Background Report II – Future Conditions and Financial Assessment

Prepared for the City of Hamilton by IBI Group
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1. Introduction

In 2013, the City of Hamilton completed the Downtown Hamilton Parking Study and Parking Garage Assessment ('the 2013 study"). 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 to 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. Considering the extent of the changes, the City initiated the Parking Master Plan in 2019 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 findings related to:

- Assessment of future conditions; and,
- Financial modelling and scenario assessment.

2. Future Conditions

The Future Conditions section evaluates parking operations in Downtown Hamilton and the BIA study areas. Existing parking operations, as analysed in Background Report I, are summarized and future parking operations are projected to estimate future parking needs.

Based on the existing and future parking assessment findings, a general principles and policy recommendations are developed to help guide Hamilton in meeting long term parking needs in the Downtown and in the BIA study areas.

2.1 Parking Supply and Demand

Through the accurate projection of future parking demand, educated long term parking related decisions can be made to support successful parking operations in the Downtown study area and the 13 BIAs. The following factors are considered when projecting future parking supply and demand:

- Existing parking patterns;
- Single occupancy vehicle (SOV) modal share changes;
- Background population and employment growth;
- New developments in the Downtown study area and BIAs;
- Parking supply losses and gains; and
- Parking price changes.

The future parking operations assessment considers a 2030 horizon year, which is consistent with Hamilton's major planning documents.

Similar to the existing conditions analysis described in Background Report I, the 85% effective capacity threshold is used here as a target utilization which reflects effective capacity. Using the projected future parking supply and demand, and the targeted effective capacity threshold, locations with parking deficiencies and surpluses are identified. Using these findings, locations

where additional parking supply will be needed and locations with potentially surplus parking lots are identified.

It should be noted that the future parking projections are estimated based on the best data available at the time of this study. Hamilton is recommended to collect new parking supply and demand data every 3 to 4 years to evaluate the resulting parking demand. This is because growth and other assumptions may not materialize as projected. The findings and recommendations made as part of this study are intended to be updated on an as needed basis to reflect the parking demand achieved.

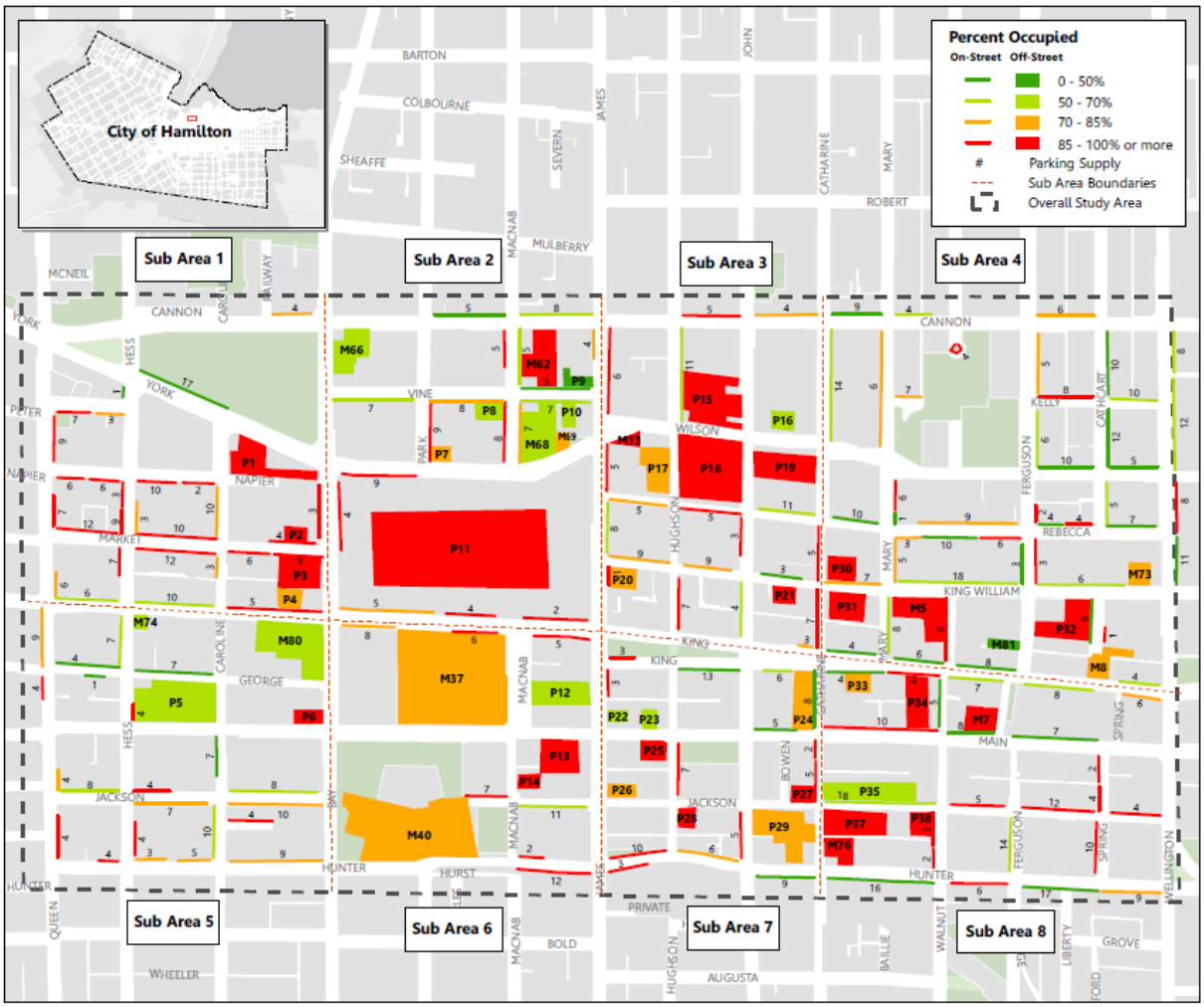
2.1.1 Existing Parking Patterns

Existing parking operations forms the base data layer of the future parking projections. To project future parking supply and demand, the seasonally adjusted existing conditions data is further adjusted based on the factors outlined in Sections 2.1.2 to 2.1.5. This section summaries existing parking operations.

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. The Downtown Hamilton parking supply and demand data is illustrated geographically in **Exhibit 2-1.**

Exhibit 2-1: 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

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 peak. However, parking opportunities are available near 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 likely associated with 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 most 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, 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.

2.1.2 Background Parking Growth

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

- 2016 population and employment data from the Transportation Tomorrow Survey (TTS);
- 2031 population and employment data for Hamilton from City of Hamilton staff; and
- 2031 population and employment data for the rest of Southern Ontario from the Places to Grow.

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

Population and employment growth is not anticipated to be consistent across Hamilton. Some areas such as the Downtown core are anticipated to experience larger growth than the rural areas. Therefore, simply growing the observed parking demand linearly to Hamilton's citywide population and employment growth is not considered appropriate. To calculate unique growth projections for Downtown study area and the 13 BIAs, the areas were divided to match the TTS zones. The TTS divided Hamilton in approximately 250 zones based on transportation patterns.

To determine the impact Hamilton's population and employment growth may have on future parking demand, population and employment growth was calculated by interpolating between obtained 2016 and 2031 data. The following 2019 to 2030 population and employment growth factors were calculated:

- Downtown study area: 1.204;
- Ancaster Heritage Village BIA: 1.130;
- Barton Street BIA: 1.102;
- Concession Street BIA: 1.102;
- Downtown Dundas BIA: 1.156;
- Downtown Hamilton BIA: 1.216;
- International Village BIA: 1.157 (1.204 applied, explained below);
- King Street West BIA: 1.214 (1.204 applied, explained below);
- Locke Street BIA: 1.090;
- Main Street Esplanade BIA: 1.190;
- Ottawa Street BIA: 1.092;
- Waterdown BIA: 1.179; and
- Westdale Village BIA: 1.069.

