MORRISON HERSHFIELD

2023 Downtown Parking Study – Final Report

District of Squamish, British Colombia

Project No. 220221900 June 28, 2023

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1. EXECUTIVE SUMMARY

Parking in cities is not just about vehicle storage: How a city prices—and ultimately manages—parking has direct and indirect effects on how people travel and therefore impacts related issues like congestion, air pollution and emissions, road safety, land development patterns, cultural and economic activity, and street design. Together, these contribute to the quality and livability of public space. By implementing tailored parking strategies that align with community needs, municipalities can maximize economic advantages while promoting a balanced and sustainable urban environment.

The Squamish downtown commercial area along Cleveland and Second Ave, is starting to experience near-capacity parking utilization conditions ranging from 66% occupancy on weekdays to 76% on weekends, and an average parking duration of less than 2 hours for the average patron. Some blocks in the commercial area exhibit a combination of inefficiencies and underperforming metrics -compared to industry standards-, with excessive stay duration, inefficient turnover and sustained time limit violations. In general, the downtown residential on-street parking supply remains largely underutilized at about 45% occupancy on weekdays and 50% on weekends.

Squamish downtown is expected to continue growing, diversifying, and attracting more residents and visitors. Much of this growth will be in the form of mixed-used commercial and residential units being added to the downtown core as well as the anticipated Squamish Oceanfront Development area on the lower downtown peninsula which will influence travel and parking activity in the area.

Future on-street parking demand will largely come from a combination of sources including increased mixed-used residential, commercial and tourism activity. Over the next 5-years, Cleveland and Second Ave are expected to attract higher parking demand (over 85% occupancy thresholds) driven by approved developments nearby. While most residential streets in downtown are expected to remain relatively under-utilized (below 60% occupancy), occasional parking spillover during peak parking periods may occur in proximity to the commercial area. That said, **downtown's combined (commercial and residential areas) on-street parking supply is expected to sufficiently handle the anticipated demand over the next 5-years**. Better demand management is recommended though, including paid-parking systems in the Commercial area, Resident Exempt Permit program in the residential area plus minor adjustments to current time limits.

The compactness and mixed-use nature of Squamish's downtown makes it an ideal candidate for a 'Park Once-and-Walk' (PO&W) strategy. One of the keys to creating a successful, walkable downtown is to design the area so you only have to park your vehicle once and run multiple errands walking. A PO&W district strategy relies on the idea that much of the parking supply on and off street should be open to the public, even if it is privately owned. These types of areas generally require on-street parking, private and public lots, parkades, and other shared facilities to handle overall parking demand. On-site parking for specific sites is not prioritized or is actively discouraged through zoning and/or design standards. This strategy is ideal for transit-oriented developments and downtown urban revitalization efforts where walkable urbanism is a priority. Also, ideal to support the concept of the 15-min walkable city. In a PO&W environment, migration to paid-parking management systems typically occur as a way to managed overcapacity conditions in certain streets or blocks.

A paid parking management strategy for the Downtown Commercial Area is proposed based on best practices in similar jurisdictions, policies and programs designed to reduce and manage parking demand, preserving parking for certain trip types and users, and promote a shift from single occupant vehicle (SOV) trips to transit, pedestrian, and bicycling trips. The strategy includes both parking pricing and supply-side strategies including a Residential Exempt Zone program and further time limit adjustments. The strategy is also tailored to current and future parking demand patterns and seasonal variations.

The study proposes a set of incremental and phased actions beyond a paid-parking scheme that includes parking permit programs, loading zones, harmonization of off-street parking requirements, and supporting bicycle and pedestrian mobility upgrades in the downtown area. The phased approach was developed in consideration of previous studies as well as strategies and actions set out in the CCAP adopted in 2020 and best industry practices. Finally, a cost-revenue model is developed based on the proposed program, technology, and demand forecasting.

2. INTRODUCTION

2.1 Study Overview

The District of Squamish is a community and a district municipality in the Canadian province of British Columbia, located at the north end of Howe Sound on the Sea to Sky Highway. Squamish has been and is expected to continue experiencing rapid growth and development. A significant portion of this this growth is in the form of commercial space and residential units being added to the downtown area as well as anticipated residential and commercial growth in the Squamish Oceanfront Development area on the lower downtown peninsula. As Squamish grows, so too does the number of businesses opening in the downtown area and tourists visiting the town.

The project is to undertake a new parking utilization study for Downtown Squamish. The aim of the project is to assess current and anticipated future downtown parking needs and associated infrastructure with the goal of supporting citizens and economic development initiatives while encouraging a transition from private vehicle use to alternate modes of transportation throughout Squamish, and to develop a framework and plan for introducing an approach to manage paid parking in the community (focused on the downtown area).

The scope and format of this study match the 2017 Parking Utilization Study to allow for future comparison and to enable future monitoring (every 5 years) as recommended in the District's Parking Strategy 2016-2020.

The study is also to confirm current parking supply-demand imbalances (spatially and temporally) in the downtown based on parking capacity/utilization surveys, as well as future supply-demand imbalances based on anticipated development intensification as per the OCP and approved sub-area plans.

This new study aims to confirm up-to-date circumstances, changes and 'new' patterns since the last 2017 parking study to ensure accuracy and consistency moving forward. Some recent circumstances that may have brought changes in downtown parking trends/patterns since the last report was conducted include:

- Commercial space and residential units are being added in the downtown core as per the OCP and area sub-plans.
- Various development applications/approvals are on their way, including several multi-family residential developments in the downtown residential area, particularly north of Pemberton Ave; increased density and application in the downtown commercial area; as well as ongoing development/building approvals for the Oceanfront Squamish Development and peninsula.
- Initiation of construction activity of the Oceanfront Squamish Development and Park
- Covid pandemic and post-pandemic conditions and implications to commuter travel and vehicle ownership (i.e., flex and remote work; gas prices, alternative modes, micro-mobility etc.) as well as reported accelerated exodus from Vancouver to smaller and more affordable communities[1]
- To the above, peak parking demand periods may have shifted as working schedules become more flexible/organic (i.e., weekday lunch break may no longer be around noon, work end-of-day may no longer be 5 pm, Thu/Fri may no longer be preferred for after-work socialization, residential curbside peak parking demand may no longer be after dawn).

In addition to sustained monitoring and continuing recalibration of parking restrictions, an appropriate paid parking program could be an advisable measure for the District to manage future parking demand towards achieving sustainable and integrated downtown transportation systems that support economic grow and foster healthy and active living. Our work has included the scanning and prioritizing of the best practices from comparable jurisdictions, reviewing available technologies, and formulating recommendations to be closely aligned with the unique conditions, goals and considerations for adaptability, equity, scalability, flexibility, return on investment, ease of administration and enforcement.

[1] https://www.squamishchief.com/bc-news/pandemic-accelerates-exodus-from-city-to-suburbia-3962032

2.2 Study Approach

MH designed a comprehensive study approach that not only meets the District's objective of optimizing existing on-street parking but that also provides potential strategies for managing anticipated parking demand within the context of future planned development. A summary of the key study components and approach/methodology is provided in Table 1 below.

Table 1. Squamish On-Street Parking Study Approach/ Methodology

Study Component	Approach/Methodology
Preliminaries / Project Initiation	Background Data Review / Data Gap Assessment GIS Base Overlay & Database Setup
Parking Data Collection & Inventory	Parking Survey Planning and Design Parking Inventory (including the number of spaces, time limits, service hours, etc.) Parking Survey (Occupancy Survey and License Plate Survey) Survey Data Clean-Up and Encoding
Assessment Of Existing Parking Conditions	Baseline Parking Data Analysis Baseline Summary Assessment
Future Parking Demand Forecasting	Review/Confirm Development Scenarios for Parking Generation Parking Demand Forecasting Future Supply and Demand Imbalances Future Demand Forecasting Documentation and Mapping
Parking Supply Optimization & Time Limits Review	Parking Geometric Review Review Appropriateness of Current Restrictions & Recommend Future Recalibration Assess Potential Parking Spillovers
Best Practice Review of Paid Parking Management Systems	Scan Review of Best Practices Multi-Criteria System Assessment
Recommend Paid Parking Program	Define Locations and Time Periods for Future Paid Parking Implementation Demand-Based Pricing Settings Technology Review & Option Recommendations Recommend Phased Approach for Implementation Residential Permit Program Estimated Implementation Cost & Parking Revenue Model

2.3 Study Area

Generally, the study area is bounded by Loggers Lane/Mamquam Blind Channel to the east, Town Dike Trail to the west, the CN Rail Line to the north; and Westminster Street to the south. **Figure 1** shows the study area including the two distinctive sub-areas within downtown, a predominantly **residential area** west of Second Ave and south of Main Street; and a **core commercial area** bounded by Pemberton Ave to the north, Second Ave to the west, Cleveland Ave to the east and Main Street to the south. Figure 1 also show current on-street parking time restrictions in the study area.

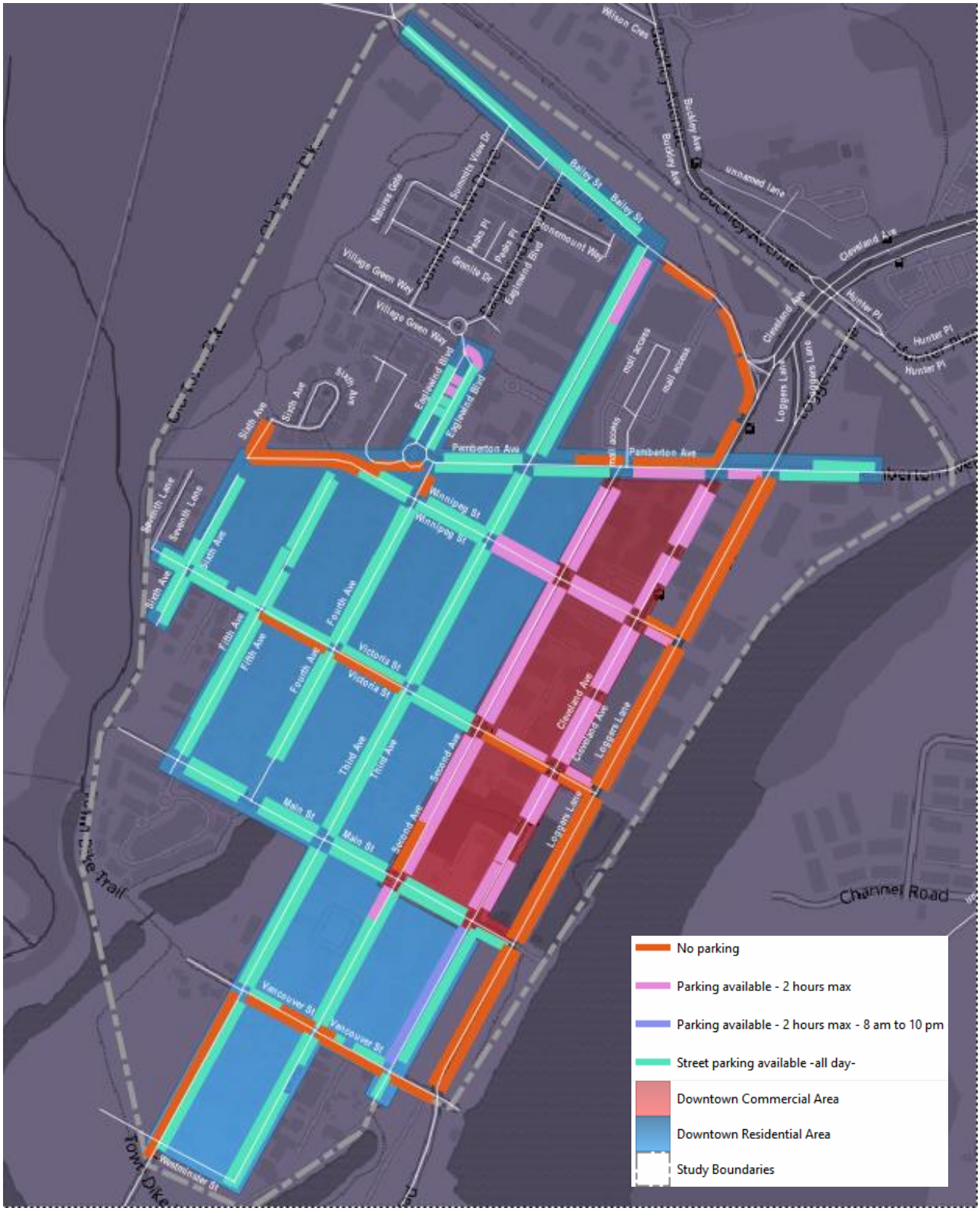


Figure 1. Study Boundaries, Sub-Areas and On-street Parking Restrictions

2.4 Previous Parking Study Findings

Some key results from the 2017 study to be revisited include but are not limited to:

- Overall, no parking utilization issues were found across downtown. Average parking utilization rates were estimated at 52% (weekday) and 51% (weekend).
- Downtown Commercial Area parking demand does not appear to have any impact on residential on-street parking availability.
- For downtown residential, utilization was within a 5% range (except for the long weekend around 3 pm at 44%). Higher parking utilization was noticed near multi-family residential developments within the residential area.
- Peak parking utilization was recorded during the noon hour (12 pm to 1 pm) for both weekdays (58%) and long weekends (56%). Weekday parking utilization rises in the morning until the peak at noon decreases after lunch and briefly increases late afternoon again (after 3 pm).
- For a Saturday (on a long weekend), parking utilization is stable from 11 am to 3 pm, then decrease after 3 pm.
- In terms of duration, short-time (less than 30 minutes) parking was recorded for 34% (weekday) and 53% (weekend) of all parked vehicles.
- Most vehicles (85th percentile) parked for less than 1.5 hours on both weekdays and weekends. Further, 89% and 92% of parked vehicles were compliant with the 2-hour parking limit in the Commercial Downtown Area.
- Available bicycle parking supply across downtown, especially along bike routes, with the easiest access to commercial and retail developments (mainly along Cleveland Avenue and 2nd Avenue), were well utilized. Also, high utilization near locations of interest, such as Squamish Public Library, the District of Squamish Municipal Hall, and the professional office buildings at the corner of Cleveland Avenue and Victoria Street and Pavilion.

Based on the 2020 Downtown Parkade Study, it is also understood that a future Parkade structure has been conceptualized, potential locations investigated, planned capacity, and estimated cost. Also, it is noted that the existing development contribution cash-in-lieu scheme for funding the parkade is insufficient. Some options were provided; however, no indication is known about the preferred one (if any) to date.

3. EXISTING PARKING CONDITIONS

3.1 Parking Survey

3.1.1 Survey Periods and Durations

MH has conducted two rounds of surveys (the weekend and weekday) for the commercial and residential on-street parking inventory in Downtown Squamish.

- The first round of the survey was conducted on Saturday, May 21, 2022, for the downtown commercial area (from 11 am to 5 pm, with the half-an-hour interval) and the downtown residential area (from 11 am to 5 pm and 6 pm to 8 pm, with the one-hour interval).
- The second round of the survey was conducted on Wednesday, June 15, 2022, for the downtown commercial area (from 9 am to 5 pm, with the half-an-hour interval and two one-hour breaks of 11 am - 12 pm and 2 pm – 3 pm respectively) and the downtown residential area (from 9 am to 5 pm and 6 pm to 8 pm, with the one-hour interval and two one-hour breaks of 11 am - 12 pm and 2 pm – 3 pm, respectively).

3.1.2 Parking Survey Methodology

3.1.2.1 Utilization Survey (Downtown Residential Area)

For the Downtown Residential Survey area, parking demand was observed using the utilization survey by counting the number of parked vehicles compared to the number of available spaces. The number of on-street parked vehicles within the study area was recorded for each block face. Through the analysis of this data, the parking utilization by each block face was determined. The utilization is presented as a percentage (utilized spaces over available spaces), while 100% utilized would mean that vehicles occupied all possible parking spaces. In the Downtown Residential Area, the utilization survey was undertaken in one-hour intervals for the entire six-hour survey periods (both weekend and weekday). The utilization survey was also conducted during the evening (6 pm to 8 pm) for the Residential Area only.

3.1.2.2 License Plate Survey (Downtown Commercial Area)

The license plate survey was conducted for the Downtown Commercial Area to determine the parking utilization, duration, turnover and other detailed information. Two surveys collecting partial license plate numbers (last 3 digits) from the parked vehicles for each identified on-street parking stall have been conducted. Vehicles parked on-street were recorded in 30-minute intervals for the 6-hour survey periods (weekend and weekday). Since each vehicle was given an identifier (partial license plate), the parking duration for each vehicle could be determined from the first interval it was recorded and the interval in which it was not re-recorded. In addition, the parking duration and turnover for each parking stall over the entire parking survey could also be determined.

3.2 Current Parking Inventory

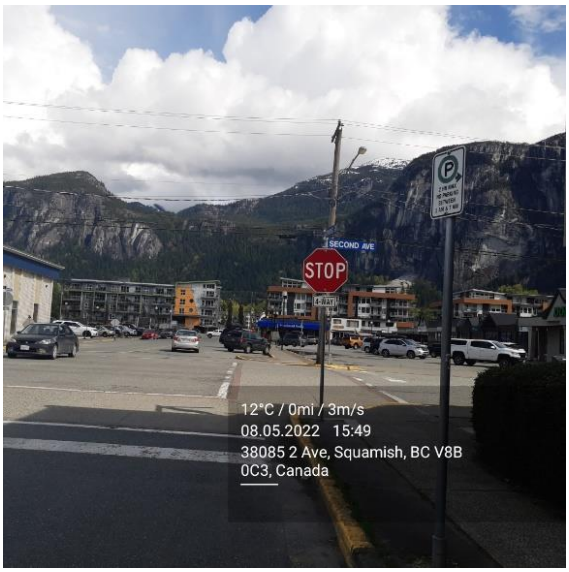
The existing on-street parking stalls (parallel/angle/perpendicular and marked/unmarked) within the study area were identified through the relevant information provided by District staff and MH's multiple site visits. As shown in **Figure 2** and summarize in **Table 2,** a total number of 1,463 on-street parking spaces have been identified and are distributed as follows:

Table 2. Parking Inventory

Study Area	**90 Degree**	**Angle Parking**	**Parallel Parking**	**Total Stalls**
Downtown Commercial	0	87	199	286
Downtown Residential	359	78	740	1,177
Sub-Total	**359**	**165**	**939**	**1,463**

Figure 2. Distribution of the On-Street Parking Stalls in Downtown Squamish

12°C / 0mi / 3m/s
08.05.2022 15:48
38085 2 Ave, Squamish, BC V8B
0C3, Canada


SECOND AVE
STOP
12°C / 0mi / 3m/s
08.05.2022 15:49
38085 2 Ave, Squamish, BC V8B
0C3, Canada

Royal Bank
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08.05.2022 15:49
1367 Winnipeg St, Squamish, BC J4Y
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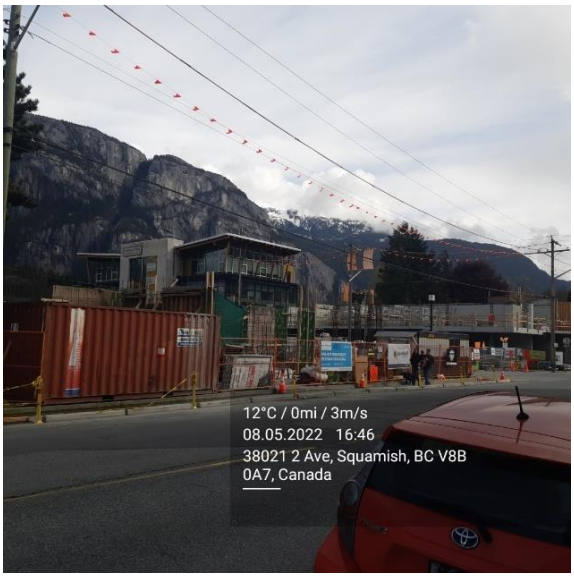
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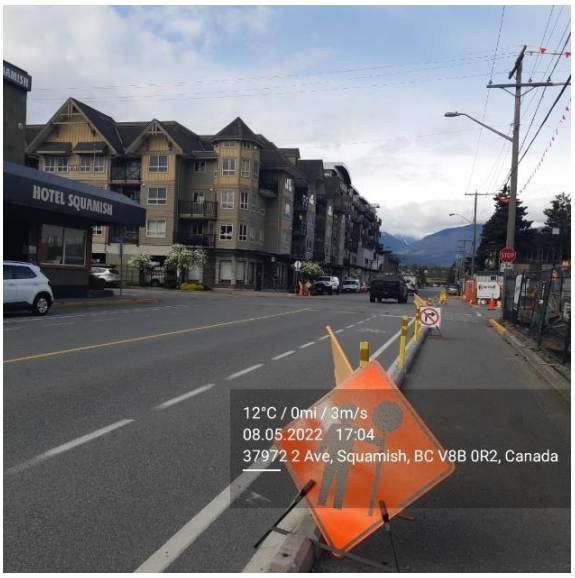
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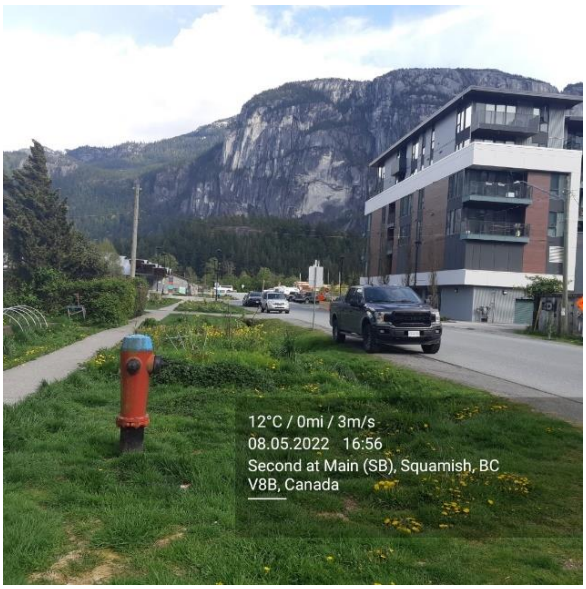
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V8B, Canada

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Second at Main (SB), Squamish, BC
V8B, Canada

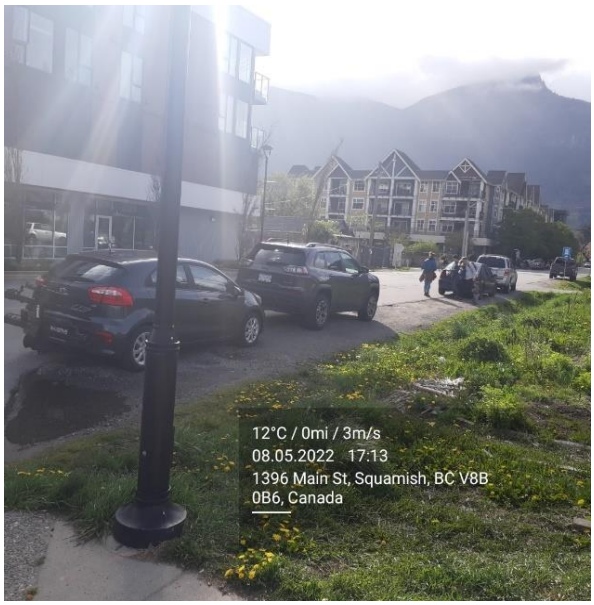


Figure 3. Site Pictures of Sample On-Street Parking Inventory in Downtown Squamish

3.3 On-Street Parking Utilization Analysis

On-street parking utilization surveys can provide an understanding of the following:

- The utilization of the parking supply during different times of the day,
- The times of peak parking demand,
- How long the peak parking demand extends, and
- The areas with the highest parking demand, etc.

In terms of performance, the analysis of existing conditions also includes a comparison with industry general performance metrics to 'check' optimal use of current supply for all block-faces in the study area. Blocks identified as 'underperforming' are good candidates for modifications or adjustments to time limits for a more efficient usage. Typical industry standards for performance checks include:

- Overall, on-street occupancy rate: 85% (practical capacity): Sustained occupancy levels over 85% are generally considered good candidates for demand management measures such as paid parking, increased cycling parking, alternative modes.

- Average duration of stay in on-street spaces: A range of parking duration between 70% to 120% of time posted limits is considered withing standards. A below-range value indicates the current time limit is overly generous so it could be adjusted down. Conversely, an over-the-range value indicates current time limit may be too restrictive hence it could be increased.

- Design turnover rate of 0.5 vehicles per hour (assuming 5 vehicles on a typical 10-hr day) is recommended for a healthy and attractive street-level environment. Values below 0.5 may indicate inefficient use of space.

- Overtime/meter violation rate: Typically ranges between 5-7% to be considered within standards; values over the upper range limit should be considered for time limit adjustments or enhanced enforcement.

- Overtime/meter capture rate: 20-25%. Capture rates can vary considerably based on the method of patrol and enforcement area. Smaller enforcement beats patrolled by officers on foot (common in many downtown metered areas) should yield capture rates of 30-40%. Larger beats with a mix of regulations and patrolled by scooter might only produce capture rates of 5-10%. Since paid parking has not been implemented, no specific target capture rates have been established. However, in the future, a capture rate target between 20-25% could be a good starting point.

For illustration and reference hereafter, block-face identifiers used are shown in **Figure 4 below. Tables 3,4,6 and 7** follows including applicable performance checks in comparison to industry generalized performance standards for occupancy, duration, turnover, and violation.

Figure 4. Block-Face Identification Map

3.3.1 Downtown Commercial Area On-Street Parking Analysis

3.3.1.1 Downtown Commercial Area Weekday

During a typical weekday day, the downtown commercial area has an overall utilization rate of 66.8%, an average parking duration of 1.85 hours and an hourly turnover rate of 0.54 (refer to **Appendix A** for the Parking Occupancy Maps for commercial and residential areas in both weekday and weekends). The following table summarizes the utilization rate, parking duration, turnover rate and violation conditions at the block level.

Table 3. The Utilization of On-Street Parking Spaces in the Squamish Downtown Commercial Area (Weekday)

Block_Face	Time Limit (Hour)	Utilization Rate	Std. Utilization Rate	Utilization Check	Average Parking Duration (Hour)	Std. Duration (70%-120% of time limit)	Duration Check	Hourly Turnover Rate	Std. Hourly Turnover Rate	Turnover Check	Violation Rate (5%-7%)	Violation Check
17	unlimited	87.5%	85.0%	Over-occupied	4.75			0.21	0.5	Inefficient		
18	unlimited	68.5%	85.0%	Ok	3.72			0.27	0.5	Inefficient		
19	unlimited	92.7%	85.0%	Over-occupied	4.56			0.22	0.5	Inefficient		
32	2	68.1%	85.0%	Ok	1.19	59.61%	Short	0.84	0.5	Ok	-0.40	Okay
33	2	48.8%	85.0%	Ok	0.92	46.16%	Short	1.08	0.5	Ok	-0.54	Okay
34	2	77.9%	85.0%	Ok	3.87	193.70%	Long	0.26	0.5	Inefficient	0.94	Generally Violated
35	2	54.5%	85.0%	Ok	2.89	144.44%	Long	0.35	0.5	Inefficient	0.44	Generally Violated
36	2	43.9%	85.0%	Ok	1.04	51.77%	Short	0.97	0.5	Ok	-0.48	Okay
37	2	53.5%	85.0%	Ok	1.94	96.88%	Ok	0.52	0.5	Ok	-0.03	Okay
38	2	52.4%	85.0%	Ok	0.97	48.32%	Short	1.03	0.5	Ok	-0.52	Okay
39	2	70.6%	85.0%	Ok	1.06	53.21%	Short	0.94	0.5	Ok	-0.47	Okay
40	2	80.9%	85.0%	Ok	0.98	49.20%	Short	1.02	0.5	Ok	-0.51	Okay
41	2	72.9%	85.0%	Ok	1.19	59.33%	Short	0.84	0.5	Ok	-0.41	Okay
42	2	65.9%	85.0%	Ok	0.92	46.00%	Short	1.09	0.5	Ok	-0.54	Okay
43	2	59.5%	85.0%	Ok	1.55	77.67%	Ok	0.64	0.5	Ok	-0.22	Okay
44	2	94.4%	85.0%	Over-occupied	2.01	100.69%	Ok	0.50	0.5	Inefficient	0.01	Generally Violated
45	2	90.5%	85.0%	Over-occupied	2.50	125.05%	Long	0.40	0.5	Inefficient	0.25	Generally Violated
46	2	62.5%	85.0%	Ok	2.19	109.26%	Ok	0.46	0.5	Inefficient	0.09	Generally Violated
47	2	84.2%	85.0%	Ok	1.94	96.93%	Ok	0.52	0.5	Ok	-0.03	Okay
50	2	60.4%	85.0%	Ok	4.00	200.00%	Long	0.25	0.5	Inefficient	1.00	Generally Violated

As shown in the table above, some block faces in the commercial area exhibit a combination of inefficiencies and underperforming metrics, for example block-faces 17, 19, 44 and 45 appear overutilized, with excessive stay duration, inefficient turnover and generally violated.

