Background Report I – Existing Conditions and Best Practices

Prepared for the City of Hamilton by IBI Group
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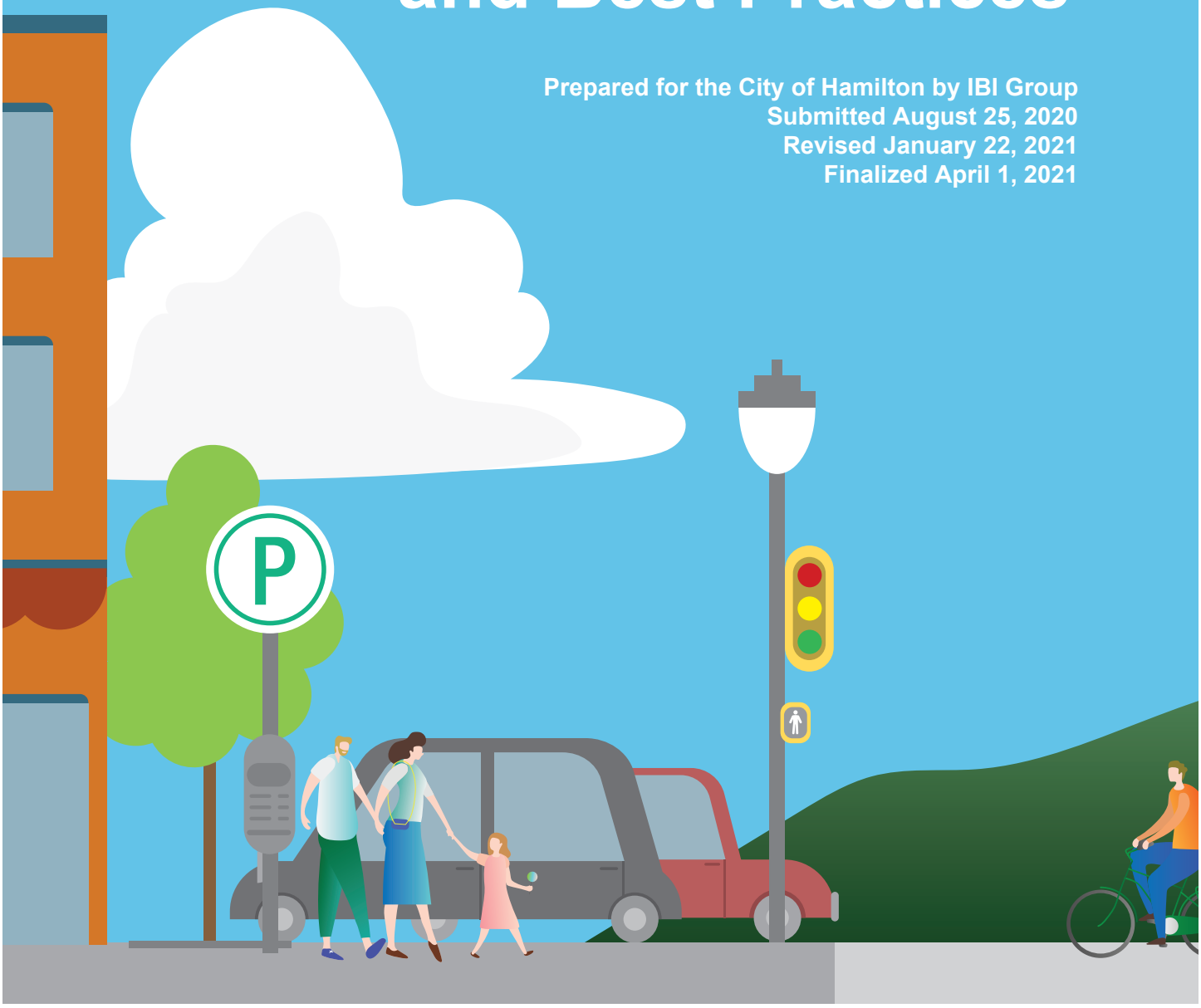

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1. Introduction

In 2013, the City of Hamilton completed the Downtown Hamilton Parking Study and Parking Garage Assessment. The study objective was to:

- Assess existing parking supply and demand in the Downtown;
- Investigate potential parking supply expansions to help meet future parking needs; and
- Complete a financial assessment for a new parking facility.

Since the 2013 study, there have been significant changes in the City such as increased development densities, reduced car ownership, the emergence and widespread use of ride-hailing and shared mobility platforms (i.e. Uber, Lyft), and updates to major planning documents such as the Urban Hamilton Official Plan.

In recent years, development in Downtown Hamilton has significantly increased, with developers pushing for higher development densities. In many cases, Downtown development approval means that existing off-street lots will be converted to different land uses, which can lead to a significant change in parking supply and location over a relatively short time. As surface lots are removed and available Downtown land becomes a more valuable resource, opportunities to build parking structures, or to better utilize the existing parking supply, should be explored to safeguard against a lack of parking availability hindering the economic growth of Downtown Hamilton.

Considering the extent of the changes, the City initiated the Parking Master Plan to provide direction for a strategic approach to parking policy, planning, financial sustainability, and enforcement that will align with other city-wide transportation and land use planning policies.

This document summarizes the Study's initial tasks including project start-up and scoping, review of Hamilton's existing parking system, stakeholder and public consultation conducted to-date, and a best practices review.

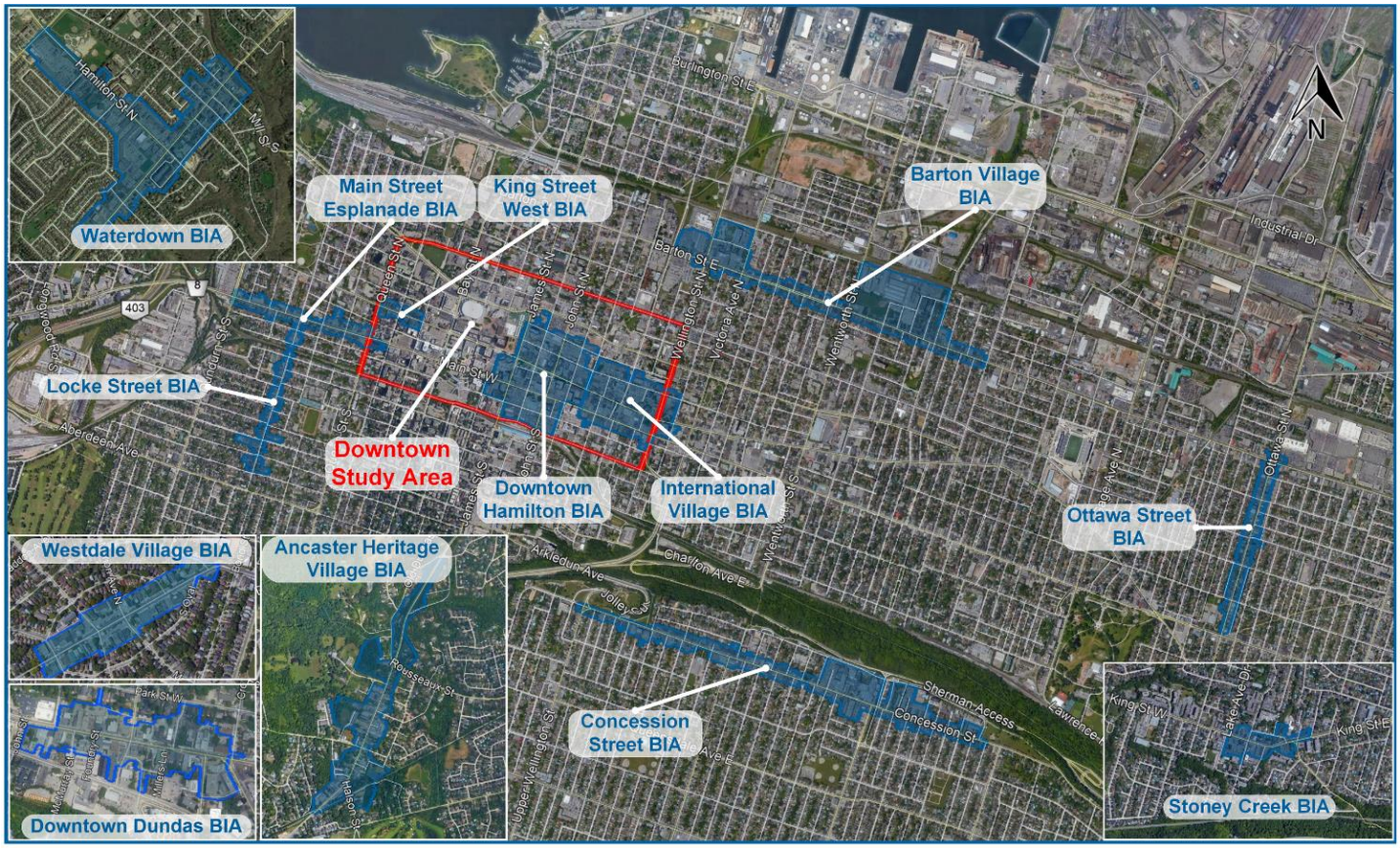
2. Existing Conditions Assessment

This section outlines the existing conditions parking supply and demand assessment. The study focuses on the Downtown Hamilton study area and the following BIAs:

- Ancaster Heritage Village;
- Barton Village;
- Concession Street;
- Downtown Dundas;
- Downtown Hamilton;
- International Village;
- King Street West;
- Locke Street;
- Main Street Esplanade;
- Ottawa Street;
- Stoney Creek;
- Waterdown; and
- Westdale Village.

A map illustrating the study areas is located in **Exhibit 2-1**.

Exhibit 2-1: Hamilton Parking Master Plan Study Areas



2.2 Parking Inventory

Geographically, the Hamilton municipal parking system is divided into Downtown Hamilton and 13 individual Business Improvement Areas (BIA), each operating as independent parking systems with varying paid parking prices and periods. Since the Downtown Hamilton and BIA areas operate as independent parking systems, each will be evaluated as such for the parking analysis.

Exhibit 2-2: Hamilton City Centre Parking Structure

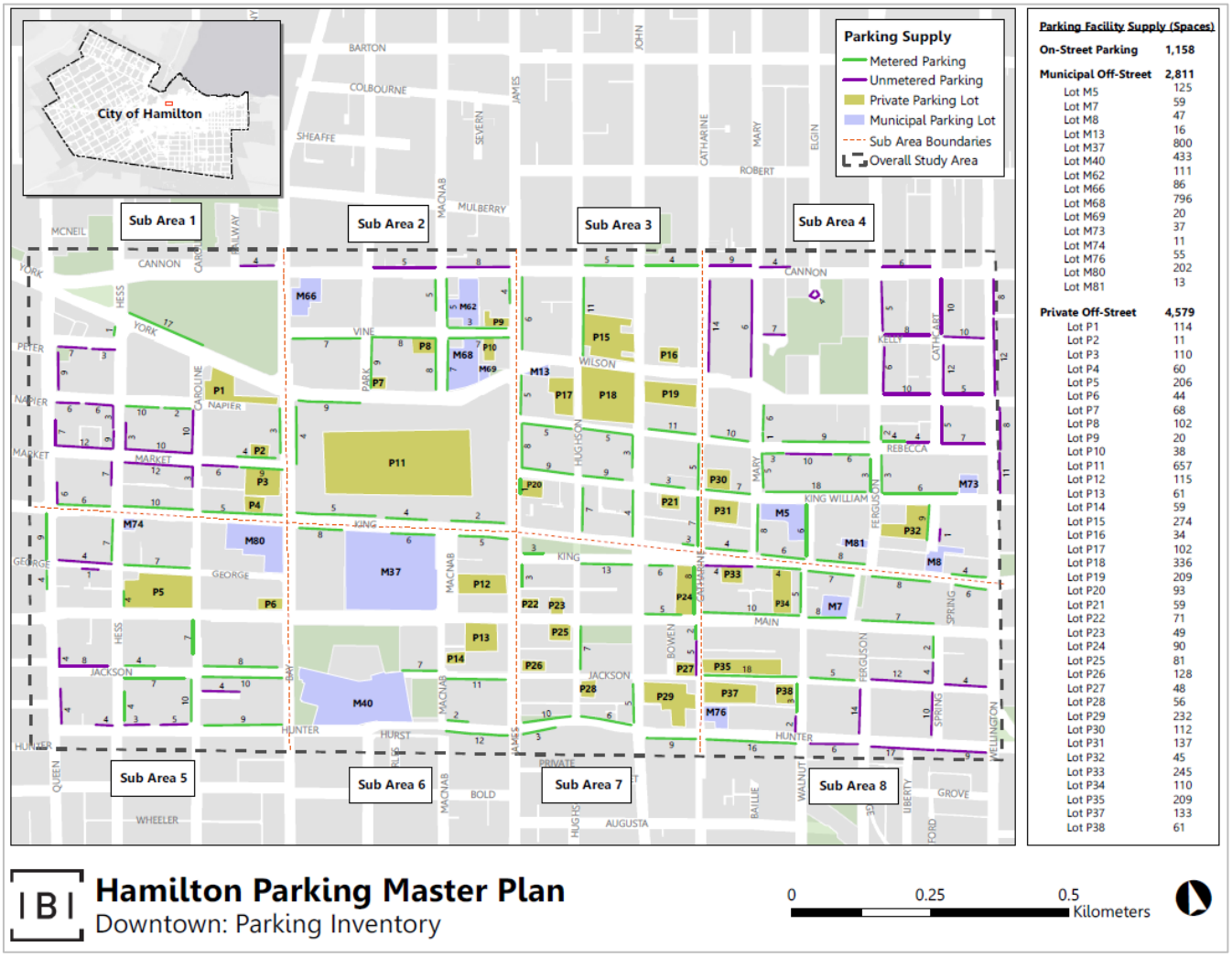
2.2.1 Downtown Hamilton

The Downtown Hamilton parking system consists of a total of 8,548 spaces divided in the following manner:

- 1,158 municipal on-street parking spaces;
- 2,811 municipal off-street parking spaces; and
- 4,579 publicly accessible privately-owned off-street parking spaces.

For the purposes of this study, the Downtown Hamilton study area is divided into eight sub area which are illustrated geographically in **Exhibit 2-3**. These sub-areas will provide a more refined assessment of parking operations since localized parking supply issues can be identified.

Exhibit 2-3: Downtown Hamilton Parking Inventory



During the time that parking demand surveys were conducted, on-street parking costs $1.50 per hour. Hourly parking rates in off-street parking facilities cost between $0.50 and $3.00 per hour, up to a daily rate (where applicable) of $6.00 to $12.00 a day, depending on the parking facility. Monthly rates vary from $45 per month to $140 per month depending on the parking facility.

As of July 6, 2020, on-street parking rates were increased to $2.00 per hour, hourly off-street parking rates were increased to $3.00 per hour, and monthly rates for off-street facilities were increased to be between $85 and $150 per month.

On-street paid parking operations are in effect between 9 AM to 6 PM on Monday, Tuesday, Wednesday, and Saturday, and between 9 AM to 9 PM on Thursday and Friday. There are some meters in Downtown Hamilton where paid parking is not in effect after 6 PM, or on Saturdays. Off-street parking operations are in effect for a longer period of time, and on all days except for Sundays and statutory holidays. Overnight parking is not permitted in off-street lots between 2 AM and 7 AM. In general, paid parking periods vary by BIA, **Exhibit 2-4** shows the times when paid parking is in effect.