These weighted growth factors are applied to the existing parking demand in each respective area to project the 2030 parking demand. Note that the Downtown Hamilton, International Village, and King Street BIAs are contained within the Downtown study area. To maintain consistent parking demand projections for the overlapping parking facilities, the Downtown study area factor was applied (1.204). The broader area factor was selected since the parking operations in the study area are interdependent, and the study area factor considers the weighted growth of all zones in the study area.

Technical Sample Calculation

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

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

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

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

Sample calculation: Zone 5020 Waterdown BIA

Zone 5020 trips/person/day: 0.00826

Max trips/person/day of all Waterdown zones: 0.40468

Zone 5020 Pop&Emp (2030): 12,334

Zone 5020 Weighted Pop&Emp (2030) = Pop&Emp (2030) x $\left(\frac{Zone\ 5020\ trips/person/day}{Max\ trips/person/day\ in\ any\ zone}\right)$

Zone 5020 Weighted Pop&Emp (2030) = 12,334 x $\left(\frac{0.00826}{0.40468}\right)$

Zone 5020 Weighted Pop&Emp (2030) = 252

To calculate the weighted population and employment of the Waterdown BIA, the weighted population and employment of each Waterdown BIA zone are added together. Using this methodology, the 2016 and 2030 weighted population and employment for Waterdown is calculated. A weighted population and employment growth factor from 2019 to 2030 can then be interpolated.

2.1.3 Single Occupancy Vehicle Modal Share

One of the Official Plan's parking-related objectives is to promote and facilitate alternative modes of transportation such as rail, transit, cycling, and walking. With improvements to alternative modes of transportation, future SOV mode share is anticipated to be reduced, which would reduce the number of vehicles on the roads and in parking lots. Hamilton's transportation network has several large changes planned, including implementation of the BLAST transportation network (the planned frequent rapid transit system), potential GO Transit service improvements, among others, which are anticipated to significantly impact transportation patterns, and thereby parking operations.

Based on the Hamilton Transportation Master Plan (2018), 67% of trips in 2011 were completed by SOVs. By 2031, the City is targeting a SOV mode share of 52%. A reduction from 67% to 52% represents a relative reduction of 22.4% over the 20-year period. Through interpolation, the SOV mode share is anticipated to decrease by approximately 1.02% annually. For the purposes of this future conditions assessment, a 1.02% annual decrease in SOV mode share is anticipated to result in a 1.02% annual decrease in parking demand. An annual parking demand decrease of 1.02% represents a total decrease of 11.8% between 2019 and 2030.

2.1.4 Parking Supply Changes and New Developments

While the background parking demand growth and mode share reduction of SOVs are anticipated to result in a net parking demand growth/reduction across the study areas, new developments and parking supply changes are expected to have localized impacts on nearby parking facilities. Therefore, a micro level assessment of each potential future development was undertaken to develop an understanding of the parking related impacts.

City staff provided a list of planned and anticipated future developments to be considered in the Downtown study area and the BIAs. Unless otherwise noted by City staff, developments are assumed to meet the zoning by-law parking requirements. In other words, sufficient on-site parking supply is assumed to be provided to meet the generated demand, with no parking demand spillover onto the municipal parking system.

Exhibit 2-2 summarizes the future developments, their anticipated impact on the parking system, and the anticipated timeline for completion. Only developments with parking system impacts are displayed. Note that additional developments not currently identified may be proposed, approved, and constructed in the future, which would have some implications.

Exhibit 2-2: New Study Area Developments and their Parking Impacts

Address	Sub-Area	Development Type	Parking System Impact	Development Timeframe
106 Bay Street North	2	Affordable housing (unknown number of units)	Lot 66 closure, 86 spaces removed	2020 - 2025
12 York Boulevard	2	N/A	Lot 69 closure, 20 spaces removed	2020 - 2025
99 John Street North	3	N/A	Lot P15 closure, 274 spaces removed	2025 - 2030
253 King William Street	4	20 residential units	Lot 73 closure, 37 spaces removed	2025 - 2030
191 King Street West	5	408 residential units (potential student residence)	Lot 80 closure, 202 spaces removed	2025 - 2030
22 Bay Street South	5	285 residential units		
101 Hunter Street East	8	174 residential units	Lot 76 closure, 55 spaces removed	2021
212 King William Street	8	266 residential units	Lot P32 closure, 45 spaces removed	2020 - 2025
System Wide Total			**719 spaces** removed	

A total of 719 off-street parking spaces are expected to be removed from the publicly accessible supply in the Downtown study area by 2030, including

- 106 spaces in sub-area 2;
- 274 spaces in sub-area 3;
- 37 spaces in sub-area 4;
- 202 spaces in sub-area 5; and
- 100 spaces in sub-area 8.

Vehicles currently parking in the facilities targeted for redevelopment are reallocated to nearby facilities. Parking lots with available capacity are prioritized. However, if sufficient capacity is not available nearby to accommodate the displaced demand, parking demand greater than the lot's supply is assigned to illustrate a parking supply shortage.

No major parking supply changes are anticipated in the BIAs.

2.1.5 Parking Price Increases

An increase in the price of parking will result in a decrease in the demand for parking. According to Canadian Parking Association, the price elasticity of parking demand is generally in the order of -0.37. In other words, a 1% increase in the price of parking would result in a 0.37% decrease in the demand for parking. The elasticity increases in locations where there are modes of transportation alternative to personal vehicles and decreases in locations where transportation is more reliant on personal vehicles. Through discussion with Hamilton staff, Hamilton commuters were determined to be personal vehicle oriented. In other words, the parking price/demand elasticity is anticipated to be relatively low, and a value of -0.20 was adopted for this study.

Four different parking price scenarios were assessed, including:

- **Scenario 1 Status Quo**: 2% annual parking price increase to account for inflation;
- **Scenario 2 Policy-Based Prices Adjusted by Location and Demand**: Adopting a standardized parking price structure for the BIAs and the Downtown Hamilton study area;
- **Scenario 3 Modest Policy-Based Price Increases Adjusted by Location and Demand**: Increasing parking prices with the intent of managing parking demand; and
- **Scenario 4 Modest Policy-Based Price Increases Adjusted by Location and Demand with 380 New Publicly Funded Parking Spaces**: Scenario 3 parking prices are maintained, and 380 new public parking spaces are funded.

The 2030 parking prices associated with each Scenario is outlined in **Exhibit 2-3**. Note that Section 2 assesses the parking demand impacts associated with the four parking price Scenarios, while Section 3 examines their financial impacts.

Exhibit 2-3: Scenario Parking Prices

Scenario 1							
Lot	Supply	Hourly			Monthly		
		Existing	2030	Increase	Existing	2030	Increase
5	125	$2.00	$2.40	20%	$75.00	$91.40	22%
7	59	$1.00	$1.20	20%	$75.00	$91.40	22%
8	47	$1.50	$1.80	20%	$85.00	$103.60	22%
13	16	$2.00	$2.40	20%	-	-	-
37	800	$2.50	$3.00	20%	$140.00	$170.70	22%
40	433	$3.00	$3.70	23%	$95.00	$115.80	22%
62	111	$2.00	$2.40	20%	$85.00	$103.60	22%
68	796	$3.00	$3.70	23%	$110.00	$134.09	22%
74	11	$2.00	$2.40	20%	$85.00	$103.60	22%
81	13	$1.50	$1.80	20%	$75.00	$91.40	22%
On-street	1158	$1.50	$1.80	20%	-	-	-

