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## MEMORANDUM

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DATE	February 5, 2020
TO	<b>David Breveglieri, Development Planner, City of Mississauga</b>
CC	Lakeview Community Partners Ltd.
SUBJECT	Lakeview Village Zoning By-law Parking Standards
FROM	The Municipal Infrastructure Group Ltd. (TMIG)
PROJECT NUMBER	17201

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A Transportation Demand Management and Parking Strategy Report was prepared by TMIG, dated March 18, 2019, and was submitted in support of the proposed Official Plan and Rezoning applications for the future development of Lakeview Village. The site will contain approximately 8,000 residential units, and approximately 86,000m<sup>2</sup> of commercial/retail space.

The City of Mississauga reviewed the proposed reduction in parking rates for residential and non-residential uses, as per Zoning By-law 0225-2007 and shared staff-supported rates in a memorandum, dated May 28, 2019. Glen Schnarr & Associates Inc. (GSAI) has prepared a By-law to amend By-law Number 0225-2007, as amended. In support of this draft implementing ZBL for the City's review, TMIG has prepared this memorandum in review of parking rates, bicycle parking dimensional standards, and the impacts of shared and emerging technologies for future consideration in the planning process.

### 1 Residential Parking Standards, as proposed

The residential vehicle parking standards and rates proposed in the by-law to amend Zoning By-law Number 0225-2007, as stated in Exception RA5-XX, are consistent with those standards supported by City of Mississauga staff in their memo, dated May 28, 2019.

As per the City of Mississauga's May 2019 memo, the required parking rate for studio units in condominium and rental horizontal multiple dwellings, as per Zoning By-law 0225-2007, is 1.1 spaces per unit. This was requested to be revised to 1.4 spaces per unit, however, the City's supported rates remained at 1.1 spaces per unit, for studio dwelling units, while supporting a rate of 1.4 for all other unit sizes in this type of residential use. In addition, the staff-supported rate of 0.33 spaces per bed in long-term care facilities remained consistent with the By-law. As these rates for studio units and long term care facilities were not adjusted, they are not identified in the Exception Table within the proposed by-law amendment.

Table 1-1 presents a breakdown of parking rates by unit type, as per the amended by-law, and consistent with staff supported rates.

**Table 1-1 City of Mississauga – a by-law to amend By-law 0225-2007  
Exception Table 4.15.6.XX – Exception: RA5-XX**

Type of Use	Minimum Off-Street Parking Regulations
<b>Apartment Dwelling Unit</b>	<b>1.0 spaces / unit</b>
Condominium Apartment	1.0 spaces / unit
Rental Apartment	1.0 spaces / unit
<b>Townhouse Dwelling Unit</b>	<b>1.4 spaces / unit</b>
Condominium Townhouse	1.4 spaces / unit
<b>Stacked / Back-to-Back Multiple Dwelling Unit</b>	<b>1.4 spaces / unit</b>
Condominium Multiple Dwelling	1.4 spaces / unit
Rental Multiple Dwelling	1.4 spaces / unit
<b>Retirement Dwelling Unit</b>	<b>0.4 spaces / unit</b>
<b>Visitor</b>	<b>0.15 spaces / unit</b>

## 1.1 Bicycle Rates (Residential Uses)

The supported reduction rate for residential bicycle parking spaces is stated as follows.

- 4.15.6.XX.25 Total resident parking spaces per residential dwelling unity may be reduced at a rate of 1 vehicle parking space for every 5 bicycle parking space provided in excess of the minimum number of bicycle parking spaces, if the reduction of the vehicle parking space is not greater than 20% of the total minimum vehicles parking spaces required.

The minimum number of bicycle parking spaces for apartments, townhouses, and horizontal multiple dwelling units, which do not have an exclusive garage and driveway, are supported by the following rates.

- 4.15.6.XX.24 Minimum number of bicycle parking spaces  
**Residential** 0.6 spaces per unit  
**Visitor** 0.15 spaces per unit

While the proportion of residential (long term) and visitor (short term) bicycle parking rate varies, the City of Mississauga's required total of 0.75 spaces per unit is average relative to other cities in Canada. The bicycle parking rate in downtown Toronto is 1.0 (0.8 long term, 0.2 short term) spaces per unit, and the rest of the City has a total of 0.75 (0.6 long term, 0.15 short term) spaces per unit. Rates in Vancouver range from 0.75-1.25 depending on the unit size. In Ottawa, the bicycle parking rate totals to 0.5 (0.125 long term, 0.375 short term), and in London the provision is for 0.75 long term spaces for buildings with 5 or more units. These rates were derived based on historical data and surveys and comparatively determined across municipalities and as a result there is no specific formula to calculate bicycle parking rates relative to vehicle parking.

## 2 Non-Residential Parking Standards, as proposed

The non-residential vehicle parking standards and rates proposed in the by-law to amend Zoning By-law Number 0225-2007, as stated in Exception C4-XX1, are consistent with those standards supported by City of Mississauga staff in their memo, dated May 2019.

The proposed restaurant parking rates lower than 9.0 spaces / 100 m<sup>2</sup> was not supported by City staff, without further justification required to reduce to 7.65 spaces / 100 m<sup>2</sup>. All other rates in Tables 2-1 and 2-3 are supported and consistent with the proposed amended by-law.

Tables 2-1 to 2-3 present non-residential parking rates by type, as per the amended by-law, and are consistent with staff supported rates. Each Exception refers to a zoning area lot code identified in Figure 2-1, "Schedule A" of the proposed by-law to amend Zoning By-law Number 0225-2007.

