still needs to be considered by the CIP. Eligibility for the program should be determined on a case-by-case review of development applications.
- **Consider parking as a benefit from the upcoming Community Benefits Charges (CBCs) regime in Brampton.** CBC is a financial contribution that is required to be paid when a land is developed to help the City pay for the capital costs of facilities and services of high-density developments. For areas where parking minimums are rescinded or reduced, the City may need to build and operate municipal parking facilities, and since these facilities serve the public including the new developments, their cost can be considered in the CBC contributions.
- **Prohibit and enforce no trucking or warehousing in highly visible strategic areas and along primary urban boulevards.** This is in order to preserve the landscape architecture and the densification of these areas.

Task 8: Parking Management Model will build upon these parking policies and strategies.

7.4.2 Rest of City

The Rest of City policy area applies to all other areas not covered by the IAs. Given that population and employment densities are lower, the residents and employees in these areas tend to be more reliant on personal vehicles and therefore parking demand tends to be higher. Recognizing that personal vehicles remain a primary mode of travel, parking demand should be met, but balanced with improvements to alternative modes of transportation. Using 2016 data, Exhibits 7.5 and 7.6 auto ownership per household and per capita citywide respectively. Some travellers will still be anticipated to select alternative modes of transportation if provided the option, particularly low-income residents who are less likely to own a vehicle. The City of Brampton Transportation Master Plan Update (TMPU) report promotes a strategy aiming to achieve the following modal split targets by 2041, 16% Brampton transit, 6% active Transportation, 28% auto passenger, 50% single-occupancy vehicles.

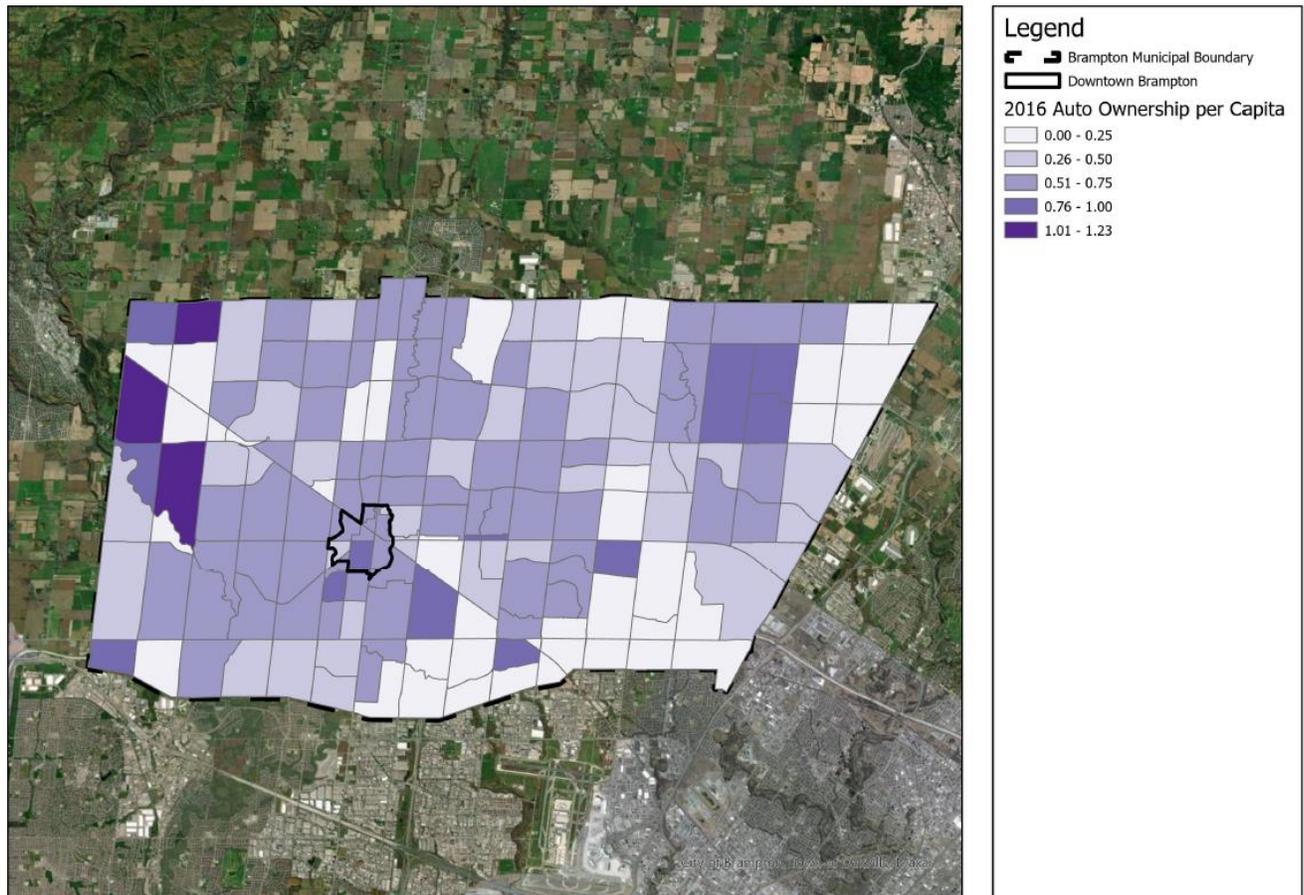
Exhibit 7.5: Auto Ownership per Household in Brampton