Scenario 2							
Lot	Supply	Hourly			Monthly		
		Existing	2030	Increase	Existing	2030	Increase
5	125	$2.00	$2.50	25%	$75.00	$106.25	42%
7	59	$1.00	$2.50	150%	$75.00	$106.25	42%
8	47	$1.50	$2.50	67%	$85.00	$114.00	34%
13	16	$2.00	$3.00	50%	-	-	-
37	800	$2.50	$3.50	40%	$140.00	$140.00	0%
40	433	$3.00	$3.50	17%	$95.00	$122.50	29%
62	111	$2.00	$3.00	50%	$85.00	$114.00	34%
68	796	$3.00	$3.50	17%	$110.00	$122.50	11%
74	11	$2.00	$2.50	25%	$85.00	$106.25	25%
81	13	$1.50	$2.50	67%	$75.00	$106.25	42%
On-street	1158	$1.50	$2.50	67%	-	-	-

Scenario 3							
Lot	Supply	Hourly			Monthly		
		Existing	2030	Increase	Existing	2030	Increase
5	125	$2.00	$3.00	50%	$75.00	$127.50	70%
7	59	$1.00	$3.00	200%	$75.00	$127.50	70%
8	47	$1.50	$3.00	100%	$85.00	$133.00	56%
13	16	$2.00	$3.50	75%	-	-	-
37	800	$2.50	$4.00	60%	$140.00	$140.00	0%
40	433	$3.00	$4.00	33%	$95.00	$140.00	47%
62	111	$2.00	$3.50	75%	$85.00	$133.00	56%
68	796	$3.00	$4.00	33%	$110.00	$140.00	27%
74	11	$2.00	$3.00	50%	$85.00	$127.50	50%
81	13	$1.50	$3.00	100%	$75.00	$127.50	70%
On-street	1158	$1.50	$3.00	100%	-	-	-

Scenario 4							
Lot	Supply	Hourly			Monthly		
		Existing	2030	Increase	Existing	2030	Increase
5	125	$2.00	$3.00	50%	$75.00	$127.50	70%
7	59	$1.00	$3.00	200%	$75.00	$127.50	70%
8	47	$1.50	$3.00	100%	$85.00	$133.00	56%
13	16	$2.00	$3.50	75%	-	-	-
37	800	$2.50	$4.00	60%	$140.00	$140.00	0%
40	433	$3.00	$4.00	33%	$95.00	$140.00	47%
62	111	$2.00	$3.50	75%	$85.00	$133.00	56%
68	796	$3.00	$4.00	33%	$110.00	$140.00	27%
74	11	$2.00	$3.00	50%	$85.00	$127.50	50%
81	13	$1.50	$3.00	100%	$75.00	$127.50	70%
On-street	1158	$1.50	$3.00	100%	-	-	-

Given the parking prices and the -0.20 parking price/demand elasticity, the parking price/demand adjustment factors outlined in **Exhibit 2-4** were calculated.

Exhibit 2-4: Parking Price/Demand Adjustment Factors

Type	Scenario 1	Scenario 2	Scenario 3	Scenario 4
On-Street	0.951	0.867	0.800	0.800
Off-Street	0.951	0.945	0.912	0.912

2.2 2030 Parking Operations

This section consolidates all parking supply and demand changes outlined in the previous sections and examines the future parking performance of the Downtown Study Area and the BIAs. Note that the future conditions assessment evaluates operations during the system wide period of peak

parking demand. Peak parking demand occurred during the weekday at 12:00 PM in the Downtown Study Area, and at varying times in the BIAs. These times are specified in **Exhibit 2-7**.

Note that, when projected parking supply and demand for Scenario 1 to 4, all factors are kept consistent except for the parking price increases.

Scenario 1 (Status Quo)

Downtown Hamilton

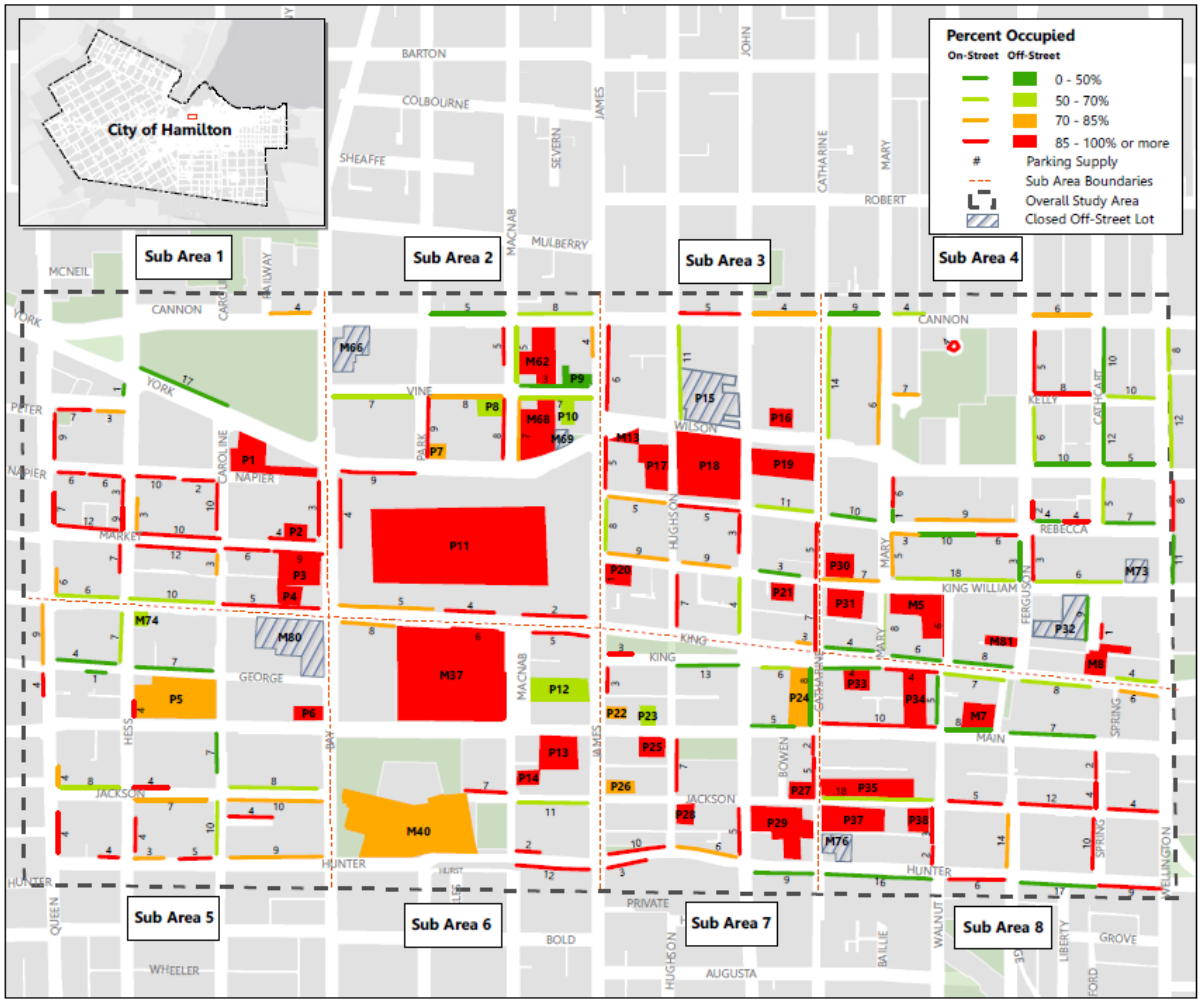
Overall, the Downtown Hamilton parking system is projected to experience the following demand by 2030:

- On-street: 838 vehicles (72% utilization);
- Off-street (Public): 2,174 vehicles (90% utilization);
- Off-street (Private): 4,116 vehicles (97% utilization); and
- Overall: 7,128 vehicles (91% utilization).

Given these operations, the Hamilton Municipal Parking System is projected to operate near capacity by 2030. The biggest factor in the projected operations is the loss of 719 parking spaces.