As shown below by the distribution graph of parking space utilization rate by the time of the day, the peak parking demand appears between 12 pm – 1 pm in the weekday. After 1:30 pm, the utilization rate decreases gradually.

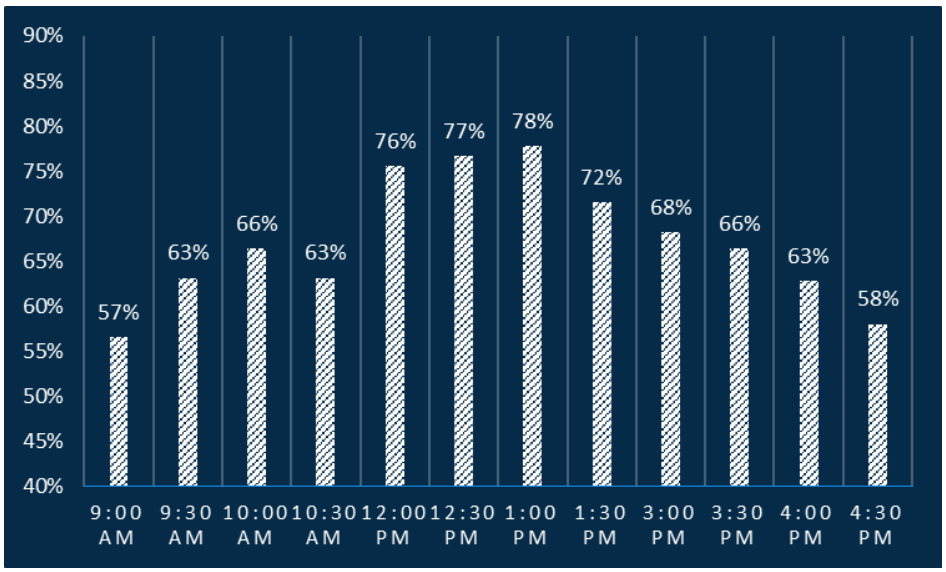


Figure 5. The Hourly Distribution of On-Street Parking Space Utilization Rate in the Squamish Downtown Commercial Area (Weekday)

As shown by the accumulative percentage graph of parking durations below, the following is noted during weekday within downtown commercial areas 2-hour zones:

- Almost 60% of all vehicles parked equals or less than 30 minutes,
- 77.7% of all vehicles parked less than 1 hour,
- 90.5% of all vehicles parked less than 2 hours.
- 10.7% of all vehicles parked longer than two hours (time limit).

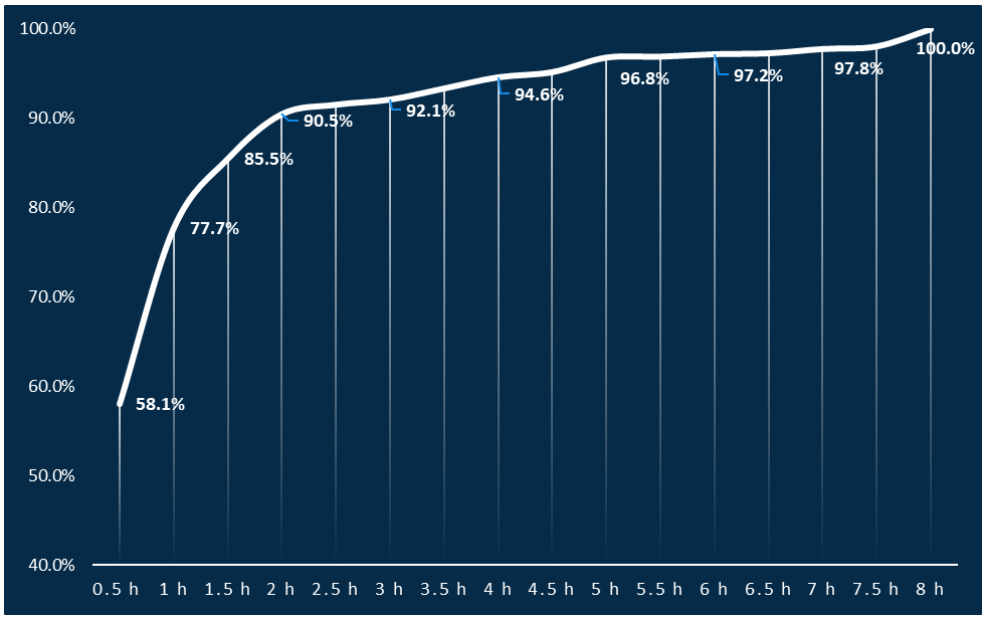


Figure 6. Cumulative Percentage of On-Street Parking Durations in the Squamish Downtown Commercial Area (Weekday)

3.3.1.2 Downtown Commercial Area Weekend Survey

Over the weekend, the Squamish downtown commercial area has a general utilization rate of 76.0%, an average parking duration of 1.59 hours and an hourly turnover rate of 0.63. For Parking Occupancy Maps for commercial and residential areas in both weekday and weekends please refer to **Appendix A.**

Table 4. The Utilization of On-Street Parking Spaces in the Squamish Downtown Commercial Area (Weekend)

Block_Face	Time Limit (Hour)	Utilization Rate	Std. Utilization Rate	Utilization Check	Average Parking Duration (Hour)	Std. Duration (70%-120% of time limit)	Duration Check	Hourly Turnover Rate	Std. Hourly Turnover Rate	Turnover Check	Violation Rate (5%-7%)	Violation Check
17	unlimited	95.8%	85.0%	Over-occupied	2.55			0.39	0.5	Inefficient		
18	unlimited	88.9%	85.0%	Over-occupied	2.36			0.42	0.5	Inefficient		
19	unlimited	99.0%	85.0%	Over-occupied	2.48			0.40	0.5	Inefficient		
32	2	67.4%	85.0%	Ok	0.97	48.62%	Short	1.03	0.5	Ok	-0.51	Okay
33	2	35.7%	85.0%	Ok	0.75	37.33%	Short	1.34	0.5	Ok	-0.63	Okay
34	2	65.8%	85.0%	Ok	2.45	122.31%	Long	0.41	0.5	Inefficient	0.22	Generally Violated
35	2	67.3%	85.0%	Ok	1.84	92.15%	Ok	0.54	0.5	Ok	-0.08	Okay
36	2	78.3%	85.0%	Ok	1.51	75.65%	Ok	0.66	0.5	Ok	-0.24	Okay
37	2	44.7%	85.0%	Ok	1.68	84.17%	Ok	0.59	0.5	Ok	-0.16	Okay
38	2	56.0%	85.0%	Ok	1.05	52.72%	Short	0.95	0.5	Ok	-0.47	Okay
39	2	91.7%	85.0%	Over-occupied	1.12	56.12%	Short	0.89	0.5	Ok	-0.44	Okay
40	2	87.9%	85.0%	Over-occupied	1.69	84.31%	Ok	0.59	0.5	Ok	-0.16	Okay
41	2	85.4%	85.0%	Over-occupied	1.33	66.53%	Short	0.75	0.5	Ok	-0.33	Okay
42	2	80.8%	85.0%	Ok	1.15	57.42%	Short	0.87	0.5	Ok	-0.43	Okay
43	2	85.8%	85.0%	Over-occupied	1.69	84.68%	Ok	0.59	0.5	Ok	-0.15	Okay
44	2	100.0%	85.0%	Over-occupied	2.45	122.62%	Long	0.41	0.5	Inefficient	0.23	Generally Violated
45	2	90.5%	85.0%	Over-occupied	2.38	119.20%	Ok	0.42	0.5	Inefficient	0.19	Generally Violated
46	2	83.3%	85.0%	Ok	0.95	47.56%	Short	1.05	0.5	Ok	-0.52	Okay
47	2	87.5%	85.0%	Over-occupied	1.09	54.31%	Short	0.92	0.5	Ok	-0.46	Okay
50	2	87.5%	85.0%	Over-occupied	2.20	110.00%	Ok	0.45	0.5	Inefficient	0.10	Generally Violated

From the table above, it is noted that various block-faces in the commercial downtown area are exceeding recommended utilization standards, although in many cases with lower durations than the recommended range thus

resulting in highly efficient turnover. Other block-faces (i.e. 44 and 45) experience overutilization, long stay durations hence inefficient turnover

From the figure below, parking utilization on weekends peaks (over 80%) from 11 am until 2 pm with the average parking utilization exceeding the recommended 85% between 12 to 1 pm. After 2 pm, the parking utilization starts to decrease rapidly.

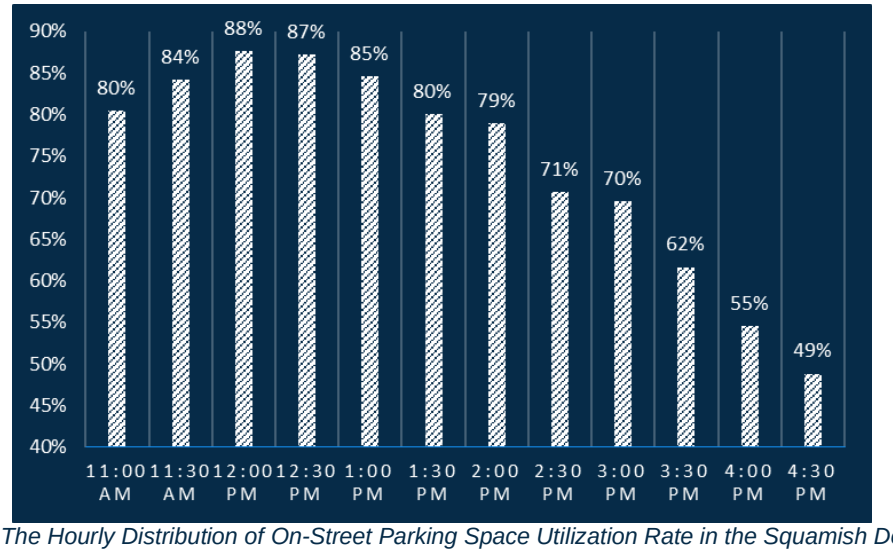


Figure 7. The Hourly Distribution of On-Street Parking Space Utilization Rate in the Squamish Downtown Commercial Area (Weekend)

Regarding the cumulative distribution of parking durations on weekends in the 2-hour limit commercial area:

- 44.4% of vehicles parked equal or less than 30 minutes;
- 69.7% parked within one hour;
- 90.6% parked within two hours.
- 8.4% of all vehicles parked longer than two hours (time limit).

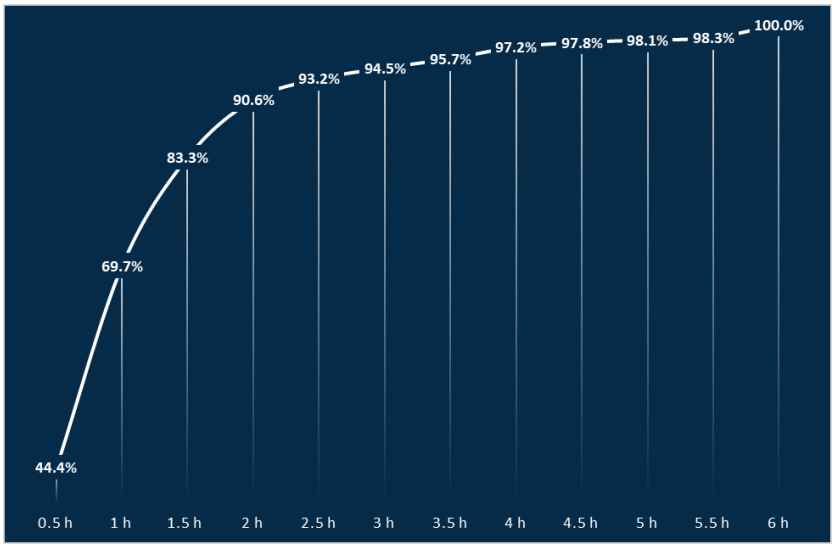


Figure 8. The Accumulative Percentage of On-Street Parking Durations in the Squamish Downtown Commercial Area (Weekend)

3.3.1.3 Comparison Between the Weekend and Weekday On-Street Parking Utilization in Downtown Commercial Area

During weekends, the general on-street parking space utilization rate is 9.2% higher than during weekdays (76% versus 66.8%); meanwhile, the average parking duration is shorter by about 15 mins (1.59 hours versus 1.85 hours), which results in higher turnover rates on weekends than weekdays (0.63 versus 0.54). The peak on-street parking demand appears one hour earlier on the weekend (11 am versus 12 pm) and keep on longer than in weekdays.

It is also found that the percentages of vehicles parked for short-moderate duration (less or equal to 2 hours) are similar between the weekend and weekday, around 90%. However, during the weekdays, there are more vehicles parked for relatively long durations, especially over 5 hours. According to the table below, 2.2% of vehicles parked for 5 hours or longer on the weekend as compared to 4.8% during weekdays. Similarly, the 2-hour parking violation rate during the weekend (8.4%) is slightly lower than the weekday (10.7%).

Table 5. Comparison of the Long Duration On-Street Parking (equal to or over 5 hours) Percentages Between the Weekday and the Weekend

Vehicle Long Parking Duration	5 h	5.5 h	6 h or more	Total
Weekday Percentage	1.6%	0.1%	3.1%	**4.8%**
Weekend Percentage	0.3%	0.3%	1.7%	**2.2%**

3.3.2 Downtown Residential Area On-Street Parking Analysis

3.3.2.1 Downtown Residential Area Weekday

During weekday, the general parking utilization rate of the residential areas is around 45.7%. The distribution of the utilization rates by the hour is relatively stable at about 41%-45% during the daytime (9 am – 4 pm), while a higher occupancy rate is observed after 6 pm.

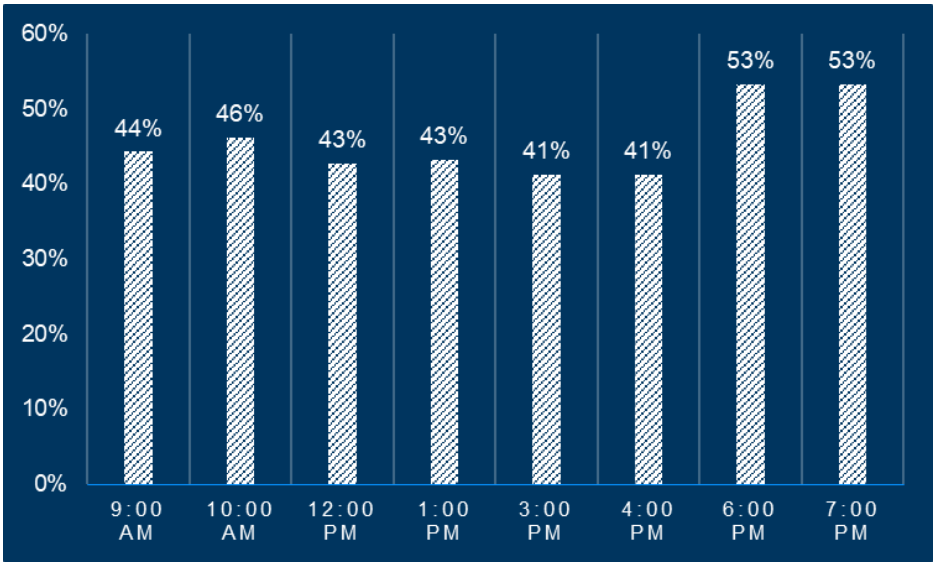


Figure 9. The Hourly Distribution of On-Street Parking Space Utilization Rate in the Squamish Downtown Residential Area (Weekday)

Similar to the analysis of commercial blocks, the table below summarizes applicable performance checks for residential blocks in comparison to industry generalized performance standards for occupancy, duration, turnover, and violation. For identification of block-faces please refer to **Figure 4** above. For Parking Occupancy Maps for commercial and residential areas in both weekday and weekends please refer to **Appendix A**

Table 6. The Utilization of On-Street Parking Spaces in the Squamish Downtown Residential Area (Weekday)

Block Number	Number of Parking Stalls	Average Utilization Rate	Std. Utilization Rate	Utilization Check
1	32	50.0%	85.0%	Ok
2	35	50.0%	85.0%	Ok
3	9	9.3%	85.0%	Ok
4	10	30.0%	85.0%	Ok
5	54	20.4%	85.0%	Ok
6	24	42.2%	85.0%	Ok
7	36	29.2%	85.0%	Ok
8	39	36.9%	85.0%	Ok
9	29	61.6%	85.0%	Ok
10	20	56.3%	85.0%	Ok
11	18	87.5%	85.0%	Over-occupied
12	8	48.4%	85.0%	Ok
14	18	72.2%	85.0%	Ok
15	9	72.2%	85.0%	Ok
16	9	93.1%	85.0%	Over-occupied
20	36	87.2%	85.0%	Over-occupied
21	6	39.6%	85.0%	Ok
22	22	42.6%	85.0%	Ok
23	9	50.0%	85.0%	Ok
24	9	34.7%	85.0%	Ok
25	10	82.5%	85.0%	Ok
26	16	111.5%	85.0%	Over-occupied
27	9	88.9%	85.0%	Over-occupied
28	6	64.6%	85.0%	Ok
29	8	21.9%	85.0%	Ok
30	11	10.6%	85.0%	Ok
31	4	20.8%	85.0%	Ok
48	7	52.4%	85.0%	Ok
49	9	53.7%	85.0%	Ok
51	7	59.5%	85.0%	Ok
52	12	93.1%	85.0%	Over-occupied
55	29	56.9%	85.0%	Ok
56	15	40.0%	85.0%	Ok
57	3	112.5%	85.0%	Over-occupied
58	3	58.3%	85.0%	Ok
59	8	43.8%	85.0%	Ok
60	7	17.9%	85.0%	Ok
61	29	47.8%	85.0%	Ok
62	21	55.4%	85.0%	Ok
63	31	25.8%	85.0%	Ok
64	19	40.8%	85.0%	Ok
65	33	54.2%	85.0%	Ok
66	24	66.7%	85.0%	Ok
67	8	79.7%	85.0%	Ok
68	10	21.7%	85.0%	Ok
69	33	23.5%	85.0%	Ok
70	22	28.4%	85.0%	Ok
72	11	6.1%	85.0%	Ok
75	14	31.0%	85.0%	Ok
76	12	0.0%	85.0%	Ok
77	3	54.2%	85.0%	Ok
86	120	39.6%	85.0%	Ok
91	12	0.0%	85.0%	Ok
92	14	65.5%	85.0%	Ok
93	12	69.4%	85.0%	Ok
95	6	44.4%	85.0%	Ok
96	9	9.3%	85.0%	Ok
99	16	15.6%	85.0%	Ok
100	27	36.6%	85.0%	Ok
101	9	38.9%	85.0%	Ok
102	9	0.0%	85.0%	Ok
104	4	9.4%	85.0%	Ok
105	18	42.4%	85.0%	Ok
106	28	60.7%	85.0%	Ok
109	8	0.0%	85.0%	Ok
110	8	0.0%	85.0%	Ok

3.3.2.2 Downtown Residential Area Weekend

The parking utilization rate is relatively constant on weekends during the entire survey duration at around 50%. There is a slight occupation decrease between 2 pm to 4 pm.

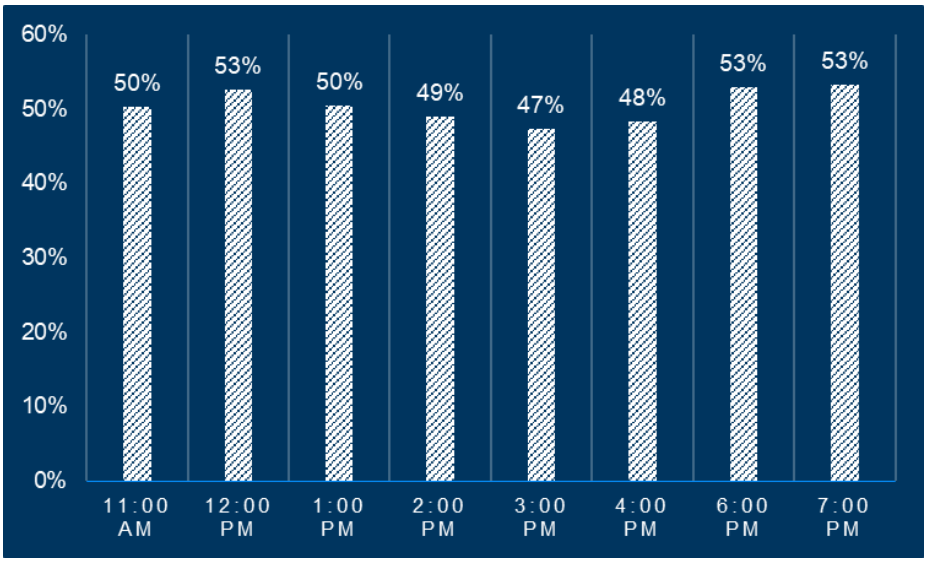


Figure 10. The Hourly Distribution of On-Street Parking Space Utilization Rate in the Squamish Downtown Residential Area (Weekend)

Similar to the analysis of commercial and residential blocks above, the table below summarizes applicable performance checks for residential blocks on weekends in comparison to industry generalized performance standards for occupancy, duration, turnover, and violation. For identification of block-faces please refer to Figure 4 above. For Parking Occupancy Maps for commercial and residential areas in both weekday and weekends please refer to **Appendix A**

Table 7. The Utilization of On-Street Parking Spaces in the Squamish Downtown Residential Area (Weekend)

Block Number	Number of Parking Stalls	Average Utilization Rate	Std. Utilization Rate	Utilization Check
1	32	50.0%	85.0%	Ok
2	35	46.2%	85.0%	Ok
3	9	18.5%	85.0%	Ok
4	10	56.7%	85.0%	Ok
5	54	34.7%	85.0%	Ok
6	24	50.0%	85.0%	Ok
7	36	29.2%	85.0%	Ok
8	39	42.6%	85.0%	Ok
9	29	58.2%	85.0%	Ok
10	20	53.1%	85.0%	Ok
11	18	80.6%	85.0%	Ok
12	8	35.9%	85.0%	Ok
14	18	81.9%	85.0%	Ok
15	9	73.6%	85.0%	Ok
16	9	91.7%	85.0%	Over-occupied
20	36	108.3%	85.0%	Over-occupied
21	6	83.3%	85.0%	Ok
22	22	70.5%	85.0%	Ok
23	9	81.9%	85.0%	Ok
24	9	45.8%	85.0%	Ok
25	10	75.0%	85.0%	Ok
26	16	88.5%	85.0%	Over-occupied
27	9	111.1%	85.0%	Over-occupied
28	6	60.4%	85.0%	Ok
29	8	37.5%	85.0%	Ok
30	11	7.6%	85.0%	Ok
31	4	54.2%	85.0%	Ok
48	7	61.9%	85.0%	Ok
49	9	46.3%	85.0%	Ok
51	7	23.8%	85.0%	Ok
52	12	87.5%	85.0%	Over-occupied
55	29	94.4%	85.0%	Over-occupied
56	15	53.3%	85.0%	Ok
57	3	125.0%	85.0%	Over-occupied
58	3	70.8%	85.0%	Ok
59	8	42.2%	85.0%	Ok
60	7	17.9%	85.0%	Ok
61	29	87.1%	85.0%	Over-occupied
62	21	94.0%	85.0%	Over-occupied
63	31	29.8%	85.0%	Ok
64	19	46.1%	85.0%	Ok
65	33	56.8%	85.0%	Ok
66	24	50.0%	85.0%	Ok
67	8	75.0%	85.0%	Ok
68	10	25.0%	85.0%	Ok
69	33	17.4%	85.0%	Ok
70	22	33.5%	85.0%	Ok
72	11	6.1%	85.0%	Ok
75	14	32.1%	85.0%	Ok
76	12	2.8%	85.0%	Ok
77	3	8.3%	85.0%	Ok
86	120	49.2%	85.0%	Ok
91	12	0.0%	85.0%	Ok
92	14	47.6%	85.0%	Ok
93	12	62.5%	85.0%	Ok
95	6	38.9%	85.0%	Ok
96	9	22.2%	85.0%	Ok
99	16	9.4%	85.0%	Ok
100	27	9.7%	85.0%	Ok
101	9	8.3%	85.0%	Ok
102	9	1.4%	85.0%	Ok
104	4	0.0%	85.0%	Ok
105	18	62.5%	85.0%	Ok
106	28	55.8%	85.0%	Ok
109	8	0.0%	85.0%	Ok
110	8	0.0%	85.0%	Ok

3.3.2.3 Comparison Between the Weekend and Weekday On-Street Parking Utilization

It is found that the general on-street parking occupation rate in residential areas on the weekend is about 4.3% higher (50% versus 45.7%) than the weekday. The variation in on-street parking utilization rates by the time of day is relatively minor during the weekend without an apparent increase in the utilization rate after 6 pm, compared to the weekday.

4. FUTURE ON-STREET PARKING DEMAND

Future on-street parking demand will largely come from a combination of sources including increased commercial and tourism activity in the downtown area, and future residential and employment parking demand in downtown.

Morrison Hershfield used a shared parking model to analyze future parking demand resulting from development based on 5-year anticipated development projections provided by the District. The shared parking demand model reflects changes in parking demand for different types of land uses over the course of the day and throughout the year. The model assumes those driving into the downtown park for more than one purpose due to the proximity and variety of land uses within relatively short walking distance. The model was calibrated to match actual parking demand observed during both midweek and weekend surveys to determine potential parking demand more accurately for future developments.

4.1 Mixed-Use Shared Parking Principles

Understanding the relationship between land use patterns and parking demand is critical. Squamish Downtown function to a degree as a mixed-use parking district with a unique user behavior profile that poses challenges in managing parking resources. Traditional development expectations often assume that parking is provided for each unique development on site, with little or no consideration of shared parking or access among different uses. Such an approach does not support the mixed-use environment envisioned in the Downtown planning vision.