Exhibit 2-4: Off-Street Paid Parking Periods

BIA	Off-Street Paid Parking Periods
Ancaster Heritage Village	-
Barton Village*	9:00 AM to 9:00 PM
Concession Street	9:00 AM to 9:00 PM
Downtown Dundas	9:00 AM to 6:00 PM
Downtown Hamilton	9:00 AM to 2:00 AM
International Village**	9:00 AM to 2:00 AM
King Street West	9:00 AM to 2:00 AM
Locke Street	-
Main Street Esplanade	-
Ottawa Street	9:00 AM to 2:00 AM
Stoney Creek	Free off-street parking
Waterdown	Free off-street parking
Westdale Village	-

* 6 lots require payment between 9:00 AM and 9:00 PM, 1 lot charges for parking 24 hours

** 3 lots require payment 9:00 AM and 2:00 AM, 1 lot requires payment between 9:00 AM and 10:00 PM, and 1 lot requires payment between 8:00 AM and 2:00 AM

Based on the off-street paid parking periods shown in **Exhibit 2-4**, paid parking in the BIAs generally start at 9:00 AM, and continue until 6:00 PM, 9:00 PM, or 2:00 AM depending on the BIA. For other parking lots that are not located within a BIA, the start times are generally 9:00 AM, and continue until 9:00 PM, 10:00 PM, or 2:00 AM, depending on the lot. The inconsistency between off-street paid parking periods throughout Hamilton may result in confusion for drivers.

2.2.2 Business Improvement Areas

The parking systems in the BIAs consist of municipally owned on-street and off-street parking facilities. **Exhibit 2-5** outlines each BIA's parking inventory.

Exhibit 2-5: BIA Parking Inventories

BIA	Off-Street (spaces)	On-Street (Spaces)	Total (spaces)
Ancaster Heritage Village	-	17	17
Barton Village	156	186	342
Concession Street	24	133	157
Downtown Dundas	331	91	442
Downtown Hamilton	71	224	295
International Village	281	117	398
King Street West	11	16	27
Locke Street	-	124	124
Main Street Esplanade	-	39	39
Ottawa Street	306	102	408
Stoney Creek	169	-	169
Waterdown	8	-	8
Westdale Village	-	98	98

Similar to Downtown Hamilton, on-street parking now costs $2.00 per hour. Hourly parking rates in off-street parking facilities cost between $0.50 and $1.50 per hour, up to a daily rate (where applicable) of $6.00. Monthly rates vary from $55 per month to $65 per month depending on the parking facility

In general, on-street paid parking operations are in effect between 9 AM to 6 PM on Monday, Tuesday, Wednesday, and Saturday, and between 9 AM to 9 PM on Thursday and Friday. Off-street parking operations vary by BIA and are in effect for a longer period of time, and are in effect on all days except for Sundays and statutory holidays. Overnight parking is not permitted in off-street lots between 2 AM and 7 AM.

Paid parking periods varies by BIA. In Downtown Dundas, on-street paid parking is in effect between 6 AM and 6 PM on weekdays, and municipal off-street parking is free within the Stoney Creek BIA.

Based on local knowledge, the following list presents a high level overview of parking operations in each BIA:

- **Ancaster Heritage Village**: Ancaster Village lies within an area of relatively high personal vehicle mode share (approximately 82% of trips to Ancaster are by automobile). Parking opportunities are generally provided on-site at local businesses with minimal public parking. On-site private parking is complemented by 17 paid on-street parking spaces. During surveys and site visits conducted in Fall 2019, 11 of the 17 on-street parking spaces were observed to be occupied at all times. Given the limited amount of on-street parking in the commercial core, one of the main challenges in Ancaster is a lack of clarity on what private parking lots are available for the public.

- **Barton Village**
  Barton Village is a mixed use area with a number of small family owned businesses fronting Barton Street. HMPS provides 186 on-street and 156 off-street parking spaces within the BIA. However, as Barton Street also functions as a Minor Arterial and truck route, and with high transit bus volumes, many conflicts are known to occur with vehicles parked on-street. The Hamilton General Hospital is a large parking demand generator with demand often spilling into the nearby residential neighbourhood. It was also observed that over half the drivers parked in the lots nearest the Hamilton General Hospital were accessible parking permit holders.

- **Concession Street**
  This “Main-street” has a number of businesses that serve the neighbourhood and broader areas with 133 on-street parking spaces provided along Concession Street. Municipal off-street parking opportunities are limited (24 spaces), however several businesses provide on-site parking. A minimum of 20% of parking spaces were available at the time of the surveys, indicating that while supply is sufficient today, future growth in parking demand could strain the parking system.

- **Downtown Dundas**
  This historic main-street area currently offers 331 municipal off-street parking spaces complemented by 91 on-street spaces. Outside of the Downtown Hamilton core, Downtown Dundas has the largest supply of publicly operated parking spaces in Hamilton. Notwithstanding its high personal vehicle mode share; many local residents are known to walk Downtown. While the on-street parking system was observed to be well utilized, almost 100 off-street parking spaces were available at all times.

Exhibit 2-6: Downtown Dundas BIA

*Source: Google Streetview

- **Downtown Hamilton**
  The Downtown Hamilton BIA is a sub-section of Downtown Hamilton (as opposed to Downtown Hamilton as defined by the Downtown Secondary Plan). Generally comprising the area east of James Street and centred on Gore Park, it is a traditional central business district environment with 224 on-street and 71 off-street parking spaces provided by the HMPS. Available parking opportunities are scarce in Downtown Hamilton during the weekday peak, with 95% of the parking spaces occupied. Strategies that help manage existing demand, like dynamic pricing and real-time-parking information systems, may help parkers more easily find available spaces without requiring expensive infrastructure like new parking structures. Strategies to help manage parking demand would also support Hamilton's planning documents (Official Plan, Downtown Transportation Master Plan, etc.). Large volumes of alternative curbside activities (transit, passenger pick-up/drop-off, office deliveries, pop-up patios, etc.).

Exhibit 2-7: Downtown Hamilton BIA

*Source: IBI Group data collection

- **International Village**
  Similar to Downtown Hamilton BIA, the International Village BIA is also located within Hamilton's Urban Growth Centre. Within this area HMPS provides 281 off-street and 117 on-street parking spaces within the BIA. Parking users are known to experience difficult in finding an available parking spaces during weekday business hours. Strategies aimed at managing parking demand would be beneficial. Large numbers of passenger pick-up/drop-off and ride-sharing curbside activities are known to occur.

- **King Street**
  Generally comprising the area along King Street between Caroline Street and Queen Street this is an active area for residential development with a number of new street level businesses following. Most parking needs are privately through on-site parking. However, the HMPS does provide 16 on-street and 11 off-street parking spaces. Finding an available on-street parking space may be challenging during peak periods, however available off-street parking was always observed. On-street parking time restrictions are known to create compliance issues.

- **Locke Street**
  This "Main-street" neighbourhood has 124 on-street parking spaces provided along Locke Street, but no municipal parking lots. Many restaurants front Locke Street with many multi-modal transportation visitors. The municipal on-street parking is complemented by on-site private parking at many establishments. Available on-street parking opportunities were observed at all times. The local churches are known to draw high parking demand on Sundays.

Exhibit 2-8: Locke Street BIA

*Source: IBI Group data collection

- **Main Street West Esplanade**
  This BIA extends between Queen Street and Dundurn Street. While lined with commercial establishments, Main Street predominantly serves through vehicles travelling Downtown from Highway 403 and western Hamilton. Similar to Locke Street, the 39 on-street parking spaces are complemented by privately owned on-site parking facilities. Abundant on-street parking opportunities are known to be available at all times, but high traffic volumes may give the perception that these spaces are not useable.

- **Ottawa Street**
  The Ottawa Street neighbourhood continues to evolve and is home to a large textile district, antique stores and other popular businesses. Large volumes of out of town visitors are known to frequent the area during weekends. The HMPS provides 102 on-street and 306 off-street parking opportunities in the Ottawa Street BIA, with plentiful available parking opportunities at all times. Recently, AM peak rush hour restrictions were eliminated in order to make on-street parking available for longer periods.

- **Stoney Creek**
  This main-street neighbourhood is characterized by small businesses fronting onto King Street West. A large supply of municipal off-street parking and on-street parking along King Street West is provided, both of which are available at no cost, with a two-hour maximum parking duration. Available parking opportunities are known to be limited during weekday business hours.

- **Waterdown**
  A historic main-street neighbourhood with large commercial businesses fronting onto Hamilton Street North. Municipal parking facilities are limited (8 off-street parking spaces), which means that business rely heavily on private parking operations. Approximately 55 free on-street parking spaces are also available. Concerns have been raised around the Zoning policy that small retail units (less than 450 m^2) do not require a parking spaces, and thus tend to rely on parking at adjacent uses. As the area intensifies, on-site parking supply shortages may develop, partially due to the lack of local municipally operated parking facilities.

- **Westdale Village**
  Main-street neighbourhood with small businesses fronting onto King Street West. Similar to the Locke Street BIA, the HMPS provides 98 on-street parking spaces which is complemented by privately owned on-site parking. On-street parking demand is known to be high, but parking opportunities were available at all times during the 2019 utilization survey. A high volume of boulevard parking with parking infiltration from surrounding areas is known to be an issue.

2.3 Existing Parking Operations

The existing conditions assessment is intended to evaluate the health of Hamilton's Downtown and BIA parking operations. Based on industry standards, parking systems are considered "effectively full" at an occupancy of approximately 85%, depending on lot size and other characteristics. This represents the point where finding a space becomes challenging for drivers, resulting in an increased likelihood of a driver having to search for an available parking space. Using the collected parking supply and demand data and a targeted 85% effective capacity threshold, the parking facilities that are under-utilized and over-utilized are identified. In other words, locations with parking supply deficiencies are identified.

2.3.1 Supply and Demand Data Collection

To provide a solid basis for the parking demand study and a meaningful needs analysis, it is important to accurately collect parking supply and demand data in the field. To capture typical weekday and weekend parking operations, parking utilization surveys were completed on the following days:

Downtown Hamilton study area (hourly intervals)

- November 19, 2019: between 8:00 AM and 7:00 PM; and
- November 23, 2019: between 11:00 AM and 6:00 PM.

BIAs (20 minute intervals with turnover data)

- November 20, 2019: between 10:00 AM and 6:00 PM.

The Downtown Dundas BIA and Westdale Village BIA parking surveys were conducted the week of March 6, 2020 between 10:00 AM and 6:00 PM.

To complement the IBI Group collected parking data, the City of Hamilton collected parking supply and demand data for approximately 50 isolated lots throughout Hamilton on September 26, 2019 and September 28, 2019.

The remainder of this section summarizes the data collected and trends identified therein.

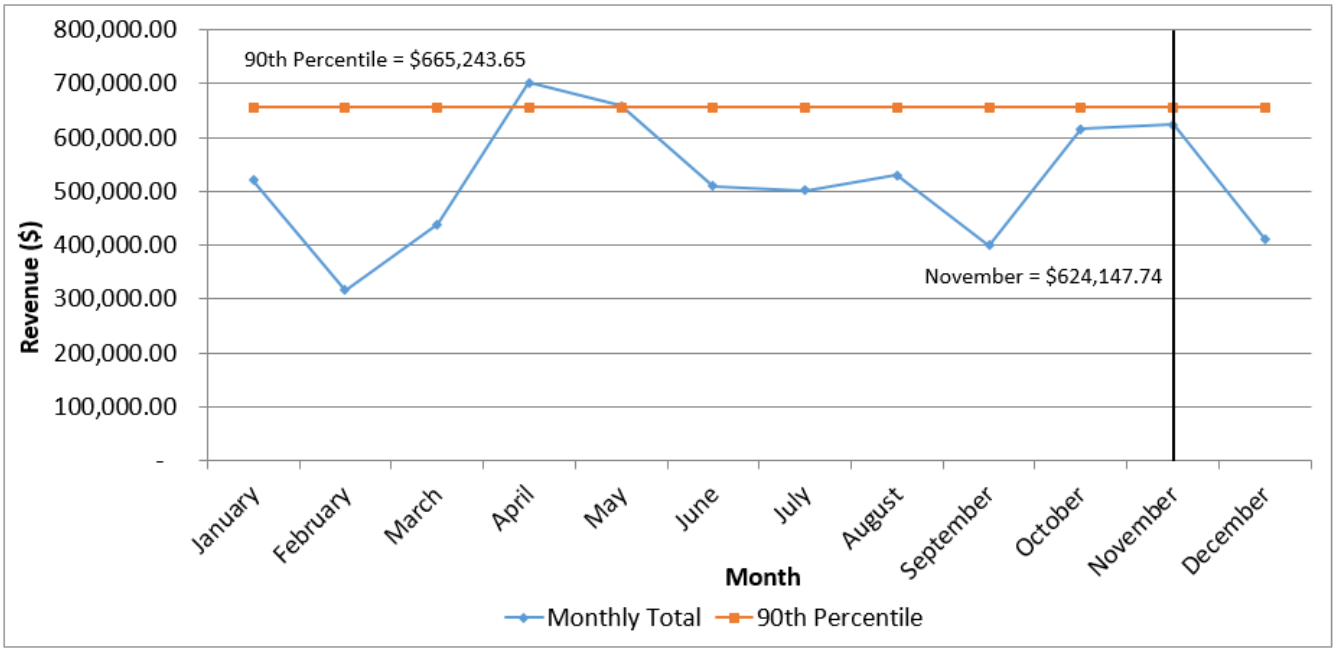
2.3.2 Seasonal Parking Variation

Parking patterns are known to vary throughout the calendar year. For example, parking demand may be slightly lower during the winter months due to cold weather and heavy snow fall. Parking systems are generally designed to accommodate the 85-90th percentile peak annual parking demand. This is intended to provide parking supply that is sufficient to accommodate all but the highest parking demand experienced throughout the year. Parking systems are not designed to accommodate the peak annual parking demand since there would be excess parking capacity available during the remainder of the year.

To assess the seasonal variation of demand in the study areas the City of Hamilton provided monthly parking revenue data for 2018. To determine the seasonal adjustment factor, the parking revenue collected during the month corresponding to the month the utilization surveys were completed (November 2019) were compared to the 90th percentile parking revenue.

Exhibit 2-9 shows revenue in November 2018 was $624,147 while the 90th percentile of revenue collection was $665,243. Therefore, we can assume the 90th percentile of system demand is approximately 6.5% higher ($665,243 / $624,147 = 1.065) than what was observed in the November survey. This 90th percentile of demand is the demand that will be used in the remainder of this report as well as later on in this study when forecasting future demand.