To gain an understand of the most critical parking hot spots, the projected 2030 operations are illustrated geographically in **Exhibit 2-5.**

Exhibit 2-5: Downtown Hamilton Parking Supply and Demand (Scenario 1)



Parking Facility	Occupancy/Supply (Spaces)
On-Street Parking	**838/1,158**
Municipal Off-Street	**2,174/2,411**
Lot M5	171/125
Lot M7	62/59
Lot M8	65/47
Lot M13	15/16
Lot M37	712/800
Lot M40	310/433
Lot M62	100/111
Lot M66	Closed
Lot M68	714/796
Lot M69	Closed
Lot M73	Closed
Lot M74	7/11
Lot M76	Closed
Lot M80	Closed
Lot M81	18/13
Private Off-Street	**4,116/4,260**
Lot P1	125/114
Lot P2	10/11
Lot P3	117/110
Lot P4	54/60
Lot P5	171/206
Lot P6	49/44
Lot P7	55/68
Lot P8	65/102
Lot P9	7/20
Lot P10	25/38
Lot P11	595/657
Lot P12	62/115
Lot P13	70/61
Lot P14	57/59
Lot P15	Closed
Lot P16	45/34
Lot P17	138/102
Lot P18	446/336
Lot P19	271/209
Lot P20	83/93
Lot P21	55/59
Lot P22	52/71
Lot P23	31/49
Lot P24	75/90
Lot P25	85/81
Lot P26	100/128
Lot P27	44/48
Lot P28	66/56
Lot P29	212/232
Lot P30	124/112
Lot P31	137/137
Lot P32	Closed
Lot P33	211/245
Lot P34	100/110
Lot P35	190/209
Lot P37	122/133
Lot P38	67/61

Hamilton Parking Master Plan
Downtown: 2030 Peak Occupancy Scenario 1 (Weekday 12:00 PM)

0 0.25 0.5 Kilometers

As illustrated in **Exhibit 2-5**, many on-street segments and off-street lots operate at or above the 85% effective capacity threshold, with large concentrations of overcapacity facilities in the northern half of the study area. A tabular summary of sub-area parking occupancies is shown in **Exhibit 2-6**.

Exhibit 2-6: 2030 Downtown Hamilton Sub Area Operations (Scenario 1)

Sub Area	Parking Occupancy			
	On-Street	Off-Street (Municipal)	Off-Street (Private)	Total
1	89%	N/A	104%	98%
2	81%	90%	84%	87%
3	82%	94%	125%	119%
4	56%	137%	105%	92%
5	72%	64%	88%	82%
6	92%	83%	81%	83%
7	62%	N/A	88%	86%
8	71%	105%	91%	81%

Note: numbers in red indicate utilization greater than 85%

Based on the sub area operations outlined in **Exhibit 2-6**, sub-areas 1, 3, and 4 are projected to experience a parking supply shortage and alternatives aimed at managing demand or increasing parking supply to accommodate expected future demand may be needed.

Business Improvement Areas

The Scenario 1 parking supply and demand for each BIA is illustrated in **Exhibit 2-7**. Note that each BIA operates as an isolated parking system, therefore individual peak periods were identified for each BIA.

Exhibit 2-7: 2030 BIA Parking Supply and Demand (Scenario 1)

BIA	Type	Supply	Peak Demand	Peak Utilization	Time of Peak
Ancaster Heritage Village	On-Street	17	10	59%	11:00 AM - 12:00 PM
	Off-Street	-	-	-	
	Total	17	10	59%	
Barton Village	On-Street	186	145	78%	1:00 PM - 2:00 PM
	Off-Street	156	96	62%	
	Total	342	241	70%	
Concession Street	On-Street	133	111	83%	12:00 PM - 1:00 PM
	Off-Street	24	14	58%	
	Total	157	125	80%	
Downtown Dundas	On-Street	91	82	90%	1:00 PM – 2:00 PM
	Off-Street	331	242	73%	
	Total	422	324	77%	
Downtown Hamilton	On-Street	224	211	94%	1:00 PM - 2:00 PM
	Off-Street	16	17	106%	
	Total	240	228	95%	
International Village	On-Street	117	87	74%	12:00 PM - 1:00 PM
	Off-Street	244	315	129%	
	Total	361	402	111%	
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	100	81%	12:00 PM - 1:00 PM
	Off-Street	-	-	-	
	Total	124	100	81%	
Main Street Esplanade	On-Street	39	10	26%	10:00 AM - 12:00 PM
	Off-Street	-	-	-	
	Total	39	10	26%	
Ottawa Street	On-Street	102	45	44%	1:00 PM - 2:00 PM
	Off-Street	306	51	17%	
	Total	408	96	24%	
Stoney Creek	On-Street	-	-	-	9:00 AM - 10:00 AM
	Off-Street	169	159	94%	
	Total	169	159	94%	
Waterdown	On-Street	-	-	-	2:00 PM - 3:00 PM
	Off-Street	8	5	63%	
	Total	8	5	63%	
Westdale Village	On-Street	98	76	78%	4:00 PM – 5:00 PM
	Off-Street	-	-	-	
	Total	98	76	78%	

Note: numbers in red indicate utilization greater than 85%

As outlined in **Exhibit 2-7**, the parking systems in several BIAs were observed to operate at or above the effective capacity threshold. Note that Downtown Hamilton, International Village, and King Street West BIAs are in the Downtown Study Area, which is assessed above. Parking operations in all other BIAs are anticipated to be acceptable except for on-street parking in Downtown Dundas and off-street parking in Stoney Creek.

Scenarios 2, 3, and 4

Scenarios 2, 3, and 4 include progressively larger parking price increases, which results in a larger parking demand decrease due to the price/demand elasticity. Note that Scenario 4 price increases matched Scenario 3 but also includes approximately 380 new parking spaces in Downtown Hamilton.

Downtown Hamilton

A tabular summary of sub-area parking occupancies for Scenarios 2, 3, and 4 is shown in **Exhibit 2-8.**

When compared to Scenario 1, parking operations slightly improve in Scenario 2 and are further improved in Scenario 3. These improvements are due to the progressively larger parking price increases which are anticipated to shift some users to alternative modes of transportation. While operations slightly improve, the near capacity operations observed in Scenario 1 are still evident in Scenarios 2 and 3.

Scenario 4 includes approximately 380 new parking spaces, which is anticipated to significantly improve operations. With the exception of private off-street facilities in Sub-area 1, parking operations are projected to operate below capacity in all sub-areas. To determine if localized parking supply issues persist, Scenario 4 operations are illustrated geographically in **Exhibit 2-9.**