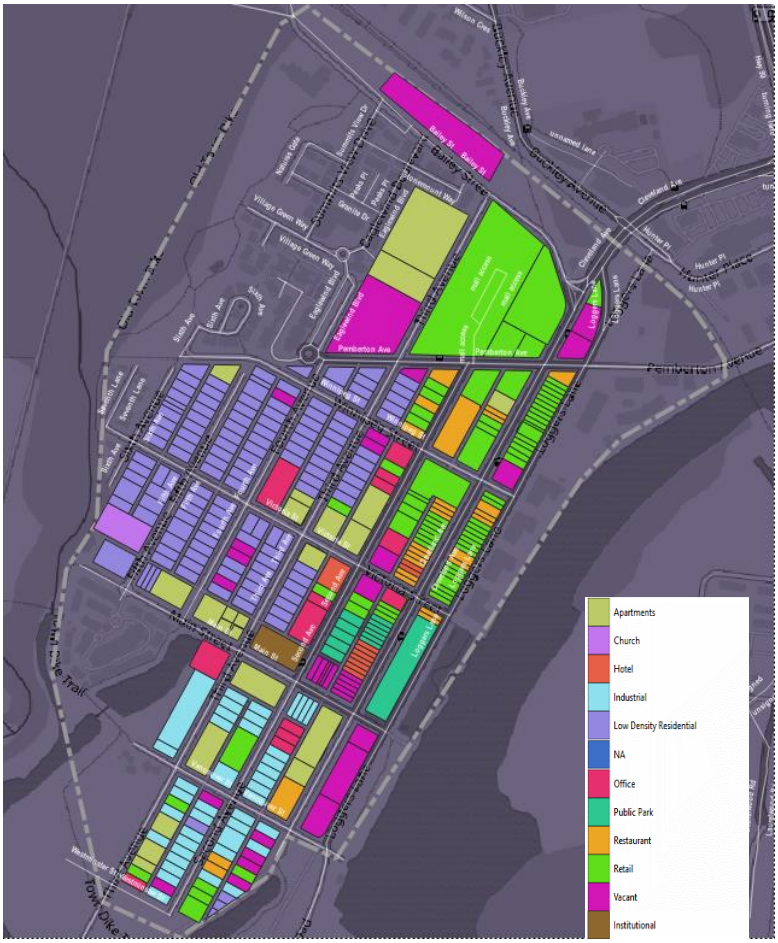


Figure 11. Current Mix Uses in Downtown Squamish

In a proven principle often referred to as "staggered peaks," the actual demand for parking varies by use throughout the hours of a day, days of a week and seasons of the year: office space generates parking demand during traditional weekday business hours; residential parking is often highest overnight as many residents use their cars during the day; and the parking demand generated by bars and restaurants is highest during meal times and in the evening. If parking is shared between multiple uses, the aggregated parking demand by time of day is less than the total that would be programmed separately for each use.

A second principle of shared parking in a mixed-use area is often referred to as "internal capture" whereby a single parking space that normally serves one land use at a time may serve another land use at the same time simply by the virtue of someone walking to a second destination after parking at their first destination. The figure below illustrates

the variety of mixed uses within the downtown area and how relatively easy is to walk (or cycle) throughout downtown for multiple purposes and destinations. Walking downtown along its longest access (north south) which is less than 1 km end-to end, may take approximately 15 -20 min for an average pedestrian. In a Park-Once-and-Walk District concept (further discussed in Section 5), an individual may park in the residential area, visit the public library in the morning, walk to a pizza shop on Cleveland Ave. for lunch, and pick up some medication at the Shoppers Drug Mart before leaving the area. This eliminates demand for a separate parking space at the pizza shop and another space at the dry cleaner. Mixed-use areas such as Squamish Downtown, naturally promote this type of shared parking that eliminates the need for many redundant parking spaces.

Mixed-use areas typically experience reductions compared to traditional parking demand assumptions as a result of both staggered peaks and internal capture, depending on how well uses are mixed together and the quality of the walking environment among them. There are several ways Downtown Squamish already supports shared parking patterns. For example, the following groups make use of only a single parking space (on- or off-site):

- Business employees who patronize nearby restaurants at lunchtime;
- Commercial workers who shop at lunch or on their way home from work
- Downtown visitors who dine at a restaurant before visiting shops or walking to their hotel without re-parking their car
- Residents who own vehicles but instead park at home and walk or bike to downtown retail and restaurants.

4.2 Modelling Shared Parking Demand

The shared parking model differs from a traditional parking generation exercise by accounting for staggered peaks and internal capture principles. The traditional 'unshared' parking demand model relies almost exclusively on the Institute of Transportation Engineers (ITE) Parking Generation Manual (incl. methods and rates) which estimates parking demand generated by a development by multiplying a peak parking demand factor for each land use type by the physical size of each use type and assuming that the peak amount of parking is required all day every day and exclusively for that use.

A more sensitive approach to model urban mixed-use shared parking patterns, is used by Morrison Hershfield in this study following the Urban Land Institute's (ULI) Shared Parking Manual (2nd Edition, 2005) in conjunction with locally calibrated parking generation ratios (based on the parking survey) and 5-year development forecasting data provided by the District. This approach accounts for actual staggered peaks and internal capture behavior. Both the ITE and ULI manuals report demand by time of day for most land uses. By layering this information with peak parking ratios, we produce a more realistic peak parking demand for land uses in a given area.

The difference in approach between traditional and shared-parking model approaches is illustrated in the figure below.

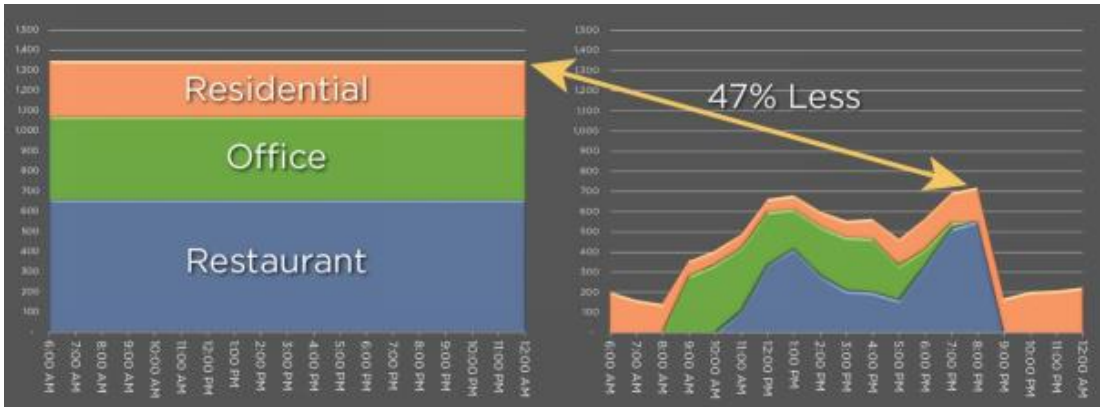


Figure 12. Shared Parking Modelling Concept

Generally, the Urban Land Institute (ULI)[2] multi-step process, which includes the traditional model as starting point, includes the following basic steps:

A. **Existing Land Use**: Categorize and aggregate existing land uses to determine the built square footage that attracts parking demand and adjust for known vacancies. This involves reviewing parcel data from the Districts' cadastral base in conjunction with Google street view and field observations to verify current use of parcels within the study area.

B. **Traditional Parking Demand Model**: Calculate and compare how much parking would be "required" if each existing land use had its own, dedicated supply of parking based on Parking Generation.

C. **Parking Model Calibration to Context**: Calibrate by approximating the captive market effect, transit access, resident car ownership, and other factors specific to the study area.

D. **Adapted Parking Model**: Apply an adapted parking model derived from ULI's Shared Parking Manual to show the expected parking demand throughout the course of an average weekday and weekend, adjusted for staggered peaks and internal capture.

E. **Observed Parking Demand**: Compare the adapted model-generated parking demand to parking utilization data collected and calibrate the model if necessary to match observations.

F. **Locally-calibrated on-street parking rates**: Estimate local parking peak rates by land use category for typical weekend and weekday based on locally calibrated model.

G. **Future Land Use**: Estimate future parking demand by applying locally-calibrated rates to anticipated development plans and add future parking demand to the existing demand for the new expected total parking demand.

A summary of results for each one of steps above is provided in the following subsections. For detailed assumptions, analysis and calculations please refer to **Appendix B**.

4.3 Current Baseline Parking Model

As discussed, the ULI approach to shared parking model begins with the development of a traditional parking model which is later calibrated to match actual parking demand observed during both midweek and weekend surveys. The model is also further adjusted to account for staggered peaks by category of land use (daily and seasonal) and internal capture principles. A summary of the calibrated models for a 'typical' midweek in June and a weekend in July are shown below. The model integrates both commercial and residential study subareas. More detail calculations are included in **Appendix B**.

[2] Shared Parking, Urban Land Institute (ULI), Second Edition, 2005

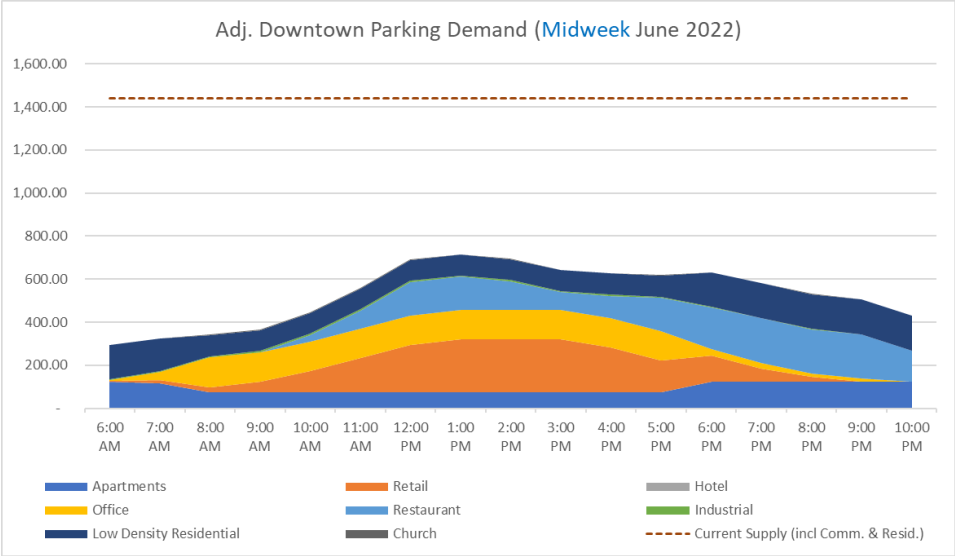


Figure 13.Current Parking Demand Typical Model Midweek

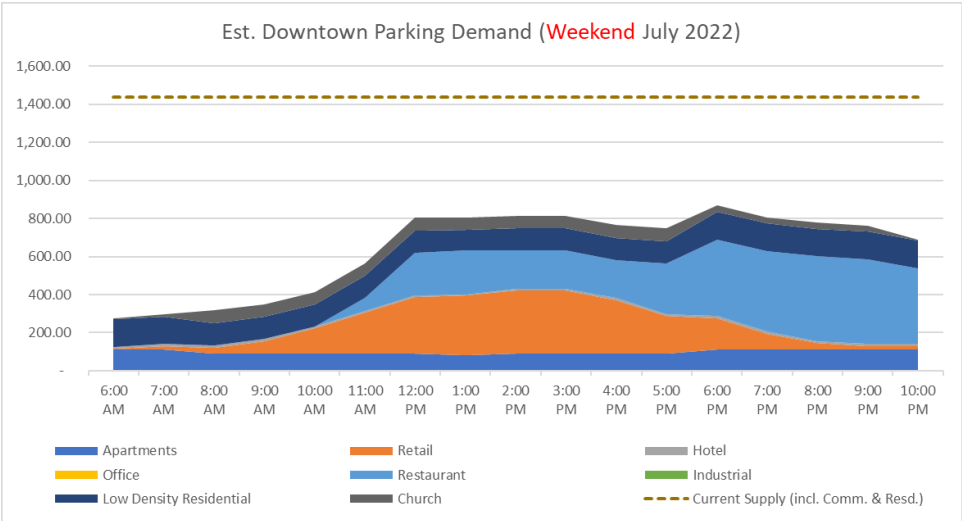


Figure 14. Current Parking Demand Typical Weekend

4.4 Future 5-Year Development

The District's Planning Department provided a 5-year anticipated development currently instream (i.e., applications approved or in-review) within the study area. These are anticipated development application at various stages in the development review process (expected to be approved and constructed within the next 5 years) as well as building permits (currently under construction). **Figure 15** beliw shows parcels slated for development completion over the next 5 years.

Based on the information provided, the anticipated additional residential, commercial, industrial and office space expected in the study area is summarize in the table below. Mixed used commercial, residential, office as well as affordable housing are part of the mix of anticipated developments throughout downtown.

Table 8. Anticipated 5-Year Development Downtown Squamish

Land Use Type	Unit	Yield
Residential	Dwelling Units	1,383
Commercial	GFA (sqft)	262,375
Office	GFA (sqft)	108,118
Light Industrial	GFA (sqft)	4,398

Geographically, demand may concentrate around blocks with new developments, particularly those anticipated in and around the downtown commercial area. Residential areas may also be impacted during high demand special events (i.e. Canada Day, Labour Day weekend) as excess demand from downtown commercial streets may 'spill' into these areas.

Development parking demand would likely intensify around mid-day hours on both weekday and weekend, particularly in and around the blocks adjacent to these developments. Residential and employment parking demand (on and off-street) would come from future residential, office space and mixed-used developments, also expected to peak on weekday afternoons for office use and past dusk for residential streets.

Detailed information about anticipated development (i.e., land use, typology, FARs, units, GFA, etc.) as provided by the District is included in **Appendix C**.

Block-by-block calculations and assumptions used for estimating yield residential units, commercial and office space are included in **Appendix C.**

Figure 15. Anticipated Development Parcels Over the next 5 Years within the Study Area

4.5 5-Year Development On-Street Parking Demand

The expected on-street parking demand for future development was estimated by applying locally-calibrated on-street parking generation rates as estimated based on the actual surveys conducted for weekend and midweek periods and further adjusted for staggered daily peaks and seasonal variations per ULI methodology. In essence, current peak demand ratios by category of land use (unique to Downtown Squamish) were estimated and applied to the amount of expected development within the next five years as noted in the previous section. The table below summarizes the expected additional on-street parking demand. For context, ITE and ULI traditional 'unshared' parking rates are also listed.

Table 9. Estimated 5-year Development On-Street Parking Demand

Development Type	Unit	Yield	Parking Rate			Est. Future On-Steet Parking Demand	
			Est. Local Rate		Std.		
			Mid-week	Weekend	ITE*	Mid-week	Weekend
Residential	Dwelling Units	1,383	0.0719	0.086	1.20	100	120
Commercial	Per 1,000 sqft (GFA)	262,375	0.4770	0.584	2.65	126	154
Office	Per 1,000 sqft (GFA)	108,118	0.5544	0.000	2.84	60	0
Light Industrial	Per 1,000 sqft (GFA)	4,398	0.0309	0.000	0.75	1	0
* ITE average weekday (midweek) including all demand on and off-street						**287**	**274**

4.6 Future Shared Parking Model

The estimated future aggregated parking demand model is estimated by adding future parking demand to the existing baseline demand model for both typical midweek and weekend. The two figures below illustrated the future aggregated model. More detailed calculations are included in **Appendix C.**

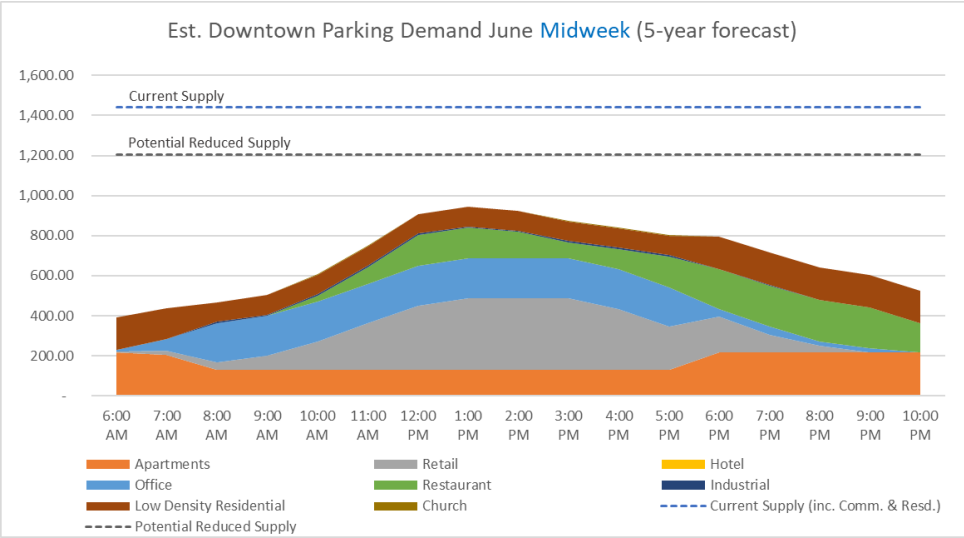


Figure 17.Future 5-Year Shared Parking Model (Weekdays)

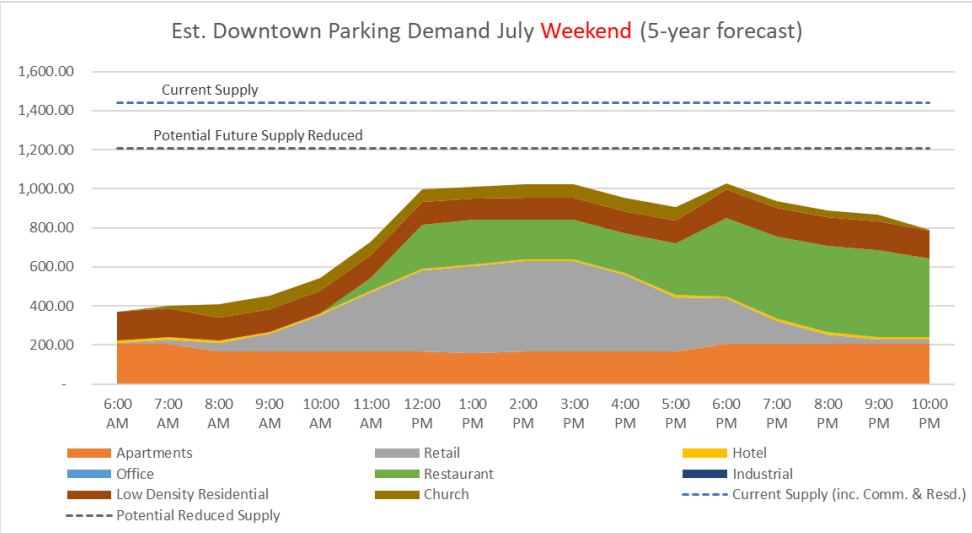


Figure 18. Future 5-Year Shared Parking Model (Weekend)

On the figures above, a potential future reduced supply is noted. The District has indicated that it is quite possible that the current supply of on street parking stalls is reduced in the future due to a variety of reasons that include reconfiguration of streets and streetscape projects, elimination of 90 degree and angle parking and flexibility of curbside space for other purposes (i.e. parklets, loading zones, bicycle parking, etc.). The main reduction is likely due to conversion of 90 degree and angle parking into parallel parking. Hence, assuming that for every two angled spaces and for every three 90-degree spaces, one parallel stall can be accommodated the reduced supply has been illustrated.

4.7 Future On-Street Supply and Demand Imbalances

The final step in the assessment of future parking conditions is a comparison between on-street parking supply and anticipated demand. The goal is to identify where and to what extent overcapacity conditions may occur as well as how overcapacity pressure in certain streets may result in spillover impact on nearby streets.

The table below summarizes the aggregated capacity utilization for each study subarea (Commercial and Residential) comparing current and future conditions for midweek and weekend.

Table 10. Average Current and Future Capacity Utilization Downtown Squamish

	Commercial Area		Residential Area	
	Midweek	Weekend	Midweek	Weekend
Avr. Current Occupancy	69%	79%	45%	48%
Avr. Future Occupancy	90%	97%	57%	59%

From the table above, it can be said that commercial area streets, namely Cleveland and Second Ave will experience a significant uptake in capacity utilization over industry recommended 85% occupancy thresholds. Residential areas are expected to remain fairly under parked below 60% utilization overall.

Although it was found (per Section 3.6) that on aggregate, overall supply (commercial plus residential) would sufficiently accommodate the anticipated demand across downtown, it should be noted that there are currently some geographic supply and demand imbalances in certain blocks which could be further exacerbated by the additional parking demand expected.

Figure 19 and 20 below compares current versus future peak capacity utilization at block-level during a typical midweek. As shown in Figure 15, current 'at capacity' occupancy (85-100%) mostly occur along Main Street and Cleveland Ave south of Main Street. High occupancy (60-85%) concentrate mostly along Cleveland and Second Avenue between Victoria and Winnipeg Streets. Unsurprisingly, Figure 16 (future weekday) shows overcapacity (over 100%) utilization conditions mostly along Cleveland Ave (between Victoria and Main St.) and Second Ave (between Winnipeg and Victoria St.) specifically along block-faces adjacent to future developments. Such overcapacity conditions are expected to be accommodated on nearby blocks with available spare capacity (See next section for discussion of spillover effects).

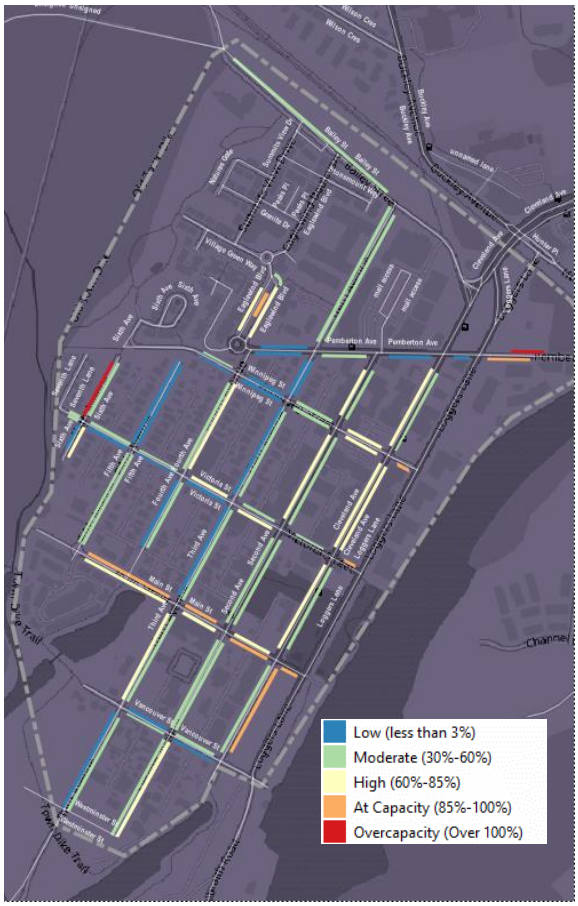


Figure 19. Current Utilization Weekdays

Figure 20. Future Utilization Weekdays

Figure 21 and 22 below compares current versus future peak capacity utilization during a typical weekend (Saturday). As noted earlier, weekend parking demand is expected to be higher than weekday demand. Currently, most of Cleveland Ave. experiences 'at capacity' utilization (85-100%) conditions on a typical weekend. Second Ave experiences High occupancy (60-85%) conditions still considered manageable.

In the next five years, some of these 'at capacity' utilization blocks in the downtown core are expected to experience 'overcapacity' conditions particularly those adjacent to proposed developments as shown in Figure 18. East-west street segments near downtown on Winnipeg, Victoria and Main Street could also experience increased demand as a result of new development. Such overcapacity conditions are expected to be accommodated on nearby blocks with available spare capacity (See next section for discussion of spillover effects).

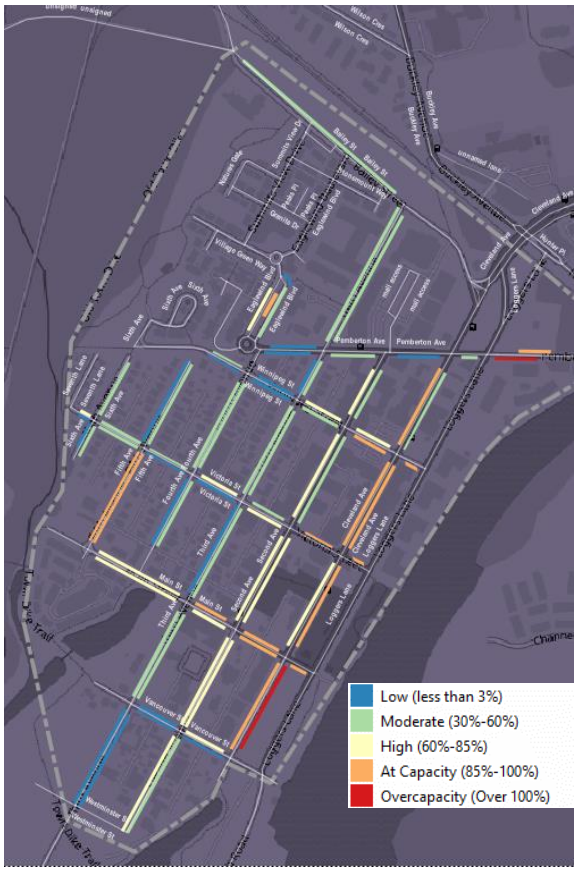


Figure 21. Current Utilization Weekend

Figure 22. Future Utilization Weekends

4.8 Potential Parking Spillovers

The previous section discusses expected parking capacity conditions resulting from adding future parking demand to existing parking capacity. As noted, some streets and individual block-faces could experience 'overcapacity' (over 100%) utilization which in practice cannot be accommodated on those streets. Such excess demand, also known as parking spillover, would be accommodated on nearby streets (less convenient for the driver) where free spaces are available.

Hence, following logical driving patterns and shortest-path principles, **Figure 23 and 24** below illustrate a theoretical iterative model for potential spillover patterns in which excess demand is redistributed on nearby streets until no one street experiences overcapacity conditions beyond 100% utilization. The resulting pattern shows a more balanced redistribution of excess demand in the downtown core, impacting a few nearby street towards the residential area.

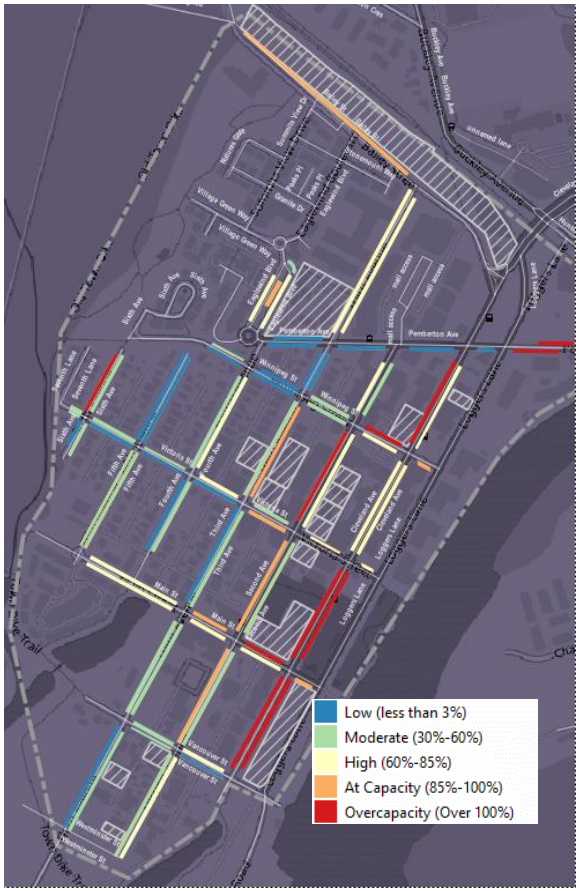


Figure 23. Potential Future Spillover Weekdays

Figure 24. Potential Future Spillover Weekend

5. BEST PRACTICE REVIEW OF PAID PARKING MANAGEMENT SYSTEMS

5.1 Walkable Parking or Park-Once-and-Walk District

Prior to discussing Paid Parking Management schemes, the concept of walkable parking also known as Park-Once-and-Walk District (PO&W) needs to be introduced.

The traditional approach of individual buildings, each with its own parking supply, requires multiple vehicular movements and a parking space to be dedicated for each visit to a shop, office, or residence. To accomplish three errands in this type of environment, for example, would require six movements in three parking spaces for three tasks. With most parking held in private hands, spaces are not efficiently shared between uses, and each building's private parking would be sized to handle a worst-case parking load. Most significantly, when new buildings are required to provide such worst-case parking ratios, the result is often pedestrian-hostile buildings that hover above parking decks.