**Table 2-1 City of Mississauga – a by-law to amend By-law 0225-2007  
Exception Table 6.2.5.XX1 – Exception: C4-XX1 (Lakeshore Road)**

Type of Use	Minimum Off-Street Parking Regulations
Restaurant	9.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Outdoor patio associated with restaurant	No parking required
Retail Store	3.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Personal Service Establishment	3.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Office	3.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Financial Institution	4.85 spaces / 100 m <sup>2</sup> GFA – non-residential
Real Estate Office	4.85 spaces / 100 m <sup>2</sup> GFA – non-residential
Medical Office	4.85 spaces / 100 m <sup>2</sup> GFA – non-residential

**Table 2-2 City of Mississauga – a by-law to amend By-law 0225-2007  
Exception Table 6.2.5.XX2 – Exception: C4-XX2 (Lakeview Village)**

Type of Use	Minimum Off-Street Parking Regulations
Restaurant, Patio	9.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Office	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Medical Office	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Medical Office-Restricted	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Financial Institution	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Personal Service Establishment	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Repair Establishment	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Take-out Restaurant	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Retail Store	1.0 spaces / 100 m <sup>2</sup> GFA – non-residential
Craft Beer Brewery	1.6 spaces / 100 m <sup>2</sup> GFA – non-residential
Accessory Restaurant	9.0 spaces / 100 m <sup>2</sup> GFA – non-residential

**Table 2-3 City of Mississauga – a by-law to amend By-law 0225-2007  
Exception Table 6.2.5.XX3 – Exception: C4-XX3**

Type of Use	Minimum Off-Street Parking Regulations
Cultural infrastructure use	3.0 spaces / 100 m <sup>2</sup> GFA – non-residential

The proposed by-law to amend Zoning By-law Number 0225-2007 recommends a reduced non-residential parking rate for most typed of uses within “Schedule A” zoning C4-XX2, which comprises of the land surrounding Lakeview Square. As per Table 2-2, “Exception Table 6.2.5.XX2 – Exception: C4-XX2 (Lakeview Village),” a minimum rate of 1.0 off-street vehicle parking spaces for every 100 m<sup>2</sup> GFA - non-residential is recommended to be provided for the area around the future Lakeview Square.

This reduced parking rate, compared to the rates for C4-XX1, has been determined to be sufficient based on the central, pedestrian-friendly, mixed-use environment being created around Lakeview Square, and the proximity of the two city public parking garages. The rate of 1 space per 100 m<sup>2</sup> GFA will ensure an acceptable amount of visitor parking is available within the mixed-use developments, for short-term visits to a variety of establishments. All other demand can be directed and accommodated in the city parking garages, which are within an approximately 50m walking distance to the future developments in the zoning block, and are situated accordingly to provide such surplus vehicle parking spaces for usage by visitors to Lakeview Square and the cultural and institutional uses in the area.

The recommended reduction in short-term vehicle parking supply would provide the additional benefit of reducing vehicular traffic around Lakeview Square, which is a projected tourist destination, and redirecting that traffic to the parking garages and alternate routes. This reduction in traffic would help support a safe environment for pedestrian activity in the public realm, which is expected to be the central focal-point for residents, visitors and tourists in the future Lakeview Village community. Local residents in particular will not require parking as they will be able to conveniently walk, cycle or scooter to transit to non-residential amenities and uses in the area, and tourists will be able to park in the nearby garages and walk.

Therefore, the proposed non-residential off-street minimum vehicle parking rate of 1.0 spaces / 100 m<sup>2</sup> GFA is recommended to be sufficient to accommodate the projected land uses and envisioned movement in Lakeview Village, in the area around Lakeview Square, designated as C4-XX2 in the proposed zoning by-law, and as identified above in Table 2-2.

## 2.1 Bicycle Rates (Non-Residential Uses)

Exception table 12.2.3.XX, line 16 states that “Employee and visitor bicycle parking and shower/change facilities for all **gross floor area – non-residential** shall be in accordance with the provisions under sections 8.2.3.XX.9 and 8.2.3.XX.10 for lands zones “E2-XX” in this Exception.” The provisions are as follows in Tables 2-4 and 2-5.

**Table 2-4 City of Mississauga – a by-law to amend By-law 0225-2007  
Exception 8.2.3.XX.9 - Minimum number of bicycle parking spaces**

Minimum number of bicycle parking spaces	
<b>Office</b>	
Employee	0.17 spaces per 100m <sup>2</sup>
Visitor	0.03 spaces per 100m <sup>2</sup>
<b>Retail store, personal service establishment, and restaurant</b>	
Employee	0.085 spaces per 100m <sup>2</sup>
Visitor	0.25 spaces per 100m <sup>2</sup>