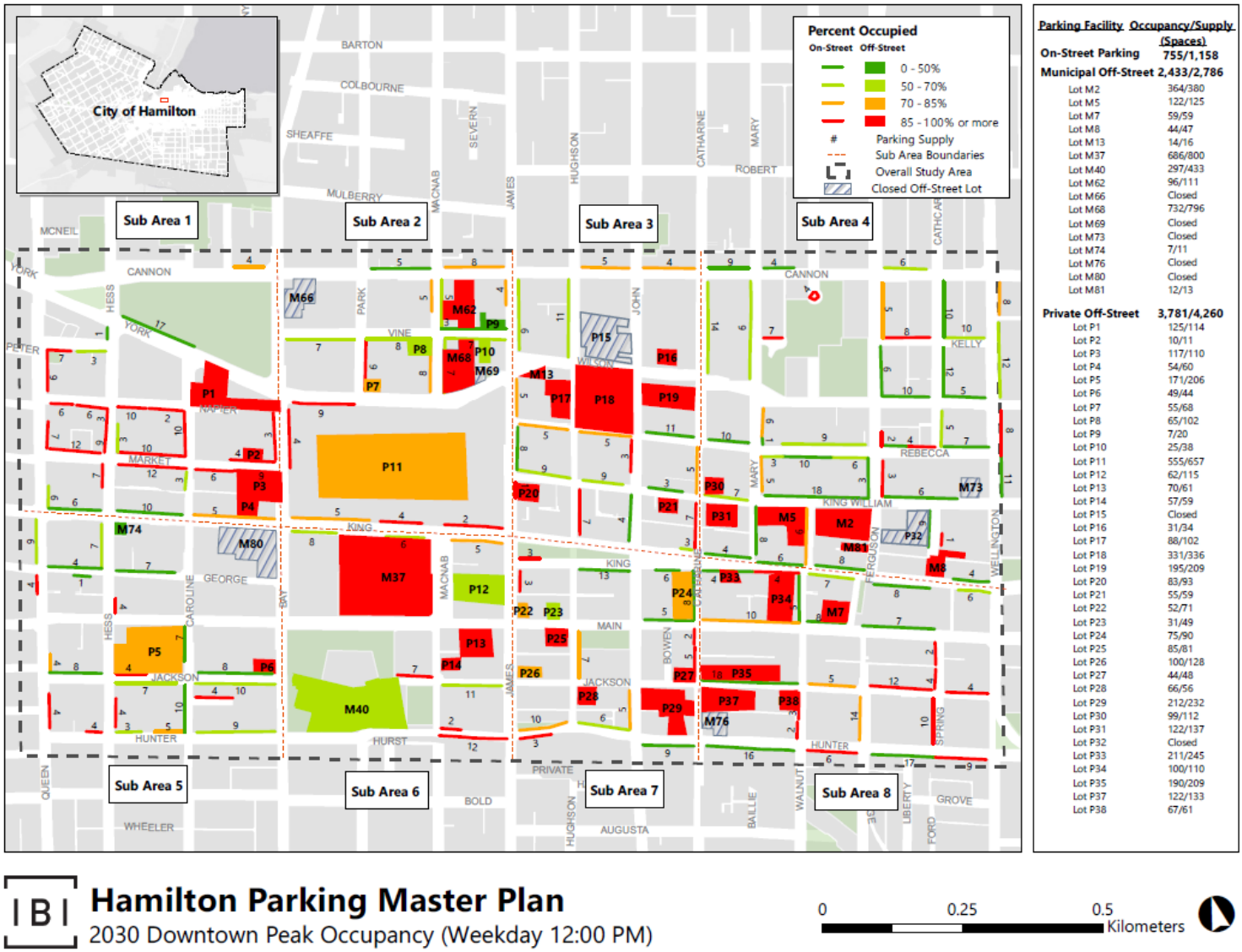
Exhibit 2-8: 2030 Downtown Hamilton Sub Area Operations (Scenario 2, 3 and 4)

Sub-Area	Type	Scenario2 & 3 Supply	Scenario 2		Scenario 3		Scenario 4 Supply	Scenario 4	
			Peak Demand	Peak Utilization	Peak Demand	Peak Utilization		Peak Demand	Peak Utilization
1	On-Street	191	166	87%	162	85%	191	162	85%
	Off-Street (Public)	-	-	-	-	-	-	-	-
	Off-Street (Private)	295	306	104%	306	104%	295	306	104%
	Total	486	472	97%	468	96%	486	468	96%
2	On-Street	99	73	74%	68	69%	99	68	69%
	Off-Street (Public)	907	814	90%	798	88%	907	828	91%
	Off-Street (Private)	885	746	84%	736	83%	885	706	80%
	Total	1,891	1,633	86%	1,602	85%	1,891	1602	85%
3	On-Street	117	87	74%	80	68%	117	80	68%
	Off-Street (Public)	16	15	94%	14	88%	16	14	88%
	Off-Street (Private)	833	1,038	125%	1,038	125%	833	783	94%
	Total	966	1,140	118%	1,132	117%	966	877	91%
4	On-Street	318	172	54%	166	52%	318	166	52%
	Off-Street (Public)	185	253	137%	247	134%	635	542	96%
	Off-Street (Private)	249	261	105%	261	105%	249	221	89%
	Total	752	686	91%	674	90%	1,152	929	82%
5	On-Street	127	86	68%	81	64%	127	81	64%
	Off-Street (Public)	11	7	64%	7	64%	11	7	64%
	Off-Street (Private)	250	220	88%	220	88%	250	220	88%
	Total	388	313	81%	308	79%	388	308	79%
6	On-Street	51	43	84%	39	76%	51	39	76%
	Off-Street (Public)	1,233	1016	82%	983	80%	1,233	983	80%
	Off-Street (Private)	235	190	81%	190	81%	235	190	81%
	Total	1,519	1,249	82%	1,212	80%	1,519	1212	80%
7	On-Street	82	47	57%	44	54%	82	44	54%
	Off-Street (Public)	-	-	-	-	-	-	-	-
	Off-Street (Private)	755	665	88%	665	88%	755	665	88%
	Total	837	712	85%	709	85%	837	709	85%

Sub-Area	Type	Scenario2 & 3 Supply	Scenario 2		Scenario 3		Scenario 4 Supply	Scenario 4	
			Peak Demand	Peak Utilization	Peak Demand	Peak Utilization		Peak Demand	Peak Utilization
8	On-Street	173	119	69%	115	66%	173	115	66%
	Off-Street (Public)	59	61	103%	59	100%	59	59	100%
	Off-Street (Private)	758	690	91%	690	91%	758	690	91%
	Total	990	870	88%	864	87%	990	864	87%
Total	**On-Street**	**1,158**	**793**	**68%**	**755**	**65%**	**1,158**	**755**	**65%**
	Off-Street (Public)	**2,411**	**2,166**	**90%**	**2,108**	**87%**	**2,791**	**2433**	**87%**
	Off-Street (Private)	**4,260**	**4,116**	**97%**	**4,106**	**96%**	**4,260**	**3781**	**89%**
	Total	**7,829**	**7,075**	**90%**	**6,969**	**89%**	**8,209**	**6969**	**85%**

Note: numbers in red indicate utilization greater than 85%

Exhibit 2-9: Downtown Hamilton Parking Supply and Demand (Scenario 4)



Hamilton Parking Master Plan
2030 Downtown Peak Occupancy (Weekday 12:00 PM)

0 0.25 0.5 Kilometers

As illustrated in **Exhibit 2-9**, many on-street and off-street parking facilities are projected to operate over effective capacity. However, available parking facilities are available throughout the Downtown parking system. In other words, while some users are anticipated to experience difficult in finding an available parking space, particularly in the more popular facilities, parking opportunities are anticipated to be available nearby. Therefore, parking operations under Scenario 4 are projected to be satisfactory.

Business Improvement Areas

The Scenario 2, 3 and 4 parking supply and demand for each BIA is illustrated in **Exhibit 2-10**.

Exhibit 2-10: 2030 BIA Parking Supply and Demand (Scenarios 2, 3, and 4)

BIA	Type	Supply	Scenario 2		Scenario 3		Scenario 4	
			Peak Demand	Peak Utilization	Peak Demand	Peak Utilization	Peak Demand	Peak Utilization
Ancaster Heritage Village	On-Street	17	9	53%	8	47%	8	47%
	Off-Street	-	-	-	-	-	-	-
	Total	17	9	53%	8	47%	8	47%
Barton Village	On-Street	186	132	71%	122	66%	122	66%
	Off-Street	156	86	55%	76	49%	76	49%
	Total	342	218	64%	198	58%	198	58%
Concession Street	On-Street	133	101	76%	93	70%	93	70%
	Off-Street	24	12	50%	10	42%	10	42%
	Total	157	113	72%	103	66%	103	66%
Downtown Dundas	On-Street	91	75	82%	69	76%	69	76%
	Off-Street	331	220	66%	187	56%	187	56%
	Total	422	295	70%	256	61%	256	61%
Downtown Hamilton	On-Street	224	192	86%	177	79%	177	79%
	Off-Street	16	17	106%	16	100%	16	100%
	Total	240	209	87%	193	80%	193	80%
International Village	On-Street	117	79	68%	73	62%	73	62%
	Off-Street	244	315	129%	307	126%	237	97%
	Total	361	394	109%	380	105%	310	86%
King Street West	On-Street	16	13	81%	12	75%	12	75%
	Off-Street	11	7	64%	7	64%	7	64%
	Total	27	20	74%	19	70%	19	70%
Locke Street	On-Street	124	91	73%	84	68%	84	68%
	Off-Street	-	-	-	-	-	-	-
	Total	124	91	73%	84	68%	84	68%
Main Street Esplanade	On-Street	39	9	23%	8	21%	8	21%
	Off-Street	-	-	-	-	-	-	-
	Total	39	9	23%	8	21%	8	21%
Ottawa Street	On-Street	102	41	40%	38	37%	38	37%
	Off-Street	306	49	16%	43	14%	43	14%
	Total	408	90	22%	81	20%	81	20%
Stoney Creek	On-Street	-	-	-	-	-	-	-
	Off-Street	169	155	92%	136	80%	136	80%
	Total	169	155	92%	136	80%	136	80%
Waterdown	On-Street	-	-	-	-	-	-	-
	Off-Street	8	5	63%	5	63%	5	63%
	Total	8	5	63%	5	63%	5	63%
Westdale Village	On-Street	98	69	70%	64	65%	64	65%
	Off-Street	-	-	-	-	-	-	-
	Total	98	69	70%	64	65%	64	65%