IBI **Brampton Municipal Parking Strategy**
2016 Auto Ownership per Household



Exhibit 7.6: Auto Ownership per Capita in Brampton



IBI **Brampton Municipal Parking Strategy**
 2016 Auto Ownership per Capita 0 2.5 5 10 Kilometers

Brampton is recommended to adopt the following policies and strategies for the Rest of City:

- **Meeting on-site parking demand through parking minimums tailored to Brampton.** As Brampton continues to improve citywide access to alternative modes of transportation, citywide personal vehicle ownership and parking demand are anticipated to decrease. The ZBL parking requirements must therefore be updated periodically to accurately reflect parking demand generation rates without an oversupply of parking.
- **Consider developing parking maximums tailored to Brampton.** Parking maximums are more needed in IAs. However, they can be still applied citywide and offer their benefits outside the IAs. Five of the comparator municipalities apply parking maximums citywide (i.e., Hartford, San Francisco, Columbus, San Antonio, and New Orleans). Exemptions to parking maximums may still be needed for some zones or land uses. For example, New Orleans exempted major industrial districts from the parking maximums, and most municipalities exempted the street-level single family dwelling units (e.g., detached, semi-detached, and townhouse dwellings). A detailed ZBL update study is needed to set the parking maximum rates and select the land uses to be included or exempted in Brampton.

- **Develop a formalized point-based TDM checklist that developers can use to reduce parking requirements.** To continue promoting alternative modes of transportation in an effort to reduce personal vehicle mode share and manage parking demand, Brampton is recommended to develop a formalized point based TDM checklist. The checklist allows developers to reduce the ZBL parking requirement through strategies such as flexible working hours, teleworking, on-site paid parking, unbundled parking, quality-of-service measures of the nearby transit, pedestrian, and cycling networks.
- **Balance parking with public transit and micromobility improvements.** With parking demand met through tailored parking minimums, improvements to alternative modes of transportation can still be anticipated to reduce personal vehicle mode share. With less personal vehicles on the roads, parking demand can also be anticipated to be managed.
- **Adopt residential parking permit program in neighbourhoods with parking capacity constraints.** As identified through the public and stakeholder consultation, some residential neighbourhoods with a high persons per household rate do not have sufficient space on their driveway or within their garage to accommodate all of their personal vehicles. The ZBL requirement of providing a minimum of two parking spaces per residential dwelling (e.g., for single detached, semi-detached and street townhouse dwellings) is not recommended to be increased to be in-line with the parking demand generated in these neighbourhoods as it would result in an oversupply in all other neighbourhoods. Therefore, to help alleviate the parking capacity constraints and the widening of driveways beyond the maximum size permitted by the Zoning By-law, Brampton is recommended to adopt an on-street residential parking permit program.
- **Explore and promote opportunities to facilitate building more affordable housing units.** Parking is a major barrier to affordable housing of all kinds and in all geographies. Section 7.3.4 provides recommendations to establish special parking requirement reductions for affordable housing units in the ZBL. In addition, opportunities for affordable housing may arise through partnership with not-for-profit groups, affordable housing on public lands, adaptive reuse of heritage sites, various supportive housing models, as well as through the upcoming missing middle (lodging houses/triplex/fourplex) model that the City is preparing.

7.4.3 Residential Paid Parking Permit Program

As identified through the public and stakeholder consultation, some residential neighbourhoods are experiencing on-site parking capacity constraints and require additional parking opportunities to meet the existing demand. Brampton is recommended to develop an on-street residential parking permit program to unlock on-street parking for long-term parking purposes and to help alleviate the widening of driveways beyond the maximum size permitted by the Zoning By-law. The following program is recommended.

Residential preferred parking: All parking users are permitted to park within the designated zone. However, only residential permit holders are exempt from the maximum 3-hour time limit and the no overnight parking restriction.

Based on feedback collected through the online public survey, Brampton is recommended to consider the neighbourhoods identified in Exhibit 7.7 as a starting point for the residential parking permit program. Greater than 20% of respondents from these neighbourhoods noted that they experience parking capacity constraints at their place of residence.

Exhibit 7.7: Proposed Residential Parking Permit Program Areas



Residential parking patterns are anticipated to evolve as Brampton grows and improves alternative modes of transportation. Therefore, the program can be applied to neighbourhoods with new parking capacity constraints, and the program can be rescinded from neighbourhoods where existing capacity constraints are resolved through alternative strategies (ex: a new nearby rapid transit line reduces vehicle ownership).

The following additional considerations will be required to be resolved in the residential parking permit program’s development and implementation:

- **Residential Parking Program Support:** Require the support of the majority of homeowners affected by the residential permit program application (51% of affected resident support or greater). This requirement is anticipated to minimize negative public reactions to the program. Support is recommended to be evaluated through a survey of affected residents.
- **Potential for Safety Issues:** On-street parking reduces the road’s traffic capacity, which may negatively impact the operations of emergency vehicles (fire, police, and ambulance). Additionally, on-street parking reduces the sight lines of drivers entering and exiting their driveways, which may create safety issues. The case-by-case review of each application is recommended to evaluate these considerations when deciding whether or not to grant the program. It is to be emphasized that the on-street parking program discussed here is limited to local residential streets and does not include arterial roads which have higher classification serving large traffic volume and the main inter and intra city movements.
- **Permit Duration:** Residential parking permits can be granted for various periods (ex: monthly, half year, full year).