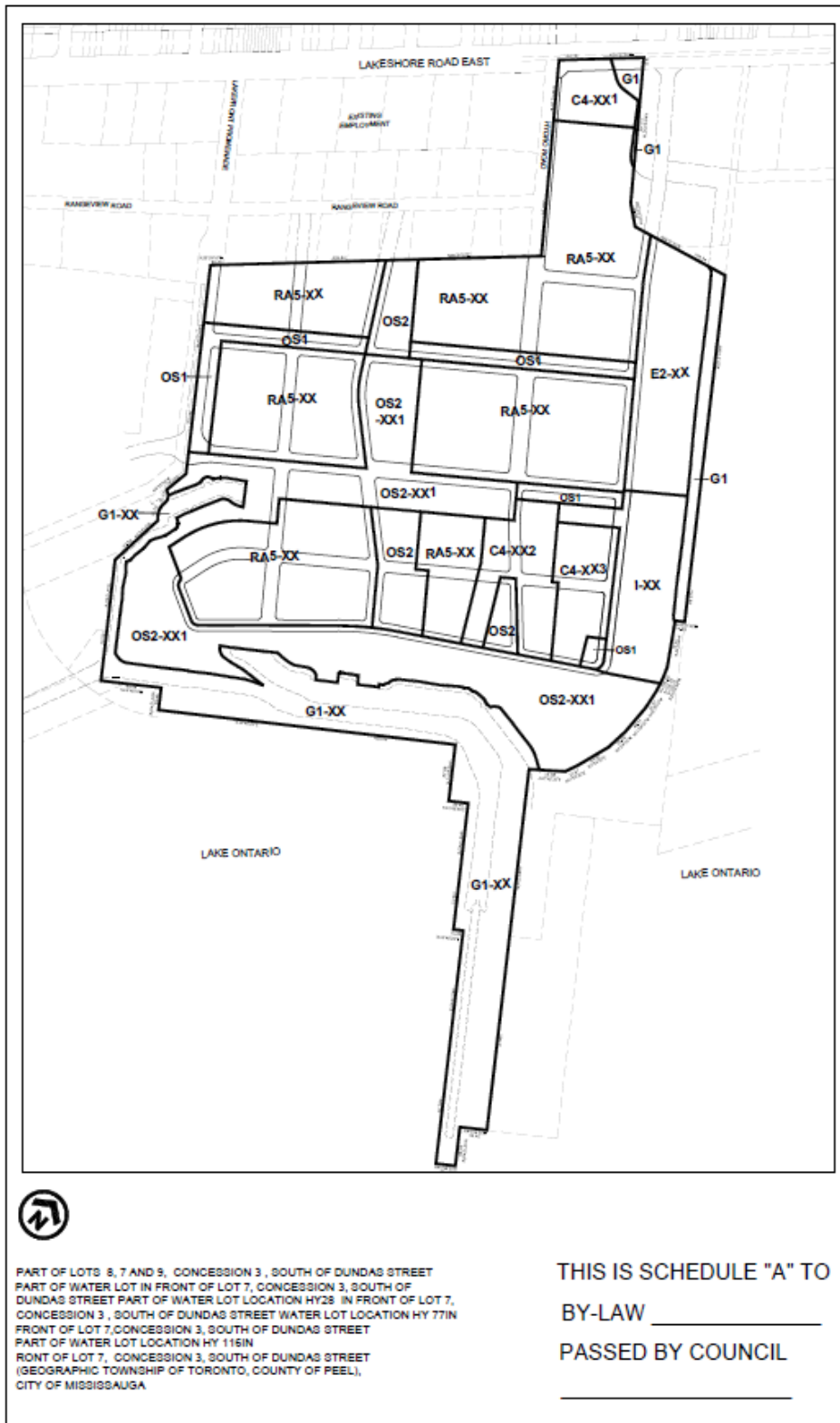
**Table 2-5 City of Mississauga – a by-law to amend By-law 0225-2007  
Exception 8.2.3.XX.10 - Minimum number of shower/change facilities per gender**

Required number of employee bicycle parking spaces	Required number of shower stalls per gender
0-4	0
5-29	1
30-59	2
60-89	3
90-119	4
120-149	5
150-179	6
Over 179	7 plus 1 for each additional 30 bicycle spaces

The recommended non-residential long term and short term bicycle parking rates total to 0.2 spaces per 100m<sup>2</sup> at offices, and total to 0.335 spaces per 100m<sup>2</sup> for retail, personal service and restaurant.

The minimum required shower facilities were taken from the City of Toronto's Cycling Guidelines. The City's *Guidelines for the Design and Management of Bicycle Parking Facilities* noted that the provision of high-quality bike-friendly infrastructure leads to increased cycling trips. This data correlates with the Statistics Canada 2006 Census, in which it states that approximately 25,000 people in Toronto cycled to work, representing 1% of all commuters, and a 0.2% increase from 2001. By the 2016 Census, this was up to 1.4% of all commutes in Toronto. As a result, the 2008 *Toronto Green Developments Standard* sets out the minimum target of providing one shower and change facility for every 30 bicycle parking spaces for workplaces. This finding and guideline was adopted the City of Mississauga, for Lakeview Village.

Figure 2-1 Development Lot Codes - "Schedule A" of the by-law to amend Zoning By-law Number 0225-2007



PART OF LOTS 6, 7 AND 9, CONCESSION 3, SOUTH OF DUNDAS STREET  
PART OF WATER LOT IN FRONT OF LOT 7, CONCESSION 3, SOUTH OF  
DUNDAS STREET PART OF WATER LOT LOCATION HY28 IN FRONT OF LOT 7,  
CONCESSION 3, SOUTH OF DUNDAS STREET WATER LOT LOCATION HY 77IN  
FRONT OF LOT 7, CONCESSION 3, SOUTH OF DUNDAS STREET  
PART OF WATER LOT LOCATION HY 115IN  
FRONT OF LOT 7, CONCESSION 3, SOUTH OF DUNDAS STREET  
(GEOGRAPHIC TOWNSHIP OF TORONTO, COUNTY OF PEEL),  
CITY OF MISSISSAUGA

### 3 Proposed Bicycle Parking Dimension Standards

The City of Mississauga does not have specifically outlined standards for bicycle parking spaces. However, in the City of Mississauga’s Cycling Master Plan (Draft March 2010) recommendations on parking space dimensions are made, for future inclusion in the City’s zoning by-law. 10.2 recommends the inclusion of parking dimensions in addition to parking quantity, definitions of long term and short term parking and the requirement for shower/change facilities.

According to the Plan, the following minimum parking space dimensions are recommended to be included in the City’s zoning by-law:

- Horizontal Parking: 1.9 metres high, by 0.6 metres wide and 1.8 metres deep.
- Vertical Parking: 1.9 metres high, by 0.6 metres wide and 1.2 metres deep. (Not to exceed a maximum of 50% of bicycle parking spaces provided as vertical parking).

**Figure 3-1** shows a stacked horizontal bicycle parking rack, which would require additional available height. This type of rack is commonly used in indoor secure bicycle parking facilities. **Figure 3-2** shows an example of a vertical bicycle parking rack, which is typically wall-mounted indoors, with sufficient room to manoeuvre. Vertical bike racks are also available as stand-alone frames which can be used outdoors for visitor parking.