Note: numbers in red indicate utilization greater than 85%

As presented in **Exhibit 2-10**, parking operations in Scenarios 2, 3, and 4 are projected to progressively improve as parking prices are increased. Operations are projected to be over capacity in the Downtown Hamilton and International Village BIAs in Scenarios 2 and 3, which is consistent with the Downtown Hamilton Study Area findings. With the 380 new parking spaces in Scenario 4, operations in these BIAs are anticipated to improve under capacity.

2.3 Future Parking Assessment Summary

Parking supply challenges are projected in Scenarios 1, 2 and 3 in the Downtown Hamilton Study Area. These challenges primarily arise from the anticipated parking supply losses, which strains the remaining facilities. System wide parking operations are projected to be near capacity with localized parking supply challenges.

Scenario 4 includes approximately 380 additional parking spaces. With these new spaces, system wide parking operations are projected to be at the 85% which is at the desirable level. Some individual parking facilities are projected to operate near or at capacity, however available parking opportunities can be found nearby.

With the exception of the BIAs located within the Downtown Hamilton Study Area, only Stoney Creek is projected to operate above effective capacity in Scenarios 1 and 2. Parking demand is projected to be managed by the parking price increases in Scenarios 3 and 4, and operations are projected to decrease below effective capacity.

3. Financial Forecasts & Impact of Pricing Scenarios

This section examines the financial state of Hamilton's parking operations and explores pricing plans aimed at achieving long term financial sustainability.

3.1 Financial Forecasting Methodology

This section discusses the financial forecasting methodology including the four parking price scenarios, revenue projections, expense projections, capital reserve transfer, operating balance, capital costs, capital reserve balance, and levy transfers. The presented methodology was developed in consultation with Hamilton staff.

3.1.1 Parking Price Scenarios

With the objective of achieving financially sustainable parking operations (parking revenues are sufficient to fund parking expenses), four parking price scenarios were evaluated, including:

- Scenario 1: Parking prices were increased 2% per year which is considered in line with inflation;
- Scenario 2: A standardized parking price plan was developed for the Hamilton Municipal Parking System (HMPS). As with Scenario 1, prices were increased over time at the rate of inflation. Parking prices were grouped into the following categories:
    - Standalone BIAs: Parking facilities located in standalone BIAs isolated from the rest of the HMPS. Parking prices in these BIAs were set at the lowest rate.
    - Periphery BIAs: Parking facilities that are located close to Downtown Hamilton, but not considered parking of the Downtown. Parking prices in these locations are set more expensive than the Standalone BIAs, but less expensive than Downtown Hamilton prices.
    - Downtown Hamilton: Parking facilities located within the Downtown Hamilton Study Area. Parking facility prices in Downtown Hamilton are set to be more expensive than both Standalone and Periphery BIAs. The Downtown Hamilton parking prices were further divided to maintain a dynamic parking price structure, where popular parking facility prices are set higher than those experiencing lower demand.

- Scenario 3: The standardized parking price plan developed in Scenario 2 was adopted for Scenario 3 as well. These prices were then increased with the objective of managing parking demand.
- Scenario 4: The parking prices developed in Scenario 3 was adopted for Scenario 4 as well. Budget was allocated to fund an additional 380 parking spaces located in Downtown Hamilton.

Detailed parking prices on a lot-by-lot basis for each Scenario are outlined in **Exhibit 2-3**.

3.1.2 Parking Revenues

To project Hamilton's future parking revenues, the 2018 parking prices were grown proportionally based Hamilton's existing parking prices compared to each Scenarios parking prices. If a parking facility's prices were increased by 25%, then the revenue collected was also grown by 25%.

As discussed in Section 2.1.5, parking price increases are anticipated to result in a decrease in parking demand. Based on discussions with Hamilton staff, a parking price elasticity of -0.20 was selected. In other words, a parking price increase of 10% is anticipated to reduce parking demand by 2%. Therefore, in the example provided above, increasing parking prices by 25% is not anticipated to result in a full 25% parking revenue increase since demand will partially decrease. Therefore, parking revenue was only grown by 80% of the parking price increase (100% minus the 20% demand reduction).

3.1.3 Parking Expenses

Hamilton staff provided detailed parking expense data for 170 different accounts including but not limited to, advertisements, information retrieval, salaries, etc. between 2014 and 2018. The expenses associated with these accounts were projected based on the following methodology:

- Onetime expenses: If the expense only occurred once between 2014 and 2018, the expense was assumed to be a onetime payment and $0 was projected;
- Variable expenses: If the expense value varied between 2014 and 2018 with no determinable pattern, the expenses average value was projected. Note that an annual increase of 2% was applied to account for inflation; and
- Growing expenses: If the expense value steadily grew between 2014 and 2018, the expense was extrapolated using the growth between 2014 and 2018.

The expense assumptions were confirmed with Hamilton staff.

3.1.4 Capital Reserve Transfer

A predetermined sum is transferred to the capital reserve fund on an annual basis drawn from the collected parking revenues. The capital reserve is used to fund parking related capital expenses. This value starts at $840,000 in 2020 and increases by $25,000 each year thereafter.

3.1.5 Operating Balance

The operating balance is the difference between the parking revenues and parking expenses. The capital reserve transfer is considered an expense. One criterion when evaluating the health of Hamilton's parking financial operations is whether the collected revenues are sufficient to fund the parking expenses.

3.1.6 Capital Costs

The City of Hamilton provided detailed capital cost projections to 2030. Note that these capital costs do not include the costs associated with Scenario 4's expanded parking supply.

3.1.7 Capital Reserve Balance

The capital reserve balance for any given year is calculated by taking the previous year's capital reserve balance, adding this year's capital reserve transfer, and subtracting this year's capital expenses. A second criterion when evaluating the health of Hamilton's parking financial operations is whether the capital reserve balance is enough to fund the projected capital expenses.