- **Number of Permits Issued:** The number of permits issued per area is recommended to be determined on a case-by-case basis. Once the initial release has been established, Brampton is recommended to monitor the on-street parking utilization. In the event on-street parking remains underutilized, additional permits can be released in a phased manner to ensure permits are not oversold.
- **Existing Parking Considerations.** The utilization of the residential permit program may have an impact on the existing parking considerations. If the permit program becomes heavily utilized, then lowering the fourteen days of the parking considerations may be considered but rescinding the parking considerations totally is not recommended. The supply of the residential parking permits should be always managed so that at least a reasonable parking provision is reserved for visitors, short-term parking purposes, and deliveries. On the other hand, if the demand of parking considerations is high and hindering the permit program, then setting parking prices for short periods (e.g., 24 or 48 hours) may be considered to manage the demand in some areas. Toronto provides fee-based temporary resident or visitor on-street parking permits, the fees differ by the period being 24-hour, 48-hour, or 7 days.
- **Waitlists:** Permit waitlists are recommended to be created for areas where the on-street residential parking permits sell out.
- **Permit cost:** Permit costs are recommended to be set at a point where the collected revenue offsets the cost of operating and maintaining the program. The cost should also be affordable, but at a rate that promotes reduced vehicle ownership and alternative modes of transportation (ex: consider monthly transit pass costs).
- **Winter Maintenance:** Winter maintenance is an area where best practices are not clearly established. Based on a review of comparator municipality practices, winter snow clearing is either not addressed, is completed while vehicles are required to park on one side of the street during the entire winter season, or on-street parking is restricted during heavy snow events and owners must find alternative parking opportunities on their own or the municipality offers some assistance through designating alternative parking facilities or using a map that illustrates other parking options. Toronto enforces one-side parking and suspends alternate side parking from December 1st through March 31st. If parking changes to the other side of the street, the ruts and accumulated snow on the previous parking side will have to be removed to make the street passable and such snow accumulation cannot be removed by conventional snowploughs.
- **Technology Requirements:** Brampton is recommended to adopt electronic permits to facilitate mobile LPR enforcement.

The neighbourhoods identified in Exhibit 7.7 are suggested based on the online public survey feedback results. However, based on an assessment of the above considerations in these neighbourhoods and elsewhere, the City can determine the most suitable area to pilot the permit program. It is to be noted also that implementing any on-street parking permit program will require the evaluation of any changes that need to be made to the City's Traffic By-law 93-93 and mainly to Part VI which regulates parking, stopping, and standing in general and also discusses parking considerations and parking on private property.

7.4.4 Brampton GO Station

Through the parking supply and demand analysis and the public and stakeholder consultation, the Brampton GO station parking lot was identified to operate at capacity during weekday business hours. Parking demand was also identified to spill into the nearby streets (Market Street and Thomas Street). Given that population and employment is projected to grow, and commuter rail is

being promoted as an alternative mode of transportation, GO Transit ridership is projected to increase. Therefore, solutions are required to help meet existing and future demand.

Metrolinx has developed the Brampton GO Station *Station Access Plan (SAP)* which has also identified the parking capacity constraint. The SAP recommends that the Brampton GO Station parking supply be expanded with additional parking opportunities secured through off-site shared parking agreements and shuttle bus service. The Downtown Brampton municipal parking system is projected to operate at 63%, which is below the 85-90% effective capacity target. This observation indicates that shared parking with Metrolinx can be considered. Based on the future conditions assessment presented in Section 5.1.4, an additional 850 vehicles can be accommodated in Downtown Brampton before utilization reaches 85%.

In addition to shared parking agreements, Brampton is also planning significant transit improvements throughout the City and in Downtown Brampton. By improving transit access to the Brampton GO Station, commuters are more likely to select transit as a mode of transportation between their homes and the GO Station, which reduces parking demand. It should be noted that the participants of the public engagement activities expressed their support for transit improvement as an efficient strategy to reduce the personal vehicle mode share.

7.5 Truck Parking Policies and Strategies

Goods movement across Brampton relies predominantly on trucks and parking is an integral part of their operations. The Region of Peel is well known to be a centre for logistics and trucking activities with over 2,000 trucking companies registered. However, truck parking has become a major challenge in the region and especially in Brampton which has over 24,000 businesses classified as “transportation and warehousing,” and these contributed approximately 11% to Brampton’s Gross Domestic Product in 2020. The large growth in e-commerce has also amplified the truck parking problem. To maintain the trucking activities and their economic contributions, creative strategies are needed to increase the supply of truck parking and meet the demand.

7.5.1 Evaluation of Truck Parking Strategies in Brampton

Section 3.5 discussed the emerging truck parking strategies and best practices. Ten strategies were introduced aiming to offer more opportunities to increase the supply of truck parking. However, the feasibility of implementing these strategies in Brampton needs to be further evaluated while considering the city’s infrastructure, urban fabric, and other relevant local conditions. Exhibit 7.8 evaluates the ten truck parking strategies and considers them for adoption in Brampton. For each strategy, the exhibit provides an assessment of strategy’s potential to resolve truck parking challenges as well as key remarks that highlight the associated opportunities and challenges.