**Figure 3-1**



**Figure 3-2**



In the same section of the Cycling Master Plan, the following definitions of long term and short term parking are recommended to be included in the City's zoning by-law.

- Long term parking must be provided in the form of racks in an enclosed, secured area such as a room or cage with controlled-access or in the form of bike lockers.
- Short term parking must be provided in the form of racks at-grade in highly visible locations close to major building entrances, sheltered wherever possible.

While these recommended dimensions are not formalized standards, they are comparable to the City of Toronto's dimensional standards, which provide additional measurements for the spacing required around a bike rack outdoors. The City of Toronto guidelines are as follows.

*City of Toronto Guidelines for the Design and Management of Bicycle Parking Facilities:*

**Spacing:** Required minimum spacing between bicycles parked in a horizontal position is 0.6 metres by 1.8 metres with a vertical dimension of 1.9 metres. For bicycles parked in a vertical position the required spacing is 0.6 metres by 1.2 metres with a vertical dimension of 1.9 metres.

For bicycle racks that hold more than 2 bicycles the following guidelines include preferred aisle spacing and spacing between a linear series of racks in order to give bicycles adequate room to manoeuvre:

- 1) A minimum distance of 2.5 m from any fire hydrant, entrance or loading area
- 2) For racks that hold multiple (>2) bicycles (*based on rack manufacturers' installation guides*):
  - (a) Distance between rack and wall, or other obstacle:
    - i. Minimum 0.45 m if bikes parked parallel to obstacle;
    - ii. Minimum 2.5 m if bikes parked perpendicular to obstacle and rack has double-sided access;
    - iii. Minimum 0.6 m if bikes parked perpendicular to obstacle and rack has single-sided access (side facing wall would not accommodate bicycles).
  - (b) Aisle width (space between bicycles):
    - i. Preferred spacing: 1.8 m. For typical bike racks this leaves approximately 4.2 m between racks, however this spacing will differ depending on the design of the rack.
  - (c) Space between rack ends (for a linear series of racks placed end to end):
    - i. 0.9m for maximum parking capacity.

**Figure 3-3** shows the recommended spacing for racks which hold multiple bicycles.

- 3) For racks that hold 2 bicycles:
  - (a) Distance between rack and wall, curb or other obstacle:
    - i. Minimum 1.5 m for racks perpendicular to wall or other obstacle
    - ii. Minimum 0.7m for racks parallel to wall, or other obstacle
  - (b) Distance between individual racks:
    - i. Minimum 2.5 m for racks parallel to wall, or other obstacle (3.5 m preferred in areas with high bicycle parking turnover).
    - ii. Minimum 1.0 m for racks perpendicular to wall or other obstacle

**Figure 3-4** shows the recommended spacing for racks which hold 2 bicycles.

**Figure 3-3**

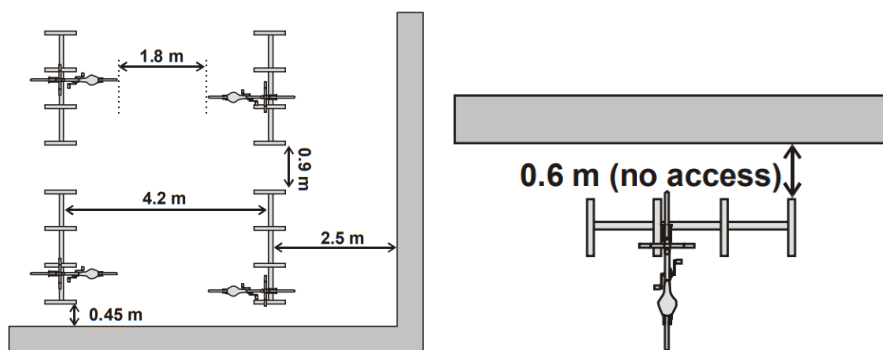
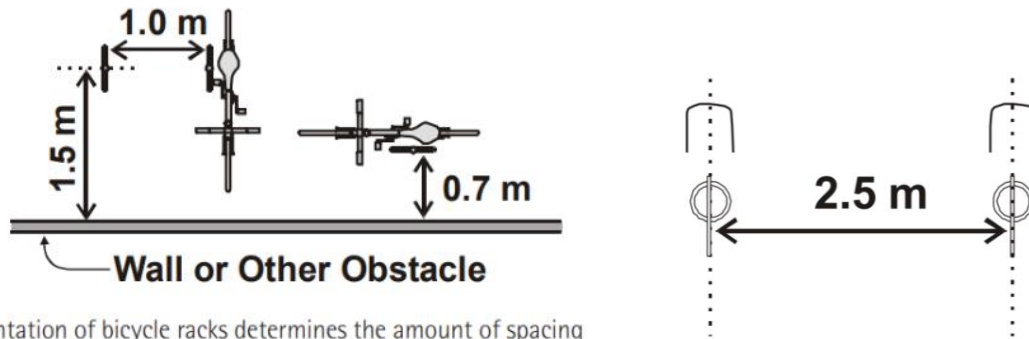