A park-once-and-walk district strategy relies on the idea that much of the parking supply on and off street should be open to the public, even if it is privately owned. It means enabling local 'parking pools' available to everyone and not caring if any particular site has enough on-site parking.

One of the keys to creating a successful, walkable downtown is to design the area so you only have to park your vehicle once. These types of areas generally require on-street parking, parkades, and other shared facilities to handle parking demand. On-site parking for specific sites is not prioritized or is actively discouraged through zoning. This strategy is ideal for transit-oriented developments and urban revitalization efforts where walkable urbanism is a priority. Also, ideal to support the concept of the 15-min walkable city[6].

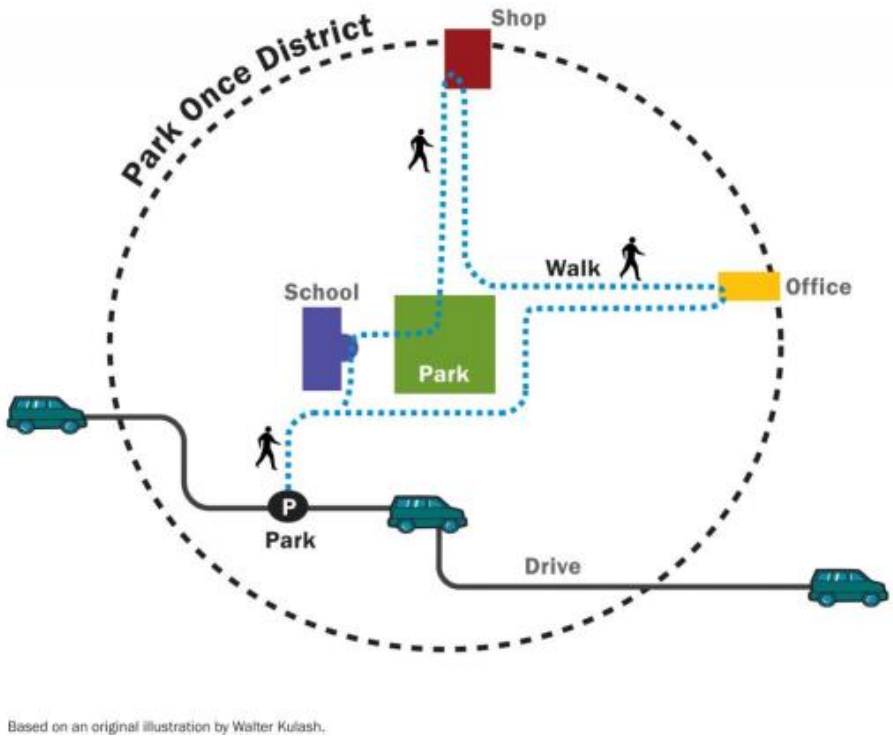


Figure 25. Park-Once-and-Walk / Walkable Parking Concept

[6] https://www.15minutecity.com

The compactness and mixed-use nature of Squamish's downtown lend itself to this kind of PO&W strategy. Operating the downtown parking supply as a single shared pool will result in significant savings in daily vehicle trips, GHG emissions, efficient utilization of parking supply, downtown walkability and capital cost savings in required parking spaces for future developments.

The following are recommended strategies[7] to pursue PO&W or walkable parking districts include, but are not limited to the following:

- Eliminate minimum parking requirements and build fewer parking spaces for individual demand generators (i.e. offices, stores, multi-family building, hotels, etc.). At a minimum, relax parking minimums and add flexibility in ways that promote Walkable Parking (i.e. TDM options in lieu of parking like in Vancouver, No parking min. for social/affordable housing, developer pay in-lieu parking schemes)
- Encourage mixed-used higher density development. Having different land uses in close proximity enables efficient use of public parking (or shared parking) by having complementary peak demand periods
- Avoid "residential permit holder" zones that exclude public on-street parking. Less stringent residential parking priority areas and customer validation methods can still be integrated into the PO&W however not fully exclusionary.
- In a PO&W environment, migration to paid-parking management systems typically occur as a way to managed overcapacity conditions in certain street or block (supply and demand imbalances)
- Facilitate a path for private parking owners to share their facilities with the public, this could be achieved by:
    - Signing public-private shared parking agreements
    - Facilitate shared-parking operation/agreements between adjacent private lots for public sharing and customer validation.
    - Allow privately-owned parking lots to join the municipal parking management system through operational and shared revenue agreements.
    - Including private parking lots in municipal parking branding and wayfinding maps
    - Advice on how best to manage public parking on private property and on how to engage reputable professional parking management service providers.
- Encourage and facilitate the use of rent-my-parking-space type app-base businesses[8] where private parking owners (i.e., Churches, business, residents, etc.) rent out (short or long-term) their parking spaces to the public.
- Improve district walkability by all-year sidewalk maintenance, completing missing sidewalks gaps, improved pedestrian crossing treatments along pedestrian desire lines and intersections, pedestrian-only streets or blocks when feasible and practical.
- Lead by example - Make on-site parking at City Hall, other local government offices, and other city-owned facilities (such as swimming pools, libraries, parks and so on) open to the general public to the extent possible.
- City-owned public parking is often part of park-once strategies. Having at least some public parking in every vicinity is essential for Walkable Parking.
- Review district's off-site parking standards to make parking design more compatible with walking urbanism (i.e., prevent parking in frontages or between buildings and sidewalks, discourage surface parking lots at street level, encourage ped connectivity across parking areas, no direct driveway access (curb cuts), encourage private-public parking by default)

5.2 Definition of Parking Management System

Parking management defines the appropriate uses of parking facilities in a specific area and at a specific time. The level of management required in a specific area is most often dictated by how well the overall parking supply accommodates demands for parking in that area. When demand for parking regularly mismatches the available

[7] Additional recommendation at https://www.reinventingparking.org/2018/01/walkable-parking-how-to-create-park.html
[8] Examples around the world include JustPark, ParkEx, SPOT, ParkHound, CurbFlip, ShareMyPark, Rakupa, ParkPNP, ParkShare and many more.

supply, it often becomes necessary to manage the supply more. A parking management system can be defined as a tool to manage parking effectively and efficiently. The parking management system can help better administrate and control the access to parking spaces; meanwhile, it can help optimize the occupancy and utilization of parking facilities.

The design of an appropriate parking management policy should consider a series of factors, including consumer choice, user information, efficient utilization, and flexibility. The parking management system can have several components based on use cases and applications. In general, the following components should be considered in a parking management system:

- **Parking Pricing**. Parking pricing, also known as metered parking, refers to direct charges for using a parking space. This can include on-street (curb) parking and off-street (parking lots) parking. Paid parking can be used to influence turnover, allocate short-term parking, ensure space availability and support TDM as a reasonable "price point" for consideration by users.
- **Payment Method/Technology**. The selection of parking payment methods should work with the designed parking pricing schedule and consider the users' convenience and experience and the automation technologies available and expected by the parking operators and customers.
- **Residential Parking Permit (Access Control)**. The usage and access control methods are specifically useful for improving parking conditions in restricted/reserved areas like residential neighbourhoods or managing off-road parking facilities. This control measure essentially allows the parking of vehicles that have a confirmed booking or permit displayed while restricting/limiting the parking of other non-residential drivers.
- **Parking Enforcement**. Enforcement is a necessary tool for managing and maintaining the appropriate operation of a parking area. Coordinated with the parking operator's chosen payment system, enforcement can help regulate and guide drivers' payment and usage of parking facilities. The enforcement measures usually involve ticket issuance and payment and further measures such as towing.
- **User Information System**. Providing information to the public regarding the planning and implementation of various parking management tools and strategies is often critical to the success of a parking program. Communicating changes to the public (e.g., travellers, residents, and local business owners) regarding parking locations, rates, and regulations can help strengthen users' understanding and compliance with the paid parking system.

5.3 Parking Pricing Strategy

Parking demand management strategies include several policies and programs designed to reduce parking demand, preserve parking for certain trip types and users, and promote a shift from single occupant vehicle (SOV) trips to transit, pedestrian, and bicycling trips. Parking demand management includes both parking pricing and supply-side strategies.

The goal of a parking pricing strategy is to help achieve an appropriate parking utilization rate that balances user convenience, demand management and the cost-revenue relationship. Specifically, it should be capable of ensuring that there are always at least a few vacant spaces on any block so that anyone who comes by (and is willing to pay) can park if they want. If the price is too high and many curb spaces are vacant, adjacent businesses will lose customers. In contrast, if the price is too low and no curb spaces are vacant, drivers searching for a place to park will congest traffic, waste fuel, and pollute the air. Businesses will also lose money because the nearby, convenient parking spaces will be taken up by those who don't really need that space.

A typical parking pricing strategy getting increasingly popular for various municipalities is performance-based pricing, also known as demand-based pricing, which can achieve an optimized turnover, redistribution of parking resources and tiered parking options for users. The specific target occupancy level using this method is usually set at 85%. The strategy uses demand as the key factor in establishing parking rates (the higher the demand is, the higher the rates are expected to be). It is also a method of redistributing the parking occupancy levels among various streets and neighbourhoods throughout the municipality. In demand-based pricing, hourly parking rates would be increased on

high occupancy streets and decreased on low occupancy streets, inducing motorists to park on the low occupancy streets. Usually, high occupancy streets are typically closest to motorists' final destinations, e.g., streets with high-volume offices, stores, restaurants, theatres, etc. Low occupancy streets are typically on the outskirts of these areas, a block or two away. It should be noted that demand-based pricing is more beneficial in the condition that demand exceeds supply, which causes motorists to spend more time driving or 'cruising' to find an open parking space, which leads to frustration, traffic congestion and more air-polluting gas emissions.

The study has also reviewed examples of parking pricing programs from similar municipalities like the District of Squamish, including Canmore, Banff, Penticton and Whistler.

5.3.1 Canmore, AB

Canmore is a town in Alberta, Canada, located approximately 81 kilometres west of Calgary near the southeast boundary of Banff National Park. According to Statistics Canada, Canmore is the ninth-largest Town in Alberta, with a population of 15,990 in 2021. Canmore applies paid parking and Resident Parking Permit parking only zones in the Town Centre and Quarry Lake. The Canmore Resident Parking Permit allows permit holders to park in all Resident Parking Permit-only zones and park for up to three hours daily in paid zones. Parking sessions can be registered and paid for through the Blinkay app (or web application) and the nearest pay machine.

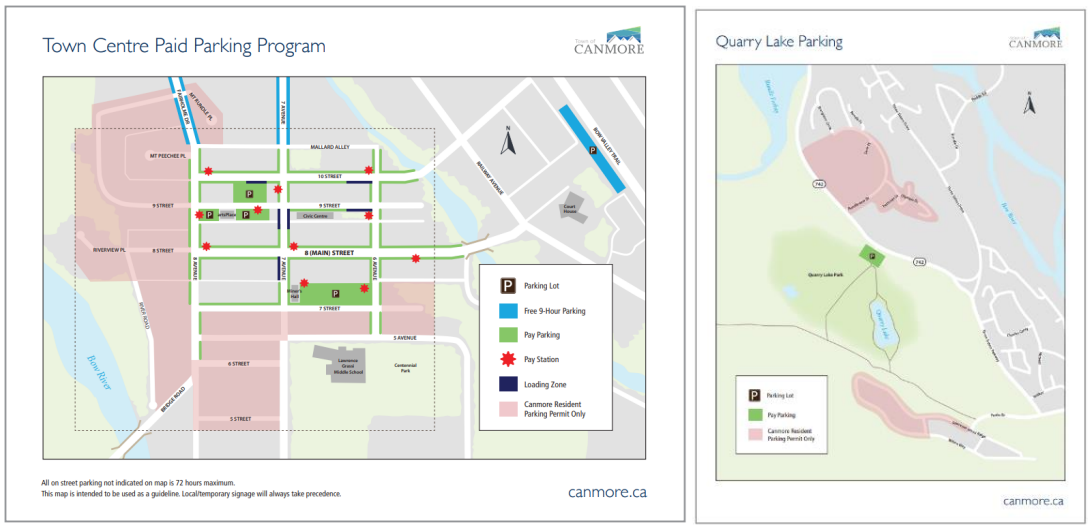


Figure 26. Map of Canmore Parking Program

5.3.2 Banff, AB

Banff is a town within Banff National Park in Alberta, Canada. It is located in Alberta's Rockies along the Trans-Canada Highway, approximately 126 km west of Calgary. Banff is a resort town and one of Canada's most popular tourist destinations. According to the 2021 Census of Population conducted by Statistics Canada, the Town of Banff had a population of 8,305. The Town is only 4 square kilometres in size but is experiencing a large number of visitors (about 4 million) each year. Until June 2021, public parking in Banff was still free, which resulted in traffic congestion, idling vehicles and frustrated drivers. Therefore, the Town introduced a paid parking program to improve the parking condition. At present, pay parking is applied in downtown Banff, and free parking is still available in certain locations around Town such as the Train Station area (free 9-hour parking and free shuttle downtown, or 8-minute walk downtown). Banff has also implemented have large and numerous signage about parking options as you drive into town. This allows drivers to make decision, for instance, to park at the Train Station for free or continue on to park downtown and pay. This reduces frustration and cars circling the downtown streets.

When:

- 8 a.m. to 8 p.m. every day, year-round

How much:

- $5/hour in summer (May 1 - Oct. 31); $4/hour in winter in the downtown core (green zone - map below)
- Same cost for on-street and parking lots
- Card payment can be made through mobile devices via the PaytoParkBanff.ca website or at Pay Stations or on the downloadable Blinkay App
- Free in three large 9-hour parking lots (blue zone - see map below)
- Banff residents who have a Resident Vehicle Parking Permit can park for free for up to 3 hours per day in the paid zone, if they have registered their licence plates. (Resident Parking Permit)

How to pay:

- pay at any pay station machine on streets and in parking lots in the paid zone - using coins ($1, $2, 25¢), credit cards or debit payment.
- Card payment can be made through mobile devices via the PaytoParkBanff.ca website or the downloadable Blinkay application (Google Play - Blinkay Smart Parking app / Apple Store - Blinkay iParkMe)

How does it work:

- Visitors enter their licence plate, select time wishing to park, and submit payment at the pay station or on their mobile device through the website or app
- A pass or receipt is not required for a dashboard display
- Town staff use licence plate recognition cameras to confirm payment in the system and time used
- If you pay with the mobile app, you can receive a reminder about time limits and can "top up" payment if needed
- There are no time limits in the pay-parking zone
- You do not need to remember the zone you are parked in. All downtown is one zone. Just park, pay and go.

The Town has also developed a mobile-friendly website[10] to help drivers navigate the parking resources, with the information of parking map, directions, fee or free designation and time limits, as well as the transit alternative. Parking payment can be made through mobile devices via the website[11], the App or pay stations. The residents virtual permit also allows residents to park in the resident-only streets around the downtown paid zone.

[10] BanffParking.ca | Find Parking Spaces in the Town of Banff
[11] Add plate (blinkay.app)

Figure 27. Map of Town of Banff Parking Program[12]

5.3.3 Penticton, BC

Penticton is a city in the Okanagan Valley of the Southern Interior of British Columbia, Canada, situated between Okanagan and Skaha lakes. In the 2021 Canadian Census, Penticton had a population of 36,885. Penticton hosts many events annually and offers many kinds of recreation, including skiing, boating and fishing, golfing, hiking and biking, and rock climbing. Penticton provides a range of parking options, including on-street and metered parking lots. In high-demand areas, such as the downtown area and around Penticton Regional Hospital, various regulations are used to balance the needs of motorists and residents. Paying options for parking spaces within downtown Penticton include hourly, monthly or annual rates. The hourly rate in City-owned parking lots and on-street parking metres is $2.00/hour. Besides paying parking machines, the parking fee can be paid through the mobile phone App 13, and parking charges, history, profile information, and print reports are available on its secure website. Meanwhile, the Resident Parking

[12] Parking | Banff, AB - Official Website
[13] PassportParking Canada (passportca.com)

Only area is designated to improve the availability of on-street parking for the residents of that street block. It is intended to restrict on-street parking in specific residential areas to local residents and their guests. Penticton's parking permits are sent by mail every two years and are required to be displayed in the vehicle.

Figure 28. Map of Penticton Parking Program (Downtown)[14]

5.3.4 Whistler, BC

Whistler is a resort municipality in Squamish-Lillooet Regional District, British Columbia. It is located approximately 125 km north of Vancouver and 36 km south of Pemberton. Whistler has a permanent population of approximately 13,982 in 2021, as well as a larger but rotating population of seasonal

[14] Parking | City of Penticton

workers. Meanwhile, over two million people visit Whistler annually, primarily for alpine skiing and snowboarding and, in the summer, mountain biking at Whistler Blackcomb. The Municipality provides a range of parking options, including municipal parking, park parking, and daily and monthly parking. Besides, the Municipality also has specific provisions and regulations regarding neighbourhood parking, winter parking, commercial vehicle permits, etc. The smart park meter and parking application [15]are provided for parking payments in Whistler.

Figure 29. Map of Whistler Parking Program[16]

[15] Parking mobile app & payment solution | PayByPhone
[16] Parking | Resort Municipality of Whistler

Table 11. Summary of Parking Pricing Programs in Similar Municipalities

Municipality	Population	Paid Parking Program	Parking Rates and Pricing Details	Parking Payment Options
Canmore, AB	15,990 (2021)	Limited-Period Free Parking, Paid parking and Resident Parking Permit	Town Centre paid parking is in effect seven days per week from 8 a.m. – 8 p.m. Peak season rates (May 15 – Oct.14): $3/hour, Low season rates (October 15 – May 14): $2/hour. Quarry Lake paid parking is in effect seven days per week during park hours: Peak season rates (May 15 – October 14): $10 per two hours, Low season rates (October 15 – May 14): $2.50/hour. Canmore Resident Parking Permit holders get up to 3 hours free in all paid zones per day (starting a parking session is required each time). Monthly parking passes will be available as an add-on option to those who are eligible for a Canmore Resident Parking Permit (not yet available). Expected peak season rates (May 1 – October 31): $83/month, low season rates (November 1 – April 30): $41.50/month. Free 9-hour parking is provided at a few locations. Parking in Canmore Resident Parking Permit zones is only available to Canmore Resident Parking Permit holders. Accessible stalls and loading zones remain free.	Parking pay machine Mobile App and website application
Banff, AB	8,305 (2021)	Limited-Period Free Parking, Paid parking and Resident Parking Permit	Paid parking is in effect from 8 a.m. to 8 p.m. every day, year-round (effective July 5, 2021). $5/hour in summer (May 1 - October 31); $4/hour in winter in the downtown core. The Train Station has a free 9-hour parking area. Free parking is also provided in a few areas. Motorhomes/caravans/campers/RVs should not drive into and park in downtown Banff. Banff residents who have a Resident Vehicle Parking Permit can park for free for up to 3 hours per day in the paid zone if they have registered their licence plates. People with these accessible parking placards displayed in their vehicles can park in the designated stalls for free for 3 hours.	Parking pay machine Mobile App and website application
Penticton, BC	36,885 (2021)	Limited-Period Free Parking, Paid parking and Resident Parking Permit	Effective January 1, 2021, the hourly rate in City-owned parking lots and on-street parking metres is $2.00/hour. Long-term parking can also be purchased. Resident and guest permits (up to 2) are free.	Parking pay machine Mobile App and website application

Municipality	Population	Paid Parking Program	Parking Rates and Pricing Details	Parking Payment Options
Whistler, BC	13,982 (2021)	Hourly, Daily and Monthly Paid Parking	Municipal parking locations are for residents' and visitors' short-term parking needs. The rate is $2 per hour for the maximum period varying from 1 to 2 hours. Hourly, daily and overnight parking options are also provided at the Municipality's Conference Centre and Library. Public daily parking is available in Day Lots 1-5, where hourly and monthly options are also provided. For Lot 1-3, the standard vehicle daily rate is $14, and the hourly and monthly rates are $3 and $72, respectively. For Lot 4-5, the daily, hourly and monthly rates are $8, $2.5, and $36, separately. Parks parking is provided at Alpha, Lakeside, Rainbow and Wayside Parks, with a rate of $2 per hour and a maximum duration of 6 hours. Parking in Whistler's neighbourhoods is not permitted on the odd-numbered side of the street at any time or on the even-numbered side of the street from November 1 to March 31, from 9 a.m. to 5 p.m. Monday to Friday (excluding holidays).	Smart park meter Mobile App and website application

5.4 Residential Parking Permit (Access Control) Strategies

Area parking permit programs mainly work to balance and distribute parking resources across a variety of users, primarily residential occupants and commercial visitors and employees. This type of program allows "authorized users" to park on-street and limits non-authorized users to a specific time stay during hours of enforcement. It is found that residential areas near city centers and major corridors sometimes experience sustained peak demands that exceed the on-street parking supply. Surrounding parking areas, generally used by residential occupants, can see increased demands and spillover from the adjacent multi-family uses and commercial activities. The over-occupied residential parking in peak hours is an indicator that a permit program would be an appropriate tool to consider. Meanwhile, the enforcement of residential parking permits is important to address the "peak hour" parking constraint and the success of the program.

An example of the introduction of the residential parking permit is from the City of Vancouver. To tackle the potential impacts of residential parking overspill from low residential parking standards, the City offers two types of residential parking zones to manage residential parking pressure on streets, namely the Resident Parking Only (RPO) zones and the Resident Permit Parking (RPP). RPO zones are parking zones strictly designated for the residents of a certain address with no permit application required. The RPP areas, on the other hand, allow parking by both residents and visitors at a cost. Residents living in the RPP zones are required to apply for a residential parking permit in order to be exempted from the posted time restrictions and other regulations subjected to non-permit parking. However, the RPP privilege can be extended temporarily at the request of permit holders to non-residents, including out-of-town visitors, house sitters, home medical care providers, and contractors. Due to the permit requirement, the RPP system is easier to enforce by City staff as permit holders have to display a valid area permit in their designated RPP zones. The City of Vancouver currently no longer establishes any new RPO zones and is currently in the process of expanding the RPP system city-wide.

The parking permit fees vary from $38.93 to $77.90 (including 5% GST) based on the zones. Meanwhile, the City also provides temporary short-term permits for courtesy vehicles, rental vehicles, borrowed vehicles, contractors, out-

of-town visitors, house sitters, and new residents from out of province, and the parking fees vary depending on whom the permit is for.

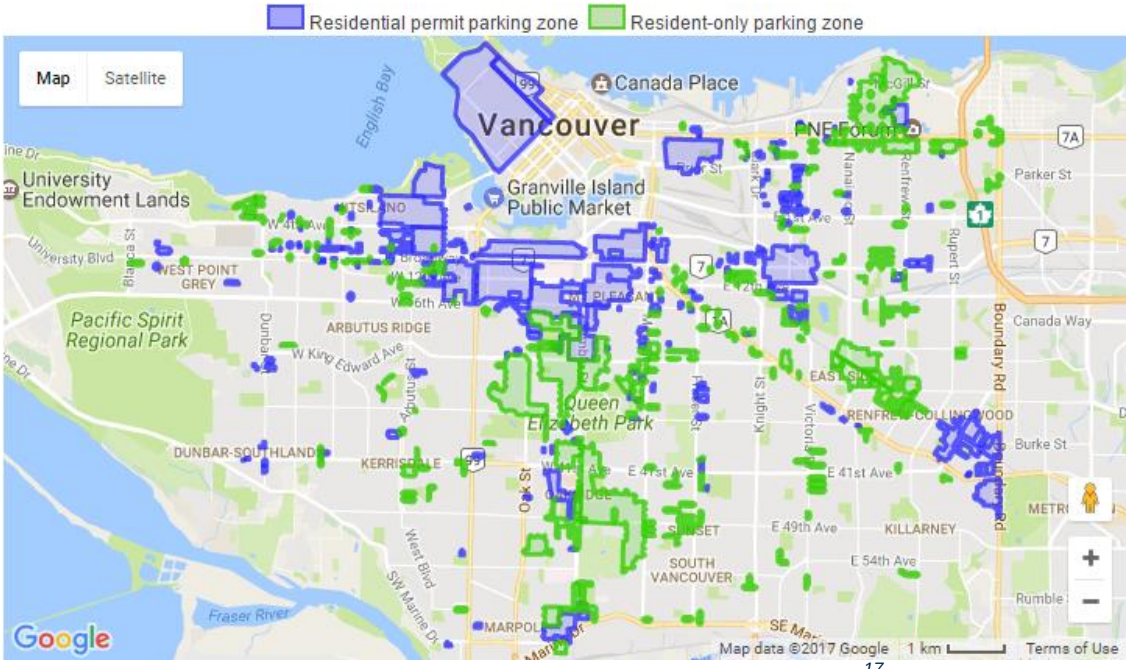


Figure 30.Distribution of RPO and RPP Zones in Vancouver[17]

The City of Calgary also introduces the residential parking program to provide easier access to on-street parking to those who live in an area without on-site parking or homes near large venues or popular outdoor areas. Major parking generators such as hospitals, post-secondary facilities and LRT stations are common examples. In these areas, parking restrictions may be necessary to allow residents and their visitors reasonable access to on-street parking in their community. The City defines the Residential Parking Zones (RPZs), which are areas of the city with high parking congestion that employ certain parking exemptions for eligible residents of the zone. For example, many zones use two-hour time restrictions to manage short-stay parking, but permit holders are exempt from the time restriction. RPZs may be created when there is demonstrated ongoing parking congestion in a residential neighbourhood that is the result of a major parking generator. According to the City, the establishment of an RPZ should follow the following criteria and procedures:

- Residents, community associations, Council members or City Administration, can make requests for new zones. In all cases, requests will be prioritized, and decisions will be based on data.
- The creation of a new zone is considered by the proximity of the area requested to a major parking generator which would typically see more than 1,500 vehicle trips per day (or per event for locations such as stadiums and arenas). Major parking generators such as hospitals, post-secondary facilities and LRT stations are common examples.
- A parking study will be conducted, and a new zone is warranted if the occupancy of available on-street space is above 80%.
- If warranted, residents can request residential parking restrictions.

Permits may be issued to a resident on a block with parking restrictions within a residential parking zone under the classes of ground-oriented buildings, small multi-residential buildings, and large multi-residential buildings. In the fall of 2022, Council approved the introduction of a new type of permit called a market permit which allows citizens who

[17] Vancouver West End Residential Parking Map and Parking Permits (ruthanddavid.com)

live in large multi-residential buildings to park in a Residential Parking Zone (RPZ) within 150 metres of their address. The permit is expected to be available towards the end of 2022. Only one Market Permit is allowed per qualifying residence and may only be used by the resident, and it cannot be used for visitors.