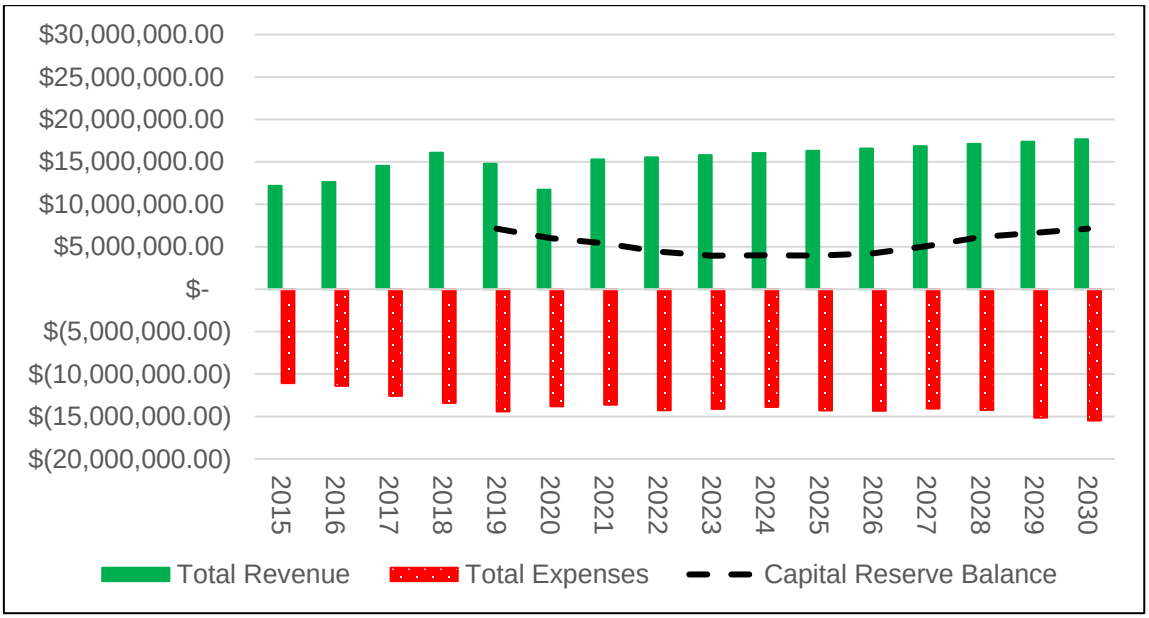
3.1.8 Levy Transfers

The levy transfer is the amount remaining after the capital reserve transfer has been subtracted from the operating balance. Note that if the operating balance for a given year is a deficit, or if the operating balance is less than the predetermined capital reserve transfer amount, then the levy transfer is $0.

3.2 Scenario 1 (Status Quo)

Under Scenario 1, the existing parking price structure was grown 2% per year to account for inflation. **Exhibit 3-1** outlines the parking revenues, expenses, capital reserve balance, and levy contribution on an annual basis between 2015 and 2030. Hamilton provided data for 2015 to 2018, 2019 to 2030 finances were projected based on the methodology discussed in Section 3.1.

Exhibit 3-1: Scenario 1 Financial Performance



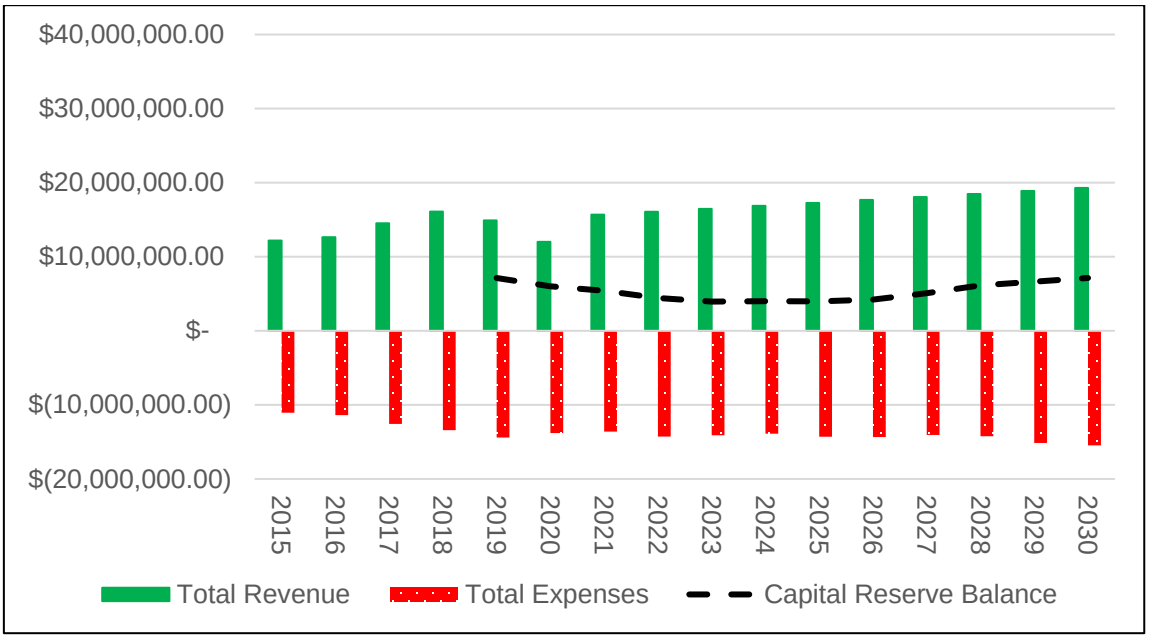
Under Scenario 1, the parking revenues are observed to exceed the expenses, resulting in an operating surplus. The operating surplus is sufficient to maintain a stable capital reserve while annually contributing to the levy. Based on this analysis, Hamilton's parking operations are projected to be financially sustainable under Scenario 1.

However, as discussed in Section 2.2, the continued underpricing of parking results in increased parking demand and pressure on parking supply, especially in high-demand areas which are expected to operate at or above capacity. Therefore, while financially sustainable, Scenario 1 is not preferable from an operations point of view.

3.3 Scenario 2 (Standardized Parking Prices)

Under Scenario 2, the existing parking price plan was standardized by location to set prices in areas like Downtown Hamilton higher and prices in standalone BIAs lower in accordance with the observed demands. Prices were then increased in line with inflation, corresponding to a $0.25 increase to hourly parking and a proportional permit price increase every 5 years. **Exhibit 3-2** outlines the parking revenues, expenses, capital reserve balance, and levy contribution on an annual basis between 2015 and 2030.

Exhibit 3-2: Scenario 2 Financial Performance



Under Scenario 2, the parking revenues are observed to exceed the expenses, resulting in an operating surplus. The operating surplus is sufficient to maintain a stable capital reserve while annually contributing to the levy. Note that parking revenues in Scenario 2 are larger than Scenario 1 resulting in a larger annual levy contribution, which provides additional opportunity for reinvestment into the system as future needs arise.

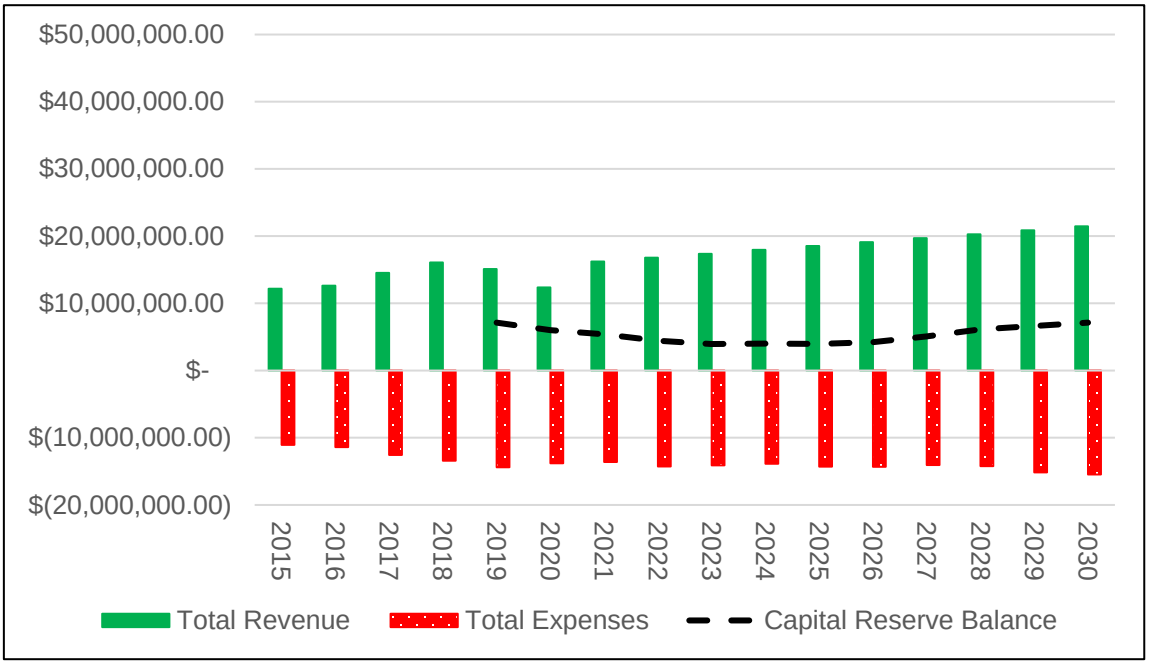
Based on these findings, Hamilton's parking operations are projected to be financially sustainable under Scenario 2. Similar to Scenario 1, parking demand is projected to approach capacity in Scenario 2 with localized parking supply issues as inflationary price increases are not able to significantly influence travel behaviour and reduce or redirect parking demand from the areas where parking is in highest demand. Therefore, while financially sustainable, Scenario 2 is not preferable from an operations point of view.