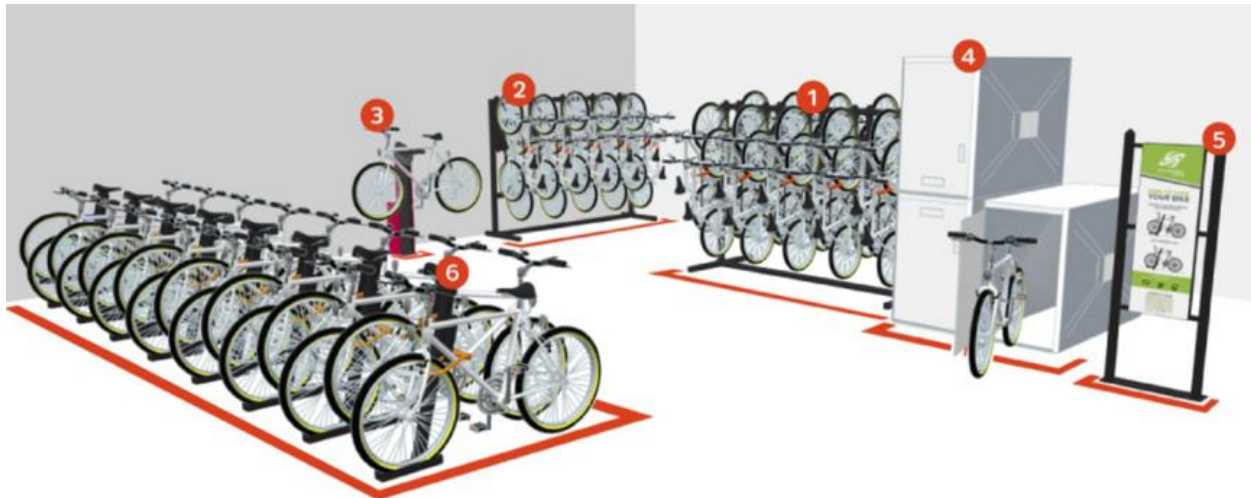
Figure 3-4



The orientation of bicycle racks determines the amount of spacing

Similarly, the City of Vancouver Municipal Code 20.945.050 outlines the City’s standards for bicycle parking facilities. These dimensions are almost the exact same, but do provide the additional guidance that Bicycle parking can be provided with wall-mounted bicycle racks, but the rack must allow for the use of “U” locks that can be locked to the bicycle’s frame. The dimensions for the rack must be 2 feet by 6 feet with adequate clear distance behind the rack for easy maneuvering. As shown in **Figure 3-5**, wall-mounted racks can be incorporated with ground racks, however they cannot be placed above one another.

Figure 3-5



Based on the above guidelines, we recommend following the City of Mississauga’s bicycle parking spaces dimensions from the Cycling Master Plan. For additional guidance on spacing of bike racks, the City of Toronto guidelines are recommended for use, until such time the City of Mississauga publishes additional standards.

## 4 Serson Corridor/Waterfront

### 4.1 Non-residential Uses

As per the latest proposed draft site plan, the Serson Corridor and Waterfront lands are heavily mixed use. The Serson Innovation Corridor features a series of non-residential programs, primarily Office and Institutional land uses. Civic space is also included, on either side of Street “I” along with parking garages. The Waterfront block features a mixed use of hotel and mid/high rise towers on top of mid-rise blocks, with ground floor retail uses. Civic spaces such as Lakeview Square act as a buffer between the Waterfront and Serson Corridor.

## 4.2 Shared Parking Rates

A mixed-use shared parking formula was proposed for Lakeview Village in the March 2019 report. Table 4-1 presents the mixed use development shared parking formula, as approved by City staff. The formulas are consistent with the Port Credit & Lakeview Parking Strategy and can be applied with the following criteria:

A shared parking formula may be used for the calculation of required parking for a mixed use development. A mixed use development means the following:

1. Non-office uses in an office or medical office building or group of buildings on the same lot
2. Office or medical office space in a building or group of buildings on the same lot primarily occupied by retail uses
3. A building or group of buildings on the same lot containing a mix of office or medical office, commercial uses and dwelling units
4. Non-residential uses in an apartment

**Table 4-1 Mixed Use Shared Parking Formulas**

Type of Use	Percentage of Peak Period			
	Morning	Noon	Afternoon	Evening
Office	100 (10)	90 (10)	95 (10)	10 (10)
Retail (Personal Service)	50 (65)	50 (80)	70 (100)	75 (30)
Retail – Store	45 (85)	65 (100)	75 (100)	80 (85)
Restaurant	25 (20)	40 (85)	25 (50)	100 (100)

XX – Weekday, (XX) – Weekend

## 4.3 Availability of Transit

The northern-most building of the Serson Innovation Corridor will be located within 500m walking distance of Lakeshore Boulevard. According to the City of Mississauga’s 2009 Action Plan: Move, 500m (a 10-minute walk) is considered a reasonable walking distance to access work and amenities from mass public transit. As a result this major employment district, or a portion thereof, is located within walking distance of a mass transit stop.

Therefore we can consider the impacts of the Lakeshore Rapid Transit Corridor in reducing the demand for vehicle parking for employment uses in Lakeshore Village. The future Lakeshore Bus Rapid Transit (BRT) would feature express bus stops along the north boundary of the subject area, with the closest stop to the Serson Corridor being at Haig Boulevard. With Haig Boulevard being extended south into Lakeview as ‘Street I’, riders on the BRT would have an un-impeded 500m walk south (to Street ‘B’) into the Serson Innovation Corridor. This ease of access for the “last mile” will certainly encourage a greater modal split towards transit and away from single-occupancy vehicles, as the “first-mile/last-mile” is often a large contributor towards commuters opting to drive. As a result, a lower non-residential / employment vehicle parking rate would be supported by the presence of accessible local and regional public transit.

This reduction is further supported by the City of Richmond Hill’s Parking Strategy (2010) which target specific areas for transit use and its anticipated reduction in auto ownership and use, particularly around Rapid Transit Corridors. According to the strategy, areas within 400m walking distance of a Viva rapid transit stop on Yonge Street, Highway 7, Major Mackenzie or the Richmond Hill GO Station are all designated parking strategy target areas. This does not include areas designated as Downtown, Key Development Areas, or Richmond Hill Regional Centre, all of which are well serviced by local and regional transit. The parking strategies employed by the Strategy as it pertains to Rapid Transit Corridors include: reduced on-site parking supply requirements; maximize use of on-street and/or off-site public parking; implement shared parking formula for mixed-use developments; parking charges for non-residential development; and travel demand management. The recommended minimum parking standards for the Rapid Transit Corridors are 20% lower than the current parking requirements for the Town, and developments within 400m are recommended to be subject to maximum parking supply rates, as defined by the Strategy.