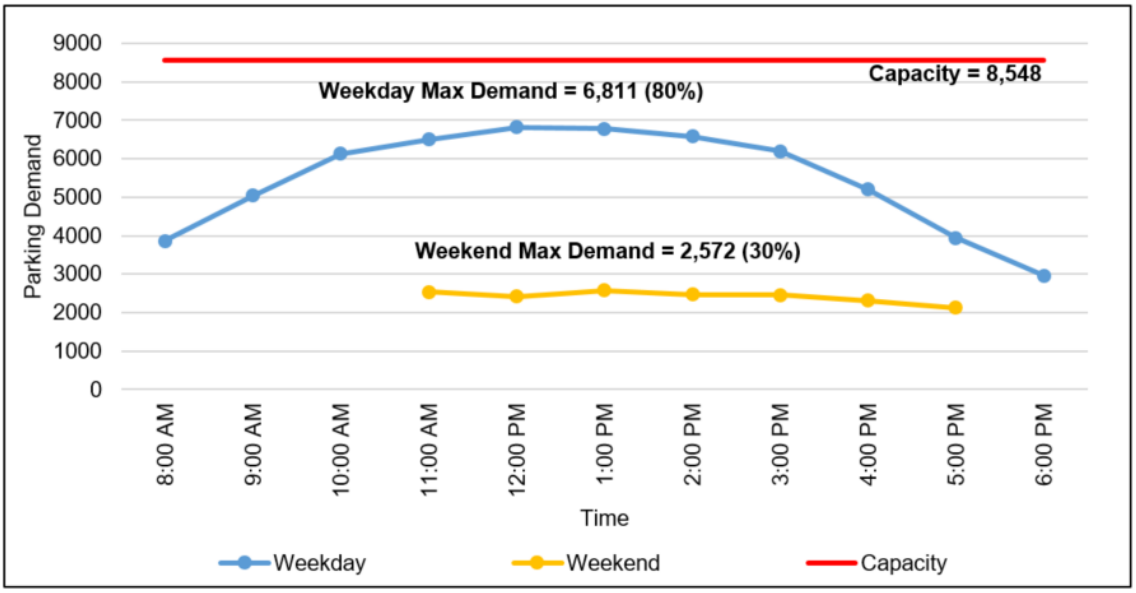
Exhibit 2-9: 2018 Monthly Parking Revenue



2.3.3 Downtown Hamilton Study Area

The weekday and weekend parking utilization observed during the survey period for the Downtown study area is shown in **Exhibit 2-10.**

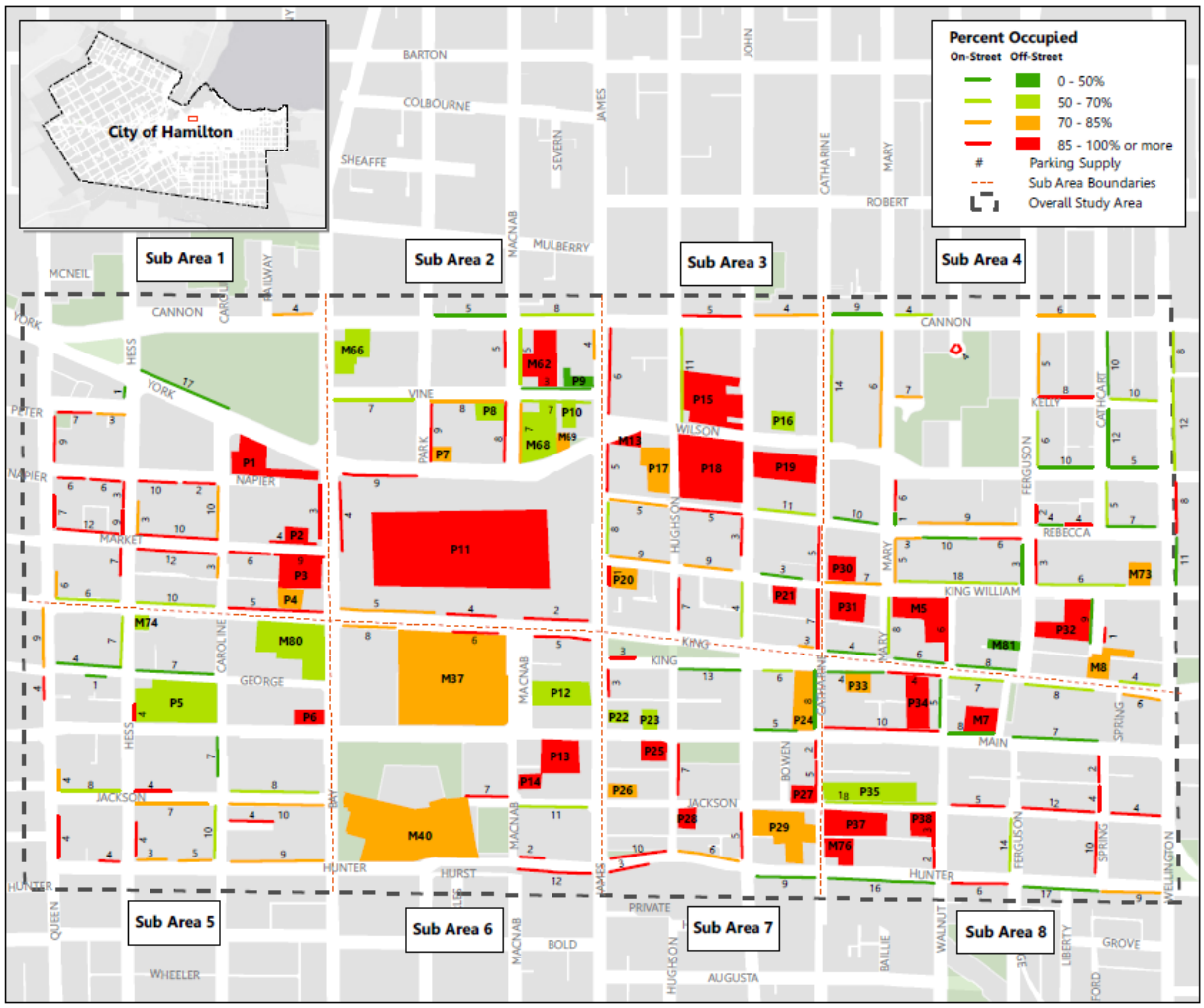
Exhibit 2-10: Downtown Parking Area Utilization



As shown in **Exhibit 2-10**, the Downtown parking system peaked at noon during the weekday with a peak utilization of 80%. While overall utilization remains below the 85% effective capacity threshold, individual parking facilities operating near capacity were observed.

The Downtown Hamilton parking supply and demand data is illustrated geographically in **Exhibit 2-11.** The Exhibit illustrates occupancy during the system wide period of peak parking demand, which occurred during the weekday at 12:00 PM.

Exhibit 2-11: Downtown Hamilton Parking Supply and Demand (Weekday 12:00 PM)



Parking Facility	Occupancy/Supply (Spaces)
On-Street Parking	**811/1,155**
Municipal Off-Street	**2,111/2,811**
Lot M5	131/125
Lot M7	61/59
Lot M8	38/47
Lot M13	15/16
Lot M37	633/800
Lot M40	307/433
Lot M62	99/111
Lot M66	55/86
Lot M68	542/796
Lot M69	17/20
Lot M73	30/37
Lot M74	7/11
Lot M76	58/55
Lot M80	114/202
Lot M81	4/13
Private Off-Street	**3,887/4,579**
Lot P1	118/114
Lot P2	9/11
Lot P3	110/110
Lot P4	46/60
Lot P5	117/206
Lot P6	46/44
Lot P7	51/68
Lot P8	61/102
Lot P9	6/20
Lot P10	23/38
Lot P11	645/657
Lot P12	59/115
Lot P13	66/61
Lot P14	54/59
Lot P15	240/274
Lot P16	23/34
Lot P17	83/102
Lot P18	312/336
Lot P19	184/209
Lot P20	78/93
Lot P21	51/59
Lot P22	49/71
Lot P23	29/49
Lot P24	70/90
Lot P25	80/81
Lot P26	95/128
Lot P27	41/48
Lot P28	62/56
Lot P29	184/232
Lot P30	117/112
Lot P31	129/137
Lot P32	42/45
Lot P33	198/245
Lot P34	95/110
Lot P35	137/209
Lot P37	114/133
Lot P38	63/61

Hamilton Parking Master Plan
Downtown: Peak Occupancy (Weekday 12:00 PM)

0 0.25 0.5 Kilometers

As illustrated in **Exhibit 2-11**, many on-street segments and off-street lots operate at or above the 85% effective capacity threshold. The following parking lots were observed to operate at 100% capacity:

- Municipal Lots M5, M7, and M76; and
- Private Lots P1, P3, P6, P13, P28, P30, and P38.

These lots operating at capacity are spread throughout the Downtown Hamilton study area indicating that there is no one hot spot driving demand in Hamilton. The land uses in close proximity to these lots are likely the cause of the localized peaks in parking demand. For example, high parking demand is likely generated by the FirstOntario Centre, Art Gallery of Hamilton, City Hall, and a concentration of small restaurants and shops in close proximity.

While these operations are not necessarily an issue if there are parking opportunities available nearby, large groups of parking facilities operating near capacity in close proximity may indicate a localized parking shortage.

A tabular summary of sub-area parking occupancies during the system wide peak is shown in **Exhibit 2-12**.

Exhibit 2-12: Downtown Hamilton Sub Area Operations (Weekday 12:00 PM)

Sub Area	Parking Occupancy			
	On-Street	Off-Street (Municipal)	Off-Street (Private)	Total
1	85%	N/A	96%	92%
2	80%	70%	89%	79%
3	81%	92%	88%	87%
4	54%	92%	98%	80%
5	71%	57%	65%	64%
6	91%	76%	76%	77%
7	61%	N/A	81%	79%
8	69%	104%	80%	81%

Based on the sub area operations outlined in **Exhibit 2-12**, the following observations are noted:

- Overall parking operations in sub-areas 1 and 3 were over effective capacity. This indicates a parking supply shortage where strategies to manage or redistribute parking demand would be useful;
- Private off-street parking facilities in sub-area 2 operated at effective capacity. However, available parking opportunities were available in the municipal off-street parking facilities;
- While overall operations remained below effective capacity, both private and municipal off-street facilities were observed to operate over effective capacity in sub-area 4. This indicates an off-street parking supply shortage where strategies to manage or redistribute off-street demand would be useful;
- On-street parking facilities operated above effective capacity in sub-area 6. This indicates an on-street parking supply shortage where strategies to manage or redistribute on-street demand would be useful;
- Both municipal off-street parking facilities in sub-area 8 (Lots M7 and M76) were observed to operate at capacity. The 104% utilization is a result of the seasonal adjustment factor. Additional off-street parking opportunities were available in the private off-street facilities to accommodate overflow demand;
- Generally off-street facilities saw higher occupancy rates than on-street facilities, demonstrating a user preference for off-street facilities given the current distribution of supply, parking time limits, and pricing characteristics.

2.3.4 Business Improvement Areas

The parking supply and demand during the peak period for each BIA is illustrated in **Exhibit 2-13**. Note that each BIA operates as an isolated parking system, therefore individual peak periods were identified for each BIA.

Exhibit 2-13: BIA Parking Supply and Demand

BIA	Type	Supply	Peak Demand	Peak Utilization	Time of Peak
Ancaster Heritage Village	On-Street	17	11	65%	11:00 AM - 12:00 PM
	Off-Street	-	-	-	
	Total	17	11	65%	
Barton Village	On-Street	186	155	83%	1:00 PM - 2:00 PM
	Off-Street	156	104	67%	
	Total	342	259	76%	
Concession Street	On-Street	133	119	89%	12:00 PM - 1:00 PM
	Off-Street	24	15	63%	
	Total	157	133	85%	
Downtown Dundas	On-Street	91	83	91%	1:00 PM – 2:00 PM
	Off-Street	331	250	76%	
	Total	422	333	79%	
Downtown Hamilton	On-Street	224	203	91%	1:00 PM - 2:00 PM
	Off-Street	71	71	100%	
	Total	295	275	93%	
International Village	On-Street	117	86	74%	12:00 PM - 1:00 PM
	Off-Street	281	265	94%	
	Total	398	351	88%	
King Street West	On-Street	16	14	88%	11:00 AM - 12:00 PM
	Off-Street	11	7	64%	
	Total	27	21	78%	
Locke Street	On-Street	124	108	87%	12:00 PM - 1:00 PM
	Off-Street	-	-	-	
	Total	124	108	87%	
Main Street Esplanade	On-Street	39	9	23%	10:00 AM - 12:00 PM
	Off-Street	-	-	-	
	Total	39	9	23%	
Ottawa Street	On-Street	102	48	47%	1:00 PM - 2:00 PM
	Off-Street	306	56	18%	
	Total	408	104	25%	
Stoney Creek	On-Street	-	-	-	9:00 AM - 10:00 AM
	Off-Street	169	153	91%	
	Total	169	153	91%	
Waterdown	On-Street	-	-	-	2:00 PM - 3:00 PM
	Off-Street	8	5	63%	
	Total	8	5	63%	
Westdale Village	On-Street	98	84	86%	4:00 PM – 5:00 PM
	Off-Street	-	-	-	
	Total	98	84	86%	

As outlined in **Exhibit 2-13**, the parking systems in several BIAs were observed to operate at or above the effective capacity threshold. Special attention will be given to these BIAs when projecting future parking operations.

In general, the periods of peak parking demand coincide with regular business hours, which is to be expected. However, the Westdale Village BIA experienced a peak parking demand between 4:00 and 5:00 PM. This trend is expected to occur given the many commercial land uses along King Street. Commercial land uses typically generate demand immediately after business hours

as employees stop by the establishments on their way home. Additionally, McMaster University is located nearby and many students and staff are known to be ending classes at this time which could further increase demand.

Hamilton General Hospital is located within the Barton Village BIA. In Lot 80, the parking lot nearest the Hamilton General Hospital, over half of the vehicles parked in the parking lot had an accessible parking permit. City staff have noted that the provision of free parking for accessible permit holders may be leading to abuse of the permits. As such, the City should consider beginning to charge accessible permit holders for parking prices, while still maintaining preferential spaces.

Maps illustrating the BIA parking supply and demand geographically (similar to the **Exhibit 2-11** Downtown Hamilton study area map) were prepared for each BIA, which are located in Appendix A.

2.3.5 Isolated Municipal Parking Lots

The Hamilton Municipal Parking System includes numerous parking lots distributed throughout the City in various locations. These lots are not considered part of either the Downtown study area or any of the 13 BIAs due to their isolated locations.

The parking supply and demand surveys for these isolated lots were completed by the City of Hamilton staff and provided to IBI Group for assessment. There are 21 of these isolated lots of various sizes ranging from 9 to 65 spaces. In general, parking operations in these were observed to be below effective capacity, excluding the following lots:

- Lot 20 (Southam): peak utilization of 100%;
- Lot 33 (Southam): peak utilization of 98%; and
- Lot 34 (Homeside): peak utilization of 100%.

In addition to the parking opportunities provided at these lots, private businesses in the area provide on-site parking and on-street parking opportunities are available in the surround residential streets. While additional parking opportunities are available, the demand in these parking facilities is unknown.

Hamilton should monitor the private parking demand and on-street parking demand in close proximity to Lots 20, 33, and 34 to determine whether parking opportunities are available. If the surrounding parking supply is determined to operate near capacity as well, a parking shortage could exist. Note that Lots 22 and 33 are located within a 200m walking distance. A parking supply shortage in the area is evident given that both lots operated near capacity.

2.4 Parking Turnover and Duration

Parking turnover and duration data was collected for on-street segments in the BIAs. Parking turnover represents the number of unique vehicles that are served by a parking system throughout the day, while parking duration represents the length of time those vehicles are parked in a space.

In general, turnover is desired to be maximized so parking spaces serve as many users as possible. However, low turnover is not necessarily an issue. A lower turnover means that a low number of vehicles are being served per day. If parking demand is low, then the turnover will naturally be low as well since only a small number of parking users are being served. Therefore turnover is typically examined in combination with duration to gain a better understanding of parking operations.