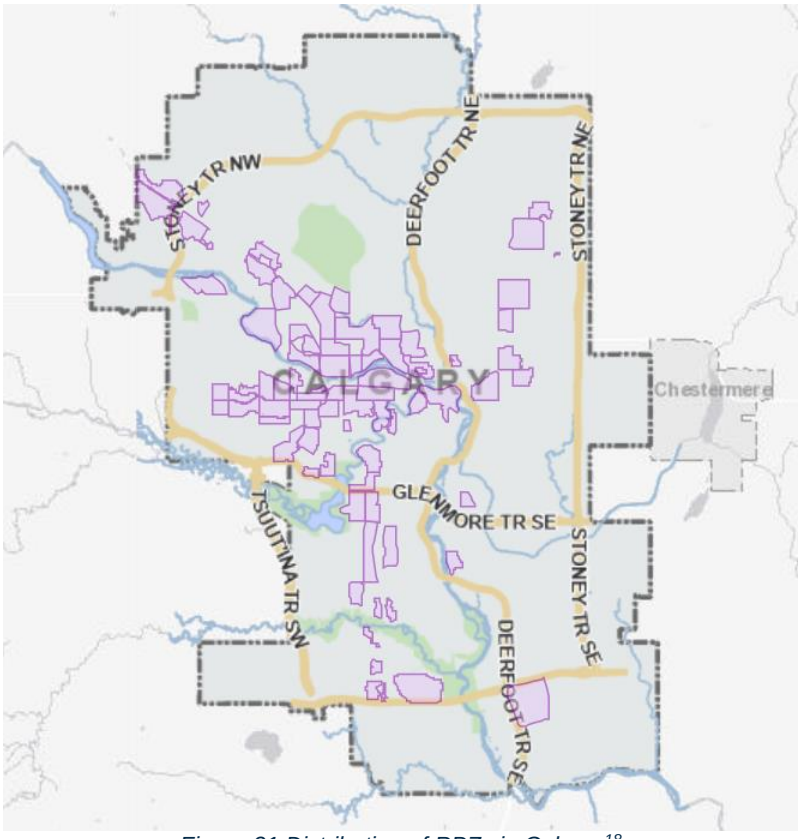


Figure 31.Distribution of RPZs in Calgary[18]

Another example is from the City of Toronto. Toronto's permit parking is implemented on either a street-name basis, where parking is restricted to one specific street or on an area basis, where a number of streets have been grouped into permit areas in order to maximize the available parking.

- In area-based permit parking, residents may park on any licensed street within their permit area but are not guaranteed a parking space on their specific street.
- Area-based permit parking provides greater flexibility by enabling permit holders to park not only on their licensed street but on other licensed streets within their area should space not be available on the street where they live.
- Within each permit area, there may be significant differences in the operating hours of the permit parking program. For example, in the Toronto community, there are currently over 70 unique combinations of permit parking operating hours which were developed over time, in consultation with area Councilors and community representatives, in response to specific concerns, e.g. long-term non-resident parking. These operating hours are clearly posted at regular intervals on each street licensed for permit parking within the area.

A permit holder who parks on the street authorized for permit parking must park in a legal space during licensed parking hours shown on the signs on the street. Though subject to other existing traffic regulations, permit holders

[18] Calgary Residential Parking Zones Map

generally have the privilege of parking their vehicles overnight and are exempt from the 1, 2, and 3-hour parking restrictions. Conversely, vehicles without parking permits may be tagged if parked in parking spaces designated for those with permits. The permit parking by-law is enforced by Parking Enforcement Unit, Toronto Police Service. The permit fee for the resident who does not have access to on-site parking for the first vehicle permit is $17.70 + HST per month, and for those who do have access to on-site parking is $77.14 + HST per month.

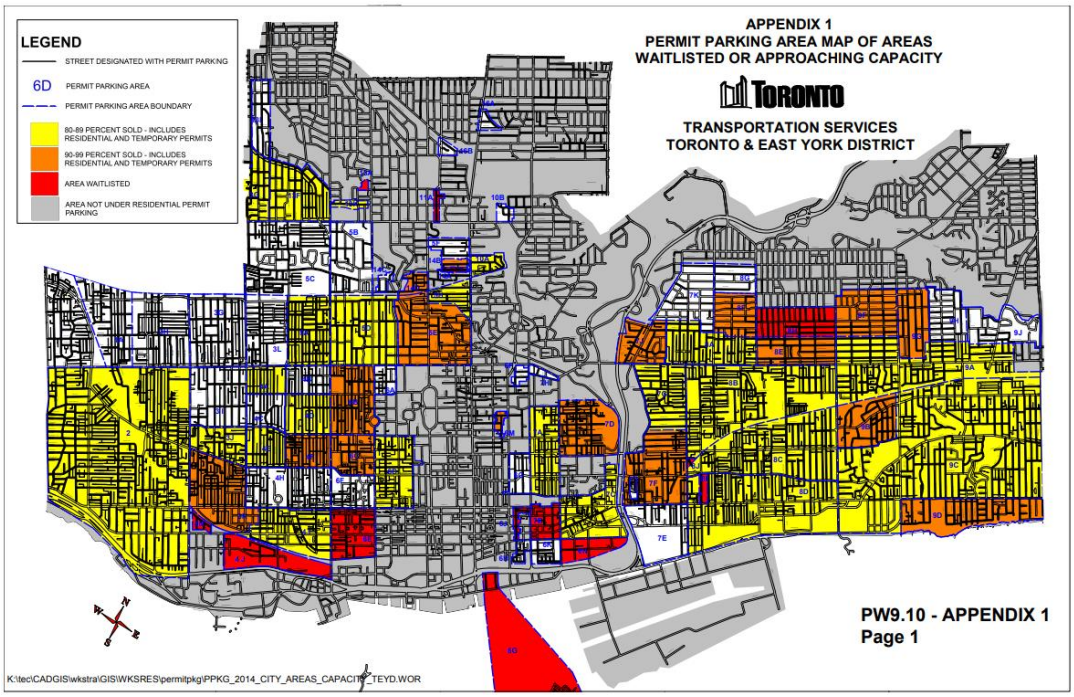


Figure 32.Distribution of the Permit Parking Areas in Toronto[19]

5.5 User Information Communication Strategy

The paid parking communication strategy should be considered and provided in areas where there is a lack of information on where to park, where a new parking plan or program is being developed, or where changes to an existing parking plan or the program will have an impact on parking conditions within an area. In general, the communication strategy should be considered prior to or in conjunction with the implementation of the paid parking system. An effective and efficient communication strategy between parking users and parking operators should consider the following methods:

- **Branding**. New paid parking facilities should be branded to inform parking users that the parking charging is in effect, as well as the pricing rate, charging time period and other limitations. It would be beneficial that the same type of charged parking area can use unified and consistent parking branding and signages for users' convenience.
- **Parking maps**. Downtown and residential parking maps and illustration graphs should be provided, with information on parking locations, rates, availability, nearby destinations, and other useful information to help motorists plan their trip and parking. The maps can also be linked to the City's website, the neighbourhood or business association website, or printed and posted in local businesses or in community centers to promote efficient use of the parking system.
- **Wayfinding and signage**. The aim of setting up wayfinding and signage is to communicate parking locations, availability, rates, and other key considerations of drivers. Wayfinding and signages may be

[19] Appendix 1: Permit Parking Area Maps (toronto.ca)

temporary to support special events or other temporary changes in parking conditions, or they may be permanent. The device can be static or dynamic, while the use of dynamic signage provides more flexibility with the provision of critical user information.

- **Stakeholder Outreach and Education**. The municipality can solicit input for new paid parking programs, survey customer experiences and communicate and educate the public on the implementation of the parking pricing strategies. Quality stakeholder outreach should be conducted often, especially when a new paid parking program is introduced or changes occur.
- **Public Information Campaign**. The campaign can be used to inform drivers of the paid parking program, including information on the location of parking facilities, availability, rates, and other vital considerations.
- **Web-Based Communication and Social Media**. Parking pricing program introduction and guidance can be developed to be published on media/websites. These resources can include the location (online mapping), rates, regulations of different parking facilities and a list of common mistakes that could lead to citations, and citation payment information. A frequently asked questions (FAQ) resource is also important to provide the opportunity to answer typical customer questions before they are asked. Social media sites can also provide another outlet for reaching parking users, communicating elements of the parking program, and receiving feedback.
- **Real-time Availability Applications**. The applications can include signs, maps, smartphone applications, websites, and electronic devices that provide useful real-time information for motorists. The applications have advantages in customer convenience, parking efficiency and parking management. However, the development can sometimes be relatively expensive.
- **Parking Ambassador**. Ambassadors can supplement parking enforcement efforts by providing information, guidance and other value-added services to parking users.

5.6 Enforcement Strategy

Implementing parking enforcement is typically in response to parking behaviours that are adversely impacting residents or businesses. Consistently high demands, low turnover, and misuse of curbside parking for long-term storage are several reasons for implementing parking enforcement. The enforcement of parking regulations is typically accomplished by the issuance of parking citations/fines, as well as further measures such as towing and booting. Focused enforcement can also be conducted for the areas where illegal parking vehicles are regularly impacting the area's operations, growth, residents or businesses.

Effective and sufficient enforcement is crucial to ensuring the efficacy of parking regulations and is a necessary component of any parking management program. However, parking enforcement in real life usually causes public tensions and misperception about its goal. An important strategy to improve is increasing parking convenience and demonstrating more comprehensive parking and transportation benefits to those who pay parking charges and to the public in general. This could include investment in new payment options to increase convenience for parkers; networked detection and payment technologies to enable more targeted enforcement and increase cost-effectiveness; real-time information about parking availability and pricing to aid motorist decision-making; and more responsive, up-to-date regulation to balance on-street demand and supply.

Enforcement is necessary but is not the only tool required as part of a comprehensive parking management program. Ultimately, enforcement is only effective if the underlying regulations are appropriate and sufficient to address the parking challenges in a given area and enforcement officials have the appropriate tools to carry out their work. It should also be noted that enforcement is a necessary but not sufficient element of comprehensive parking management; other technologies and regulatory strategies are necessary to improve parking conditions and support overall goals for the transportation system.

6. BEST PRACTICE REVIEW OF PAID PARKING TECHNOLOGIES

6.1 Single-Space Meter and Multi-Space Meter Technology

The single-space meter (SSM) is a more traditional technology. They are equipped with retrofits, including computer, solar power and wireless capacity in recent years. The single retrofit SSM is less expensive and easy to be installed compared to a multi-space meter (MSM). However, the application of SSMs in a whole area can be costly and inefficient because of the need for installation, operation and maintenance for each parking space.

The MSM technology provides a more affordable alternative as one meter can cover multiple spaces and is getting increasingly popular nowadays. The development of MSMs enhances metered parking as a viable option for controlling revenue from multiple spaces with fewer devices. MSM tends to be more economical throughout the life of the system, although the initial purchase and installation could cost more. For on-street applications, one MSM usually manages eight to fifteen spaces. MSMs can also accommodate pay-by-space or mobile license plate enforcement.

In MSM design, each meter is expected to be equipped with graphical and LED displays to instruct patrons; one or a combination of the coin, token, banknote, credit card or smart card acceptors; a cashbox and/or bill vault to securely store money; and user interface buttons and/or a keypad. The meters are computerized, which allows for complex rate structures and strong audit and enforcement trails. A typical MSM installation is networked, allowing transaction and revenue data to be consolidated to a central server and viewed remotely. This allows the municipality staff to remotely generate reports and other useful data necessary to manage the parking assets, including changing the rates and monitoring revenue. Depending on the specific application and manufacturer, most multi-space meters can be configured for use in one of three modes of operation: pay and display, pay-by-space, or pay-by-license plate. Most multi-space meter manufacturers make one meter capable of being programmed for all three payment modes by changing the user interface (face plate) and the system software (rather than replacing the meter).

- **Pay and Display**. Patrons park their vehicles, walk to the parking meter, pay for a certain amount of time and receive a receipt. Somewhat less convenient for the patron than individual meters, in pay and display mode, the patron has to return to their vehicle to place the receipt on the dashboard. The receipt indicates the duration, location, machine number and end time for which the vehicle has paid for parking. The receipts are visually inspected during enforcement procedures, which have been found to take more effort and time as compared to the enforcement of other meter types. Since this method requires that the motorist returns to their car to display the receipt, the meters should be situated relatively close to the car. On average, the meter should be within 100 feet (30 m) of the parking space. A good rule of thumb is to install the meter with a 1:10 meter-to-car ratio (five parallel parking spaces on one side of the street, 10 parallel parking spaces on two sides of the street). For diagonal parking spaces, the ratio could increase to 1:20; however, this doesn't account for fire hydrants, driveways, laneways, loading zones and other interruptions in the parking layout. In Pay and Display mode, parking spaces do not need to be identified (striped).
- **Pay-by-space**. In this mode, the patron is not required to return to the vehicle with a receipt. Each parking space is numbered. The patron approaches the parking meter, enters the parking space number in which the vehicle is parked and selects the amount of time desired. No receipt is needed for enforcement, but there can be a receipt for proof of transaction. Enforcement is done by viewing a web-based report of paid and/or unpaid spaces on a handheld enforcement device or from any web-enabled computer or smartphone. Most pay-by-space applications offer the added convenience of allowing patrons to add parking time to the meter from another meter or through their cell phone for added convenience. Pay-by-space meters are typically used in off-street applications where spaces can be easily numbered using signs or surface paint; however, they are also gaining popularity for on-street applications due to the pay-by-cell phone option, no need for the customer to return to their car with the receipt, and their improved enforcement options.

- **Pay-by-license-plate**. In this mode, the patron is not required to remember the parking space or return to the vehicle with a receipt. Instead, the patron enters the vehicle's license plate number and selects the amount of parking time. No receipt is required for enforcement, but there can be a receipt for proof of transaction. This system can allow a patron to move the vehicle to another spot within the same meter zone without having to pay for parking again - provided there was time still remaining on the original purchase and they were not in violation of the posted time restrictions. As in pay and display mode, parking spaces do not need to be identified (striped), which has been shown to allow more cars to park on each block, depending on the sizes of the cars parked at different times and the lengths of uninterrupted parking spaces. Enforcement can be done with a vehicle-mounted license plate recognition (LPR) system that scans the license plates of all parked cars or with a handheld unit, either scanning or manually entering the license plate.

It should also be noted that MSMs also have some drawbacks compared to SSMs, including longer walking distances, higher complexity that requires instructions to specify, and requirement of signage. The following table compares the advantages and disadvantages of the SSM and MSM technologies in detail.

Table 12.Comparison of SSM and MSM Technologies

Technology	Advantages	Disadvantages
Single-Space Meter (SSM)	Built on the most familiar form of metered fee collection. The majority of patrons are familiar with the operations of single-space meters; little to no customer education is needed. Additional signage requirement is limited. Meters can be configured to accept coins or tokens, city smart cards, credit cards or debit cards. Lower implementation cost than multi-space meters. Each machine covers one space; thus, an out-of-service meter only impacts one space. Meters communicate with a central server. Communication can be configured to notify the parking operator when a coin vault is full or when a unit is out-of-service. This decreases the operational burden while increasing control. Rates can be changed from the central server, including adjusting rates for events or specific time periods. Retain existing operating procedures for bagging and reserving spaces.	Unused time remains on the meter when the vehicle leaves the space and is available at no cost to the next parker (a.k.a. "piggybacking"). Limited maintenance cost savings due to the high number of units (one for each space). Besides meter head maintenance, the meter housing and poles require maintenance to straighten and secure. Some find the number of poles along the sidewalk less than aesthetically pleasing. Patrons cannot receive receipts. No bill acceptance option. Ongoing monthly costs for online access and processing of credit card payments.
Multi-Space Meter (MSM)	Increased revenue (reported as between 10% to 30%) without increasing parking rates; due to improved compliance, higher operability, alternative forms of payment, no piggybacking, and parkers purchasing larger blocks of time when paying by credit card. Flexibility and user convenience. The machines can accept multiple forms of payment, including credit cards, smart cards, coins and banknotes.	Higher initial investment compared to single-space meters. Pay and Display units require the patron to return to their vehicle to place the receipt on the vehicle's dashboard. This issue is compounded for motorcycles, as the receipt is not secured; however, 'sticky-back' and duplicate receipts are available. Pay-by-space or pay-by-plate systems require the patron to enter a space or plate number at

Technology	Advantages	Disadvantages
	Fewer machines in the field, in addition to credit card transactions, will require fewer collections and less coin processing. Variable rate structures are available to encourage the turnover of spaces and discourage long-term parkers. Flat rates can also be set for event periods. Strong audit trail. Every transaction is tracked and reported. Multi-space systems provide a full range of revenue and statistical reports. Operational efficiency. Meters communicate to a central server and can notify maintenance when coin vaults are full or if units are out-of-service. In Pay & Display and Pay by Plate mode, stall marking is not required. More cars may be able to fit on the street. Less maintenance is required. Fewer machines in the field require less maintenance and fewer spare parts.	the meter. Input errors or faulty memory can result in user frustration or fines. Requires additional customer education and supplemental signage. A marketing campaign is needed to promote, educate, and encourage acceptance of the new system. Ongoing monthly costs for online access, receipt paper, and processing credit card payments. Operating procedures for reserving individual spaces are less convenient (there are no meters at every space for bagging).

Figure 33. Sample Pictures of Single-Space-Meter (Right) and Multi-Space-Meter (Left)

6.2 Complex Rate Structures and Demand-Based Pricing

Conventional parking meters have limited rate-setting capabilities, which are limited to specifically one fixed rate for one fixed time frame. Computer software programs nowadays enable smart meters (single-space or multi-space) to create a variety of rate structures. Hourly rates can change from hour to hour by the time of day or day of the week. Flat rates can also be programmed for any duration of time. Rate structures can also be updated remotely, while conventional meters require a trip to each meter. Furthermore, smart meters nowadays enable the municipality to implement demand-based pricing. This is because the meters should be capable of handling complex rate structures and rate changes and providing baseline data needed to determine which blocks are candidates for rate increases and which blocks are candidates for reduced rates. It can be realized by providing operators with reports showing transaction details such as when motorists paid, where they paid and how much time they purchased. Once the rates are implemented, the reports will also help determine the effectiveness of the rates. Meanwhile, other technologies, such as vehicle sensors and/or license plate recognition systems, can track the actual vehicle activity more accurately.

6.3 Convenient Payment Method

One of the major benefits of smart meters (single-space or multi-space) is the ability to accept credit cards. Benefits include enhanced customer convenience, enhanced compliance, increased revenue, less coin collection and process work, and less staff need. Nowadays, cell phone payments (through online transaction via a bank account/credit card) that bypass the operation of the meter is also getting popular. Meanwhile, smart meters also have the function to feedback on when and how much money is collected from parking operators. Besides the above-mentioned, other meter-compatible payment methods include coins/tokens, bank notes, prepaid cards, etc.

6.4 Convenient Maintenance

Smart meters are usually equipped with self-diagnostic software that enables them to 'report' maintenance issues via wireless communication, enabling municipality staff to respond immediately. Conventional meters may be out of service for days before a collector or enforcement personnel notices it and reports it.

6.5 Convenient Enforcement (Mobile License Plate Recognition)

Mobile license plate recognition (LPR) technology has made the enforcement of pay-by-plate, pay-by-cell, and license plate permit parking efficient and cost-effective. Mobile LPR utilizes vehicle-mounted cameras that read and record license plate numbers as an enforcement vehicle is driven through the enforcement area. At a driving speed of just 20-30 km/h, mobile LPR is significantly more efficient than foot patrol. The cameras use a series of algorithms to convert the photographic image of license plates into text data that can be compared with lists or databases of paid or permitted license plates to determine if the vehicle has the right to park in that particular location at that particular time. The LPR software can integrate multi-space meter software, pay-by-cell software, permit software, and other databases such as law enforcement agencies to identify not only paid and unpaid parkers but also stolen or otherwise significant license plates. If the LPR camera reads a plate that is not recorded as registered or paid or has been otherwise identified as searchable, an audible alarm sounds to alert the enforcement staff, who can then take the appropriate action. Besides, mobile LPR can be used to enforce time-restricted parking, as the software time-stamps every image. The software can be programmed to identify license plates that are captured beyond the time limits (e.g., 2 hours) of that particular zone.

Another benefit of LPR enforcement is the ability to use license plates as residential, business or monthly permits. This not only eliminates the need for paper, hang tag or decal permits since the motorist already has the license plate; it also makes enforcement extremely efficient. Permit holders can register and enter their own data online and at any time, theoretically saving office staff time. Furthermore, the license plate is a regulated credential, providing a higher level of integrity and less opportunity for misuse or fraud. License plate permitting significantly reduces the possibility of counterfeit permits or real permits being given, loaned or sold to unauthorized users. The permit software allows individuals to register more than one vehicle (for owners with multiple cars), while enforcement can restrict usage to one or more vehicles at a time. Permit parking can also be restricted to particular days, timeframes and even locations. The LPR system includes GPS monitoring to enable it to identify and segregate parking zones.

Figure 34.Sample Pictures of LPR Enforcement

7. PAID PARKING MANAGEMENT STRATEGY

In 2016, the DoS approved the 2016-2020 Parking Strategy. The strategy recognized the need to balance demand and local business needs with Squamish's sustainable transportation priorities, and to ensure that demand does not lead to an oversupply of parking.

Squamish has been reviewing options and opportunities for paid parking for several years, as indicated in the 2016-2020 Parking Strategy, the DoS Official Community Plan (Policy 20.12(c)), and the CCAP. Specifically, one action of the CCAP's Big Move 2, to "shift beyond the car," is to "develop and implement a strategy to price parking along parts of the core transit network and provide adequate enforcement in order to incentivize mode shift" (p. 35).

7.1 Benefits of Paid Parking

Free and underpriced parking fails to reflect the true cost of driving alone. When parking is free, cheap, and/or abundant, the deterrents to driving are few and, when possible, people are more likely to drive to and from their destination. Additionally, pricing parking can help manage occupancy of parking spaces on the curb and reduce circling among people looking for a place to park.

Other system-wide benefits of parking pricing, include the following:

- Improved Accessibility: Adequate curbside parking management ensures that parking spaces are available for all users, including residents, visitors, and people with disabilities. Well-planned accessible parking spaces can enhance accessibility, making it easier for people to access businesses, services, and public facilities, thus promoting inclusivity and equal opportunities.
- Promote a shift from single occupant vehicle (SOV) trips to transit, pedestrian, and bicycling trips which have been found to visit more frequently, visit more stores/business on a single trip (multi-purpose trip) and spend more money than those who drive[23], hence increasing business vitality.
- Reduced VMT and congestion – Pricing parking can encourage people to choose other modes of travel to avoid paying parking fees, which in turn can reduce VMT. Pricing that more accurately reflects demand (e.g. higher prices that encourage faster turnover where parking is in high demand, and lower prices where demand for parking is lower) can also increase the chances that a parking spot is available in a given block, thereby reducing the amount of time drivers spend looking for parking.
- Support commercial activity and neighborhood livability – By ensuring a well-regulated parking environment, communities can create an attractive business climate that encourages private investment, stimulates job growth, and fosters a vibrant local economy. By managing the curb space and encouraging appropriate vehicle turnover instead of long-term storage, parking pricing can help more people efficiently access stores and services. Parking management in residential or mixed-use areas can also ensure adequate parking is reserved for residents.
- Improved efficiency & safety for other modes- Co-benefits of reduced congestion and fewer distracted drivers looking for parking spaces can include: more free-flowing transit vehicles and safer streets as reduced circling can help reduce collisions with pedestrians, cyclists and other cars.
- Climate & health co-benefits- Reductions in VMT and associated fuel consumption have climate and air quality benefits.
- Local revenue reinvestment- Revenue generated from pricing parking can be reinvested in areas around metered streets to fund projects such as: safety and/or capital projects for walking, bicycling, and transit and investments to improve the movement and delivery of goods and services, downtown safety, community

[23] https://www.yumpu.com/en/document/read/22147514/the-importance-of-on-street-parking-to-business-vitality-halifax-

programs (i.e. graffiti removal program, cultural/community events, improved wayfinding, more bylaw officer presence, social services, water fountains, etc.)

Overall, effective curbside parking management brings economic benefits by generating revenue, improving accessibility, reducing congestion, supporting local businesses, and optimizing land use. By implementing tailored parking strategies that align with community needs, municipalities can maximize these economic advantages while promoting a balanced and sustainable urban environment.

7.2 Paid-Parking Principles & Approach

Best practices suggest six key inter-related themes integral to a well managed paid parking scheme. Of note, not all themes and subtasks are cover exhaustively in this report due to the limitations of the scope however they are included herein for future monitoring and evaluation.

- **Survey & Monitor -** Quantifying supply and demand, and understanding consumer behaviour
- **Modelling and Revenue Forecast** - Forecasting future demand and optimising revenue
- **Strategy Development & Refresh** - Balancing objectives and prioritising interventions
- **Design** - Design of engineering interventions to deliver strategic objectives
- **Delivery** - Successful implementation of the strategy and detailed designs
- **Consultation** - Local decision making informing the process and building consensus.

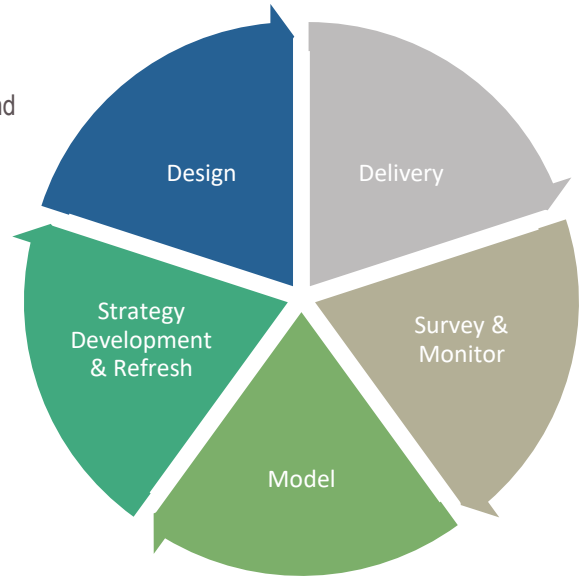


Figure 35. Paid Parking Management Principles

7.2.1 Survey & Monitoring

Understanding local parking supply and demand is critical to an authority's planning processes. Simple capacity utilization and LPR turnover surveys through to more complex attitudinal surveys using questionnaires and stated preference techniques inform of current issues and shed light on the likely responses to changes in parking policy and the introduction of certain interventions. This has been largely done as part of this study however more complex attitudinal surveys to local businesses, residents and visitors are expected and recommended for later iteration to the systems.

7.2.2 Modelling and Revenue Forecasts

As discussed above, parking pricing is implemented for a variety of reasons including to reduce parking demand, to reduce congestion, to support economic vitality, recover parking facility costs, support sustainable transport modes, etc. It is often intended to achieve a combination of these objectives but is often inefficiently priced and fails to reflect the true cost of parking to a local authority.

Parking fees should be set as part of an overall strategy and targeted to balance parking supply and demand, aiming to provide about 15% of parking space as available at any time. For example, well considered parking charges for a short stay car park have benefits such as a higher turnover of spaces, ease of finding a space and supporting retail and leisure businesses. Predicting the effects of different tariff structures can be difficult, but simple models, using tried and trusted and easily accessible parameters can give operators the ability to forecast revenue, traffic and footfall impacts in response to a changing policy and economic context.

7.2.3 Strategy Development and Refreshment

A well conceived parking strategy can balance competing demands, allowing for an attractive business environment for local business while promoting neighborhood livability and effective management of congestion and additional revenue. Each local authority should be clear about where the appropriate balance lies in its own area.

While developing or periodically refreshing the strategy, there are several principles to observe:

- Consumer Choice. People should have viable parking and travel options. In some areas people may have very limited alternatives to using their cars; in others, it may be more appropriate to give them options to help them make better travel decisions.
- User information. Motorists should have adequate information on the parking and travel options. The strategy should be clear, straightforward and consistent within recognized boundaries, avoiding too many conditions and caveats which may confuse users.
- Shared facilities. Parking facilities should serve multiple users, purposes and destinations as practical as possible.
- Efficient utilization. Parking facilities should be sized and managed so spaces are frequently occupied (Generally 85% occupancy)
- Flexibility. Parking plans should be able to accommodate uncertainty and change.
- Prioritization, or parking hierarchy. The most accessible spaces should be designated for higher-priority users (e.g. Handicap badge holders).
- Pricing. Motorist should pay the true cost for the parking facilities used.
- Peak management. Special efforts should be made to deal with peak-demand.
- Quality versus quantity. Parking facility quality is as important as quantity, including aesthetics, security, accessibility and user information.
- Costs-Benefits. All significant costs and benefits should be considered when planning parking.

7.2.4 Design

A coherent strategy must be accompanied by the detailed design and implementation of a well managed system of parking control, or management. The controls must be appropriate to the problem identified in the surveys and support the strategy without impinging too much on the priority users (often residents or shoppers).