Considering these are all viable and considered strategies in the future Lakeview Village development, it is therefore justifiable to further reduce the vehicle parking rate for non-residential uses.

## 5 Alternative Transportation Options

Parking demand can continue to be reduced through investments in alternative modes of transportation. This includes, but is not limited to car-share, bike-share, e-bike, e-scooter, and autonomous shuttle mobility technologies. Investments in the provision and expansion of these transportation options allows people the choice to opt-out of using a single-occupancy vehicle in favour of shared transportation, transit, and future modes. As ridership increases in these areas, vehicle ownership and parking demand will reduce, thereby reducing the parking supply required.

### 5.1 Car Share

The proposed reduction in residential parking spaces for car-share is based on the proposed by-law to amend Zoning By-law Number 0225-2007, as stated in Exception Table 4.15.6.XX. The proposed reduction rates are as follows:

#### City of Mississauga – a by-law to amend By-Law # 0225-2007

4.15.6.XX.22 Total resident parking spaces per residential dwelling unit **may be reduced at a rate of four parking spaces for every car-share parking space provided** on the site up to a maximum of 1 car-share parking space per 60 dwelling units.

With provisions in the by-law to reduce residential vehicle parking at a rate of four (4) vehicle parking spaces for every car-share parking space provided on site, with a max of 1 car-share for 6 dwelling units, it is recommended to provide ample car-share facilities for residents and visitors in Lakeview Village.

A survey in Metro Vancouver cited that respondent's top reasons for joining car-share included: cost savings compared to owning or leasing a vehicle; convenience of car share to transit; additional mobility provided by car share; and availability of a car share vehicle near home. With the inclusion of car-share facilities proposed as part of Lakeview Village's Transportation Demand Management strategy, demand will be present which would justify a reduction in the number of private residential parking spaces required. The following sections provide an overview of various car-share provisions in other cities, service options, and how the city can navigate a public-private car-share program.

#### 5.1.1 Existing Car Share Provisions

Cities across Canada and North America are experimenting with methods to regulate and manage car-share facilities and competition. These regulations have varying effects based on the type of service provided (fleet-based vs. peer-to-peer). Strategies include regulation of vehicle parking permits, designating specific car-share parking in cities, and requiring car-share parking in developments. This section examined various strategies, looking for best practices and ideal recommended parking rates for Lakeview Village in Mississauga.

##### Vancouver

The City of Vancouver does not currently allow one-way vehicles to end trips at parking meters. One-way and two-way vehicles may purchase a permit authorizing parking in all residential permit zone and resident parking only zones for an annual fee of \$75.67. Both one-way and two-way CSOs (car-share operators) in Vancouver are allowed to purchase *designated* parking spaces throughout the city. In non-metered areas, permitting fees are assigned based on a three-tiered geographic zone system, ranging from \$306 per parking space (for lower density areas) to \$1,346.40 per parking space (for highest density areas).

The City allows developers to substitute the number of required vehicle parking spaces at new developments at a ratio of **1 designated car-share vehicle space for 5 private auto parking spaces**. This enables developers to minimize the amount of space required for parking lots, and gives residents greater access to car-sharing, decreasing the necessity of car ownership.

##### Boston

Boston has two active two-way CSOs (Zipcar and Maven) and one active peer-to-peer CSO (Getaround). The city offers city-ordained on-street and municipal lot designated car-share spaces through its DriveBoston pilot program. For

an annual fee of \$2,700 in low-density urban areas and \$3,200 in higher-density areas, CSOs are provided 49 spaces in municipal lots and 31 spaces reserved curbside; with the number expected to rise to 200 spaces.

### New York

New York is served by both one-way (Car2go) and two-way (Zipcar and Enterprise Carshare) CSOs. One-way car-share vehicles are not allowed to end trips in metered or residential zones.

The city launched a Car-share Pilot Program (CPP) which will make on-street and municipal lot parking spaces freely available and designated for car-share. Up to 300 spaces will be on street corners, in residential and unmetered areas. Some spaces, up to 10%, are being made available in municipal parking garages. In order to participate, CSOs are required to place at least 20% of its on-street spaces in low-income neighborhoods currently underserved by car-sharing. CSOs that voluntarily give discounts to low-income members or provide at least one hand control adapted vehicles will be given additional parking spaces. The CPP is still in its initial stages, and its viability has yet to be assessed.

### Calgary

Calgary is served by 1 one-way service, Car2go. One-way car-share vehicles in Calgary may end their trip in any on-street parking space, including metered space, open to the general public except locations with posted time restrictions of less than two hours. CSOs are assessed a \$450 annual fee per one-way car-share vehicle with an all-zone RPP permit.

CSOs may request designated car-share spaces. Full-sized vehicles are assessed an annual fee of \$1000 while small vehicles (e.g. smart cars) are assessed a fee \$500 per year, plus a \$50 administrative fee. Calgary has codified policies to manage clustering of one-way vehicles. In business areas, car-share vehicles are not allowed to occupy more than 25% of any parking zone, averaged monthly. In residential areas, vehicles cannot occupy more than 20% of any block, again averaged monthly.