Exhibit 7.8: Evaluation of Truck Parking Strategies in Brampton

Truck Parking Strategy	Significance Level	Remarks
Shared commuter lots	High	<p>Existing park-and-ride and carpool parking facilities in Brampton provide opportunities for shared truck parking.</p> <p>There are a few existing park-and-ride and carpool facilities in Brampton (illustrated in Exhibit 7.9). However, more commuter parking facilities are expected to be added in the near future to support the planned MTSAs.</p> <p>Shared parking should be limited to the facility’s off-peak periods.</p> <p>Truck drivers experience the most difficulty in finding available truck parking during weekday evenings and nights, these times are complementary with commuter parking lots.</p>

Truck Parking Strategy	Significance Level	Remarks
Off-peak use of large venues	Moderate	<p>Shared parking agreements can be made with large venues during inactive periods (e.g., large sports venues, convention centres, etc.).</p> <p>Real-time truck parking information system is needed to inform truck drivers when these venues are available.</p>
Truck parking permits in industrial and commercial areas	Moderate	<p>On-street truck parking may be allowed in some industrial and commercial areas through permits. Exhibit 7.10 provides a map outlining existing industrial areas in Brampton.</p> <p>Identifying appropriate streets for on-street truck parking should consider street width adequacy, traffic capacity constraints, and safety (ex: sight distances at intersections, driveways, and pedestrian crossings).</p>
Truck parking availability system	High	<p>Smartphone truck parking apps and real-time truck parking information systems were highly rated by the surveyed truck drivers.</p> <p>Early adoption can be limited to truck parking supply information and wayfinding directions through smartphone apps. This requires citywide parking data collection.</p> <p>A more powerful tool is providing real-time truck parking utilization data, but this strategy requires advanced sensor technology. A lower cost strategy would be to provide historical truck parking demand data that can be updated periodically using manually collected field data. This strategy would allow truck drivers to target parking lots typically underutilized.</p> <p>Large trucking businesses and warehouses can adopt a queue management app where delivery windows can be scheduled in detail. If truck drivers know they are early, they can park for short periods further away where truck parking may be more readily available or more suitable. This would better distribute the truck parking demand and help manage parking demand at the facilities closest to major destinations.</p>
Truck Parking ZBL Requirements	High	<p>For specific industrial land uses, minimum truck parking requirements can be included in the ZBL based on the number of loading docks, square footage, and/or number of employees.</p> <p>Truck parking can be incorporated into parking justification studies for the relevant developments.</p> <p>This strategy provides a long-term solution given that time is needed for new developments to be planned, designed, and constructed.</p>
Public private partnership (P3s)	High	<p>This strategy provides an opportunity for the development of additional truck parking facilities. The level of success will depend on the incentives offered to developers for providing truck parking opportunities (ex: tax abatements and low-cost loans).</p> <p>This strategy has good potential for truck parking on hydro corridors. Hydro companies can benefit from a new source of revenue. However, permanent parking lots may not be easily accepted by the hydro companies and options to develop removable surface lots should be explored. In addition, parking lots on hydro corridors can be constrained by factors such as the need to provide a buffer from residential zones and to maintain proximity and connectivity to the highway network.</p>

Truck Parking Strategy	Significance Level	Remarks
Brownfield redevelopment	Moderate	The strategy requires public financial support through municipal taxes to fund site cleanup. Alternatively, private developers need to be incentivized. Using brownfield sites for truck parking, if cleaned, should still be weighed against other competing uses including manufacturing companies. Private developers may also consider some other land-uses as more attractive or profitable. The brownfield sites should also be assessed in terms of their accessibility to trucks and their connectivity to highway network.
Weigh stations	Low	The strategy is applicable to rural areas and freeway settings and may not be appropriate in Brampton given the lack of nearby weigh stations.
Residential areas	Low	The strategy is applicable to rural areas and may not be appropriate in Brampton given higher development densities.
Off-peak delivery	Low	Regulating this strategy is a complex process that can be challenged with legal issues (ex: conflicts with federal hours of service, labor rights of the drivers and their unions, etc.) and enforcement measures. The surveyed truck drivers already reported difficulty finding parking spaces during the evening off-peak hours.

Exhibit 7.9 identifies potential opportunities for shared truck parking including commuter lots and major venues. Further analysis will be required to assess the feasibility of these locations.