Numerous features should be considered during the preparation of a robust design, including; whether to charge; what rate to charge; variable charges (by time or location) also known as demand-based parking; duration of any controls (e.g., 10am to noon, Monday to Friday; 10am to 6.30pm, Monday to Saturday or 9am to 10pm, Monday to Sunday); vehicular/non-motorized user access considerations; park & ride options; extents of any scheme; off-street parking; and vehicle displacements.

The physical characteristics and design considerations of potential street modifications, street furniture and parking hardware and software should not be ignored. A good understanding of public opinion's preferences on the physical aspects of the system (i.e. system's branding, wayfinding, logos, coloring schemes, materials, etc.) is also important to a successful scheme acceptance and residents' sense of ownership.

7.2.5 Delivery

Once a scheme has been designed and improved it must be implemented. Design and implementation integrity should be pursued within the constrains of municipal procurement policies and procedures as appropriate. Part of the process of ensuring design integrity is monitoring the physical installation of equipment, software and other supporting technologies from design through implementation, operation and decommissioning. For implementation, the scheme needs to be presented in a format that can be understood by contractors. In addition to detailed design drawings and signing schedules, it is important that the design team be involved in 'marking-up' any on-street intervention and supervising the contractors ensuring that any minor amendments are fully recorded and/or amended appropriately.

7.3 Demand-Based Pricing

As discussed, pricing should vary by hour and location in accordance with parking supply and demand targets (performance-based paid parking). This means that pricing should not be uniform: the most desirable spaces need higher rates, while less convenient spots are cheap or may even be free. Meter rates are set (and periodically adjusted) with the goal of achieving an occupancy level of approximately 85%. This provides enough vacancies that visitors can easily find a spot near their destination when they first arrive. For each block (and ideally each parking lot in the downtown commercial area), the right price is the price that will achieve this occupancy goal.

7.3.1 Paid-Parking Locations

As a starting point, it is recommended to begin incremental implementation of parking meters on streets with highest demand. Accordingly, streets with consistently higher demand currently (both weekday and weekends) where the average occupancy near, reaches or exceeds 85% during 3 or more hours during the day. The recommended **Paid-Parking Zone** in the Commercial Downtown Area may include the following streets:

- Cleveland Avenue from Pemberton Ave to Vancouver St.
- Second Avenue from Pemberton Ave. to Main St.
- Winnipeg St. Between Second Ave and Loggers Lane
- Victoria St.* Between Second Ave and Loggers Lane
- Main St. Between Third Ave and Loggers Lane

**Note: DOS indicated that most parking on Victoria may be eliminated in 2024 due to active transportation upgrades.*

Of note, Second Avenue currently has relatively lower demand (near 85% occupancy) than Cleveland Ave, however anticipated parking demand due to ongoing and near-term redevelopment projects, as well as proximity to Cleveland Avenue make it a suitable candidate for paid parking implementation from the start of the system. Two paid-parking options are suggested below: a) Differential fee structures based on their individual demand patterns (see sections below); and b) One-zone/One-fee flat rate zone.

Off-street parking lots near Cleveland Avenue and Second Avenue may experience an uptake in demand of drivers wanting to avoid parking fees. Although the City does not have jurisdiction over private parking operation, property owners should be encouraged to implement similar parking rate schemes/systems (through specialized private parking management service providers) which facilitates hardware, software, signage, and validation system (free time-limited or discounted rates) fitted to individual business needs. If the parking lot has access and control regulations in place, they may vary from a paid parking system or reserved parking for permit holders, customers, tenants, visitors, or a mixture of both.

7.3.2 Option 1: Differential Fee-Structure

Based on the current performance findings, one hour parking stays were identified (both weekdays and weekend) as the average parking duration for approximately 70% of all vehicles in downtown commercial streets. An additional 20% of vehicles were found to stay between 1 to 2 hours, therefore indicating that parking needs for approximately 90% of users appeared to be met within the first two hour of parking.

A progressive rate fee structured based on differential parking duration can be offered within a newly define Paid-Parking Zone. No parking limits are required within the parking zone except for designated loading zones. To the above, longer-term parking (2 hours or more) is discouraged by a progressively steepest rate. On a differential-fee basis, the suggested fee structured is as follows:

Weekdays (Monday to Friday)

- $ 3.00-dollar flat hourly-rate (Peak Season) / $ 2.00-dollar flat hourly-rate (Low Season)

Weekends (Saturday and Sunday incl. Long-weekends)

- Less than 2 hours prorated at applicable hourly rate (peak or low season accordingly)
- Between 2 to 4 hours prorated at $4 or $5 per hour (peak or low season respectively)
- More than 4 hours prorated at $6 dollars per hour.

Ideally, parking meters (or phone app) should allow users to pay in 15-minute increments, which require the above hourly rates be adjusted to be evenly divisible by four.

As discussed, current capacity utilization of Second Ave is lower than that of Cleveland Ave. Generally, occupancy rates on Second Ave for both midweek and weekends are 25% lower than those on Cleveland Ave, thus at least during a pilot program, the above payment scheme on Second Ave could be 25% lower rates recognizing that Cleveland Ave parking supply need higher rates, while less convenient spots on Second Ave, while still attractive, could be less expensive. Alternatively, 25% basic lower rates can be applied on Second Ave while still leaving the 2-hour limit restriction to encourage turnover.

7.3.3 Option 2: Flat Fee-Structure

A more conventional, simple, and practical approach is to use a flat parking rate scheme similar to those used in Canmore, Banff and Penticton which is applied indistinctively within the paid parkin zone, 7 days a week from 8 am to 8 pm.

- $ 3.00-dollar flat hourly-rate (Peak Season)
- $ 2.00-dollar flat hourly-rate (Shoulder Season)
- $ 1.00 dollar (Low Season)

A flat fee structured approach is a much simpler and straightforward approach easier to communicate to customers, and easier for the municipality to manage and administer. Time restriction (2 hours) should still apply since the rate does not discourage long-term parking.

As discussed earlier, the ‘right’ rate for an individual block are such that the 85% occupancy target is generally achieved. That means that rates should be monitored and adjusted based on occupancy, so that if the price is too high, many spaces are vacant, if the price is too low, no spaces are vacant, and if there are a few vacant spaces available everywhere, then the prices are just right. As a general guideline, the following data-driven rate adjustment process is suggested to inform rate adjustment subject to District’s approval:

- Meter rates should be reduced:
  - If the observed peak occupancy for a block is less than 65%

- Meter rates should be increased:
  - If the observed average peak occupancy for the block exceeds 85%, AND
  - Average occupancy reaches or exceeds 85% during 3 or more hours during the day, AND
  - Average occupancy reaches or exceeds 70% during 5 or more hours during the day, AND
  - Annual on-street meter (or mobile app) payment transactions have not decreased since the last meter rate increase.

7.3.4 Recommended Hours of Implementation

Under either option above, an initial pilot program could limit paid parking hours from **10 AM to 3 PM** in response to study findings that revealed near capacity/occupancy levels within this time window. Outside this time window, capacity utilization was generally moderate or low (less than 70%) during both weekdays and weekends.

Alternatively, a more conventional approach similar to the Banff or Canmore examples, could be applied from **8:00 AM to 8:00 PM**. Hours of enforcement may be reduced or extended based on data, with occupancy rates of 70% or higher needed to justify extended enforcement hours.

Both timeframes and rates should be adjusted based on local knowledge, business, and resident feedback. This will need to be determined based on periodic attitudinal surveys using questionnaires and stated preference techniques.

Outside these hours, current parking limits may still apply (i.e. 2-hour) or unrestricted parking as deem appropriate by the District.

7.3.5 Seasonal Variation

Generally, Squamish is mostly visited from early spring (May) to late fall (Oct) with peak activity visitors during summer months (Jun thru Aug)[24]. Based on similar municipal practices reviewed, a graduated seasonal rate scheme would be approximately as follows:

- Peak season (Jun – Aug) – 100% of District's approved rates
- Shoulder season (Mar to May / Sep to Oct) – 75% of District's approved rates
- Winter low season (Nov to Feb) – 50% of District's approved rates or free.

Actual percentages of adjustments will need to be informed, reviewed and adjusted in consultation with the downtown business improvement association (BIA), residents and other stakeholders as appropriate.

The above, does not preclude the District's ability to apply seasonal snow clearing and no parking overnight restrictions along specific streets due to operational and emergency access considerations.

7.3.6 On-Street Parking Time Limits

For downtown commercial streets where paid parking is eventually implemented, once a policy of market rate pricing is adopted with the goal of achieving an 85% occupancy rate on each block, then time limits need not be instituted. With no time limits, much of the worry and "ticket anxiety" for downtown customers disappears.

For other streets in proximity (perimeter) of the downtown core area, best practices recommend that when updating or implementing time limits for the first time, a 2-hour zone should serve well as the default. Hence, the paid-parking scheme in the downtown core should be accompanied with 2-hour zones on the following streets that are convenient for downtown patrons yet not deemed as the most convenient locations:

- Pemberton Ave. between Second Ave and Loggers Lane
- Second Ave. between Main St. and Vancouver St.
- Winnipeg St. between Third Ave and Second Ave.
- Victoria St*. between Third Ave and Second Ave.
- Main St. between Third Ave and Second Ave.

  Vancouver St. between Third Ave and Second Ave.

[24] https://squamish.ca/assets/grid-item-files/aa57c8b370/RTC-Tourism-Impact-Study.pdf

**Note: DOS indicated that most parking on Victoria may be eliminated in 2024 due to active transportation upgrades.*

Additional parking demand data and land use information is recommended to implement alternative time limits other than 2-hour zones (i.e., 15/30-minute or 4-hour zones). No other time limits are recommended to simplify the on-street parking system and provide a clear, consistent message to customers and visitors. At least once every two years, the inventory of 15/30-minute spaces and 4-hour spaces should be updated to determine if conditions supporting their use have changed.

The District indicated a concern about the applicability and extent of 2-hr time limits currently used in light of an unmarked blanket policy of no-overnight parking restrictions across Downtown. As understood, the intent of the 2-hr time limits is to accommodate visitor parking, encourage space turnover during commercial/business hours, while discouraging overnight parking. However, the latter is impacting residential use of the street overnight when commercial demand is not needed. Once a residential permit program is implemented (see section below) the 2-hr time limit zones could be exempted for residents with permit. For streets with unrestricted parking within residential areas, a 'No Parking Between 6 PM to 9 AM – Except by Permit' signs can be installed so that only registered residents with permit can park overnight.

Unrestricted parking areas are still subject to any and all other by-laws which are not typically posted such as no overnight parking, intersection and crosswalk clearances, 12-hour max parking, etc.

7.3.7 Technology and Enforcement

Smart multi-space-meters (MSM) are recommended to be installed for the on-street parking in Squamish Downtown Commercial Area. The first reason is that MMS is proven to be capable of generating more reliable and consistent parking revenues. In comparison, the maintenance fee of MSM tends to be lower as there will be fewer machines in the field. Therefore, MSM can be more economically feasible in the long term, although the price of the MSM machine is higher. Besides, MSM is capable of supporting various in-time and variable rate structures based on the demand-pricing strategy and can help the District realize its strategic parking management goals. Meanwhile, on the user's side, the MSM machine can provide more payment options, including cards, coins, notes, and pay-by-phone, which significantly improves the user-friendly and convenient performance of parking charging. Last but not least, the MSM system makes the District's operation, management and enforcement of parking resources more effortless and more efficient.

Mobile License Plate Recognition (LPR) enforcement is suggested to be accompanied by the introduction of the MSM system. The LPR enforcement can be realized through vehicle-mounted cameras that read and record license plate numbers as an enforcement vehicle is driven through the enforcement area. LPR enforcement has been far more efficient and cost-effective than manual enforcement methods. Besides, the LPR system is more compatible with the smart MSM installation. The LPR software can integrate multi-space meter software, pay-by-cell software, permit software, and other databases such as law enforcement agencies. Mobile LPR can also enforce time-restricted parking, as the software timestamps every image. Another benefit of LPR enforcement is using license plates as residential, business, or monthly permits. This eliminates the need for paper, hang tag or decal permits since the motorist already has the license plate and makes enforcement extremely efficient.

7.3.8 Residential Exempt Zone Program

For a Park-Once-and-Walk District, it is generally recommended to avoid "residential permit holder" zones that exclude public on-street parking as it diminishes the very intent of the PO&W concept which aims to foster and capitalize on shared parking opportunities within mixed-use walking areas. Residents-only parking zones should only be introduced on a case-by-case bases in response to situations where there is a chronic and heavy demand for on-street parking by non-residents.

As discussed in the on-street parking utilization analysis (Section 3.3), the residential area is currently experiencing average utilization rates in weekday and weekend of 45.7% and 50%, respectively, with no significant capacity issues at present. In the future though, it is recognized that parking capacity issues may arise as downtown mixed-use higher density developments plans materialized.

Hence, a Resident Exempt Zone (RE) is recommended to be implemented within a similar geographic boundary as the Downtown Residential Area assumed in this study. A Resident Exempt (RE) zone consists of a geographic area where residents may choose to register their vehicles to an address within the zone are exempt from existing on-street parking restrictions.[25] Non-residents are permitted to park within the RE zone as long as they observe the time restrictions. Resident within the RE zone are eligible to purchase the permit decal but may opt out if so desire, likely because the restrictions (or absence of it) do not impact them. Visitor passes should also be available for purchase.

The Residents Exempt Zone (RE) for the Downtown Residential Area will enable short-term parking of non-local residents with restrictions, particularly on streets closer to the downtown core that may experience increased demand because of the proximity to the paid-parking zone on Cleveland and Second Ave. Meanwhile, giving residents the option to purchase RE permit decal to be exempt of such time restriction. Specifically:

- Residents living in the RE zone are eligible to apply for and display a residential parking permit to be exempted from the posted time restrictions and other regulations subjected to non-permit parking.
- The residents can register and purchase residential parking permits (online or through other means) for their on-street parking demands. The actual permit can be in the format of mailed/printed-out paper and/or decal stickers.
- The District can determine the cost of a Residential Parking Permit. The estimated price of an annual pass could be around $30-40 CAD based on a lower price range from the practices in similar jurisdictions.
- Permit holders can park on-street within a designated area/scope, e.g., within 150 meters but not necessarily on a specific street segment fronting their dwellings.
- Short-term on-street parking of 1, 2 or 3 hours, etc., can be allowed in the daytime (e.g., 9 am - 6 pm) for the temporary parking needs of visitors or customers of local businesses. Parking outside the permitted time, especially at night, is recommended to prohibited excepted for Resident Permit Holders.
- RE privilege can be extended temporarily at the request of permit holders to non-residents and other special needs, including out-of-town visitors, house sitters, home medical care providers, contractors, etc.
- The RE system can be easily enforced by District staff or a specific parking enforcement unit, as permit holders must display a valid area permit (decal) in the designated RE area.
- Residents-only parking zones should only be introduced on a case-by-case bases in response to situations where there is a chronic and heavy demand for on-street parking by non-residents. An application process should be developed for residents based on actual parking occupancy data and warrants per industry standards.

In the future, depending on progress of the paid-parking program in the downtown commercial area and the growing parking pressure due to infill developments, the program should be revisited and adjusted appropriately.

[25] Some municipalities apply limits to residents' exception for a period of up to 72 hours to discourage long term car storage on public space.

7.4 Overview Map of Paid Parking Program

The proposed parking limits within Residential and Paid Parking Zones are illustrated in the figure below.

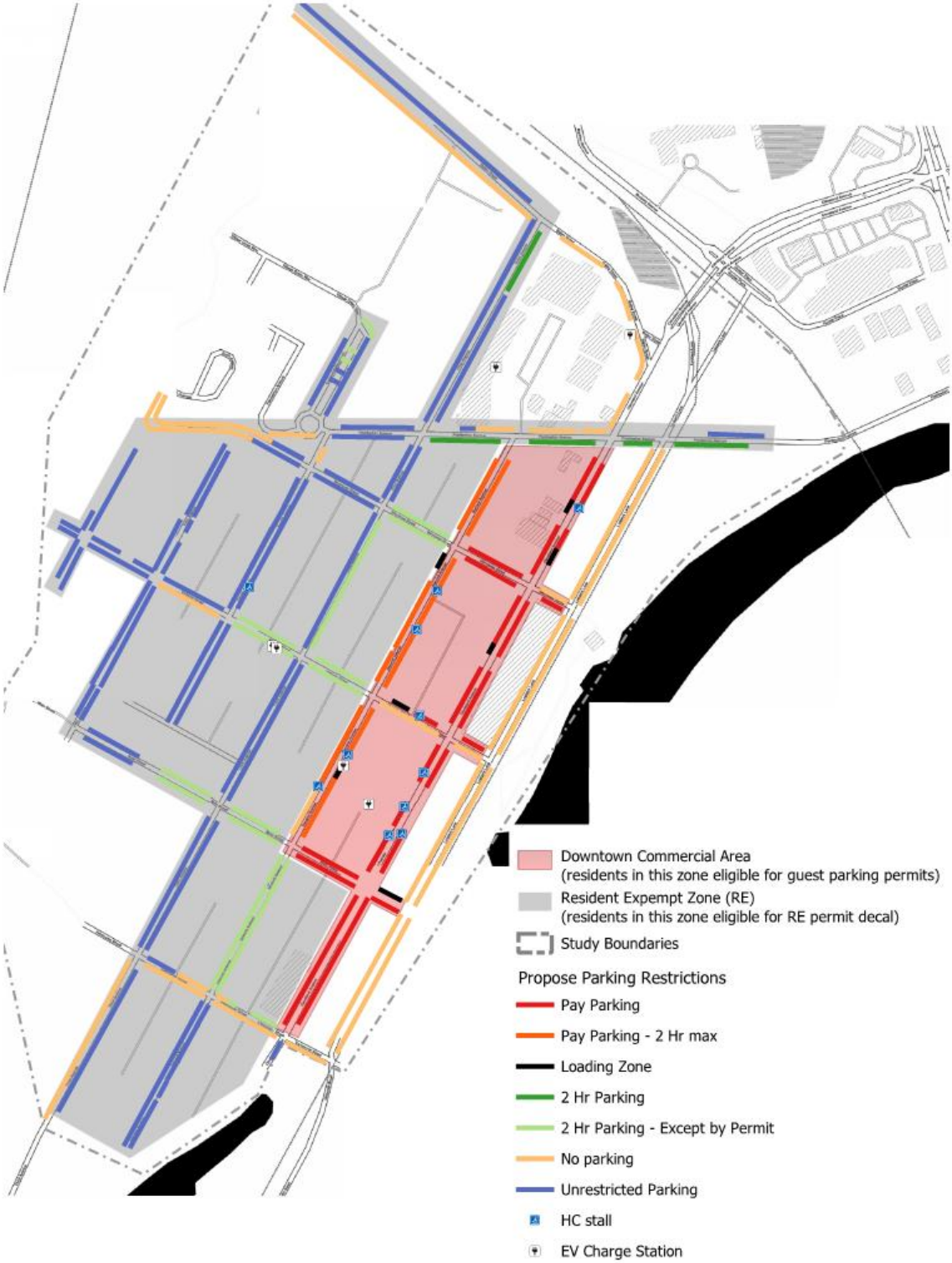


Figure 36.Recommended Paid Parking Management Strategy & Time Limits Map

7.5 Recommended Paid Parking Phased Approach

The following recommendations have been developed in consideration of previous recommendations provided by ISL Engineering in its 2017 Downtown Parking Study, the 2022 Moving Beyond the Car Report (SCARP Group) as well as strategies and actions set out in the CCAP adopted in 2020 and best industry practices.

Squamish has been reviewing options and opportunities for paid parking for several years, as indicated in the 2016-2020 Parking Strategy, the DoS Official Community Plan (Policy 20.12(c)), and the CCAP. Specifically, one action of the CCAP's Big Move 2, to "shift beyond the car," is to "develop and implement a strategy to price parking along parts of the core transit network and provide adequate enforcement in order to incent mode shift" (p. 35). Other studies have also recommended that the DoS implement a paid parking program in Downtown Squamish, with the goal of eventually expanding into other high traffic commercial and recreation areas in Squamish, such as trailheads and Garibaldi Village Shopping Centre.

Charging users for the designated parking space they consume follows what is referred to as the "Users Pay Principle," whereby "users pay in proportion to how much they use the road network" (ibid). When users do not directly pay according to the proportion of their use, the costs associated with providing free parking are then absorbed by the local government and indirectly by taxpayers, which include cyclists, pedestrians and transit users who are not consuming the parking (Shoup, 2005; Ben-Joseph, 2015).

Parking pricing is just one of several strategies to disincentivize the use of private automobile travel in and around downtown Squamish in support of more sustainable transportation modes.

As discussed in the 2022 Moving Beyond the Car Report (SCARP Group), Squamish remains a "car first" community (**Figure 36**) yet all efforts including mobility pricing options, will help the City transitioning towards a recommended "car last" community, starting with the downtown. Efforts to reduce car-dependency must consider this reality to balance the social, environmental, and economic sustainability of the community. Hence, this study also supports the view of an incremental, or phased approach beyond a paid-parking scheme that includes parking permit programs, flex loading zones, harmonization of off-street parking requirements, and supporting bicycle and pedestrian mobility upgrades in the downtown area. The reader should also consult the 2022 Moving Beyond the Car Report (SCARP Group), for additional recommendation.

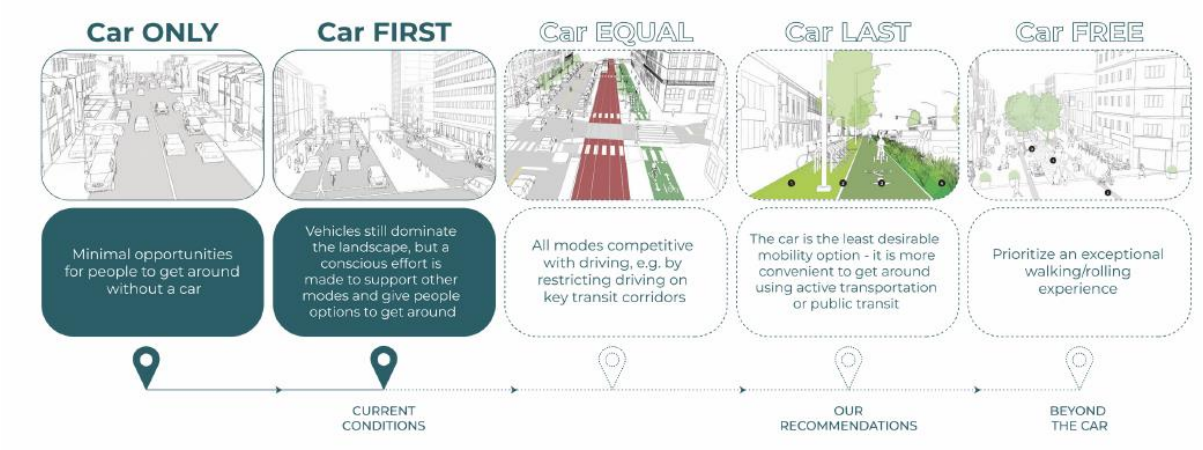


Figure 37.Adapted from 2022 Moving Beyond the Car Report (SCARP Group),

Key recommendations for phased implementation are summarized in **Table 13** below. Recommendations are coded, described, and prioritized based on suggested timeframe for implementation generally in line with associated timelines set out in the CCAP:

- **Short:** *0-2 years to implement.*
- **Medium:** *2-7 years to implement*
- **Long:** *7-10 years to implement*

In addition to the above, some near-term recommendations are suggested for a potential pilot implementation project. The recommendations are intended to articulate specific actions to be followed towards the implementation of the strategies and principles discussed above. In addition, the recommendations have been informed by the analysis conducted, the review of best practices, and applicable District policies.

Table 13.Paid-Parking Phased Implementation Strategy

Rec	Description	Timeframe
01	Allocate resources to increase enforcement of existing parking regulations. Before the DoS can explore other recommendations, a culture of enforcement around parking must be developed. Expanding the capacity of the Bylaw Enforcement will support the DoS in transitioning towards a new regulatory framework for pricing parking.	Short
02	Update District By-Laws and Policies as required to support the recommendations of this Paid Parking Management Strategy.	Short
03	Develop a communications plan that informs residents of each change to the existing paid parking system as they occur and provides information to the public on the added features and operation of paid parking system and any new technology and hardware introduced.	Short
04	Establish Parking Performance Metrics for on-street parking to identify required modifications to time limit restrictions (Section 2.3). As a starting point, typical industry standards include: • Overall on-street occupancy rate: 85% (practical capacity); • Average duration of stay in on-street spaces: 70-120% of time posted limits; • Design turnover rate: 5.0 vehicles (10-hr day)[26] • Overtime/meter violation rate: 5-7%; • Overtime/meter capture rate: 20-25%; • Check for duplicate offenders (between warning tickets and tickets)	Short
05	Transition downtown commercial area on-street parking spaces to paid parking along Cleveland Ave and Second Ave.	Short
06	Develop Residents Parking Zone (RE) Exempt permit program for eligible residents of either zone Commercial or Residential	Short
07	Implement (or maintained if existing) 2-hour zones on: - Pemberton Ave. between Second Ave and Loggers Lane - Second Ave. between Main St. and Vancouver St. - Cleveland Ave. between Main St. and Vancouver St. - Winnipeg St. between Third Ave and Second Ave. - Main St. between Third Ave and Second Ave. - Vancouver St. between Third Ave and Second Ave.	Short
08	Initial implementation period for paid parking from 10 AM to 3 PM for both weekend and midweek applying seasonal base rate variations (section 7.3.5)	Short
09	Paid on-street parking will, by design, shift parking demands within the downtown area. Parking demands are likely to increase in surrounding residential areas with unregulated on-street parking. Prior to implementing on-street paid parking, notice should be given to all residents and businesses within 400 m of proposed metered blocks.	Short

[26] Industry recommended for a healthy and attractive street-level environment.