Parking operational issues are indicated by a combination of low turnover and high parking duration. This means that a small number of vehicles are parking for long periods of time. In areas

with high parking demand, high turnover rates with low durations are essential to serve a high number of parking users.

Exhibit 2-14 presents the overall parking turnover observed in each BIA, while **Exhibit 2-15** presents the observed parking durations.

Exhibit 2-14: Parking Turnover for each BIA

BIA	Unique Vehicles	Supply (spaces)	Turnover (vehicles/space/day)
Ancaster Heritage Village	65	17	3.83
Barton Village	879	186	4.73
Concession Street	1167	133	8.77
Downtown Dundas	582	91	6.39
Downtown Hamilton	1115	224	4.98
International Village	544	117	4.65
King Street West	176	16	11.03
Locke Street	875	124	7.05
Main W Esplanade	74	39	1.88
Ottawa Street	481	102	4.71
Westdale	506	98	5.16

Note: parking duration for Stoney Creek and Waterdown BIA were not collected since there was no on-street paid parking

Exhibit 2-15: Parking Duration for each BIA

BIA	Parking Duration (hh:mm)									Average Duration (hh:mm)
	0:20	0:40	1:00	1:20	1:40	2:00	2:20	2:40	3:00+	
Ancaster Heritage Village	36	15	6	1	0	6	1	0	0	0:40
Barton Village	272	161	137	93	61	42	30	23	60	1:10
Concession Street	708	286	110	23	20	5	4	7	3	0:33
Downtown Dundas	210	135	118	47	17	20	14	7	14	0:52
Downtown Hamilton	356	204	146	107	84	51	41	34	92	1:14
International Village	187	114	86	67	42	16	12	6	14	0:56
King Street W	133	26	8	3	5	0	0	0	0	0:28
Locke Street	547	102	99	37	33	9	23	4	21	0:43
Main West Esplanade	63	7	3	0	0	0	0	0	0	0:23
Ottawa Street	294	86	42	25	18	7	3	2	3	0:37
Westdale Village	167	116	98	45	22	14	7	6	32	1:01

Note: parking duration for Stoney Creek and Waterdown BIA were not collected since there was no on-street paid parking

Based on the findings presented in **Exhibit 2-14** and **Exhibit 2-15**, the following conclusions can be drawn:

- The King Street West (11.03 vehicles per space per day), Concession Street (8.77 vehicles per space per day), and Locke Street (7.05 vehicles per space per day) BIAs all experienced

high turnover. The average duration of stay for these BIAs was less than 45 minutes. These operations are considered health given the relatively high amount of vehicles being served for low durations;

- The Main West Esplanade (1.88 vehicles per space per day) and Ancaster Heritage Village (3.83 vehicles per space per day) had the lowest turnover. However, given that the average parking duration was less than 45 minutes, parking operations are considered healthy;
- On average, vehicles in the Downtown Hamilton BIA (1 hour 14 minutes), Barton Village (1 hour 10 minutes), and Westdale Village (1 hour 1 minute) were parked the longest. The average turnover in these BIAs was also relatively low when compared to the other BIAs (5 vehicles per day). Low turnover with high durations could indicate a parking operational issue if parking demand is also high; and,
- When compared to the other BIAs, the Downtown Dundas, International Village, and Ottawa Street BIAs all experienced relatively average parking durations (40 to 50 minutes) with relatively average turnover (5 to 6 vehicles per day).

2.5 Existing Conditions Summary

Downtown Hamilton Study Area

The parking supply and demand assessment indicates that the Downtown Hamilton parking system is sufficient to accommodate the existing parking demand. Parking demand was observed to peak at 12 PM on the weekday at 80% utilization, which is below the effective capacity threshold.

While capacity is sufficient overall, some parking facilities were observed to operate near or above effective capacity, particularly in Sub Areas 1, 2, and 8. It is likely valid that some users perceive a shortage in parking with occasional difficulty in finding a spot at some of the busier parking facilities, especially during the weekday. However, parking opportunities are available in close proximity to the parking facilities operating above effective capacity.

Parking demand was observed to be lower on the weekend when compared to the weekday. Weekend parking occupancy generally remained well below effective capacity, with the exception of on-street parking in Sub Area 2, which reached a max utilization of 95% at 12:00 PM. The high weekend parking demand is anticipated to be generated by Jackson Square which is an indoor shopping and entertainment complex.

Business Improvement Areas

The Downtown Hamilton BIA experienced the highest parking demand for both on-street and off-street parking facilities, with the majority of parking facilities operating above effective capacity. Additionally, the International Village BIA's off-street system operated near capacity during the peak period. While parking operations in these BIAs were near or at capacity, they are subsections of the Downtown Hamilton study area. In other words, additional parking opportunities are available nearby.

The parking systems in the Concession Street, Downtown Dundas, King Street West, Locke Street, Stoney Creek, and Westdale Village BIAs operated at the 85% effective capacity threshold during the peak period. While not an issue under existing conditions, special attention will be paid to the parking demand in these BIAs under future conditions to maintain acceptable operations.

Parking operations remained under effective capacity at all times in the Ancaster Heritage Village, Barton Village, Main Street Esplanade, and Ottawa Street BIAs.

3. Consultation Process

The consultation process is intended to provide key stakeholders and the general public an opportunity to learn about the study, provide insights into existing issues and desired study outcomes, and provide feedback about the preliminary study conclusions and recommendations.

The Consultation Process has a three-phased approach. The first phase involves online surveys, stakeholder interviews, and a Public Consultation Meeting to gain an understanding of existing parking operations and challenges. The second phase will include stakeholder engagement and interviews to present preliminary recommendations to receive feedback to finalize the recommendations. The third phase will include the Public Consultation Meeting 2 and two Council meetings where the final findings and recommendations from the study will be presented and questions will be answered by the project team.

This document summarizes the findings of the consultation activities completed to-date.

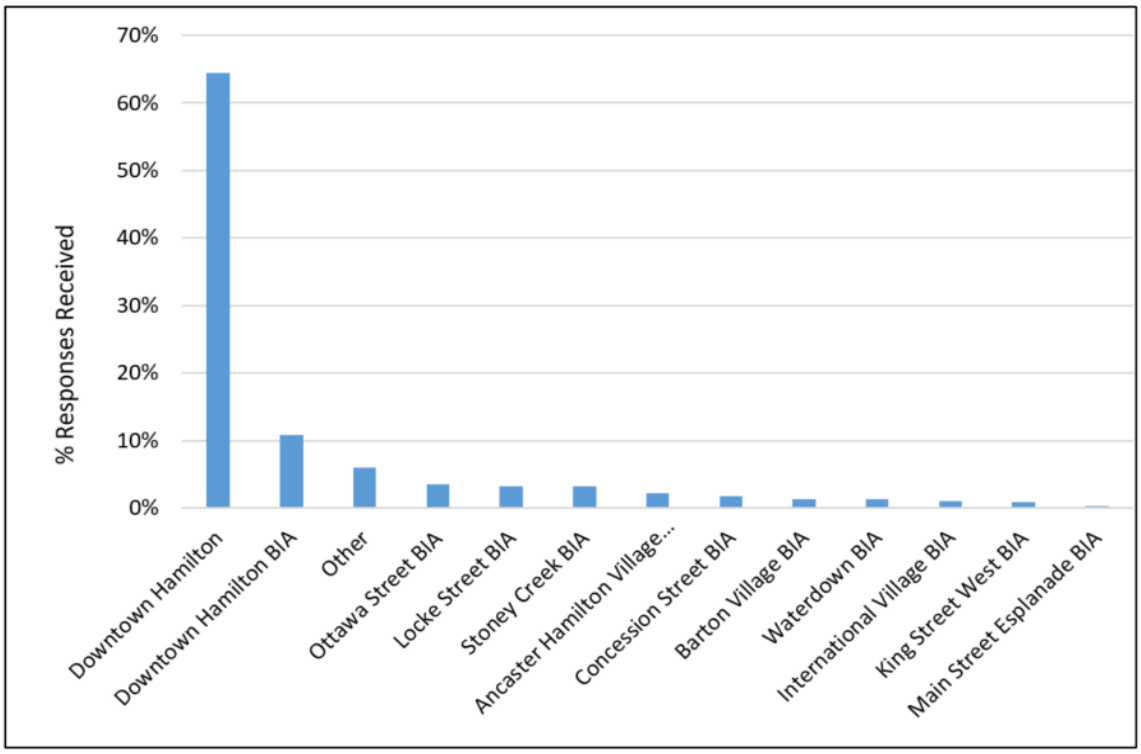
3.1 City-Wide Web-Based Survey

Two web surveys were conducted, one targeting stakeholders, and the other targeting the general public. Survey questions were developed in coordination with the City of Hamilton project team and are intended to identify existing parking issues and desired study outcomes.

3.1.1 General Public Survey

As of March 12, 2020, a total of 1,389 responses were collected for the online public survey. The vast majority of survey responder's travel to the Downtown Hamilton study area, the distribution of responses by location is illustrated in **Exhibit 3-1**.

Exhibit 3-1: Collected Public Survey Responses by Location



Based on survey responses, the general public indicated that:

- 53% support sub-divisions promoting alternative modes of transportation over vehicles.
- 27% use alternative modes of transportation to travel Downtown. 24% currently use vehicles but are willing to consider switching if alternative modes were improved.
- Responders are generally willing to walk from a parking spaces to their destination was between 200-400m (39%) and 400-800m (28%).
- 64% would walk further if parking was cheaper.
- 60% find the existing parking wayfinding signage inadequate or confusing.
- 61% have difficulty finding a space in their desired location.
- 56% believe parking is too expensive.
- 46% of responders are unsatisfied with the overall parking experience, while only 27% satisfied.
- 50% do not support parking price increases to facilitate parking improvements compared to 31% who do.
- The most requested designated zones were additional bike storage (42% of responders) and passenger pick up and drop off zones (43% of responders).
- The most requested wayfinding improvement was a parking app that displays the locations of City-owned parking facilities.
- The most requested payment process improvement was upgrading the parking machines to be more user friendly and to accept multiple methods of payment.
- In terms of curbside use, short term vehicle parking and mobility were identified as the two most prioritized uses.
- 50% are in favour of increasing enforcement to combat illegal parking, while 30% are against.

Key takeaways include:

- The vast majority of comments relate to the Downtown area or Downtown BIA which may bias the responses towards the Downtown perspective;
- Parking wayfinding improvements would be seen as beneficial;
- Alternative methods of payment would be seen as beneficial, including new pay parking machines and a pay-by-phone app;
- Parking prices are desired to be minimized;
- There is potential to reduce parking demand through transportation demand management strategies;
- There is interest in moving towards a more multi-modal transportation system; and
- The maximum acceptable walking distance is approximately 400m. Although, users would be willing to walk further for reduced prices.

Full general public survey responses are included in Appendix B.

3.1.3 Stakeholder Survey

As of March 12, 2020 a total of 41 responses were collected for the online stakeholder survey. Based on survey responses, respondents indicated that:

- 80% are located in the Downtown Hamilton study area with 58% of those located in the International Village Business Improvement Area (BIA).
- 63% receive parking complaints on a weekly basis. The most common complaints are related to expensive parking prices and difficulty in finding available parking.
- The most commonly requested parking improvements are related to inconvenient payment process and difficulty in finding available parking. Expensive parking prices and safety were also identified as areas for improvement.
- There are mixed feelings regarding parking price increases to support parking improvements (41% in favour and 50% against).
- The most requested designated zones were additional bike storage (46% of responders) and commercial loading zones (39% of responders).
- There is no clear preferred alternative for increasing parking revenues (if needed), all options received between 9-21% of responses. The two most favoured options were shifting the funding model to support parking through property taxes and increasing prices for residential parking permits.
- The most requested wayfinding improvement was a parking app that displays the locations of City-owned parking facilities.
- The most requested payment process improvement was upgrading the parking machines to be more user friendly and to accept multiple methods of payment.
- 76% are in favour of a parking equilibrium policy where existing supply is maintained.
- In terms of curbside use, short term vehicle parking and mobility were identified as the two most prioritized uses.
- 45% are in favour of increasing enforcement to combat illegal parking, while 36% are against.

Key takeaways include:

- Additional parking opportunities and improvements to the pay parking experienced are two areas where parking operations can be improved;
- Potential solutions for the above two areas of improvement include a parking app with wayfinding and pay-by-phone capabilities, and upgraded pay parking machines; and
- Parking prices are desired to be minimized.

Given that the majority of stakeholder survey responses were from the International Village, the above results may be biased towards issues experienced within this BIA. To understand the desires and issues related to each BIA, the responses were isolated based on BIA. The following observations were noted:

Downtown Hamilton (Study Area)

- 9 stakeholder responses were collected for the Downtown Hamilton (study area).
- The key difference noted was that mobility was identified as the clear priority for curbside use.

All other BIAs (excluding International Village and Downtown Hamilton)

- 9 stakeholder responses were collected from all other BIAs including 2 from the Downtown Hamilton, 1 from Ancaster, 1 from Barton Village, 1 from Ottawa Street, and 4 from “Other” locations. The “Other” locations included 3 from Westdale Village and 1 from the Central Mountain.
- The two major differences noted were stakeholders were generally not supportive of parking price increases to support parking improvements (71%), and the most requested payment process improvement was pay-by-phone.

Full stakeholder survey responses are included in Appendix C.

3.2 Map-Based Consultation Tool

A map-based consultation tool was developed that allows responders to identify locations where they have experienced parking related difficulties.