Exhibit 7.9: Potential Shared Truck Parking Opportunities

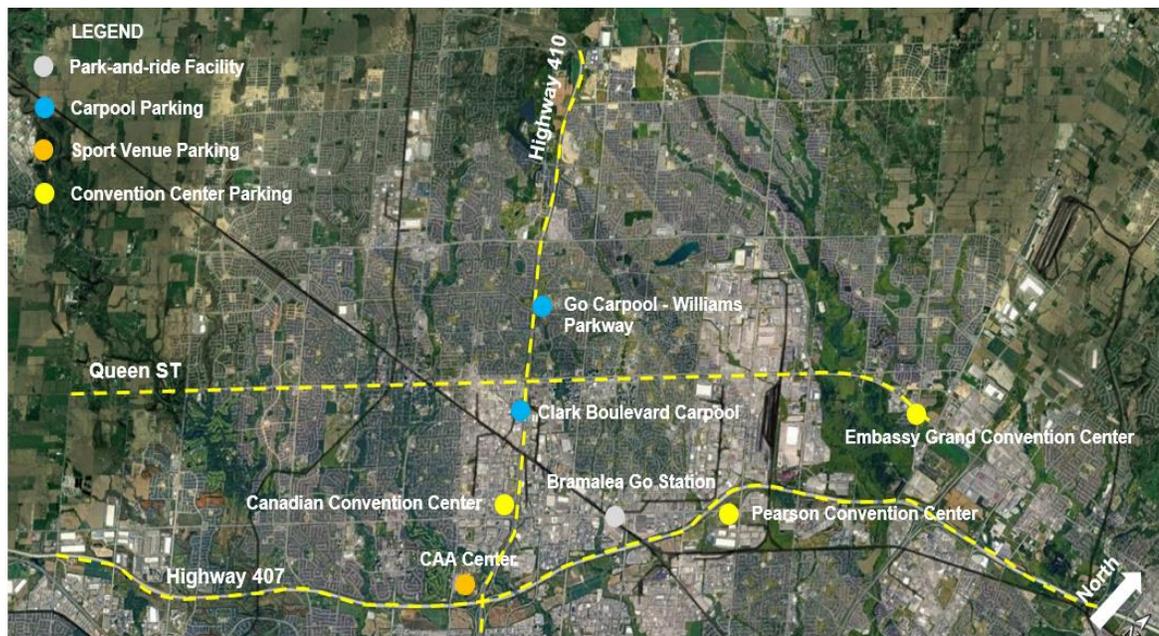


Exhibit 7.10 identifies Brampton’s designated industrial areas where the on-street truck parking permits can be considered.

Exhibit 7.10: Brampton Industrial Areas



Based on the evaluation provided in Exhibit 7.8, truck parking strategies can be further classified into three categories: short-term and medium-term strategies, long-term strategies, and strategies that are not considered appropriate for Brampton.

Short-term and Medium-term Strategies

Short-term and medium-term strategies aim to better utilize existing parking facilities. These include shared commuter parking lots, off-peak use of large venues, truck parking permits in industrial and commercial areas, and truck parking availability systems. While the strategies have significant potential towards providing additional truck parking opportunities, the following challenges will need to be resolved prior to their implementation:

- Shared parking needs detailed parking demand surveys to identify the off-peak periods and the number of available spaces for truck parking.
- Some parking facilities do not follow a regular daily demand trend because they are event-based (ex: large sport venues and convention centres). Sharing these parking facilities with trucks would require a regular communication with trucks to identify when truck parking is permitted.
- A private agreement must be made with the operators or the owners of the shared facilities. The terms of this agreement would not be enforced by the City of Brampton.
- An AutoTURN assessment of each shared parking facility would be required to ensure sufficient space is available for trucks to enter, exit, and circulate internally in the parking facility. Similarly, permitting on-street truck parking should be assessed in terms of the street width, sight distances, and other traffic capacity constraints.
- External circulation plans should also be assessed to determine whether trucks can access the shared facility while respecting existing heavy vehicle road restrictions.

- Truck parking locations and the hours of availability should be shared with truck drivers through a privately run truck parking information system (not administered by the City of Brampton). Truck parking utilization data can also be provided, but they require expensive sensor technologies or the collection of periodic truck parking demand data.

Long-Term Strategies

Long term strategies aim to increase truck parking opportunities through the construction of new parking facilities. Long-term strategies include new ZBL truck parking requirements, brownfield redevelopment, and new truck parking through P3s.

The ZBL and parking justification study requirements can be updated to include truck parking requirements for new industrial developments. Trucking companies should be required to provide truck parking as part of running their business.

Brownfield redevelopment is a strategy that has potential, but it also faces clean-up challenges that requires time and funding.

Including truck parking in new developments through P3s can also provide additional truck parking opportunities. Ideally these facilities would be in Brampton's industrial areas near major highways. This strategy would require several phases including feasibility assessment, legal agreements, design, build, and maintain.

Strategies with Low Potential

Truck parking strategies not considered appropriate for adoption in Brampton include weigh stations, large residential lots, and off-peak delivery. Weigh stations and large residential lots are less common in cities with high-density such as Brampton. Off-peak delivery appears to have several regulatory and logistic challenges, additionally Brampton truck drivers identified weekday evenings and overnight as the period they experience the most difficult in finding a parking space.

7.5.2 The Case Study of the City of Surrey

The previously introduced and discussed truck parking strategies were based on a broad best practice review in North America. A further investigation is made here to learn from the City of Surrey's experience concerning truck parking. Surrey was considered as a case study for several reasons, i.e., it has population and land area comparable to Brampton, its economy relies heavily on the trucking industry, it is one of the fastest growing Canadian cities, and the lack of adequate truck parking has been a long-standing issue in the city. All these reasons make Surrey a suitable comparable municipality for truck parking issues. The City of Surrey established a one-year Truck Parking Task Force mandate to evaluate truck parking challenges and identify options to increase truck parking supply. The following are the main takeaways from this study which can inform Brampton's truck parking policies:

A detailed one-year study was needed to investigate the viable options to increase truck parking supply. The study included several public and stakeholder engagement activities, a detailed assessment of the pros and cons of several options to increase truck parking supply, and an assessment of the potential of each viable option.