10	Procure and incorporate approximately 27 pay stations (multi-space meter hardware) to manage parking on recommended streets. Multi-space metres are one of the most effective hardware options currently in the industry.	Short
11	Consider early adoption of smart meters which allow use of both coins and credit cards and can provide real-time information to the end-user and system manager (occupancy data).	Short
12	Conduct an engagement process to determine the appropriate parameters for a parklette program and develop the necessary policy and tools to implement such a program.	Completed
13	Develop a public engagement strategy the recommendations parking Strategy for further public discussion. This strategy should include a plan for how the input received will be incorporated into the resulting recommendations and decisions.	Short
14	Bring forward a recommendation to council on how to manage Residential Parking Permits (RPP) within the Downtown based on Section 6.3.7 of this study.	Short
15	Conduct a public engagement process to gather feedback on the proposed paid-parking strategy and residential permit (RPP) program and incorporate feedback into the plan.	Short
16	Maintain existing parking space arrangements with local business for use of parking spaces as parklets/patios in front of their business regardless of changes to the paid parking system along Cleveland Ave and Second Ave.	Short
17	Maintain existing parking arrangements with on-street food-truck vendors in the short term while reviewing mid-term compatibility with BIA interest and overall paid parking program.	Short / Medium
18	Develop a process for residents and local business to propose changes to on-street parking regulations, usually it involves a) filling an on-line application, b) staff review, and if warranted recommend bylaw update to Council, c) bylaw update and change implemented. Medium	Short/Medium
19	Establish effective and adequate enforcement to ensure the efficacy of parking regulations. As a starting point, basic enforcement goals should include. Overtime capture rate: 20-25%	Short/Medium
20	Develop guidelines/policy for Revenue Allocation. The majority, if not all, revenue collected from the parking program should be reinvested within the downtown (commercial and residential). This is critical for the success of the of program as residents and business owners can directly see the benefits. Possible uses of parking net revenues back into the community include street cleaning, beatification, wayfinding, improvement of parks and schools, reduction of property taxes or business licensing, marketing and communication.	Short/Medium
21	Facilitate a path for private parking owners to share their parking facilities with the public (See section 5.1)	Short/Medium
22	Encourage and facilitate the use of rent-my-parking-space type app-base businesses where private parking owners (i.e., Churches, business, residents, etc.) rent out (short or long-term) their parking spaces to the public.	
23	Develop a policy of setting the price of the annual residential parking permit based on a revenue neutral price target based on recouping the cost to the District of administering and enforcing the program.	Medium
24	Adopt a policy of setting time and location specific rates for parking meters and permits based on demand.	Medium
25	Adopt a policy of implementing duration-based pricing found to be appropriate (as suggested in Section 6.3.2) as a tool to manage turnover and demand while providing flexibility to users.	Medium
26	Procure a pay-by-phone parking application to supplement/integrate with on-the-ground system and so to expand accessibility and convenience	Medium

27	Examine the viability of establishing a Parking Benefit Area (PBA) to manage pay-parking scheme within the area in coordination with the Downtown BIA and other stakeholders.	Medium
28	Delegate the authority to staff to make minor changes to the residential parking permits (RPP) available, such as: application process, definitions of intended permit use, and eligibility criteria to align with and support the intent of the RPP program.	Medium
29	Engage with the BIA and business/institutions along Cleveland and Second Ave to determine the parking needs of their employees and customers and develop parking permit rates that are appropriate for these needs. This should include consideration for permits that vary in cost based on employment type.	Medium
30	In consultation with the BIA, consider the feasibility/appropriateness of Hourly Wage Employee Parking Monthly Permit program for eligible low income employees to offer low cost parking within the paid parking zone.	Medium
31	Consider implementation of Home Care Service Parking Permit program (i.e. Hamilton ON). for residents who are confined to their home and require essential services. These permits allow health care service workers to park their vehicle in a permit parking zone for up to two hours.	Medium
32	Consider Accessible On-Street Permit Parking program for eligible applicants with one "No Parking Except by Permit" parking space near their home and issues a permit to the applicant. (i.e., Hamilton ON)	Medium
33	To ensure consistency, establish performance-based metrics (and data collection program) for future rate adjustment process: • Hourly occupancy by block, collected over at least one weekday and weekend during hours when meters are enforced. • Average duration of stay by block and posted time limit, collected over at least one weekday and weekend during hours when meters are enforced. • Violation rates, calculated based on observed duration of stay data and posted time limits. • Annual on-street meter and SmartPark (app if and when available) pay station transactions as a check to review the total number and redistribution of transactions between public parking areas within the meter district. • Citation (ticket) rates as a check to confirm levels of enforcement. Best practices recommend data collection once every 12 months using consistent processes to allow for year-to-year comparisons.	Medium
34	Review the Paid Parking Management Strategy every five years to ensure the content and recommendations remain relevant and continue to align with District's vision.	Medium/Long
35	Adopt a policy of allowing price, stay duration, and other incentives within the paid parking system to encourage desired parking behaviour (such as cashless payment or frequent turnover). Examples include first 30min free parking with cashless payment". Incentives could be offered periodically or during an introductory period to encourage transition to the pay-by-phone app.	Medium/Long
36	Consider adoption/promotion of mobile technologies for payment option, wayfinding and supply and demand matching smartphone application.	Medium/Long
37	Review standard metered parking pricing and recommend to Council adjustments of up to $0.25 per hour (increase or decrease) up to once per calendar year.	Medium/Long
38	Review effectiveness of the Residential Permit Program and consider implementation of Commuter and Business Employee categories. Once paid parking is implemented, regular commuters and local business employees may choose being exempted from regular paid-parking when buying a seasonal pass/sticker from the District.	Medium/Long
39	Coordinate the installation of new meter hardware with any roadway improvement projects that may arise from time to time.	Medium/Long

40	Delegated authority to staff to introduce paid parking in areas of high parking demand that would benefit from managed parking.	Medium/Long
41	Improve district walkability by all-year sidewalk maintenance, completing missing sidewalks gaps, improved pedestrian crossing treatments along pedestrian desire lines and intersections, pedestrian-only streets or blocks when feasible and practical.	Medium/Long
42	Lead by example - Make on-site parking at City Hall, other local government offices, and other city-owned facilities (such as swimming pools, libraries, parks and so on) open to the general public to the extent possible.	Medium/Long
43	Establish a cashless system as an end goal for paid parking in the District and ensure the transition to a cashless system be planned and managed carefully in recognition of social equity issues (i.e.. segments of population who do not have access to credit cards or digital wallets). On the other hand, cashless payment options eliminate the risk of theft and provide added security benefits and efficiencies providing increased system auditing ability and eliminate cash handling costs.	Long
44	Eliminate minimum parking requirements and build fewer parking spaces for individual demand generators (i.e. offices, stores, multi-family building, hotels, etc.). At a minimum, relax parking minimums and add flexibility in ways that promote Walkable Parking (i.e. TDM options in lieu of parking like in Vancouver, No parking min. for social/affordable housing, developer pay in-lieu parking schemes)	Long
45	Review district's off-site parking standards to make parking design more compatible with walking urbanism (i.e., prevent parking in frontages or between buildings and sidewalks, discourage surface parking lots at street level, encourage ped connectivity across parking areas, no direct driveway access (curb cuts), encourage private-public parking by default)	Long
46	Install new meters with the cash payment option disabled, in carefully targeted areas, as part of a phased trial of a cashless replacement program for new parking meter hardware.	Long

7.6 Paid Parking Revenue Model

A parking cost & revenue assessment was conducted for the parking pricing area in Squamish – Downtown Commercial Area. The aim of this section was to provide a preliminary parking revenue and cost estimation model for on-street parking pricing. In addition, a high-level forecasting of on-street parking cost and revenue for a 5-year period (2024-2028) is provided. It is noted that the estimations hereof have been based on a number of assumptions and generalized industry parameters, which can be further refined as more project-specific information and insights from the District become available. As such, the results are intended only as a high-level estimation to assist the District.

From both the transport operation and economic perspectives, car parking should provide an appropriate capital return for the owner and be fully paid for by parking users. It should be noted that parking management and pricing programs can generate revenue but also require capital, operating and maintenance costs. Therefore, parking revenue models should be developed as an important part of the parking management system to determine the relevant cost, pricing and revenue when a parking pricing program is implemented. A well-designed model can also help the owner better understand the anticipated parking revenue/cost in the future and decide and adjust the pricing scopes, schemes and rate structures, etc., accordingly. Based on a review of the best practices for the design of parking cost and revenue models in North American cities, a downtown Squamish on-street parking cost and revenue model is developed, and appropriate estimations are conducted to predict the cost and revenue after the parking pricing program is implemented in the next five years.

7.6.1 On-Street Parking Pricing Cost Estimation

When estimating the cost of the on-street parking pricing program, key considerations should include the initial capital costs and ongoing costs over the years.

Capital Cost. The capital costs mainly contain the parking space land cost, the parking meter machine construction cost, and the LPR vehicle and equipment cost. The estimated total capital cost of the Downtown Commercial Area on-street parking program is $384,000, including the machine construction cost of $270,000 and the LPR vehicle and equipment cost of $114,000. It should be noted that the land cost is zero as the District already owns the land for on-street parking stalls. Besides, the total capital cost can be further transferred to an annualized cost considering an assumed 5-year payment and implementation period and a 3% interest rate. The calculated annualized capital cost is $83,848. The details and rationales of the capital cost estimation can be found in the following table.

Table 14.Details and Rationales of Downtown Squamish Commercial Area On-Street Parking Charging Capital Cost

Items	Estimated Cost	Rationale
Parking Space Land Cost	$0	The District already owns the land and the relevant land cost should be zero.
Parking Machine Construction Cost	$270,000	Assuming the multi-space-metres (MSM) is applied. It is appropriate to install one MSM machine for each block face in general, while some longer blocks may need two MSM machines on either side of the block. It is estimated that approximately 27 MSM machines need to be installed within the downtown commercial area. The typical cost of an MSM machine, including purchasing, construction, signages, software/hardware, and warranties, is around $10,000[29]. The total cost of the machines is estimated at $270,000.
LPR Vehicle and Equipment Cost	$114,000	Mobile License Plate Recognition (LPR) utilizes vehicle-mounted cameras that read and record license plate numbers as an enforcement vehicle is driven through Downtown Squamish. Based on the recommendation of USDT[30], the price of a new LPR system is at least $50,000 USD ($64,000 CAD). The price of a new vehicle conducting LPR enforcement is assumed at $50,000 for a standard sedan or SUV.
Total Capital Cost	**$384,000**	The sum of parking space land cost, parking machine construction cost, and LPR vehicle and equipment cost
Annualized Capital Cost	**$83,848**	The estimated total capital cost is $384,000. Assume a 5-year payment and service period and a 3% interest rate.

Continuous Annual Cost. The ongoing annual costs include the operation & maintenance costs of MSM machines and on-street parking stalls, as well as the cost of LPR enforcement (gas cost and labour cost). The estimated operation, maintenance and enforcement cost of the downtown Squamish on-street parking program is $125,290 (including $39,150 for MSM machine operation & maintenance, and $86,140 for LPR enforcement). It should be noted that the District taxes for the relevant parking space operation & maintenance cost, so this cost is zero here. The details and rationales of the continuous annual cost estimation can be found in the following table.

Table 15. Details and Rationales of Downtown Squamish Commercial Area On-Street Parking Charging Operation, Maintenance and Enforcement Cost

Items	Estimated Cost	Rationale
MSM Machine Operation & Maintenance	$39,150	$1,450 per MSM machine per year[29]. 27 MSM machines in total.
Parking Spaces Operation & Maintenance	$0	This cost should include repairs, maintenance, cleaning, insurance, administration, etc. It should be noted that the District taxes for these under road programs or through public works. Therefore, this cost is not included here.

[29] Source: On-Street Parking Management Study, City of Lethbridge, Alberta, 2015.
[30] The cost to implement a mobile License Plate Recognition (LPR) system on an existing enforcement vehicle can range from $50,000 to $65,000. | ITS Deployment Evaluation (dot.gov)

Items	Estimated Cost	Rationale
LPR Enforcement Cost (Gas Cost and Labour Cost)	$86,140	Assuming an LPR vehicle will circulate around all the on-street parking stalls 5 hrs a day, with an average speed of 30 km/h, then the total daily mileage is 150 km. For 365 charging days, the mileage is about 54,750 km; considering a gas price is 200 cents/litre and the vehicle fuel efficiency is 12, the gasoline fee is about $13,140. Assuming two people are required in the enforcement vehicle, and are paid with an average wage of $20/hr and 5 working hours per day, a daily salary of $200 is expected to be paid to these two enforcement personnels; and for 365 days, the salary is at $73,000. It should be noted that this cost is only a rough estimation and could be lower than the real cost. It is recommended that the District talks to Bylaw Enforcement to determine the new FTE count needed to undertake enforcement and monitor the relevant cost of the new vehicle and LPR technology.
Summed Annualized Operation, Maintenance and Enforcement Cost	**$125,290**	The sum of operation & maintenance cost and LPR enforcement cost

Annualized Total Cost. If taking both the transferred annualized capital cost and continuous annual cost into consideration, the annualized total cost can be estimated for the year 2024-2028. It should be noted that the operation, maintenance, and enforcement cost are expected to be increasing annually with the inflation, which is assumed to be approximately 3%.

Table 16.Details of Downtown Squamish Commercial Area On-Street Parking Charging Total Annual Cost (Five Year, 2024-2028)

Items	Current Estimated Cost	2024	2025	2026	2027	2028
MSM Operation & Maintenance	$39,150	$40,325	$41,534	$42,780	$44,064	$45,386
LPR Enforcement Cost	$86,140	$88,724	$91,386	$94,128	$96,951	$99,860
Annualized Sum Operation, Maintenance and Enforcement Cost	**$125,290**	**$129,049**	**$132,920**	**$136,908**	**$141,015**	**$145,245**
Annualized Capital Cost		**$83,848**	**$83,848**	**$83,848**	**$83,848**	**$83,848**
Annualized Total Cost (Annualized Operation, Maintenance, Enforcement Cost plus Annualized Capital Cost)		**$212,897**	**$216,768**	**$220,756**	**$224,863**	**$229,094**

7.6.2 On-Street Parking Pricing Revenue Estimation

The major gross revenue source of the on-street parking pricing program is the parking fee. The assumed Squamish Downtown Commercial Area pricing structure is aligned with the above-suggested rate, which assumes $3.00 per hour in peak months with a seasonal variation of 75% in shoulder months and 50% in low months. The assumed pricing implementation duration is 5 hours per day (10 AM to 3 PM). In addition, the basic parking rates are expected to be increased by 25 cents per hour annually with the inflation.

Gross Revenue. The total gross revenue of the on-street parking pricing is calculated based on the above assumptions and the on-street parking utilization conditions, i.e., the number of parking stalls, parking stall utilization rates, parking durations, etc. The estimated total gross revenue from 2024-2028 can be seen in the following table.

Table 17.Downtown Squamish Commercial Area On-Street Parking Charging Gross Revenue Estimation (Five Year, 2024-2028)

Calendar Year	2024	2025	2026	2027	2028
Mid-Week Revenue	**2024 Mid-Week Revenue**	**2025 Mid-Week Revenue**	**2026 Mid-Week Revenue**	**2027 Mid-Week Revenue**	**2028 Mid-Week Revenue**
Number of Charged Parking Stalls	286	286	286	286	286
Annual Mid-Week Days	250	249	249	249	250
Total Annual Mid-Week Chargeable Hours	1250	1245	1245	1245	1250
Average Mid-Week Utilization Rate	66.8%	66.8%	66.8%	66.8%	66.8%
Average Mid-Week Parking Duration	1.85	1.85	1.85	1.85	1.85
Average Mid-Week Charging per Completed Parking	$6.0	$6.5	$7.0	$7.5	$8.0
Estimated Mid-Week Revenue	**$564,753**	**$609,369**	**$656,243**	**$703,118**	**$753,005**
Weekend Revenue	**2024 Weekend Revenue**	**2025 Weekend Revenue**	**2026 Weekend Revenue**	**2027 Weekend Revenue**	**2028 Weekend Revenue**
Number of Charged Parking Stalls	286	286	286	286	286
Annual Weekend Days	116	116	116	116	116
Total Annual Weekend Chargeable Hours	580	580	580	580	580
Average Weekend Utilization Rate	76.0%	76.0%	76.0%	76.0%	76.0%
Average Weekend Parking Duration	1.59	1.59	1.59	1.59	1.59
Average Weekend Charging per Completed Parking	$5.3	$5.8	$6.3	$6.8	$7.3
Estimated Weekend Revenue	**$303,526**	**$332,434**	**$361,341**	**$390,248**	**$419,156**
Gross Annual Revenue	**$868,280**	**$941,803**	**$1,017,584**	**$1,093,366**	**$1,172,160**

Note 1. Seasonal adjustment factors are included in the revenue estimation, specifically peak season (Jun – Aug) – 100% of the District's approved rates; shoulder season (Mar to May / Sep to Oct) – 75% of the District's approved rates; winter low season (Nov to Feb) – 50% of District's approved rates. 2. The parking rate is expected to be increasing by 25 cents annually with the inflation. 3. Parking charging is expected to be in effect 5 hours a day from 10 am to 3 pm.

Net Revenue. The net revenue can be obtained when the annual total cost is subtracted from the gross annual revenue, as shown in the following table. It can be found that the proposed parking pricing schedule in Squamish Downtown Commercial Area can be profitable, with the capacity to recover the initial capital cost and the annual cost during the five years from 2024 to 2028. The net revenue generated from parking pricing will rise gradually with the annual increase of basic parking rates of 25 cents. In sum, from a financial perspective, this revenue model proves the paid parking program in Squamish could be a realistic approach and will result in annual revenue to the District. It should also be noted that this is a high-level revenue estimation which can be further adjusted and calibrated as the implementation of the paid-parking project in Squamish.

Table 18.Downtown Squamish Commercial Area On-Street Parking Charging Net Revenue Estimation (Five Year, 2024-2028)

Calendar Year	2024	2025	2026	2027	2028
Gross Annual Revenue	$868,280	$941,803	$1,017,584	$1,093,366	$1,172,160
Total Annual Cost	$212,897	$216,768	$220,756	$224,863	$229,094
Net Annual Avenue	$655,383	$725,034	$796,829	$868,503	$943,067

Note 1. The total annual cost is the sum of the annual operation, maintenance, and enforcement cost plus the initial capital cost of MSM machine purchase and installation, as well as the LPR equipment and vehicle purchase.

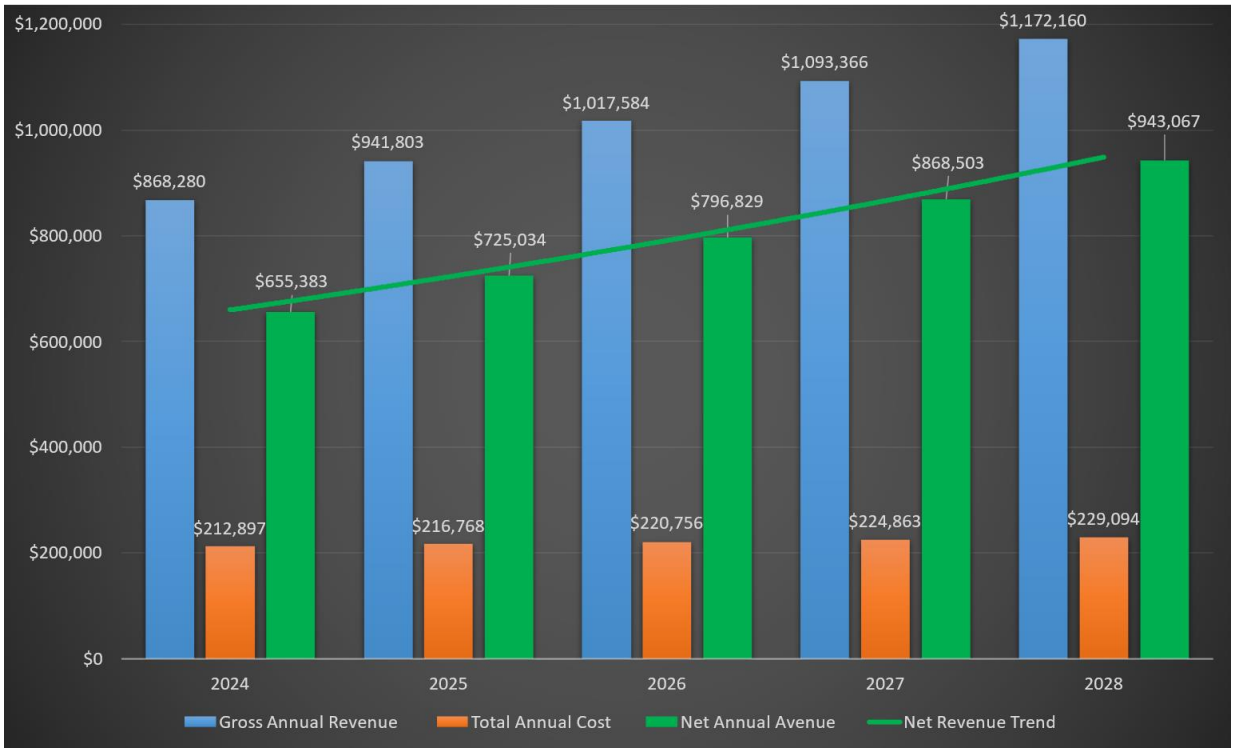
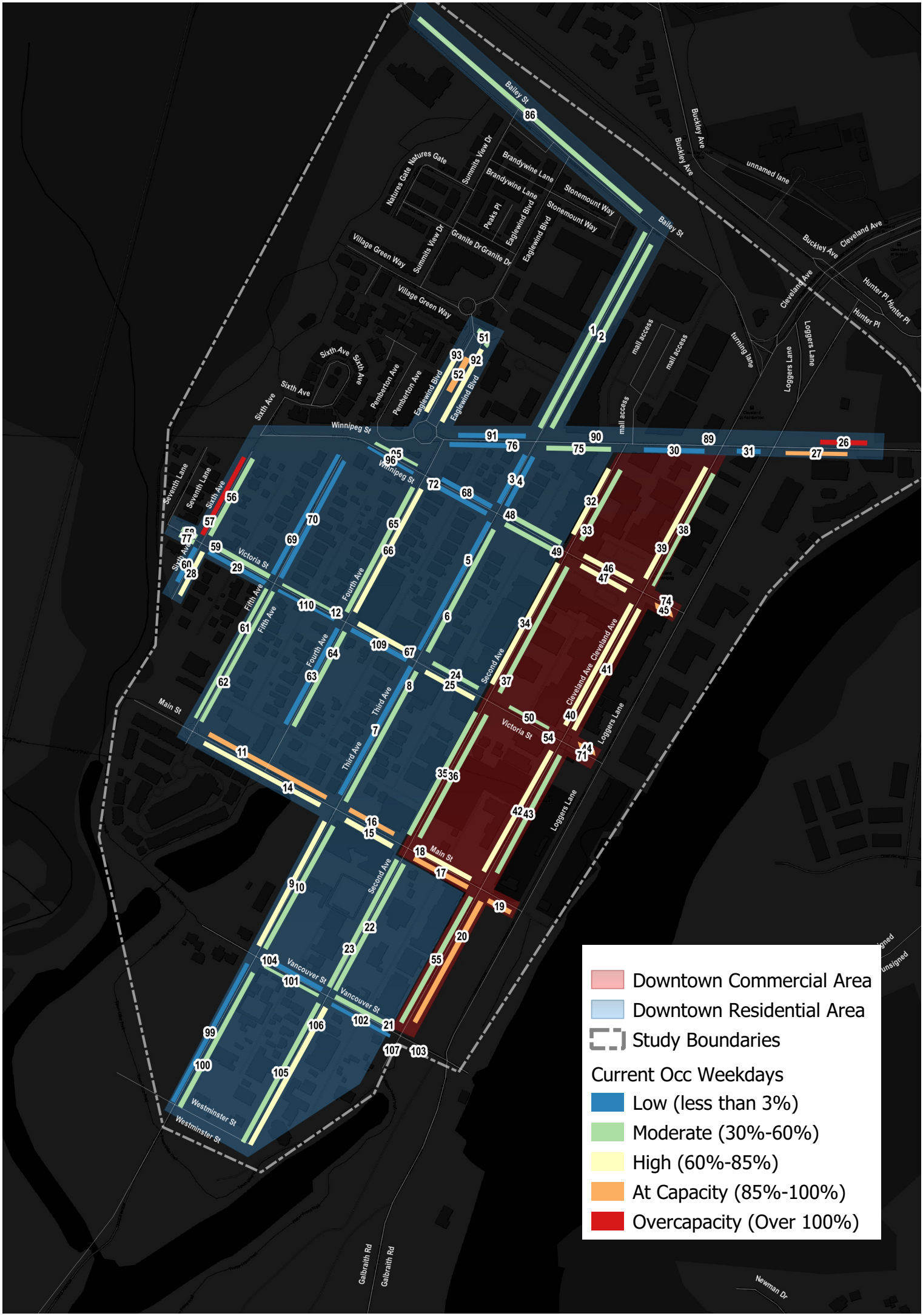
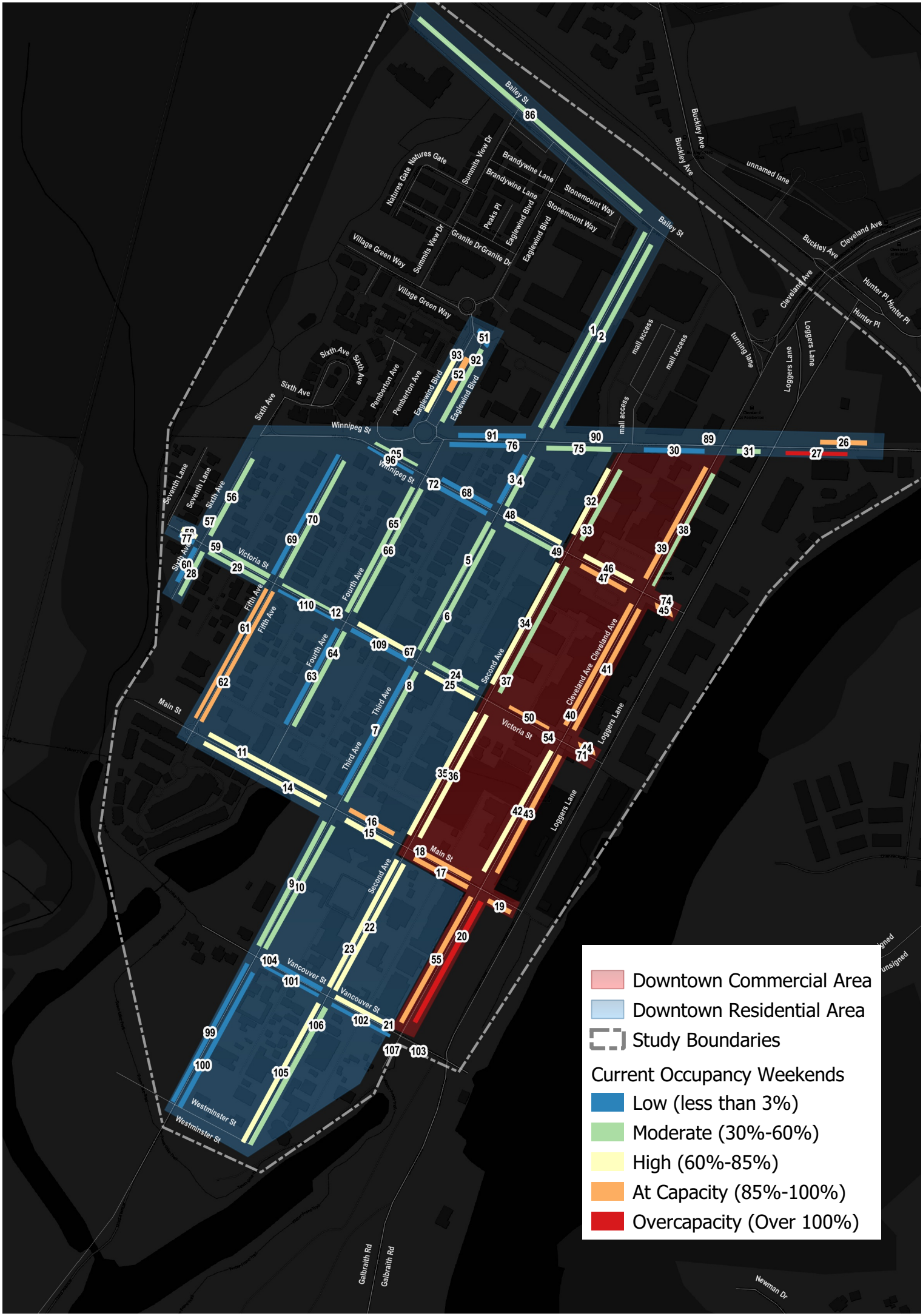


Figure 38.Net Revenue Estimation of Squamish Downtown Commercial Area Parking Charging for the Years 2024-2028

Appendix A : Maps of Parking Stall Utilization by Block-face Typical Weekday and Weekend

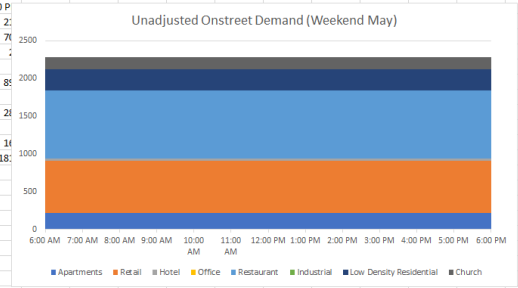

Downtown Commercial Area
Downtown Residential Area
Study Boundaries
Current Occ Weekdays
Low (less than 3%)
Moderate (30%-60%)
High (60%-85%)
At Capacity (85%-100%)
Overcapacity (Over 100%)
Bailey St
Buckley Ave
unnamed lane
Cleveland Ave
Hunter Pl
Loggers Lane
mall access
turning lane
Natures Gate
Summits View Dr
Brandywine Lane
Stonemount Way
Peaks Pl
Englewind Blvd
Granite Dr
Village Green Way
Sixth Ave
Pemberton Ave
Winnipeg St
Seventh Lane
Victoria St
Fifth Ave
Fourth Ave
Third Ave
Second Ave
Main St
Vancouver St
Westminster St
Galbraith Rd
Newman Dr