As of March 12, 2020, 94 responses were gathered with the majority of responses fairly well distributed in the Downtown Hamilton study area. Responses were provided for the following categories:

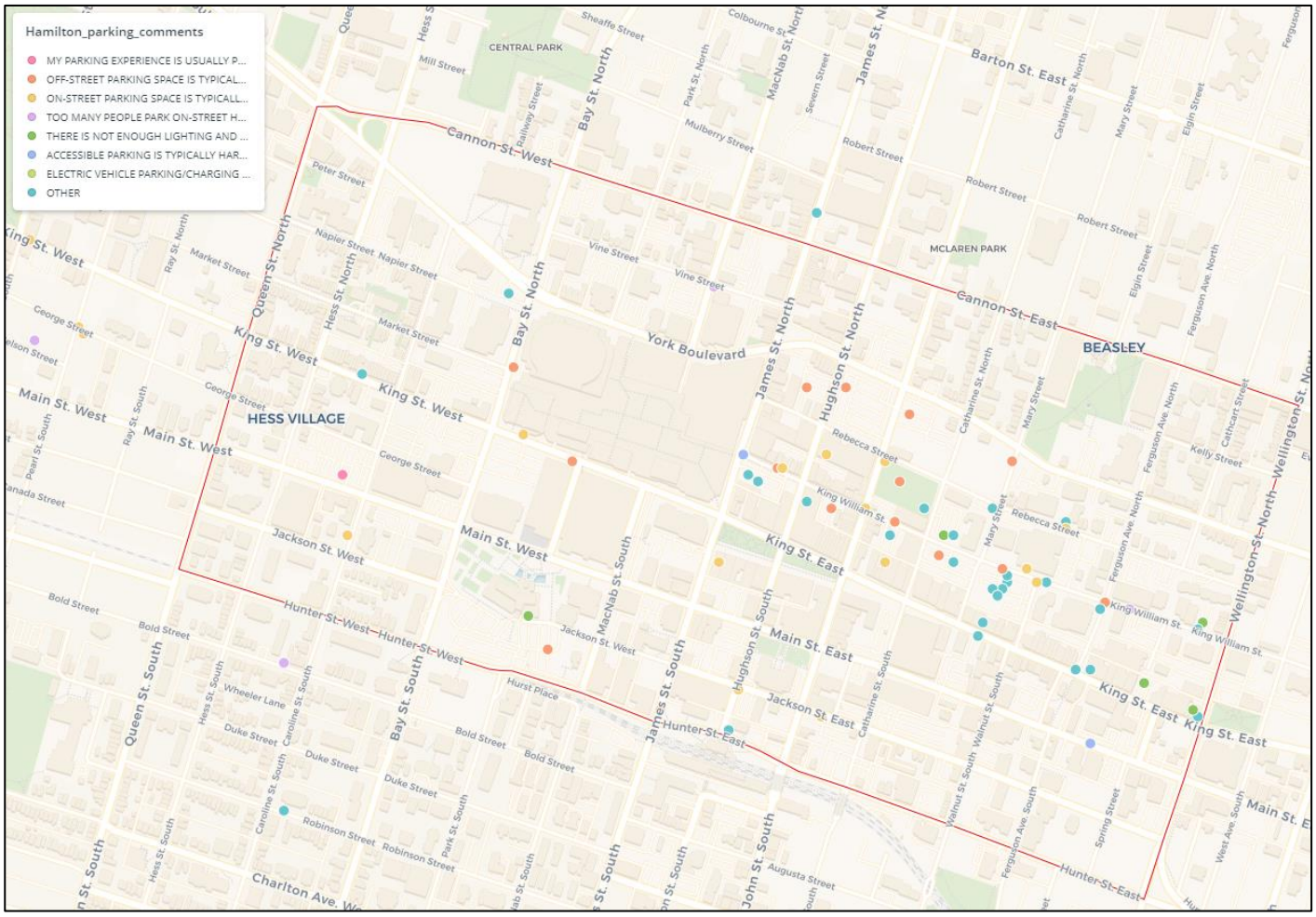
- My parking experience is usually positive here;
- Accessible parking is typically hard to find here;
- Electric Vehicle parking/charging would be useful here;
- There is not enough lighting and it feels unsafe to walk when parking here;
- Too many people park on-street here;
- Off-street parking space is typically hard to find here;
- On-street parking space is typically hard to find here; and
- Other.

The most commonly selected responses included difficulty in finding both on-street and off-street parking spaces, and the “Other” category. The most common responses under the “Other” category were also related to insufficient on-street and off-street parking.

The majority of responses were located in the Downtown Hamilton area, which are illustrated geographically in **Exhibit 3-2**. Full responses are located in Appendix D in table format and are available online at:

- **Website URL**: https://ibigroup-enterprise.carto.com/u/ibigroup-admin/builder/770889db-2165-44c4-995b-2b5f15a841c8/embed
- **Password**: Hamilton!

Exhibit 3-2: Map-Based Consultation Tool Results



As discussed above, the most common parking issues identified were related to difficult in finding on-street and off-street parking spaces. When isolating these two identified issues, a significant portion of the responses were observed to be located in the area encompassed by King Street to the south, James Street to the west, Wilson Street to the north, and Wellington Street to the east. This issue will be considered when developing solutions as part of the Downtown Parking Strategy task.

3.3 Public Consultation Meeting

The first Public Consultation Meeting (PCM) was held on January 22, 2020 with the objective of introducing attendees to the study and to collect input on existing parking operations, knowledge of existing issues, and desired study outcomes. The PCM was a “drop-in” open house format, with presentation boards on display to help lead discussions. The event was attended by 23 individuals.

The following key themes were identified:

- Parking operations should be self-funded, and parking should be priced at a point that encourages alternative modes of transportation (ex: more expensive than a transit pass).
- Seasonal pop-up patios were noted to have pros and cons. Patios promote a vibrant and active Downtown core, but they occupy popular on-street parking spaces.

- Increased long term parking supply needed.
- Expand the cycling network through the removal of on-street parking (with a focus on the BIAs).

The PCM boards are located in Appendix E.

3.4 Stakeholder Interviews

Two set of stakeholder interviews were conducted. The City completed interviews prior to commencing the study on June 4, 2019 with various BIAs to identify parking related needs, issues, and opportunities. Additionally, IBI Group will complete a second round of stakeholder interviews as part of the Hamilton Parking Master Plan project.

3.4.1 Stakeholder Meetings

On June 4, 2019, the City hosted a meeting with several BIAs with the objective of identifying parking related needs, issues, and opportunities. The following key topics were discussed:

- Ancaster Heritage Village: Improved on-street parking signage would reduce parking user confusion.
- Barton Village: On-street parking operations in close proximity to the General Hospital could be improved. Known issues include, compliance, demand spillover into the adjacent residential area, and hospital staff occupying the premium on-street spaces.
- Downtown Dundas: Improvements to transient parking operations is requested with the top priority being a better balance between permit and transient parking opportunities.
- Downtown Hamilton: Increased on-street and off-street parking opportunities are needed.
- International Village: Increased on-street and off-street parking opportunities are needed especially with the planned parking lot redevelopment projects.
- Locke Street: Increased on-street parking duration would be beneficial some strategic locations with limited off-street parking.
- Stoney Creek: No existing parking issues.
- Waterdown: Parking operations are known to be contentious, additional on-street and off-street parking supply would be beneficial.
- Westdale: Additional on-street and off-street parking opportunities would be beneficial.

The stakeholder meeting needs, issues, and opportunities provided by the City will be considered as the Parking Master Plan conclusions and recommendations are formulated. Full meeting notes can be found in Appendix F.

4. Best Practices Review

The best practices review was divided into two components: financial best practices, and parking policy and strategy best practices. The list of comparator municipalities was determined in collaboration with City staff, with the exception of Brampton and Mississauga which were added as IBI Group is highly familiar with practices in these locations and are generally comparable to the City of Hamilton. The City of Toronto was included for context. The municipalities assessed as part of this review are:

- Calgary
- Halifax (financial only)
- London
- Montreal
- Regina (financial only)
- Greater Sudbury,
- Thunder Bay,
- Windsor,
- Winnipeg,
- Toronto (financial only);
- Brampton, and
- Mississauga.

4.1 Financial Best Practices

The intent of the financial component of the best practices review is to develop an understanding of revenues and expenditures related to parking operations in comparator municipalities, as well as examine the long term financial strategies deployed.

4.1.1 Financial Sustainability Review

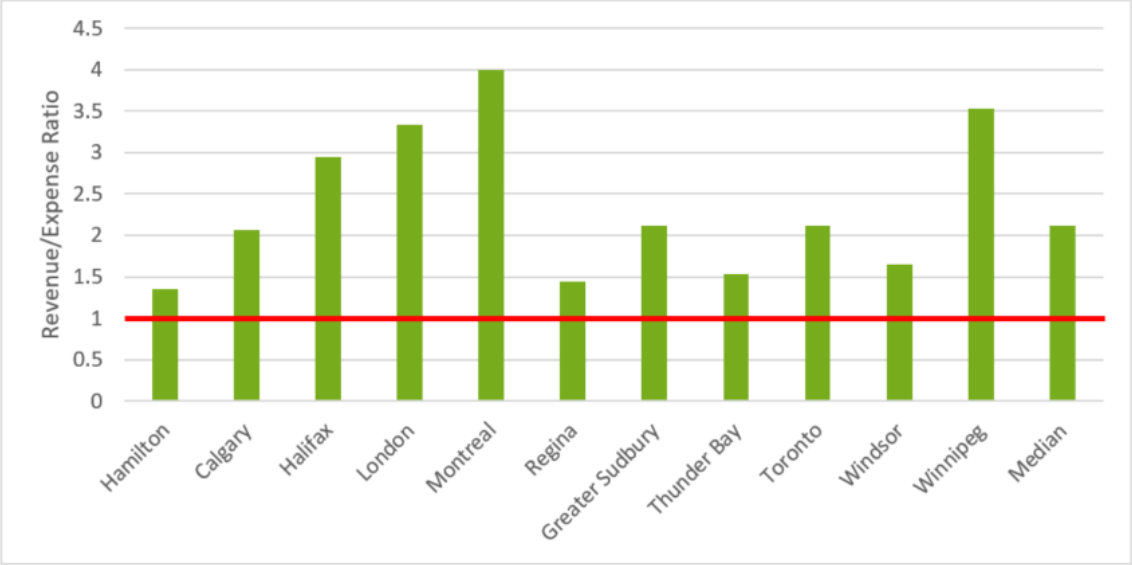
Hamilton provided comprehensive financial data outlining all parking related revenues and expenses. In 2018, Hamilton collected $16,084,451 in revenue from sources including parking meters, general parking permits, boulevard parking permits, citations, cash-in-lieu of parking, and miscellaneous sources. Conversely, Hamilton spent $13,410,673 on parking related expenses in 2018 including operations and maintenance, property taxes, and salaries. When accounting for all revenues and expenses, parking operations resulted with a net surplus of $2,673,778 in 2018. Put another way, for every dollar spent on the parking system, Hamilton recovered $1.20 in revenue. A portion of the surplus revenue is placed in a parking reserve fund to be spent on future parking improvements such as new parking facilities and implementation of supportive technologies, and the remainder is placed into a general municipal fund.

Using the data obtained from the 2018 Municipal Benchmarking Network (MBNCanada) Performance Measure Report, the parking financial performance of the comparator municipalities was investigated. The MBNCanada is a collaborative partnership of Canadian municipalities that collects, compares, and shares performance data and operational practices. MBNCanada obtains financial data from the Ontario Financial Information Return (FIR), which collects financial and statistical data from Ontario based municipalities on an annual basis.

Exhibit 4-1 presents the parking revenue to expense ratios of the comparator municipalities. A value 1.0 indicates that financial sustainability has been achieved (revenues are sufficient to fund expenses). Values greater than 1.0 indicate that revenues exceed expenses while values below 1.0 indicate that expenses are greater. While MBNCanada did not include Brampton and Mississauga, Halifax and Regina were included as two additional non-Ontario municipalities.

Note that the revenue expense ratio calculated using the data provided by Hamilton was 1.20, while MBNCanada indicates it to be 1.35. This is likely due to slight discrepancies between internal figures and MBNCanada in which revenues and costs are attributed to the parking system. While these figures are not identical, the MBNCanada data is still useful in that it provides a relative comparison between Hamilton's financial performance and the performance of other Canadian municipalities.

Exhibit 4-1: Comparator Municipality Financial Performance



Based on **Exhibit 4-1,** the following is observed:

- All municipalities were determined to be financials sustainable as indicated by the revenue/expense ratios exceeding 1.0;
- Hamilton has the lowest revenue/expense ratio at 1.35, indicating that other municipalities collect more revenue per dollar spent;
- Montreal collects $4 in revenue for every dollar spent; and
- The median revenue/expense ratio is 2.12, which is 57% higher than Hamilton.

While financially sustainable, the comparison indicates that other Canadian municipalities collect a larger surplus than Hamilton. While maximizing revenue is not necessarily a best practice, a higher surplus does provide more flexibility to accommodate unexpected future parking expenses and provides more future capital funding for expensive parking facilities, should additional parking supply be needed.

4.1.2 Findings from Discussions with Financial and Parking Staff

Based on additional financial best practice reviews completed by IBI Group in the past, municipalities generally desired to maintain revenue neutral parking finances. In other words, all parking expenses are funded through parking revenues. Some parking systems have been

determined to be subsidized by revenue from the general fund. However, this approach is not common.

To supplement the general best practices, the City of Hamilton requested that IBI Group gather feedback from Guelph, Kitchener and Winnipeg regarding financial operations via interviews. Interviews with City staff from Guelph and Kitchener were conducted, and written responses to the same questions were provided by the parking manager at the Winnipeg Parking Authority.

The following provides a summary of the feedback received from these three municipalities.

City of Guelph

The parking department has historically operated as a tax-supported department. The downtown parking program requires an annual revenue of roughly $6.8 million. In the most recent 2018 updated funding model, it was planned that $1.9 million (29%) of this annual investment would be funded from a property tax contribution, $3.6 million (52%) from monthly permits, $1.2 million (21%) from on street parking, and $65,000 from periphery permits.

In 2020, the parking department is moving towards an enterprise governance model, where it would no longer be supported by property taxes, and fully self-sustaining through user fees. It is anticipated that the parking department will be self-sustaining by 2044, and until then the parking system will receive $1.4 million in tax support annually. Any year end budget variances will result in a year end surplus or deficit which will be transferred to or from a parking reserve. The City currently operates a capital reserve fund for parking and is introducing an operating parking reserve starting in 2020.

The primary reasons that Guelph is moving to an enterprise governance model are:

- Parking is a value added service and should be paid for by users; and
- The parking system is focused downtown and property taxes are drawn from the entire city. This causes issues around who is paying for the service and who is using it.

From an operational standpoint, the City of Guelph is able to fully cover costs from revenue generated. However, it is the capital expenditures and the associated debt service that usually drive any deficits. As an example, the City just opened a $21 million parking facility, which results in roughly $1 million in debt service annually, with another facility coming online in 2023, which is estimated to cost $600,000 annually in debt service. The City of Guelph has a plan to increase hourly and permit pricing by 5% annually over the next 10 years.

City of Kitchener

The parking Organizational Review Business Case led by the City in 2011 discussed three alternatives and their relative benefits and implications related to the following:

- Develop a user pay system that will result in a minimal or no levy impact to the tax-based operations;
- Provide an annual dividend to the City – to be supportive of urban intensification and redevelopment;
- Incorporate and be supportive of Transportation Demand Management principles; and
- Position the City to maintain the existing parking infrastructure and expand when warranted. The three alternatives included:
    - Distributed and Tax Supported Parking Model;
    - Consolidated and Self-Sustaining Parking Model; and
    - Arm’s Length and Self-sustaining parking model – a parking authority alternative.

In 2011, the parking enterprise model was adopted by Council (self-sustaining). The net profit before dividend has been in a surplus position since inception in 2011. The net revenue after

dividend payment to the City was in a deficit position until 2014; however, it has been in a surplus position thereafter. Expenses include operating, capital structural reserve provisions, facilities maintenance and internal charges. Transportation Demand Management and Cycling Master Plan Implementation expenses were re-introduced in the 2020 budget forecast.

The City retains a Stabilization Reserve Fund to cover deficit positions. The minimum benchmark is 10% of total revenues and the maximum is 15%.The Stabilization Reserve Fund was in a deficit position from 2011 to 2016. It is now in a surplus position and exceeds the maximum benchmark. Should the fund reach its maximum, the additional funds as per policy are transferred to a Capital Reserve Fund.

The parking enterprise receives annual subsidies from the Economic Development Department for free parking initiatives. Parking subsidies are considered an 'economic development tool' and are accounted for accordingly so that the revenue of the parking enterprise remains whole. In other words, the Economic Development Department subsidizes the parking revenue that would have been collected during the free parking period.

In addition to parking expenses, the parking enterprise and parking reserve fund are known to contribute towards active transportation initiatives. Parking contributes to the following initiatives as per Kitchener's 10 year capital budget:

- Cycling infrastructure: in part funded by parking ($3,487,000 from Parking Enterprise + $900,000 from Parking Reserve; and
- Transportation Demand Management: 100% funded from parking (($2,393,000 from Parking Enterprise).