The truck parking initiatives that were identified as viable in the study include the following: on-street truck parking permit program in select industrial areas, parking in select low-density residential areas, reducing the cost of developing truck parking facilities, developing truck parking app for payment and wayfinding, requiring trucking companies to provide parking for all the trucks they use, and piloting a City's program to facilitate truck parking development.

The option of reducing the cost of developing new truck parking facilities was mainly based on a suggestion to remove the requirement to fully pave the truck parking facilities in the industrial zones.

In order to require trucking companies to provide parking for their trucks, it was suggested to amend the business licensing application for trucking companies to require parking identification for all trucks they use on an exclusive basis. This includes companies that employ owner-operators.

The City's program to facilitate truck parking development aims to achieve economies of scale and reduce the total construction cost of building new truck parking facilities. In such a program, the City is supposed to manage the servicing process and pay the costs of construction works at the beginning which can be repaid later by the owners or benefitting parties.

Using hydro corridors for truck parking was assessed in the study. It was found that: (1) due to infrastructure requirements and environmental impacts there were no viable BC Hydro-owned viable sites, and (2) BC Hydro was generally supportive to use private lands for truck parking given that all requirements are met.

The provision of City-owned lands for truck parking was considered as unviable option because the provision of City's lands for less than the market value is considered as an "assistance," and this is prohibited in BC's Community Charter and the Local Government Act.

One of the guiding principles in Surrey's study was to consider truck owner-operators as business owners and to view the provision of parking as a necessary part of this business.

The public and stakeholder engagement activities stressed on the need for an increased by-law enforcement to limit the unauthorized truck parking. There was also generally an opposition to trucks in residential areas.

Based on Sections 7.5.1 and 7.5.2 above and discussion with the City of Brampton, the following additional remarks are made:

- Trucking or warehousing should be prohibited along primary urban boulevards and in highly visible and strategic areas in order to preserve the landscape architecture and the densification of these areas.
- Truck parking facilities and their locations should be weighed against other uses or developments.
- By-law enforcement of unauthorized truck parking is needed to regulate truck parking city-wide and especially in strategic areas. Illegal truck parking can be very unattractive, and it may get too close to the primary boulevards and corridors hindering the ability to attract the intended development.
- Based on Surrey's truck parking study, additional viable initiatives that can be considered in Brampton include: (1) amending the business licensing application for trucking companies to require parking identification (i.e., this should be coordinated along with the ZBL updates that require parking spaces for trucks), (2) reducing the cost of new truck parking facilities by waiving some requirements (e.g., to partially pave the facility), and (3) initiating a City's program that can achieve economies of scale through public private partnership (e.g., the City manages the servicing process and shares the cost).

8 Conclusions

This section summarizes the Phase 1 Report conclusions and recommendations.

8.1 Background Document Review

The City of Brampton has a strong policy framework to help guide the growth and development of the evolving City (Official Plan, Vision 2040, Transportation Master Plan, Term of Council Priorities, Housing Brampton, etc.). In addition to municipal plans, there are numerous Regional and Provincial Plans to help further guide Brampton development (Places to Grow, Provincial Policy Statement, Region of Peel 2051 MCR ROPA, Regional Transportation Master Plan, etc.). In general, provincial, regional and municipal planning are all shifting towards supporting transit and active modes of transportation (walking and cycling), and the intensification of urban areas. When it comes to parking, these policies translate to:

- Building transit-oriented complete communities;
- Redeveloping surface parking and converting public parking to structured facilities;
- Minimizing on-street parking to support the development of active transportation networks; and
- Reducing/rescinding parking requirements around major transit station areas and potentially adopting maximum parking requirements.

8.2 Best Practice Review

The best practices review covered a wide range of strategies successfully adopted in the comparator municipalities. These policies and strategies are considered for adoption as part of the Task 6: Parking Policy Framework and will be further examined as part of the Task 8: Parking Management Plan. Based on the review findings, the following conclusions are drawn:

- Brampton's parking prices, both inside and outside the Downtown, are significantly lower than all other comparator municipalities.
- Most comparator municipalities use location based and time based pricing, with the performance based pricing model gaining popularity.
- Graduated parking fines has seen limited adoption to date but provide an opportunity to target repeat offenders if a small amount of offenders represent a disproportionately high amount of violations.
- Parking permits are commonly available for residential and visitor uses. Prices and conditions were determined to vary significantly between municipalities.
- Many of the comparator municipalities use parking technologies to improve the parking system's efficiency and user friendliness. Common technologies include smart parking meters, pay-by-plate technology, smartphone parking apps, parking occupancy technology, and electric vehicle charging stations.
- Some municipalities are requiring private developers to provide EV infrastructure as part of the development application process. The requirement can be such as a ratio of the total number of parking spaces is to be equipped with EV charging equipment. In addition, the remaining spaces may be designed in a manner that allows for future EV charging equipment.
- Removing parking minimums and implementing parking maximums can be implemented in high density areas, or citywide to increase parking system efficiency while providing flexibility to developers and land owners.