### Toronto

Toronto currently has a mix of one-way and two-way car-share providers operating in and around the city. These options will be explored in the next section. In April 2018, the city implemented an 18-month Free-Floating Car-Sharing Pilot Program, which allowed parking in any legal space, and eliminated the need to return to an origin space. This pilot required one-way vehicles to pay an annual fee of \$1,500 for residential parking permits. Car-share vehicles are not allowed to end trips in metered locations

As per the pilot, up to 500 overnight on-street permits can be issued per car-share Company for customers to park on permitted streets (for a maximum of 2,000 total permits). The Free-Floating Car-Share pilot permit fee is \$1487.85 plus HST. Streets and areas that are at 95 percent capacity or more for residential permit parking must be excluded. To mitigate clustering, no more than one car-share vehicle from the same company is allowed to park on a street block with residential permit parking for any length of time. The impacts of this policy and pilot are yet to be determined.

Permitted reductions in parking requirements have ranged from 0 to 10 parking spaces per dedicated car share space.

## 5.1.2 Car Share Operations in Mississauga and Toronto

The City of Toronto has a number of competing Care Share Operators (CSOs) providing services across the city. Their rates, parking models, types of vehicles, and types of service differ based on availability and demand. Generally, the forms of operation can be split between fleet-based car-sharing, and peer-to-peer car share. Depending on the company, parking is accommodated on city streets, municipal lots, private parking spaces, or stations. The CSOs also range from one-way, two-way, and flexible trip options. The following breakdown provides an overview of the specifics for each CSO, including Car2Go which recently ceased operations in Toronto but has the potential to return.

It is important to note that with the growth of these services, generally, it is safe to forecast the expansion of these car-share fleets outside of Toronto, into Mississauga and servicing the future Lakeview Village community.

- **Zipcar**
  - Yearly membership = \$70, plus \$30 application fee

- Hourly rates are around \$9.25
- Require a Zipcard to unlock/lock cars.
- Two-way car-share
- Vehicles located in designated parking spaces, and must be returned to the same space.
- Currently in Mississauga around Square One, UTM, Clarkson GO
- **Enterprise CarShare**
  - Annual memberships from \$45/year to \$200/month
  - Hourly rates from \$6
  - Daily rates from \$75
  - Overnight rates from \$29
  - Vehicles located in designated parking spaces, and must be returned to the same space.
- **Maven**
  - GM-owned, app-based, station-based, two-way car-share
  - Hourly rates from \$9
  - Vehicles located in designated parking spaces, and must be returned to the same space.
  - Currently in Toronto, stations not available in Mississauga
- **Turo**
  - Peer-to-peer Car-share (like car rental... auto Airbnb)
  - Most cars available in Canada, more variety of models
  - Cars need to return to home location. Typically private residential parking.
  - Owner makes money renting out car; Turo eliminates overhead costs
- **Communauto FLEX**
  - Free-floating car-share
  - \$0.41/minute, max \$15/hour, \$50/day
- *(formerly) Car2Go*
  - Once serving 80,000 users in Toronto, Car2Go stopped operations in Toronto on May 31, 2018, due to City's free-floating car-sharing pilot program restrictions and high parking permit fees of \$1500.
  - Originally, Car2Go vehicles parked in City Green P lots. Then changed to allow customers to park in any legal space, including residential areas.

The majority of car-share services currently provided in Toronto/GTA are fleet-based operations. Zipcar, Enterprise, Communauto, Maven, and Car2go are all fleet-based services, however their operations do differ. Zipcar, Enterprise and Car2go are all round trip services, requiring designated parking spaces in public or private lots, or curbside. These services would require full-time parking permits and would be the most formal approach to reducing private car parking spaces in favour of car-share parking. Maven is station-based, which has a similar approach but will require its own privately-owned lot to operate round trips to/from. Communauto Flex is the only fleet-based service currently providing a free floating approach, allowing one-way trips and requiring public parking permits for city streets. Turo is the only peer-to-peer car-share service in Toronto, although Getaround may soon enter the market. Turo does not require special car-share parking spaces, but rather operates using privately-owned individual vehicle parking spaces for two-way trips. The Turo model suggests a reduced parking demand as multiple residents could make use of a single neighbour's Turo car-share vehicle in their building.

### 5.1.3 Public vs. Private Car Share

As outlined, car-share services can operate in various ways, combining round-trip vs. free-floating, fleet-based vs. peer-to-peer services into at least four different models of service. To summarize:

- **Round-tip car-sharing:** a car-sharing service that allows its members to undertake trips beginning and ending at the same location.
- **Free-floating car-sharing (point-to-point):** a car-sharing service that allows its members to undertake one-way trips, beginning in one location and terminating in another, also known as point-to-point.
- **Fleet-based car-sharing:** a car-share service which operates a fleet of vehicles which can allow two-way or one-way services for riders. Fleet-based operations require parking spaces in addition to existing residential or visitor parking (i.e. ZipCar). Can rent spaces in either public or private parking lots.

- **Peer-to-Peer car-sharing:** a rental car-sharing service utilizing private owner vehicles. Vehicles would start/finish in their owner's personal residential parking space (i.e. Turo). This model eliminates need for special car-share parking spaces, while providing benefits of reduced parking demand.

All of these car-share models are presently provided by the private sector by the companies described above in section 5.1.2. Each of these private car-share companies have to rent parking spaces from private or public parking lots, or pay for public on-street parking permits for free-floating services, the costs for which vary across cities in North America. With private car-sharing, the companies usually cover all capital costs for vehicles, while cities take losses in parking revenue in local lots and city streets.

### **Public Care-Share**

Providing a public car-share service, formally in conjunction with public transit, would require substantial capital investments. Unlike private services, a city will likely only be able to provide fleet-based services similar to para-transit operations. It would be easy for city vehicles to park in public lots, rather than renting parking in private lots. However this designation of public car-share parking would eliminate the revenue from private rentals of those spaces. The main benefit of public car-share would be the ability of the city to regulate its own fleet, eliminate clustering, and ensure an equitable distribution of vehicles across all communities in the city. Public car-share services would also have more affordable, standardized prices, free from private surge-pricing and focus on profits.