City of Winnipeg

In recent years the Winnipeg Parking Authority (WPA) has been operating at a net surplus from a financial perspective. Looking forward, the WPA forecasts that operations will remain in a positive financial position. The agency has historically and continues to prepare its annual budget with financial sustainability in mind, and closely monitors progress against the approved budget on a regular basis throughout the year.

Additional surplus net income that the WPA generates in a given fiscal year is transferred to the City's General Revenue Fund (GRF). One of the functions of the GRF is to help fund other tax supported departments at the City. The City does not have a reserve fund that is dedicated to parking and transfers capital to the GRF only.

4.1.3 Parking Prices

The comparator municipality's parking prices were assessed to provide an indication in the appropriateness of Hamilton's rates. The average on-street hourly rate, average off-street hourly rate, and average off-street monthly permit prices of the comparator municipalities are displayed in **Exhibit 4-2**. Many of the municipalities have adopted the location based parking price strategy, where prices vary depending on location, therefore an average price has been calculated for the comparison.

Exhibit 4-2: Comparator Municipality Parking Prices

Municipality	Average On-street Hourly Rate	Average Off-street Hourly Rate	Average Off-street Monthly Permit
Calgary	$3.31	$4.86	$237.74
London	$1.50	$1.81	$64.82
Montreal	$2.00	$3.17	$86.16
Greater Sudbury	$1.30	$1.33	$84.20
Thunder Bay	$1.25	$1.00	$55.50
Windsor	$1.75	$1.50	$69.68
Winnipeg	$3.00	$2.80	$171.67
Brampton	$2.00	$2.00	$44.00
Mississauga	$1.00	$1.17	$65.00
Average	**$1.90**	**$2.18**	**$97.64**
Hamilton*	$2.00	$1.50	$57.00

As outlined in **Exhibit 4-2**, Hamilton's parking prices are significantly lower than the average of comparator municipality prices. This indicates that Hamilton's parking prices may be below market value and that price increases would be in line with comparable municipalities.

As of July 2020, hourly on-street parking prices have been increased to $2.00 per hour, which is more in line with the rates charged by comparable municipalities. Average off-street hourly and permit prices have also been increased to $1.50 per hour, and $57.00 a month, respectively. While the recent increase raised off-street parking prices, Hamilton still charges significantly less than the comparable municipalities. Note that Calgary and Winnipeg permit prices are significantly higher than all other comparator municipalities, resulting in the displayed averages being skewed. *Task 7: Financial Assessment* will take an in depth examination of Hamilton's parking finances to determine whether prices increases are required, and if so, to what price.

4.1.4 Financial Best Practices Conclusions

Based on financial best practice review, municipalities were determined to generally prefer financially sustainable parking operations where parking expenses are entirely funded through parking revenues.

4.2 Parking Policy and Strategy Best Practices

The following parking policies and strategy best practices were reviewed:

- Pricing related strategies such as location based pricing, time and location based parking, performance based pricing (demand based pricing), pay parking limits, and the availability of a Cash in Lieu (CIL) of parking program/bylaw;
- On-street accessible parking;
- Enforcement Technologies and Strategies;
- Permit Programs;
- Emerging trends (ride hailing, shared mobility, automated vehicles (AVs)); and
- Future technologies.

4.2.1 Pricing Related Strategies

IBI Group reviewed the pricing related parking strategies used by comparator municipalities. The review include the following strategies:

- **Location based parking prices**: a strategy where parking prices vary depending on the location. The intent of this strategy is to improve the distribution of parking demand throughout a parking system. To promote increased utilization, parking prices at underutilized lots are set at a lower rate than the prices are lots operating near capacity. These rates are established and not adjusted outside of a typical price revision process.
- **Time and location based parking prices**: a strategy where parking prices vary by time of day and by location. Through the time and location based pricing, higher parking rates are adopted during the periods of peak parking demand than all other periods. This strategy is intended as a TDM measure to control 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 drivers to park in specific areas or parking lots. Rates are not adjusted outside of the typical price revision process.
- **Performance based parking prices**: under performance based parking prices, the price of parking is automatically adjusted based on observed demand with the intent of maintaining a desired overall utilization. This strategy requires parking technology capable of automatically collecting parking occupancy data. Rates 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.
- **Cash-in-lieu (CIL) of Parking:** CIL grants developers with an exemption from meeting the Zoning By-law parking requirements in exchange for a payment. The payment collected is then used by the municipality to construct a strategically located parking facility intended to supplement the exempt spaces.

The review findings are summarized in **Exhibit 4-3**.

Exhibit 4-3: Summary of Parking Strategies in Comparator Municipalities

Municipality	Location Based Parking Rates	Time and Location Based Parking Rates	Performance Based Pricing	CIL By-law in Effect
Calgary	✓	✓	X	X
London	✓	✓	X	X
Montreal	✓	X	X	X
Greater Sudbury	X	X	X	X
Thunder Bay	✓	X	X	X
Windsor	X	X	X	X
Winnipeg	✓	X	X	X
Brampton	X	X	X	X
Mississauga	✓	X	X	✓

Overall, it was observed that the majority of the comparator municipalities use location based pricing, with higher rates being charged in areas that have higher parking demand. Only two of the nine comparator municipalities vary parking rates based on time and location. None of the comparator municipalities currently have the technology in place to enforce performance based pricing, where parking demand, time and location all are considered when setting parking rates.

Out of the nine comparator municipalities examined, only Mississauga was identified for having a CIL by-law in place. Calgary previously had a CIL by-law in force, but ended the by-law to allow office developers to retain all required parking spaces onsite, rather than providing 50% of stalls in Calgary Parking Authority (CPA) public parkades. The idea has been entertained in other comparable municipalities, but IBI Group is not aware of approved CIL by-laws in these jurisdictions.

The following provides an overview of pricing related parking strategies by comparator municipality.

Calgary

The City of Calgary enforces paid parking in a number of locations throughout the city, including: downtown, Kensington, Beltline, Inglewood, as well as the areas north and south of downtown. The City charges different parking rates based on location, with minimum purchases and maximum parking limits for both hourly and permit parking. Hourly prices generally range from $0.50 to $4.00 per every half hour, while monthly permit prices generally range from $80 to $360 per month. In select lots, time and location based parking rates are enforced. The City generally charges the full rate from 6 AM to 6 PM and charges a lesser rate on weekends and evenings. For areas that do enforce paid parking, the city charges for parking at all hours of the day, every day of the week.

Until recently, the Calgary had a CIL of parking policy where 50% of an office development's parking requirement was to be provided through CIL. The City investigated various CIL of parking approaches, including maintaining the existing 50% policy, increasing the CIL contribution to 60% of the required parking, and removing the CIL policy entirely. Based on feedback received during the stakeholder consultation process, a motion was approved by council to end the cash-in-lieu program entirely in May 2017. This was done to allow office developers to retain all required parking spaces onsite, rather than providing 50% of stalls in Calgary Parking Authority (CPA) public parkades. This allows new development to remain competitive and provide all required parking on-site. Previously developers would build only half of their required parking and pay a fee to CPA to build the remaining required parking as public stalls. Sufficient parking was determined to have been built through the CIL of parking program to support retail, arts and cultural activities downtown. With the conclusion of the CIL program, all future parking facilities in the downtown will serve private developments.

London

The City of London enforces paid parking downtown and charges different rates relative to location. The majority of lots are set at a rate of $2.00 per hour during the hours of 8 AM to 6PM, with only two lots charges $0.75 per hour. Metered parking is set at a rate of $1.50 per hour at all locations. Monthly permit rates are more variable, ranging between $50 and $113 depending on the location. The City also charges different rates depending on the time of day. During the hours of 6 PM and 12 AM, the rate charged drops in the majority of lots. Some lots this is enforced every day of the week, while some lots this price decrease is only enforced Monday through Saturday. The City does not currently deploy performance based pricing.

Parking is generally enforced at all lots and metered locations, until midnight, Monday through Saturday, with different rates from 8 AM to 5 PM or 6 PM, and from 5 PM or 6 PM to 12 AM. Select lots charge 24 hours a day, 7 days per week. Select lots charge for parking Monday through Sunday, with different rates from 8 AM to 5 PM or 6 PM, and from 5 PM or 6 PM to 12 AM.

In 2017, the City released their Downtown Parking Strategy. Within the Parking Strategy, the merits of a CIL program and by-law are discussed, with proposed rates provided. There was no recommendation to adopt the program or not - it was mentioned that adopting the CIL program would assist the city in generating funds to finance public parking garages. Currently it does not appear that a CIL by-law in effect.

Montreal

The City of Montreal enforces paid parking in the downtown area and in a number of boroughs surrounding the downtown. Given that paid parking is enforced in a number of different areas, the city charges different rates based on the borough, with the highest rates being charged downtown. Monthly permit prices also vary by borough.

The City enforces different pay parking limits throughout the city. Parking is generally enforced on weekdays from 9 AM to 6 PM with free parking in the evenings. On Saturdays, parking is generally enforced from 9 AM to 6 PM, with free parking on Sunday at most locations. In some locations, parking is enforced from 1 PM to 6 PM on Sunday, with the same pay parking periods as noted above on Saturdays and during the weekdays. It does not appear that the city currently has a CIL by-law in effect.

Greater Sudbury

In general, parking prices in the City of Greater Sudbury are uniform with hourly rates at $1.30 and monthly permits priced at $82. However, Greater Sudbury does employ the location based parking price strategy by varying the hourly and monthly prices at a few lots. For example: permits at Lot 6 cost $51 instead of $82, and hourly parking prices cost $1.40 at Lot 7 instead of $1.30. Paid parking is enforced weekdays to 6:00 PM and is free thereafter, as well as on weekends, both Saturday and Sunday. It does not appear that the city currently has a CIL by-law in effect.

Thunder Bay

The City of Thunder Bay currently enforces paid parking downtown and at the waterfront. Location based parking rates are enforced, with different rates being charged at on street meters, off-street metered lots, and the waterfront and Victoriaville parkades. Monthly permits are generally are charged at a uniform rate, with different rates being charged depending on the duration of the permit (i.e. 1 month, 3 months, 6 months, etc.).

Paid parking is enforced weekdays from 9 AM to 6 PM on weekdays, and is free in the evening and on weekends, both Saturday and Sunday. It does not appear that the City has a CIL by-law in effect.

Windsor

Paid parking at all metered locations in the City of Windsor is charged at a flat rate of $1.75 per hour, while the standard rate at off street lots and municipal garages is $1.50 per hour. Monthly permit prices vary depending on the lot, with higher prices set for sheltered parking.

Pay parking limits at metered locations are enforced Monday through Saturday from 9 AM to 6 PM – parking is free after these hours and on Sundays. For municipal lots paid parking is in force during the same hours, however a number of lots have a flat fee of $2.00 from 6:00 PM to midnight. Downtown municipal garages operate 24 hours a day, 7 days per week, with no cashier and a pay on foot system at the exit.

A recommendation was brought to council in 2016 to adopt a CIL program in order to have another revenue stream that would contribute to fostering a sustainable parking system. At the time, the parking reserve was in a deficit and a CIL was seen as a means to reconcile this deficit. It does not appear that a CIL by-law was enacted.

Winnipeg

The City of Winnipeg enforces paid parking downtown and charges different rates based on location. Parking lots in the downtown are divided into high demand and low demand zones and rates are charged accordingly, generally ranging from $2.50 to $3.50 per hour. Monthly permit prices also range relative to location, although variances in parking rates are generally attributed to whether the location is structured or non-structured parking. The City charges a uniform rate for all hours of the day, except during the evenings and on Sunday when parking is free. As such, the

On Saturdays, the City has a two hour complimentary parking window, with regular rates resuming after this window closes. Paid parking is enforced during the weekdays and on Saturday from 8 AM to 5:30 PM, with free parking thereafter and on Sundays. It does not appear that the City currently has a CIL by-law in effect.

Brampton

The City of Brampton enforces paid parking downtown and charges a uniform rate across all lots and metered locations, with the same daily maximum for all lots. Yearly and monthly permits are also charged at the same rate for all lots. Paid parking is enforced Monday to Friday during the hours of 9 AM to 7 PM, with free parking in the evenings and on weekends. It does not appear that a CIL by-law is currently in force.

Mississauga

The City of Mississauga enforces paid parking in the downtown, Streetsville and Port Credit. The City employs location based parking rates, with higher rates set at select lots in Streetsville and Port Credit when compared to downtown. Monthly passes are currently only available in the downtown area, and are priced at a flat rate of $65.00. Free parking is in effect during the evenings after 6 PM, and on weekends, both Saturday and Sunday.

The city has had a CIL program and associated by-law in place since 1984. CIL is applicable in areas where municipal parking is provided, and is only eligible to be applied to non-residential uses. From reviewing the draft 2019 parking master plan, it appears that the city will continue providing the CIL program. There is not a standardized methodology or rate charged for the CIL rate charged for each exempt parking space. As such, CIL applications are handled on a development by development basis, with varying rates charged. The city uses the following ground floor area (GFA) thresholds to help determine the rate charged:

- Category 1: Up to 50 m^2 GFA, 12.5% of estimated cost of parking;
- Category 2: Up to 200 m^2 GFA, 25% of estimated cost of parking; and
- Category 3: over 200 m2 GFA, 50% of estimated cost of parking.

General Practice

Through the completion of numerous parking master plan level studies, the most common parking pricing strategy adopted by municipalities similar to Hamilton was determined to the location based parking price structure. Parking prices are higher in the more popular parking facilities, while prices are lower in the facilities experiencing lower utilization. Prices are not adjusted at an elevated frequency in response to observed demand or average utilization.

4.2.2 On-street Accessible Parking

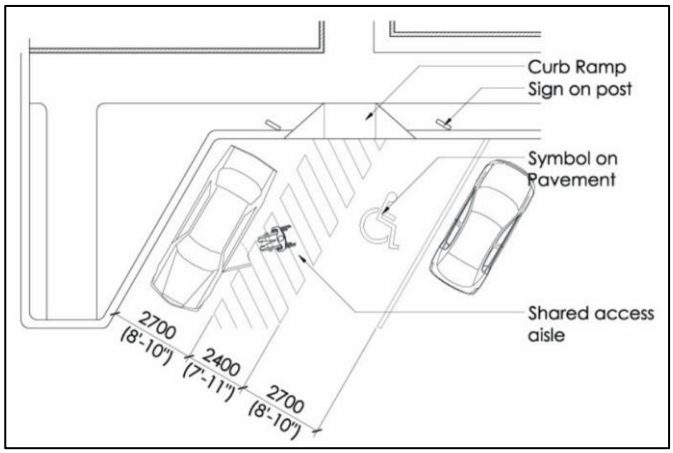
This section examines best practices in on-street accessible parking programs, relating both to parking space dimensions and permit programs. The programs are intended to provide a dedicated on-street street accessible parking space for those residents who have mobility limitations and who cannot access off-street parking facilities.