- Adopting parking maximums provide several benefits such as limiting the oversupply of parking, preserving the urban landscape, offering lands for other uses, reducing the reliance on private autos, and promoting the use of alternative and more sustainable modes of transport.
- A lack of truck parking supply is a key issue, and a wide range of strategies have been recommended across North America.
- Key emerging trends related to parking include future proofing new parking facilities, shared mobility, CAV, and P3s.

8.3 Parking Supply and Demand in Downtown Brampton

The City has historically conducted quarterly parking demand surveys for the Downtown Brampton area between 2009 and 2019. Based on these findings, the parking demand in Downtown in 2019 was 15% lower compared to parking demand in 2009. This decrease could be attributed to improvements to transit service and implementation of all-day GO Transit service.

Based on parking demand data in 2019, the Downtown parking system experienced peak parking demand at 10:00 AM on a weekday, where 58% of all parking spaces were occupied. The on-street system was 41% occupied, some street segments were more than 85% occupied but adjacent street segments had capacity to accommodate the excess parking demand. The off-street parking lots were 60% occupied, only the GO Transit parking lot operated above 85% occupancy.

A future parking assessment was conducted for 2040, which was based on the existing parking demand. Factors such as population growth, modal share targets, municipal supply changes, and impacts of the COVID-19 pandemic were considered. Three scenarios were created – the 2040 base scenario, COVID-19 analysis, and the Nelson Square Garage Closure. The 2040 base scenario experienced a system wide utilization of 63% which was slightly higher compared to the existing conditions. Like the existing conditions, some on-street segments are projected to operate above 85% utilization, but nearby facilities are anticipated to accommodate the excess demand. The COVID-19 scenario had a system wide utilization of 45%, with only one segment that operated above effective capacity. In the Nelson Square Garage closure scenario, all parking demand from the Nelson Square Garage was allocated to nearby municipal garages. All garages were still able to accommodate the parking demand while remaining below the 85% effective capacity threshold.

Based on the results of the existing and future parking assessment, there does not appear to be any major challenges or issues related to the Downtown Brampton parking system. The GO Transit parking lot is often completely full during working hours, but it is owned by Metrolinx and therefore outside of the City's jurisdiction. Opportunities were identified for GO Transit to enter shared parking agreements with nearby municipally or privately owned parking lots to accommodate the high parking demand. Additionally, with improvements to Transit service, GO Transit parking demand can be managed if commuters select transit as the mode of transportation between their place of residence and the GO Station.

8.4 Parking Policy Framework

The Parking Policy Framework is a key tool intended to help guide Brampton decision makers in managing citywide parking provision to the 2040 horizon year and to inform the Brampton Plan.

8.4.1 Vision and Guiding Principles

Based on the findings of Tasks 2 through 5, the following key overarching themes were identified: future parking provision, alternative modes of transportation, sustainable development, innovative parking policies and strategies, affordability, and accessibility. These themes were used as the basis for Brampton's vision statement and guiding principles.

To manage parking provision in a rapidly growing City through the adoption of forward thinking and innovative parking policies and strategies consistent with Brampton's planning objectives and priorities. Parking is envisioned to strike a just balance between affordability and accessibility, and support for sustainable forms of development and transportation.

Building upon the vision, the following 10 guiding principles were developed:

1. Align parking improvements with these guiding principles, and support Brampton's broader policies, objectives, and initiatives.
2. Manage parking provision, including accessible parking, while prioritizing and promoting alternative modes of transportation such as transit, walking, cycling, and shared economy.
3. Prepare to accommodate different types of vehicles such as micromobility vehicles and expand EV charging supply.
4. Explore opportunities to consolidate surface parking facilities into structured parking to support redevelopment and intensification, and integrate structured parking facilities into the urban fabric to complement the surrounding area's character through the development approval process and public private partnerships.
5. Balance curbside access between the many user groups (parking, transit, micromobility, cycling, pick-up/drop-off, etc.).
6. Encourage innovative parking strategies that optimizes a facility's utilization and performance such as shared, off-site, and unbundled parking.
7. Establish an on-street residential parking permit program for neighbourhoods experiencing off-street parking capacity constraints or are appropriate for gentle densification through missing middle typologies.
8. Explore opportunities to increase truck parking supply and to improve truck parking wayfinding.
9. Implement practices and strategies aimed at financially sustainable parking operations where revenues are sufficient to fund expenses.
10. Strategically set parking prices at rates that are affordable, in-line with market value, and promote alternative modes of transportation and the distribution of parking to available nearby locations.

8.4.2 Comprehensive Zoning By-law Review

Brampton's Comprehensive ZBL is currently being prepared by WSP. The latest version (June 2020) was reviewed in detail to inform the Parking Policy Framework development.

Based on the comparator municipality review, the draft ZBL residential parking requirements were determined to be relatively high. While lower rates were adopted in other municipalities, reducing the residential parking minimums in Brampton is not considered appropriate given the parking capacity constraints identified in some neighbourhoods. Additionally, increasing the requirements are also not considered appropriate since this would result in an oversupply of parking in all other neighbourhoods. Therefore, the draft ZBL parking requirements are generally considered appropriate, and alternative strategies should be adopted to resolve the parking capacity constraints in the identified neighbourhoods.