### **Public-Private Car-Share**

A public-private car-share model has not yet been attempted but provides an interesting platform for collaboration. The city's main asset in a partnership would be land available for parking on- or off-street. Private companies would be able to provide fleets of vehicles outfitted with the latest technology. A collaboration would allow cities to offload capital costs, while providing spaces in particular communities in order to ensure equitable access, while private companies could eliminate high parking costs and enter new markets. The fleets could be operated around and in-partnership with public transit to directly service the 'first mile' or 'last mile' within cities.

## **5.1.4 Impacts to Parking**

As discussed, the provision of car-share services would justify a reduced parking rate as these models reduce individual vehicle ownership due to their convenience and elimination of vehicle capital costs from individuals. Specific rates would vary based on the supply of units, but existing pilot programs suggest an average of 1 designated car-share vehicle space for 5 private auto parking spaces.

To avoid an over-supply or under-supply of parking, the potential vehicle reduction effect within a building must account for both the on-site car share vehicle and the availability of nearby car share vehicles, whether in other apartment sites or on nearby streets.

Also a possibility is to link the provision of car share with "parking unbundling", whereby a prospective apartment customer is provided the option to buy/rent an apartment unit without a parking stall (and the option to have a stall for an extra fee). That parking stall could be converted into a car-share space, while reducing the overall required vehicle parking supply.

## **5.2 Bike Share**

Bike share programs provide residents and employees of a city or downtown area access to bicycles without the responsibility of owning, maintaining, and storing a bicycle themselves. The City of Mississauga's Cycling Master Plan, which aims to make the city safer for and more appealing to cyclists, called for the creation of bike-share systems and the City's Transportation Master Plan recommended creating a shared system of bikes, e-bikes or e-scooters.

City of Mississauga staff are currently starting a study to determine available options and models including publicly owned and operated, privately owned and operated as well as mixed publicly and privately owned and operated. This will include a review of bikes, e-bikes and e-scooters that operate within a docked (devices are picked up and dropped off at specific locations) and dockless (users can park the device within certain zones) style.

Currently, the Ontario Highway Traffic Act doesn't allow e-scooters on roads and sidewalks. The Government of Ontario is in the process of reviewing that Act. Active, shared mobility is certainly coming to Mississauga, with questions only surrounding how it will be regulated.

For Lakeview Village, it is recommended to reduce the quantity of vehicle parking spaces and providing special bicycle-share parking spaces, as a step towards promoting bike share and active mobility. The by-law to amend By-Law Number 0225-2007 suggests the rate as follows.

#### City of Mississauga – a by-law to amend By-Law # 0225-2007

4.5.6.XX.23 Total resident parking space per dwelling unit **may be reduced at a rate of 3 parking spaces for every 10 bicycle-share parking spaces** and an additional 1 parking space for 2 bicycle share parking spaces to a maximum of 25% of total required parking spaces per residential dwelling unit.

### 5.2.1 Local Bike Share Programs

#### Mississauga

There are at least two bike-share programs currently operating in the City of Mississauga. The University of Toronto at Mississauga (UTM) has a student bike share program and the City of Mississauga operates a bike share program at the civic centre for city employees.

BikeShare, at UTM, is a free bicycle rental and repair service open to all students, faculty and staff, providing free 48-hour bicycle rentals.

#### Toronto

Bike Share Toronto, administered by the Toronto Parking Authority, is Toronto's public bike sharing network. The current network is comprised of over 5000 bikes at 465 stations which covers over 100 square kilometres of the city.

#### Hamilton

SoBi (Social Bicycles) program in Hamilton features 11,000 members and has 131 stations with 750 bikes over 40 square kilometres.

#### Cambridge

The Region's Drop Mobility pilot project will have up to 500 bicycles available in 2019 from Spring through the Fall.

With Drop Mobility technology built right into each bicycle — an app is used to find, scan and unlock the bike with a smartphone — smaller stations, as opposed to the larger bike racks used in the CAB program, can be put around the region, or existing racks can be used. The bike does have to be returned to a marked station so it can be easily found by users. The cost is \$1 per hour of use. People are encouraged to take their own helmets, as they won't be provided. Riders must also follow the rules of road.

### 5.2.2 Public vs. Private Bike Sharing

Similar to public car-share, a public bike-share model would allow the city to regulate the number of bikes in neighbourhoods, ensure an appropriate distribution across communities, connect a larger network, and manage parking within public spaces. Public bike share would require a capital investment from cities for the bikes, parking stations and maintenance, however this would be far less costly than car-sharing provisions. Parking could also be provided at transit stops, within the public right-of-way, where space is available.

Public bike share could be linked to existing transit systems, and require the same Presto card to unlock the bike as when transferring to transit. This would open up options for fare integration within a fully-public system. As the City of Mississauga Cycling Master Plan suggests: *"integrated bike share access and fares with conventional transit can assist with journeys from a transportation hub to a final destination to and from the home ('last mile' journeys)."*

### 5.2.3 Bike Share Parking

There are currently no specific requirements for bike-share parking in Mississauga or around the GTA, beyond the need for bike share stations to be publically accessible. As stated in the City of Mississauga's Cycling Master Plan, up to 10 bikes can be parked in the same area required for one car. As bike share bicycles are no different than privately-owned bikes, similar bicycle parking rates based on GFA and building usage may be justified. The existing bicycle parking rates (and associated vehicle parking reduction rates) discussed in this memo may still apply to bike-share. In fact, the rates could be increased with a recommended split built in for privately-owned and bike-share bicycles. Bike-share may be predominantly used by employees and visitors, however studies in Germany show bike share being used as a reliable first-mile/last-mile solution to reach transit stations. To best promote active transportation and reduce vehicle demand, bike share parking may be provided at every development and transit hub at rates equivalent to existing bicycle parking standards.