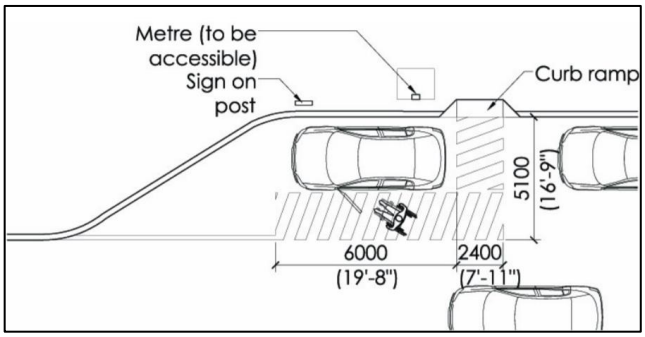
On-street Accessible Parking Dimensions

The City of Hamilton developed its Barrier-Free Design Standards in 1994, which were revised into City of Hamilton Barrier-Free Design Guidelines in 2006. The goal of the guidelines is to establish design standards intended to eliminate barriers faced by persons with various disabilities.

In the Barrier-Free Design Guidelines, there are standards for two types of on-street accessible parking spaces: diagonal designated parking spaces and paralleled designated parking spaces. These designs are illustrated in **Exhibit 4-4**.

Exhibit 4-4: Hamilton On-street Parking Barrier-Free Design Guidelines





Most comparator municipalities also provide requirements for on-street accessible parking space dimensions similar to Hamilton. These requirements are outlined in **Exhibit 4-5**.

Exhibit 4-5: Comparator Municipality On-Street Parking Space Dimensions

Municipality	Parking Space		Access Aisle		Clear Space	
	Length (m)	Width (m)	Length (m)	Width (m)	Length (m)	Width (m)
Calgary	7	2.6	1.5	2.6	2	2
London	5.4	3.9	2	3.9	2.44	2.44
Montreal	No requirements provided					
Greater Sudbury	No requirements provided					
Thunder Bay	No requirements provided					
Windsor	5.4	3.9	2.44	3.9	2.44	2.44
Winnipeg	5.4	3.9	2 to 2.44	3.9	2 to 2.44	2 to 2.44
Brampton	6.5	2.75	2.44	2.75	N/A	N/A
Mississauga	5.75	4.6	1.5	4.6	2.44	2.44
Hamilton	6	5.1	2.4	5.1	N/A	N/A

In general, the parking space lengths were observed to be fairly similar with slightly variations. Hamilton's accessible parking space width was determined to be the largest, with the extra width intended to provide dedicated space for drivers with disabilities to comfortably enter and exit their vehicles. Access aisle lengths were also observed to be fairly consistent, with a width matching the parking space widths. Unlike Hamilton, most comparator municipalities provide design standards for clear space, which is defined as the space between the curb and the buildings edge. The clear space intended to provide dedicated space for passengers with disabilities to comfortably enter and exit the vehicles.

Municipalities are generally moving towards adopting accessible parking requirements that are consistent with the requirements outlined by the Accessibility for Ontarians with Disabilities Act (AODA) for location and quantity of spaces made available. Ontario's Accessibility Action Plan outlines a timeline to fully mandate AODA guidelines by 2025. In terms of on-street accessible parking, AODA simply requires the municipality consult with its local Accessible Advisory Committee (or equivalent organization) when implementing on-street accessible spaces. To remain in line with AODA, Hamilton could consider consulting the local Accessible Advisory Committee when determining the location of and how many accessible on-street parking spaces are required to meet parking user needs.

On-Street Accessible Parking Program

The City of Hamilton offers the Reserved Accessible On-Street Permit Parking program that grants eligible applicants with one "No Parking Except by Permit" parking space permit near their place of residence. To be eligible for the program, the applicant must:

- Hold a valid Ministry of Transportation, Ontario (MTO) accessible parking permit with at least 7 months remaining before expiry;
- Live on the street where the permit is requested;
- Provide proof of vehicle ownership;
- Have no available off-street parking; and
- Live in a one, two, or three family residence.

The existing program is known to have challenges including the high operational costs and some streets with more accessible parking spaces than general parking spaces. Each permit application must be investigated on a case-by-case basis, and if approved, appropriate signage must be installed in the field.

This section investigates similar programs offered by the comparator municipalities.

Calgary

The City of Calgary does not offer a residential on-street accessible parking program.

London

The City of London does not offer a residential on-street accessible parking program.

Montreal

The Société de l'assurance automobile du Québec (SAAQ) sells accessible parking permits for $15, which allows users to park in any of the designated accessible parking spaces.

In terms of residential accessible parking, the City offers an accessible program where a parking space in front of the user's place of residence is reserved if the curbside space is often unavailable. Users may request a reserved space by calling 311 and the City will consider the requests on a case by case basis. Additionally, accessible parking users are granted discounted prices for general residential parking permits. These permits allow holders to park in designed residents only parking zones.

Greater Sudbury

The City of Greater Sudbury does not offer a residential on-street accessible parking program.

Thunder Bay

The City of Thunder Bay offers an individually designated accessible parking space program to residents with accessible needs and without available off-street parking. The applicant must provide a valid MTO accessible parking permit and the City will investigate each application on a

case-by-case basis. If approved, the City will implement the accessible parking space. The City does not guarantee that the installed accessible parking space will be available at all times.

Windsor

The City of Windsor offers a residential on-street accessibility program to residents with accessible needs and without available off-street parking. The applicant must provide a valid MTO accessible parking permit, proof of residency, and a vehicle ownership permit. The City investigates each application on a case-by-case basis, and if approved, will implement a designated accessible parking space within a reasonable distance of the applicant's place of residence. To facilitate the implementation, the City will amend the by-laws accordingly and install accessible parking signage.

The residential accessible parking spaces are valid for a two year period or for the remaining durations of the applicant's MTO accessible parking permit (permits with less than 6 months remaining before expiry are not considered). Note that the implemented on-street accessible parking spaces are not reserved for the applicant, all users with a valid MTO accessible parking permit may park in the space. Multiple applicants for a given street can be considered, however a maximum of 20% of the on-street parking supply will be designated for accessible parking.

This residential on-street accessibility program is similar to Hamilton's, however City of Hamilton staff have noted this is difficult and expensive to administer, since these applications are reviewed and granted on a case-by-case basis, and there are costs associated with installation and operation of the accessible parking spaces. In addition, there are also challenges in designating a parking space as an accessible space on residential streets where parking supply is limited, or if there are multiple accessible permit holders requesting spaces on the same street.

Winnipeg

The City of Winnipeg does not offer a residential on-street accessible parking program.

Brampton

The City of Brampton does not offer a residential on-street accessible parking program.

Mississauga

The City of Mississauga offers a City Issued Accessible Parking Permit program to residents with accessible needs and without available off-street parking. The permit allows the holder to park on-street in front of their place of residence. The applicant must provide a valid MTO accessible parking permit and the City will investigate each application on a case-by-case basis. If approved, a permit will be mailed to the applicant.

On-Street Accessible Parking Program Conclusion

The comparator municipality best practices review determined that Hamilton's Reserved Accessible On-Street Permit Parking program is similar to the programs offered by other municipalities. In general, applications for a designated on-street accessible parking space are reviewed on a case-by-case basis. If granted, the zoning by-laws are updated accordingly and accessible parking signage must be installed. The City of Windsor program offers a potential solution to an issue experienced by Hamilton, where some streets have more accessible parking spaces than regular. Windsor limits the number of accessible parking spaces to 20% of the street's capacity, and allows all users with accessible needs access to these spaces versus reserving each space for a single user.

From an operational point of view, meeting the parking needs of accessible parking users is considered a best practice. However, the maintenance and operation cost of offering such a program can be considerable. It is estimated that the cost of administering this program costs approximately $60,000 per year. These costs are not covered by the program as the spaces are provided for no charge, either for installation of signage or for the residential permit. The cost-free nature of the program may incentivize misuse, resulting in fewer spaces available for those paying

for permits. Further investigation into the cost of providing the Reserved Accessible On-Street Permit Parking program is required to decide whether or not to continue the program. In the event the program is rescinded, the existing spaces could be grandfathered and repurposed as spaces turn over.

4.2.3 Enforcement Technologies and Strategies

Through the completion of numerous Parking Master Plan level studies, IBI Group is aware that the most common enforcement approach involves proactive enforcement in the areas with paid municipal parking operations with reactive, complaint-based enforcement in all other areas. Generally, this approach results in patrolled enforcement in the Downtown core with complaint based enforcement in residential neighbourhoods.

Through previous research, License Plate Recognition (LPR) systems have been identified as a highly valued enforcement technology. Of the comparator municipalities, only Calgary and Brampton were determined to have implemented LPR technology. Calgary adopted mobile LPR in October 2017 while Brampton adopted mobile LPR in January 2020.

LPR synergizes with pay parking technologies that record vehicle license plates, such as pay-by-plate technology and parking apps, to provide a more efficient method of parking enforcement. User payments are uploaded into a database along with the user's license plate number and a timestamp. This information can then be used to determine whether a vehicle is parked illegally. In areas where payment systems electronically record license plates, enforcement officers can determine parking infractions based solely on a vehicle's license plate number. This can be done in three ways:

- **Handheld Device:** Enforcement officers can use a handheld device to scan and check if a license plate is registered within the parking system. Unpaid vehicles and plate numbers that have exceeded the allotted parking time or will be flagged and selected for parking infractions.
- **Mobile Cameras:** Cameras are mounted onto enforcement vehicles which then circulate around the area and scan license plates. The system then flags illegally parked vehicles.
- **Stationary Cameras:** Cameras are placed at predetermined angles to monitor specific parking spaces. When a parking infraction has been identified, the system can then alert enforcement officers. This is a more responsive approach which decreases the amount of time spent patrolling.

Parking enforcement programs can access data from a database collected from LPR and parking payment devices. These devices include handheld smart meters, partnered third-party parking apps, handheld LPR devices, and mobile and stationary LPR cameras. If a real-time database connection is established from these devices, enforcement officers can accurately and efficiently determine parking violations.

Of these methods, handheld devices have the smallest capital costs, but require more hours of operation by enforcement officers for the same level of effectiveness as mobile cameras. Consequently, it will be more costly in the long run if the pay parking area was expended. Mobile cameras come with a very high capital cost but can scan approximately 1,200 vehicles per hour. Although the use of stationary cameras is the most hands-off method, it cannot be applied everywhere and will most likely only be applicable within off-street parking lots and parkades due to privacy concerns. Similarly, the number of cameras and their setup are dependent on the space and geometry of the off-street lot, resulting in a high variation in price on a case by case basis.

Digital chalking via handheld LPR is typically preferred over continuing to manually chalk vehicles due to the following reasons:

- A vehicle can be digitally chalked while driving by in the mobile LPR, making it more efficient to chalk vehicles;
- Once a vehicle is digitally chalked, its information would be communicated to all other devices (i.e., handheld LPR devices and mobile LPR devices), making it impossible to fool the officers, whereas drivers are known to erase the chalk from the tires if it were not digitally chalked;
- Bending and chalking could be a concern for repetitive injury, making digitally chalking a safer option for the by-law officers; and

GPS accuracy in the devices would likely make drivers more motivated to move their vehicles to another block rather than just driving up one parking space, if a street block or parking lot were to have a parking duration limit with no re-parking permitted.

Hamilton is known to be progressing towards adopting LPR enforcement.

4.2.4 Residential Parking Permits and Passes

Hamilton offers a residential on-street parking program with a cost of $90.26 plus HST per permit per year. This program offers two type of permits, the Parking Zones Permit and the Parking Time Limit Zones Permit. Parking Zones Permits allow the holders to park their vehicles on select streets specified by the City of Hamilton, and the Parking Time Limit Zones Permits exempt permit holders from all signed time limits in the purchased zone.

Hamilton is in the process of adopting an online permit system that will allow users to purchase residential permits and temporary permits (e.g. visitors, construction, filming, special events, etc.) online.

Calgary

Calgary offers residents two parking permits per household at no cost. Additional parking permit cost $102.10 plus GST for two year term. The permits allow 24/7 on-street parking in residential parking zones and time-restricted parking zones, but the permit holders are required to move their vehicle every 2 days.

Residents of single detached dwelling, semi-detached dwelling, duplex, row house, or townhouse can apply for a temporary visitor passes that allows for parking up to 14 consecutive days at a time at no cost.

London

London restricts on-street parking over 12 hours. However, between Victoria Day and Labour Day, the City of London offers 15 overnight parking passes for each license plate per year at no cost. These parking passes allow the pass holder to park on street 24/7 in locations with “No Parking 3:00 AM to 5:00 AM” signs.

Additionally, due to the high demand of parking in specific area, the City of London also offers Residential parking permits in 3 zones. In these three zones, each residence can apply for a maximum of 2 permits. In Zone 1 and Zone 2, the first permit is free of cost, and the second permit cost $60.00 each per year. In Zone 3, each permit costs $60 per year. The permit holders in these three zones have to move their vehicles every 12 hours.

Montreal

Montreal offers resident-only parking permits and visitor passes in reserved parking zones. The parking permit prices vary depending on the zone, the time of the year the permit is purchased, vehicle type (e.g. electric, hybrid, or gas), and engine capacity. Each address is issued one parking permit, and additional permits can be provided at a higher cost than the first permit. The permit types and associated costs are outlined below:

- Type 1: If the permit is purchased between July 1 and December 31, it expires on September 30 of the following year. These permits cost between $11.50 and $258.69 per year, but in some zones permits are provided free of charge.
- Type 2: If the permit is purchased after January 1 but before March 31, it cost the same as Type 1 permits, and it expires on the September 30 of the same year. These permits cost between $11.50 and $258.69 per year, but in some zones permits are provided free of charge.
- Type 3: Between April 1 and June 30, it costs roughly half of the yearly price, and expires on September 30 of the same year. These permits cost between $5.75 and $129.35 per year, but in some zones permits are provided free of charge.

In terms of the vehicle types, electric vehicle permits have the lowest price, followed by hybrid vehicle permits, and finally gas-powered vehicle permits. For hybrid and gas-powered vehicles, the prices are further broken down by engine capacity, where permit prices for larger engines are higher compared to those of smaller engines. In most of the areas, the permits allow the permit holder to park 24/7, but the permit holders need to move their vehicles every 24 hours.

Greater Sudbury

Sudbury does not offer a residential parking program or a visitor parking program.

Thunder Bay

Although Thunder Bay generally does not offer a city wide residential on-street parking program, on-street permits are available to Downtown residents at a cost of $5 each. Through discussions with the Parking Enforcement Office, these permits were determined to not be meant as a revenue generator but to restrict non-Downtown residential parking in the Downtown area. These permits allow 24/7 on-street parking, whereas non-permit holders are restricted to a maximum of 2-hours.

Downtown residential on-street parking permit holders can also apply for visitor passes for free. Each dwelling unit can apply for up to 4 visitor passes per year, and each apartment unit can apply for 1 visitor pass. On-street parking is restricted from November 15 to March 31 of the following year to facilitate snow removal.

Windsor

Windsor offers two residential on-street parking permits per household for the areas adjacent to the University of Windsor, St. Clair College and the Central Business District. The first permit costs $35.00 per year and the second permit costs $20.00 per year. Additionally, a visitor permit is available for $35.00. Both the residential and the visitor permits allow the permit holders to park on street 24/7, but the permit holders need to move their vehicles every 3 days.

Winnipeg

Winnipeg offers a residential parking program that allows three permits to be purchased per household with the cost of $25.00 per permit per year. Visitor residential parking passes are also available upon request. The first two weeks are free with additional weeks available at a cost of $5.00 (up to a maximum of 30 days). Pass holders are granted with exemptions to the maximum parking time limit in locations where on-street parking is limited to 1 or 2 hours.