Reducing or rescinding residential parking requirements is still feasible in intensification areas where population and employment densities are higher and vehicle ownership rates are lower.

The draft ZBL was also compared with the comparator municipalities for some non-residential land uses. For office, medical office, restaurant, retail, recreation centre, and general manufacturing land uses, the draft ZBL's rates were higher than most of the other municipalities. It is

recommended that these rates to be revisited and reviewed against the actual parking demand surveys, since Brampton is moving towards promoting alternative modes of transport other than the private auto.

The draft ZBL allows developers to reduce parking requirements by adopting shared parking, providing dedicated carsharing spaces, and adding more bicycle parking spaces than required. These parking reductions are in-line with best practices to promote sustainable and affordable developments. To build upon these strategies, Brampton is recommended to develop a point-based TDM checklist to provide developers with greater flexibility for larger parking requirement reductions (ex: flexible working hours, unbundled parking, and nearby rapid transit).

Parking policies can support affordable housing by granting parking requirement reductions. In the short-term, Brampton is recommended to grant parking reductions or exemption based on a case-by-case review. This provides a flexible approach that can accommodate the wide variety of affordable housing types and locations. If more definitive types of affordable housing are established and more on-site parking demand data become available, affordable housing requirements can be added as a land use with specific ZBL parking requirements once the parking demand generation is better understood. To further support affordable housing, Brampton is developing an Inclusionary Zoning program, and reducing parking requirements can be added as an incentive in such a program. It is to be noted that area-wide parking exemptions, granted to strategic and intensification areas, will benefit affordable housing units by default.

Several parking provisions are recommended to be added to the draft ZBL, these include requirements for accessible parking spaces and electric vehicle charging stations. The accessible parking requirement can be still maintained in areas where parking minimums are rescinded, i.e., the number required can be a ratio of a hypothetical number of required parking spaces. In addition, a ratio of the total parking spaces can be required to be equipped with EV charging equipment.

8.4.3 Parking Policies and Strategies

Recognizing that parking patterns vary throughout the City and that a uniform parking policy framework is not appropriate, the City is divided into Intensification Areas (IA) and the Rest of City. This division is in line with the draft ZBL and accounts for Brampton's recent ZBL amendments.

IAs are areas with existing or planned high population and employment densities and low personal vehicle mode share. The parking supply in these areas are rescinded/reduced and alternative modes of transportation are incentivized and promoted. Rescinding parking minimums is key to facilitating affordable housing buildings or affordable units within a market rate building. In Brampton, Intensification Areas are proposed to include the following: areas already granted parking exemptions as per By-law 45-2021, the future and planned MTSA as per the Region of Peel Official Plan, Urban and Town Centres and Primary and Secondary Boulevards as per the ongoing Brampton Plan study. It is to be noted that some of the planned MTSA and intensification centres/corridors will achieve their high-density characteristics over time. However, the pre-zoning of these lands from now would better achieve the targeted sustainability and intensification goals.

IA policies include reducing/rescinding parking minimums, setting parking maximums, consolidating municipal parking facilities, prioritizing curbside uses other than parking, increasing EV charging station supply, implementing car share services, improving transit and micromobility services, and supporting a hybrid telecommuting business model.

The Rest of City are all other areas not included in IAs. These areas have higher vehicle ownership and personal vehicle mode share and are typically lower density residential, commercial, and industrial areas. Recognizing the personal vehicles remain a primary mode of travel, parking demand should be met but balanced with improvements to alternative modes of transportation. Policies and strategies include setting tailored parking minimums as the City continues to improve alternative modes of transportation, setting parking maximums for select land-uses and zones, developing a point-based TDM checklist, improving public transit and

micromobility, and developing a residential parking permit program and adopting it in strategic neighbourhoods and/or strategic street classifications.

8.4.4 Truck Parking Policies and Strategies

The best practices review identified ten truck parking strategies that are being used in different jurisdictions to increase the supply of truck parking. These strategies were evaluated and considered for adoption in Brampton.

Short-term and medium-term strategies aim to better utilize existing parking facilities. These include shared commuter parking lots, off-peak use of large venues, truck parking permits in industrial and commercial areas, and truck parking availability systems. The effectiveness of these strategies increases if implemented in parallel. For example, the utilization of shared parking facilities can be optimized if a truck parking availability system is also adopted. Additionally, this system could notify truck drivers when parking is permitted in the shared parking facilities.

Long-term strategies aim to increase truck parking opportunities through the construction of new parking facilities. These strategies include new ZBL truck parking requirements, brownfield redevelopment, and new truck parking through P3s.

As informed from the City of Surrey's experience, additional initiatives may include amending the business licensing application for trucking companies to require parking identification, reducing the cost of new truck parking facilities by waiving some requirements (e.g., to partially pave the facility), and initiating a City's program to achieve economies of scale through P3s (e.g., the City manages the servicing process and share the cost).

Truck parking strategies not considered appropriate for adoption in Brampton include truck parking in weigh stations, truck parking in large rural residential lots, and off-peak delivery.

The implementation of each strategy requires further investigation to address potential constraints and challenges such as geometric design, technology needs, funding resources, and regulations.