3.4 Scenario 3 (Demand Management Based Prices)

Under Scenario 3, the standardized parking price plan developed in Scenario 2 was adopted and the prices were further increased with the objective of managing parking demand, equating to approximately a $0.50 increase to hourly parking with proportional increases to permit parking

every 5 years. **Exhibit 3-3** outlines the parking revenues, expenses, capital reserve balance, and levy contribution on an annual basis between 2015 and 2030.

Exhibit 3-3: Scenario 3 Financial Performance



Under Scenario 3, the parking revenues are observed to exceed the expenses, resulting in an operating surplus. The operating surplus is sufficient to maintain a stable capital reserve while annually contributing to the levy. Note that parking revenues in Scenario 3 are larger than both Scenario 1 and 2 resulting in a larger annual levy contribution as well as allowing for additional reinvestment into the system to address future needs.

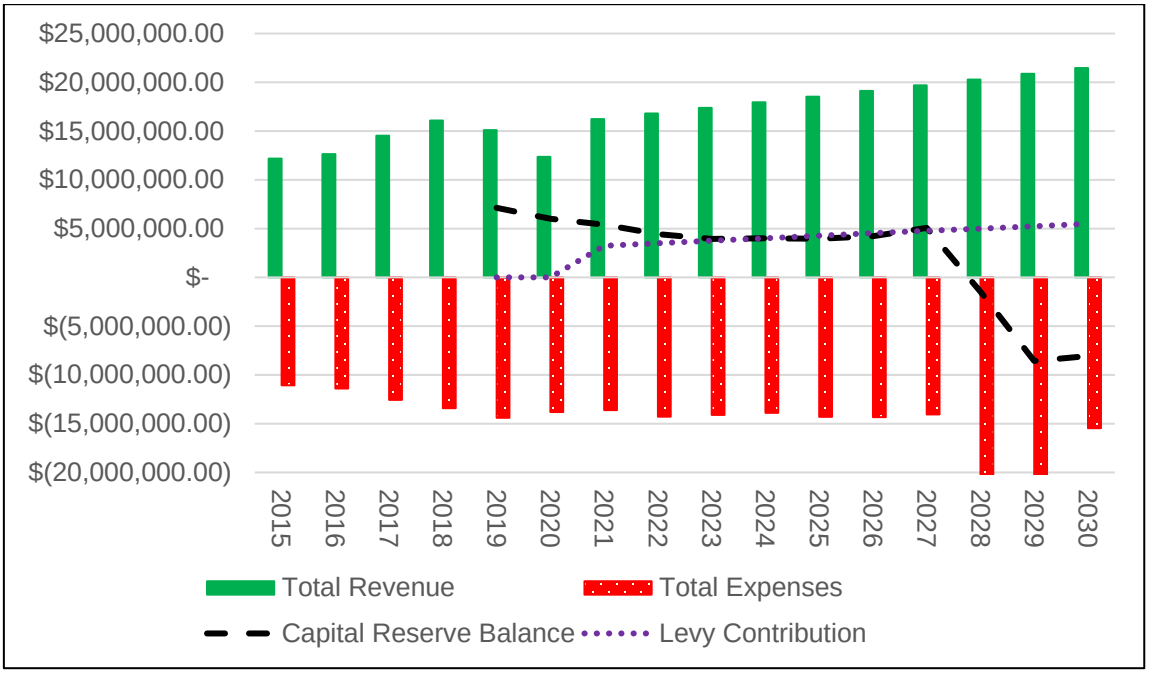
Based on these findings, Hamilton's parking operations are projected to be financially sustainable under Scenario 3. As discussed in Section 2.2, overall parking operations are projected to improve compared to Scenarios 1 and 2 given the larger price increases and higher amount of parking demand management. Overall parking operations are projected to be slightly over effective capacity with localized parking supply challenges, but under this scenario HMPS would have the ability to modify prices in high demand areas as-needed to address these acute deficiencies and maintain efficient and accessible parking operations.

If parking supply is not increased, Scenario 3 is the preferred price plan since it manages parking demand the most resulting in the best operations, respectively. Additionally, Scenario 3 best supports Hamilton's policy of promoting alternative modes of transportation in Downtown Hamilton.

3.5 Scenario 4 (Demand Management Based Prices and Parking Structure)

Under Scenario 4, the standardized parking prices developed in Scenario 3 was adopted ($0.50 increase to hourly parking with proportional increases to permit parking every 5 years). **Exhibit 3-4** outlines the parking revenues, expenses, capital reserve balance, and levy contribution on an annual basis between 2015 and 2030.

Exhibit 3-4: Scenario 4 Financial Performance



Under Scenario 4, the parking revenues are observed to exceed the expenses except in 2028 and 2029, where the significant capital expenses associated with the parking supply expansion required to achieve acceptable parking operations are incurred. Due to the significant costs, the capital reserve fund is projected to result in a deficit of approximately $8,000,000. Note that the levy contribution continues to increase annually even in 2028 and 2029. This is because the maximum capital reserve contribution continues to be exceeded by the operating surplus.

Based on these findings, Hamilton's parking operations are not projected to be financially sustainable under Scenario 4. Hamilton could consider increasing the maximum capital reserve contribution which would allow the capital reserve fund to collect sufficient funding to cover the new parking facility costs. Note that this change would reduce the annual levy contribution.

3.6 Financial Assessment Summary

With the objective of achieving financially sustainable parking operations (parking revenues are sufficient to fund parking expenses), four parking price scenarios were evaluated. Based on the financial assessment, the following conclusions are drawn:

- Scenarios 1, 2, and 3 are projected to be financially sustainable. However, parking demand is projected to be above effective capacity in these Scenarios with localized parking supply issues. While all parking supply challenges are not anticipated to be solved, operations are projected to progressively improve as larger price increase are adopted.
- Scenario 4 includes the parking supply required to achieve acceptable parking operations. However, Scenario 4 is not projected to be financially sustainable without increasing the maximum capital reserve fund contribution. Note that this change would reduce the annual levy contribution.

4. Next Steps

This report represents the conclusion of the major technical analysis to be conducted as part of the Hamilton Parking Master Plan. The next steps to be undertaken as part of this study include:

- Revision of this document by IBI Group in accordance with comments submitted by HMPS staff and others;
- Development of recommendations;
- A virtual public engagement session where these findings and recommendations will be presented to the public and stakeholders for their consideration;
- Development of a draft study report that summarizes all study findings, including a summary of the virtual public engagement session and any revisions required as a result of public input;
- Review of the draft study report by HMPS staff and other City of Hamilton staff; and,
- Revision of the draft study report in accordance with comments submitted by HMPS staff and others; and,
- Presentation of the final study report, findings, and recommendations to Hamilton City Council.