Brampton

The City of Brampton does not offer residential on-street parking permits. However, residents can request temporary on-street parking exemptions up to 14 days per year, per licence plate, free of charge. Brampton restricts on-street parking after a snowfall event until the street is salted and/or plowed.

Mississauga

The City of Mississauga offers two types of residential on-street parking programs, the short term residential parking program and long term residential parking programs. The short term parking program allows a maximum of 5 vehicles to park on-street for a maximum period of 5 days. This short term parking pass is free and can be requested 14 times per year. The long term residential program allows a maximum of 5 vehicles to park on-street through the year, at a cost of $64.00 per permit per year. Pass holders are granted exemptions to the maximum parking time limit in locations where on-street parking is limited to 5 hours and to the no parking from 2:00 AM to 6:00 AM restrictions. In other words, pass holders are permitted to park on-street 24/7.

Residential Parking Permits and Passes Conclusion

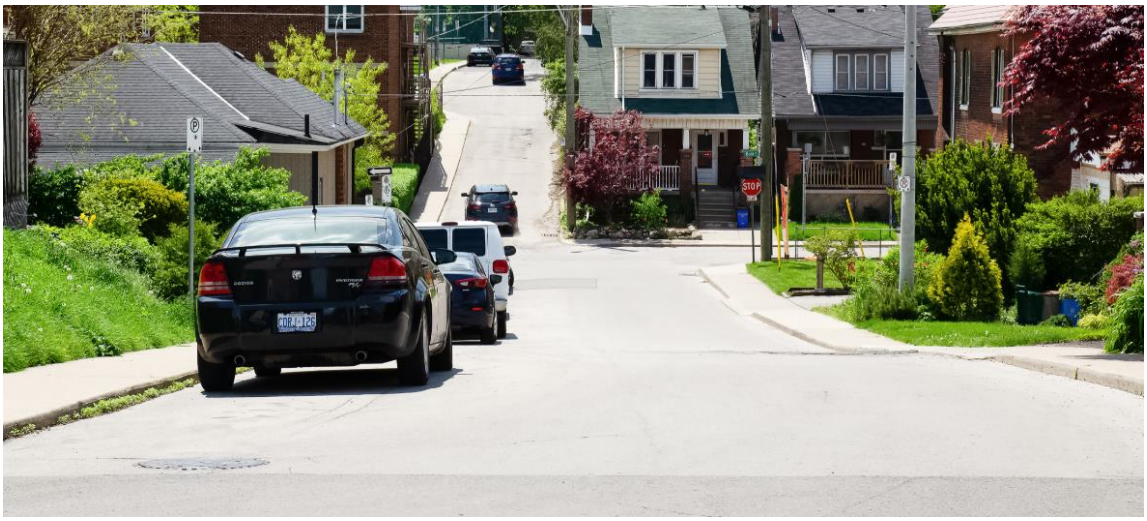
The best practices review determined that two common types of programs are generally offered:

- Local residents: long term on-street parking permits sold by the municipality.
- Visitors: temporary on-street parking passes that can be requested several times per year.

Hamilton already offers long term on-street parking permits but currently does not offer visitor or temporary (e.g. construction, special events, filming, special events, etc.) on-street parking passes. To meet the parking needs of Hamilton resident visitors, Hamilton may consider offering temporary visitor passes that allows for on-street parking up to 15 consecutive days at a time at no cost. The passes could be granted on a request basis and once per license plate per calendar year.

These findings are in line with the practices of non-comparator municipalities where IBI Group has completed parking studies in the past.

Exhibit 4-6: Residential On-Street Parking



*Source: IBI Group data collection

4.2.5 Emerging Trends Impact on Parking Demand

As Hamilton works towards improving alternative transportation options and citizens become more multi-modal, the demand for shared economy services such as ride hailing, carshare, and bikeshare will continue to emerge. Additionally, connected and automated vehicles (CAVs) have the potential to significantly impact parking patterns in the near future.

While the exact magnitude of the impact is subject to debate, most industry experts agree 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 (CAVs do not need to open doors after parked) and the amount of tandem parking will be increased as CAVs can be summoned. However, additional pick-up/drop-off spaces would be required.

Policies and strategies related to emerging trends were determined to be limited in the comparator municipalities, therefore the best practices review was expanded to consider leading industry practices.

Given that parking structures typically have a service life of 50 years, which significantly exceeds the anticipated timeline of emerging trends, innovative strategies for increasing parking supply in a sustainable manner are beginning to emerge including:

- "Future proofing" new parking facilities;
- Private developers including public parking supply in new developments; and
- Shared public and private parking in existing private parking facilities.

Future proofing parking facilities refers to the practice of designing the parking facilities in a manner that, should parking demand decrease in the future, part of or the entire structure can be converted to an alternative land use. This flexibility will require 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 some offices and shopping malls. Other design considerations that would need to be accounted include increased loading capacity (parking loads are generally the lowest when compared to other land uses), more windows, different column spacing, grading and slope, and pedestrian access.

Above grade parking structures should be favoured over below grade garages as they are cheaper and easier to convert into other uses. This concept has already been applied in the City of Calgary, where a few recent office and residential developments were built with structured parking above grade rather than underground.

In the event additional municipal parking supply needed, some municipalities have been investigating the opportunity to coordinate with local developers to include public parking in new developments. These parking spaces would be in addition to the development's Zoning By-law parking requirements. This practice is currently emerging and has not yet seen widespread implementation. However, Parking Master Plan level studies for municipalities 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 developers agree to provide public parking on-site in addition to what is required to serve the development.

Another strategy Hamilton could consider is partnering 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. The Village maintains and snowplows the lots, manages the signs, installs payment technology, and enforces parking payment through the Police Department. The Village collects the revenue, subtracts the administrative, operations, and maintenance costs, and splits the remaining funds with the landowner 50/50. These leases are typically no more than three years.

4.2.6 Future Technology Considerations

Parking technology plays an important role in the parking experience of users. Examples where technology can enhance the parking experience include parking lot entrance/egression, payment (pay and display, pay by phone, etc.), enforcement, and wayfinding signage through the delivery of real time parking information (variable message signs, smart phone apps, online, etc.).

The reviewed technologies are considered state-of-the-art and their adoption in the comparator municipalities was determined to be limited.

Parking Payment Systems

Smart Parking Meters

Smart meters are parking meters that have the capability to be connected to a centralized management system. Some features may include:

- The ability to remotely control fees;
- The ability to accept credit cards/smart cards;
- The ability to provide alerts to the operating party; and
- The ability to remotely collect and check historic utilization data.

Single-space/double-space smart meters are typically priced between $500 and $1,000, depending on whether the meter is used for a single bay or double bay, and its included features. Multi-space smart meters are capable of controlling multiple parking spaces per machine. As a result, they are typically priced between $8,000 and $15,000, depending on the included payment options 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 provide future opportunities to transform the existing parking system into a connected and intelligent system. Cities often require a combination of single-space and multi-space meters to serve on-street and off-street parking areas of varying parking lot sizes and on-street per-block space availability.

Pay-by-Plate Technology

Pay-by-plate technology provides the opportunity for motorists to use their license plate as a proof of payment. Users can enter license plate information through a parking app that facilitates payment, or use smart meters (typically multi-space meters) that allow the user to enter license plate information. By implementing pay-by-plate features into the parking system, parking enforcement has the potential to leverage LPR technology to improve parking enforcement efforts. Pay-by-plate technology also relieves concerns regarding accessibility with respect to the traditional pay-and-display format, as users do not need to walk back to their vehicles after payment.

Pay-by-plate can also be applied to permitting. Motorists would be required to register their license plates with the City, either in-person or online, to obtain their parking permits. Using license plate numbers as proof of payment for parking passes inhibits the illegal resale or transfer of parking passes.

Pay-by-plate technology will be implemented in the City of Hamilton by the end of 2020.

Implementation

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 blocks, multi-space meters should be placed so that a user does not need to walk more than 50 meters from their car to the meter. Parking lots should be equipped with multi-space smart meters, positioned at a centrally located area within the lot. For lots with more than one floor or entry-access points, consideration for implementing multiple hardware can be given to provide users with the convenience of not

having to walk an unacceptable distance to pay for parking. Multi-space meters should be pay-by-plate hardware in order to allow for potential integration with future LPR systems.

Smartphone Parking Apps

Smartphone parking apps can provide a range of functionality from simply presenting real-time parking information to providing a complete parking payment system for customers. App development is versatile and various technologies can be integrated to allow apps to update in real-time. Key features that can be provided by modern parking applications include:

- **Map of the overall system:** Interactive road maps of the parking network can be incorporated into a parking app. Such maps can include locations of on-street and off-street parking, lists parking locations by parking zone, and location-to-location directions to and from parking locations.
- **Parking restrictions and events:** When selected, parking locations can display daily or weekly schedules listing their restrictions and time limits. Such information helps mitigate user confusion regarding day-to-day parking availability and maximum parking durations. Additionally, notifications regarding special events limiting parking availability can be incorporated, providing users with notice of impromptu parking restrictions.
- **Parking occupancy information:** Parking occupancy technologies, such as smart gate technology and block sensors, can be integrated to show real-time occupancy information when a parking location is selected on the app. This feature can be used to list available parking spaces by type (e.g. EV parking availability).
- **Pay-by-phone:** Parking apps can be integrated with existing and future multi-space systems. Users can enter payment information (e.g. credit card) and license plate numbers into their profile. On-street and off-street parking rates can be loaded into the app and users can pay by selecting their parking location. Additionally, monthly parking permits may be loaded onto a customer's profile through their payment and license plate information.

As determined through consultation with Hamilton Staff, the City is currently in the process of procuring a pay-by-phone app. The system is planned for release in July 2020. Hamilton should consider defining some of the features summarized above as key components above and beyond pay-by-phone functionality.

Pay-by-phone provide parking users convenience benefits, such as paying for the parking spot via the app without needing to leave the car and walk to a meter (this is helpful especially during the winter), the option to extend parking time remotely, and alerts when their paid parking time is about to run out. However, there are some limitations to pay-by-phone. Not all users have access to a smart phone, and some may have a smartphone but no data. Because of this, Hamilton should consider procuring a service provider with a pay-by-voice/text feature. 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 of these apps are currently operating in numerous municipalities in Canada and anyone already using the app elsewhere can use their existing account to pay for parking in Hamilton.

Third party parking apps also have the potential to integrate with 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 enforcement officers. Hamilton should consider a service provider with LPR capabilities if the City foresees adopting LPR services in future.

Through the completion of parking studies for other Southern Ontario municipalities, most municipalities are known to have either recently implemented a pay-by-phone system or are in the process of procuring the services of a third parking provider. A smartphone parking app with broader features is not yet common among comparable municipalities.

Parking Occupancy Technology

Occupancy technology connects individual parking spaces into a system, allowing users and operators to view parking utilization and availability through a connected app or backend management system.

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 are placed at the entrances and exits of a parkade or parking lot to activate the gates as well as keep a running tally of the number of vehicles within the parking structure. It is a fairly outdated method of collecting utilization data for parking garages as data errors arise when vehicles begin tailgating each other at the entrance or exit. This could cause multiple vehicles to be counted as one, skewing the utilization data. Individual sensors can be used in multi-level parkades with multiple ramps and entry/exit points for more accurate occupancy information and better wayfinding for vehicles maneuvering through a complicated parking structure with many access points and internal driveways. Alternatively, a barrier gate system could be installed at the entrance and exit points of parking lots and parkades in order to have the most accurate occupancy information. The backend software would keep count of the number of times the barrier gate system reacted to a vehicle (e.g., when the entrance arm opens or when the exit arm opens).

Block sensors at EV parking spots may be used to 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 about 10 parking spaces simultaneously with approximately 90% accuracy. The block sensors should be installed at intervals of 10 parking spaces (maximum).

Due to the complexity of the parking system and the different payment options (i.e. through apps or a meter), a single occupancy technology cannot be used alone. 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 hardware, data collected from occupancy technology can be integrated with an app-based platform or variable message signs (VMS) to help users locate available parking spaces. VMS technology provides real-time information to drivers regarding parking availability. When paired with occupancy technology, VMS has the potential to display the number of spaces available at each parking lot, in real time. VMS can be placed on the roadside at main entrances to the Downtown as well as large parking lots, notifying users of the parking availability at specific parking lots or areas. When paired with static wayfinding signage, users can be informed where parking is available and how to get there.

Parking occupancy technologies are fairly rare in municipal parking systems. The majority of municipalities have not implemented these technologies. The few cases parking occupancy technology has been observed, the technology was limited to larger off-street parking facilities such as parking structures.

Electric Vehicle Charging Stations

While not reducing parking demand, electric vehicles (EVs) have no emissions compared to typical motorized vehicles. The lack of emissions can help support broader sustainability and environmental goals by improving air quality across the City. They can also help attract short-term visitors who need to recharge and can enjoy local amenities at the same time.

Many municipalities provide EV charging stations in the municipal off-street parking system. The City of Barrie for example provides 54 electric vehicle charging stations distributed throughout the parking system. 36 of the charging stations are Tesla-only stations while the remaining 18 are universal.

In addition to providing publicly available charging stations, municipalities could require private developments to provide EV infrastructure as part of the site plan application process. For example, the City of Toronto Green Standards require that 20% of the parking supply required for new developments be equipped with EV supply equipment. The remaining parking spaces must also be designed in a manner to permit future EV supply equipment.

The City of Hamilton will be installing 24 EV charging stations (with two heads each) by the end of 2021. Funding for 20 of the stations are a part of the NRCan Grant as part of the Zero Emission Vehicle Infrastructure Program.

4.3 Best Practices Summary

The best practices review findings are summarized in **Exhibit 4-7**. The summary outlines Hamilton's practices, the general best practice of comparator municipalities, and items to consider for each reviewed strategy.

Exhibit 4-7: Best Practices Review Summary

Strategy	Hamilton	Comparator Municipality Best Practice	To Consider
Financial Model	Financially sustainable	Financially sustainable	-
Pricing Model	Location based pricing	Location based pricing	-
User Fees	Generally lower than comparators	Generally higher than Hamilton	Increasing parking fees
Cash-in-lieu Programs	Yes	Depends on local context	-
On-street Accessible Parking	Reserved accessible on-street permit parking	Similar accessible on-street parking programs to Hamilton	-
Enforcement	Manual proactive/ reactive enforcement depending on location	LPR Technology	Adoption of LPR technology
Residential On-street Parking	Parking zones permit and parking time limit zones permit	Long term permits for residents and temporary permits for visitors	Temporary parking program for visitors
Emerging Trends	Beginning to consider emerging trend impacts	Beginning to consider emerging trend impacts	Future proofing for new parking facilities Potential to include public parking in new private developments Partnerships with existing parking facility owners to convert a portion of the parking facility to public parking
Future Technology	Planning to upgrade pay parking technology	Limited adoption in comparator municipalities	Upgrade to smart parking payment systems (parking meters and pay-by-phone)

Strategy	Hamilton	Comparator Municipality Best Practice	To Consider
			Consider procuring a smartphone parking app Consider parking occupancy technology

5. Next Steps

The Parking Master Plan next steps include the following:

- Complete the on-going stakeholder interviews;
- Developing initial recommendations for a Downtown parking strategy;
- Develop initial recommendations for the city wide parking policy framework;
- Complete future year modelling for parking demand and financial performance based on Downtown parking strategy and city-wide parking policy framework;
- Conduct second Public Consultation Meeting; and,
- Compile final study reports and present findings.