Downtown Commercial Area
Downtown Residential Area
Study Boundaries
Current Occupancy Weekends
Low (less than 3%)
Moderate (30%-60%)
High (60%-85%)
At Capacity (85%-100%)
Overcapacity (Over 100%)
Bailey St
Buckley Ave
unnamed lane
Cleveland Ave
Hunter Pl
Loggers Lane
turning lane
mall access
Natures Gate
Summits View Dr
Brandywine Lane
Stonemount Way
Peaks Pl
Englewind Blvd
Granite Dr
Village Green Way
Sixth Ave
Pemberton Ave
Winnipeg St
Seventh Lane
Victoria St
Fifth Ave
Fourth Ave
Third Ave
Second Ave
Main St
Vancouver St
Westminster St
Galbraith Rd
Newman Dr

Appendix B: Current Baseline Parking Model

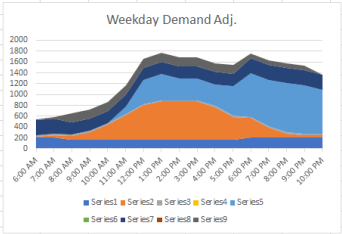
ADAPTED PARKING MODEL (WEEKEND IN MAY)

land Use	unit	ULI Week	Est. On-Street Parkin	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 P
Apartments	Dwelling Unit	1.2	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	2
Retail	per 1000 sqf	3.2	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	7
Hotel	per room	1.08	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	2
Office	per 1000 sqf	0.38	-372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Restaurant	per 1000 sqf	10.5	896	896	896	896	896	896	896	896	896	896	896	896	896	896	896	896	896	8
Industrial	per 1000 sqf	0.38	-101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Low Density Residential	Dwelling Unit	1.83	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281	2
Vacant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Church	per 1000 sqf	8.37	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	1
			1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	18



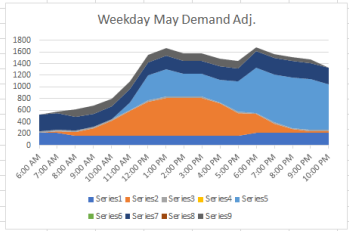
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Apartments	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retail	71%	85%	91%	90%	92%	100%	98%	92%	93%	93%	81%	67%
Hotel	90%	100%	100%	100%	90%	90%	100%	100%	100%	75%	75%	50%
Office	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	80%
Restaurant	85%	86%	95%	92%	96%	95%	98%	99%	91%	96%	93%	95%
Industrial	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Low Density Residential	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Vacant												
Church	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%

ULI/ZONING BYLAW TIME OF THE DAY FACTORS FOR WEEKENDS	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	100%	100%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	100%	100%	100%	100%	100%
Retail	1%	5%	10%	20%	40%	65%	90%	100%	100%	100%	85%	60%	50%	25%	10%	5%	5%
Hotel	95%	95%	90%	80%	70%	70%	65%	65%	70%	70%	75%	80%	85%	85%	90%	95%	95%
Office	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Restaurant	0%	0%	0%	0%	0%	15%	50%	55%	45%	45%	45%	60%	90%	95%	100%	100%	90%
Industrial	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Low Density Residential	100%	100%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	100%	100%	100%	100%	100%
Vacant																	
Church	5%	20%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	50%	50%	50%	5%



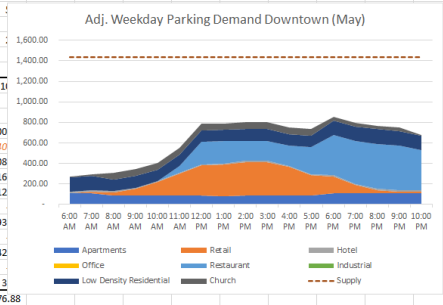
	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	214	214	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	214	214	214	214	214
Retail	7	35	70	140	280	455	630	700	700	700	595	420	350	175	70	35	35
Hotel	26.6	26.6	25.2	22.4	19.6	19.6	18.2	18.2	19.6	19.6	21	22.4	23.8	23.8	25.2	26.6	26.6
Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Restaurant	0	0	0	0	0	134.4	448	492.8	403.2	403.2	403.2	537.6	806.4	851.2	896	896	806.4
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Density Residential	281	281	224.8	224.8	224.8	224.8	224.8	224.8	224.8	224.8	224.8	224.8	281	281	281	281	281
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	8.2	32.8	164	164	164	164	164	164	164	164	164	164	82	82	82	82	8.2

MAY	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	Observed 1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	
Apartments	214	214	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	214	214	214	214	214	
Retail	6.44	32.2	64.4	128.8	257.6	418.6	579.6	644	644	644	547.4	386.4	322	161	64.4	32.2	32.2	
Hotel	23.94	23.94	22.68	20.16	17.64	17.64	16.38	16.38	17.64	17.64	18.9	20.16	21.42	21.42	22.68	23.94	23.94	
Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Restaurant	0	0	0	0	0	129.024	430.08	473.088	387.072	387.072	387.072	516.096	774.144	817.152	860.16	860.16	774.144	
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Low Density Residential	281	281	224.8	224.8	224.8	224.8	224.8	224.8	224.8	224.8	224.8	224.8	281	281	281	281	281	
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Church	6.56	26.24	131.2	131.2	131.2	131.2	131.2	131.2	131.2	131.2	131.2	131.2	65.6	65.6	65.6	65.6	6.56	
	531.94	577.38	614.28	676.16	802.44	1092.464	1553.26	1660.668	1575.912	1575.912	1480.572	1449.856	1678.164	1560.172	1507.84	1476.9	1331.844	21145.76
	32%	35%	37%	41%	48%	66%	94%	100%	95%	95%	89%	87%	101%	94%	91%	89%	80%	
							Observed	844										
							Adj factor	0.508229219										



MAY	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	40%	37%	28%	25%	21%	16%	11%	10%	11%	11%	12%	12%	13%	14%	14%	14%	16%
Retail	1%	6%	10%	19%	32%	38%	37%	39%	41%	41%	37%	27%	19%	10%	4%	2%	2%
Hotel	5%	4%	4%	3%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Office	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Restaurant	0%	0%	0%	0%	0%	12%	28%	28%	25%	25%	26%	36%	46%	52%	57%	58%	
Industrial	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Low Density Residential	53%	49%	37%	33%	28%	21%	14%	14%	14%	14%	15%	16%	17%	18%	19%	19%	
Vacant	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Church	1%	5%	21%	19%	16%	12%	8%	8%	8%	8%	9%	9%	4%	4%	4%	4%	
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1

MAY	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00
Supply	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440
Apartments	108.76	108.76	87.01	87.01	87.01	87.01	87.01	81.38	87.01	87.01	87.01	87.01	108.76	108.76	108.76	108.76	108
Retail	3.27	16.36	32.73	65.46	130.92	212.74	294.57	306.13	327.30	327.30	278.20	196.38	163.65	81.82	32.73	16.36	16
Hotel	12.17	12.17	11.53	10.25	8.97	8.97	8.32	7.79	8.97	8.97	9.61	10.25	10.89	10.89	11.53	12.17	12
Office	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Restaurant	-	-	-	-	-	65.57	218.58	224.89	196.72	196.72	196.72	262.30	393.44	415.30	437.16	437.16	393
Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Low Density Residential	142.81	142.81	114.25	114.25	114.25	114.25	114.25	106.86	114.25	114.25	114.25	114.25	142.81	142.81	142.81	142.81	142
Vacant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Church	3.33	13.34	66.68	66.68	66.68	66.68	66.68	62.37	66.68	66.68	66.68	66.68	33.34	33.34	33.34	33.34	3
	270.35	293.44	312.20	343.64	407.82	555.22	789.41	844.00	800.92	800.92	752.47	736.86	852.89	792.92	766.33	750.60	676.88
								100%									



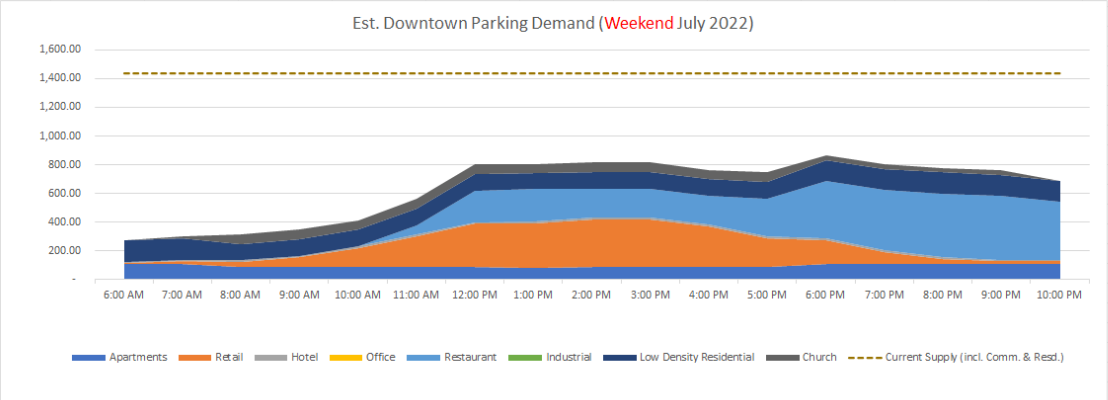
ADAPTED PARKING MODEL (WEEKEND IN JULY)

MAY	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Supply	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*
Apartments	108.76	108.76	87.01	87.01	87.01	87.01	87.01	81.38	87.01	87.01	87.01	87.01	108.76	108.76	108.76	108.76	108.76
Retail	3.27	16.36	32.73	65.46	130.92	212.74	294.57	306.13	327.30	327.30	278.20	196.38	163.65	81.82	32.73	16.36	16.36
Hotel	12.17	12.17	11.53	10.25	8.97	8.97	8.32	7.79	8.97	8.97	9.61	10.25	10.89	10.89	11.53	12.17	12.17
Office	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Restaurant	-	-	-	-	-	65.57	218.58	224.89	196.72	196.72	196.72	262.30	393.44	415.30	437.16	437.16	393.44
Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Density Residential	142.81	142.81	114.25	114.25	114.25	114.25	114.25	106.86	114.25	114.25	114.25	114.25	142.81	142.81	142.81	142.81	142.81
Vacant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Church	3.33	13.34	66.68	66.68	66.68	66.68	66.68	62.37	66.68	66.68	66.68	66.68	33.34	33.34	33.34	33.34	3.33
	270.35	293.44	312.20	343.64	407.82	555.22	789.41	789.41	800.92	800.92	752.47	736.86	852.89	792.92	766.33	750.60	676.88

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Apartments	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retail	71%	85%	91%	90%	92%	100%	98%	92%	93%	93%	81%	67%
Hotel	90%	100%	100%	100%	90%	90%	100%	100%	100%	75%	75%	50%
Office	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	80%
Restaurant	85%	86%	95%	92%	96%	95%	98%	99%	91%	96%	93%	95%
Industrial	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Low Density Residential	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Vacant												
Church	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	706%	731%	746%	742%	738%	745%	751%	746%	744%	724%	709%	652%
	96%	99%	101%	101%	100%	101%	102%	101%	101%	98%	96%	88%

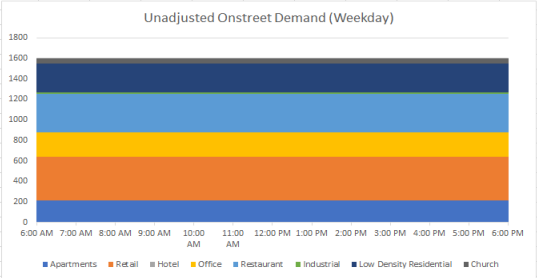
Adj Monthly %

JULY	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Current Supply (incl. Comm. & Resd.)	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*	*1,440.00*
Apartments	110.68	110.68	88.54	88.54	88.54	88.54	88.54	82.81	88.54	88.54	88.54	88.54	110.68	110.68	110.68	110.68	110.68
Retail	3.33	16.65	33.31	66.61	133.23	216.49	299.76	311.52	333.07	333.07	283.11	199.84	166.53	83.27	33.31	16.65	16.65
Hotel	12.38	12.38	11.73	10.43	9.12	9.12	8.47	7.92	9.12	9.12	9.77	10.43	11.08	11.08	11.73	12.38	12.38
Office	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Restaurant	-	-	-	-	-	66.73	222.43	228.85	200.19	200.19	200.19	266.92	400.37	422.62	444.86	444.86	400.37
Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Density Residential	145.33	145.33	116.26	116.26	116.26	116.26	116.26	108.74	116.26	116.26	116.26	116.26	145.33	145.33	145.33	145.33	145.33
Vacant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Church	3.39	13.57	67.85	67.85	67.85	67.85	67.85	63.47	67.85	67.85	67.85	67.85	33.93	33.93	33.93	33.93	3.39
	275.11	298.61	317.69	349.70	415.01	565.00	803.32	803.32	815.03	815.03	765.72	749.84	867.92	806.89	779.83	763.83	688.81



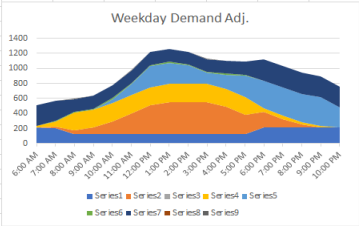
ADAPTED PARKING MODEL (WEEKDAYS)

land Use	unit	ULI Rate	ITE Rate	Est. On-Street Parking	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	Dwelling Unit	1.5	1.2	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214
Retail	per 1000 sqf	3.6	2.65	425	425	425	425	425	425	425	425	425	425	425	425	425	425	425	425	425	425
Hotel	per room	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office	per 1000 sqf	3.8	2.84	239	239	239	239	239	239	239	239	239	239	239	239	239	239	239	239	239	239
Restaurant	per 1000 sqf	10.5	5.5	377	377	377	377	377	377	377	377	377	377	377	377	377	377	377	377	377	377
Industrial	per 1000 sqf		1.02	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Low Density Residential	Dwelling Unit		1.83	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281	281
Vacant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	per 1000 sqf		3.79	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
				1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598	1598



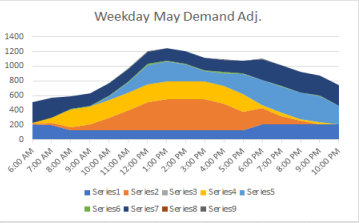
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Apartments	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retail	71%	85%	91%	90%	92%	100%	98%	92%	93%	93%	81%	67%
Hotel	90%	100%	100%	100%	90%	90%	100%	100%	100%	75%	75%	50%
Office	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	80%
Restaurant	85%	86%	95%	92%	96%	95%	98%	99%	91%	96%	93%	95%
Industrial	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Low Density Residential	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Vacant												
Church	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	706%	731%	746%	742%	738%	745%	751%	746%	744%	724%	709%	652%

	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	100%	95%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	100%	100%	100%	100%	100%
Retail	1%	5%	10%	20%	40%	65%	90%	100%	100%	100%	85%	60%	50%	25%	10%	0%	0%
Hotel	95%	95%	90%	80%	70%	70%	65%	65%	70%	70%	75%	80%	85%	85%	90%	95%	95%
Office	5%	30%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	20%	20%	10%	10%	0%
Restaurant	0%	0%	0%	0%	15%	40%	75%	75%	65%	40%	50%	75%	95%	100%	100%	100%	70%
Industrial	5%	30%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	20%	20%	10%	5%	0%
Low Density Residential	100%	95%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	100%	100%	100%	100%	100%
Vacant																	
Church	0%	0%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	5%	5%	5%	0%	0%



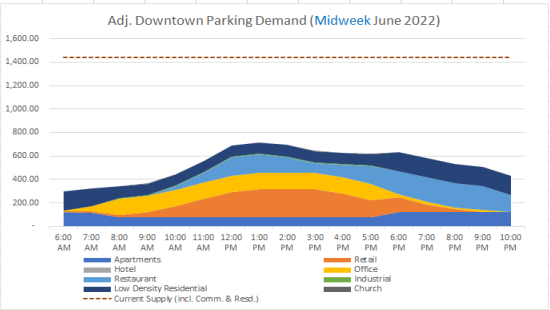
	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	214	203.3	128.4	128.4	128.4	128.4	128.4	128.4	128.4	128.4	128.4	128.4	214	214	214	214	214
Retail	4.25	21.25	42.5	85	170	276.25	382.5	425	425	425	361.25	255	212.5	106.25	42.5	0	0
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office	11.95	71.7	239	239	239	239	239	239	239	239	239	239	47.8	47.8	23.9	23.9	0
Restaurant	0	0	0	0	56.55	150.8	282.75	282.75	245.05	150.8	188.5	282.75	358.15	377	377	377	263.9
Industrial	0.65	3.9	13	13	13	13	13	13	13	13	13	13	2.6	2.6	1.3	0.65	0
Low Density Residential	281	266.95	168.6	168.6	168.6	168.6	168.6	168.6	168.6	168.6	168.6	168.6	281	281	281	281	281
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	0	0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	2.45	2.45	2.45	0	0

JUN	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	Observed 1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	
Apartments	214	203.3	128.4	128.4	128.4	128.4	128.4	128.4	128.4	128.4	128.4	128.4	214	214	214	214	214	
Retail	4.25	21.25	42.5	85	170	276.25	382.5	425	425	425	361.25	255	212.5	106.25	42.5	0	0	
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Office	11.95	71.7	239	239	239	239	239	239	239	239	239	239	47.8	47.8	23.9	23.9	0	
Restaurant	0	0	0	0	53.7225	143.26	268.6125	268.6125	232.7975	143.26	179.075	268.6125	340.2425	358.15	358.15	358.15	250.705	
Industrial	0.52	3.12	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	2.08	2.08	1.04	0.52	0	
Low Density Residential	281	266.95	168.6	168.6	168.6	168.6	168.6	168.6	168.6	168.6	168.6	168.6	281	281	281	281	281	
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Church	0	0	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	1.96	1.96	1.96	0	0	
	511.72	566.32	592.82	635.32	774.0425	969.83	1201.4325	1243.9325	1208.1175	1118.58	1090.645	1073.9325	1099.5825	1011.24	922.55	877.57	745.705	15643.34
	41%	46%	48%	51%	62%	78%	97%	100%	97%	90%	88%	86%	88%	81%	74%	71%	60%	
							Observed	716										
							Adj factor	0.575593933										



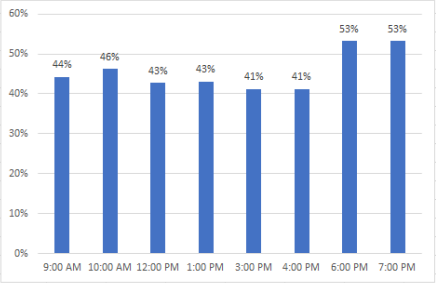
JUN	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments	42%	36%	22%	20%	17%	13%	11%	10%	11%	11%	12%	12%	19%	21%	23%	24%	29%
Retail	1%	4%	7%	13%	22%	28%	32%	34%	35%	38%	33%	24%	19%	11%	5%	0%	0%
Hotel	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Office	2%	13%	40%	38%	31%	25%	20%	19%	20%	21%	22%	22%	4%	5%	3%	3%	0%
Restaurant	0%	0%	0%	0%	7%	15%	22%	22%	19%	13%	16%	25%	31%	35%	39%	41%	34%
Industrial	0%	1%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%
Low Density Residential	55%	47%	28%	27%	22%	17%	14%	14%	14%	15%	15%	16%	26%	28%	30%	32%	38%
Vacant	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Church	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

JUN	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Current Supply (incl. Comm. & Resd.)	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00	1,440.00
Apartments	123.18	117.02	73.91	73.91	73.91	73.91	73.91	73.91	73.91	73.91	73.91	73.91	123.18	123.18	123.18	123.18	123.18
Retail	2.45	12.23	24.46	48.93	97.85	159.01	220.16	244.63	244.63	244.63	207.93	146.78	122.31	61.16	24.46	-	-
Hotel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Office	6.88	41.27	137.57	137.57	137.57	137.57	137.57	137.57	137.57	137.57	137.57	137.57	27.51	27.51	13.76	13.76	-
Restaurant	-	-	-	-	30.92	82.46	154.61	154.61	134.00	82.46	103.07	154.61	195.84	206.15	206.15	206.15	144.30
Industrial	0.30	1.80	5.99	5.99	5.99	5.99	5.99	5.99	5.99	5.99	5.99	5.99	1.20	1.20	0.60	0.30	-
Low Density Residential	161.74	153.65	97.05	97.05	97.05	97.05	97.05	97.05	97.05	97.05	97.05	97.05	161.74	161.74	161.74	161.74	161.74
Vacant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Church	-	-	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	1.13	1.13	1.13	-	-
	294.54	325.97	341.22	365.69	445.53	558.23	691.54	716.00	695.39	643.85	627.77	618.15	632.91	582.06	531.01	505.12	429.22
								100%									



OBSERVED RESIDENTIAL AREA ON-STREET PARKING OCCUPANCY (WEEKDAY)

Block Number	Number of Parking Stalls	9:00 AM	10:00 AM	12:00 PM	1:00 PM	3:00 PM	4:00 PM	6:00 PM	7:00 PM	Average Utilization Rate
26	16	18	17	17	17	19	19	NA	NA	111.5%
89	0	2	0	0	2	0	0	NA	NA	#DIV/0!
90	0	0	0	0	0	0	0	NA	NA	#DIV/0!
2	35	17	17	21	18	16	16	NA	NA	50.0%
86	120	49	52	50	47	45	42	NA	NA	39.6%
1	32	16	17	16	15	16	16	NA	NA	50.0%
91	12	0	0	0	0	0	0	NA	NA	0.0%
92	14	9	9	9	10	9	9	NA	NA	65.5%
52	12	12	10	11	11	12	11	NA	NA	93.1%
51	7	4	3	4	4	6	4	NA	NA	59.5%
93	12	8	9	8	7	8	10	NA	NA	69.4%
76	12	0	0	0	0	0	0	NA	NA	0.0%
3	9	1	0	0	1	2	1	NA	NA	9.3%
68	10	2	1	3	3	2	2	NA	NA	21.7%
95	6	2	3	4	3	2	2	NA	NA	44.4%
96	9	1	1	1	1	1	0	NA	NA	9.3%
72	11	1	0	1	1	1	0	NA	NA	6.1%
49	9	6	6	6	8	3	0	NA	NA	53.7%
48	7	2	4	3	5	4	4	NA	NA	52.4%
4	10	3	3	2	2	3	5	NA	NA	30.0%
75	14	6	4	5	3	3	5	NA	NA	31.0%
30	11	2	1	0	3	1	0	NA	NA	10.6%
31	4	1	1	3	0	0	0	NA	NA	20.8%
27	9	7	8	8	7	9	9	NA	NA	88.9%
77	3	1	2	1	1	1	1	3	3	54.2%
60	7	1	1	1	1	1	1	2	2	17.9%
28	6	4	5	4	3	3	0	5	7	64.6%
29	8	1	1	1	1	1	1	4	4	21.9%
61	29	17	17	11	5	6	4	26	25	47.8%
62	21	9	11	8	9	9	12	17	18	55.4%
110	8	0	0	0	0	0	0	0	0	0.0%
63	31	7	7	6	6	5	4	15	14	25.8%
64	19	5	6	8	6	8	6	12	11	40.8%
109	8	0	0	0	0	0	0	0	0	0.0%
7	36	13	14	7	8	6	7	14	15	29.2%
8	39	14	15	10	10	14	13	21	18	36.9%
25	10	7	7	10	8	9	9	9	7	82.5%
24	9	3	3	3	3	3	3	3	4	34.7%
6	24	11	12	11	11	10	8	8	10	42.2%
5	54	10	9	9	9	9	10	16	16	20.4%
67	8	6	7	6	7	6	6	7	6	79.7%
66	24	17	17	16	15	17	16	15	15	66.7%
65	33	19	25	12	20	16	14	18	19	54.2%
12	8	4	5	3	3	3	3	5	5	48.4%
70	22	6	6	2	4	5	5	11	11	28.4%
69	33	8	9	6	8	7	7	9	8	23.5%
59	8	4	4	5	4	3	2	3	3	43.8%
56	15	6	7	6	4	4	3	8	10	40.0%
57	3	5	5	2	2	0	0	7	6	112.5%
58	3	2	2	2	2	1	1	2	2	58.3%
14	18	12	14	12	12	11	17	13	13	72.2%
9	29	12	17	19	19	14	18	24	20	61.6%
99	16	4	2	3	5	5	1	0	0	15.6%
100	27	13	13	12	14	14	9	2	2	36.6%
101	9	4	3	3	4	3	3	4	4	38.9%
105	18	5	7	10	6	5	9	7	12	42.4%
106	28	16	20	20	24	14	19	11	12	60.7%
102	9	0	0	0	0	0	0	0	0	0.0%
20	36	31	28	24	31	32	36	33	36	87.2%
55	29	15	14	11	17	13	19	22	21	56.9%
21	6	1	2	3	1	3	1	3	5	39.6%
22	22	10	13	11	9	6	7	9	10	42.6%
23	9	4	4	4	2	7	5	6	4	50.0%
104	4	1	1	1	0	0	0	0	0	9.4%
10	20	9	8	13	10	11	14	13	12	56.3%
15	9	5	5	7	7	7	7	8	6	72.2%
16	9	8	9	8	8	9	9	8	8	93.1%
11	18	17	16	15	16	17	16	15	14	87.5%
Total	1166	516	539	498	503	480	481	418	418	
Utilization by hour		44%	46%	43%	43%	41%	41%	53%	53%	45.7%



DOWNTOWN COMMERCIAL ON-STREET PARKING OCCUPANCY (WEEKDAY)

Route # 1
Street Cleveland Ave / Winnipeg St Side na Date Wed Jun 15, 2022
Data Collector From_ na To na
na Direction of Travel na

TIME BEGINNING OF PATROL

Route	Space Desc.	9:00 AM	9:30 AM	10:00 AM	10:30 AM	12:00 PM		12:30 PM	1:00 PM	1:30 PM	3:00 PM		3:30 PM	4:00 PM	4:30 PM	5:00 PM	5:30 PM	Supply
1		60	58	69	68	84	0	89	87	81	76	0	74	76	70	0	0	102.00
3		45	48	48	46	54	0	53	57	52	47	0	44	47	46	0	0	75.00
6		50	67	65	59	69	0	68	69	63	64	0	64	49	43	0	0	97.00
		155	173	182	173	207	0	210	213	196	187	0	182	172	159	0	0	274.00

Page 1

SUMMARY OCCUPANCY OBSERVED

Area	Number of Parking Stalls	9:00 AM	10:00 AM	12:00 PM	1:00 PM	3:00 PM	4:00 PM	6:00 PM	7:00 PM
Downtown Commercial	274	155	182	207	213	187	172	NA	NA
Downtown Residential	1166	516	539	498	503	480	481	418	418
	1440	671	721	705	716	667	653	418	418
		47%	50%	49%	50%	46%	45%	29%	29%

OCCUPANCY

Area	Number of Parking Stalls	9:00 AM	10:00 AM	12:00 PM	1:00 PM	3:00 PM	4:00 PM	6:00 PM	7:00 PM
Downtown Commercial	274	57%	66%	76%	78%	68%	63%	#VALUE!	#VALUE!
Downtown Residential	1166	44%	46%	43%	43%	41%	41%	53%	53%
							104%	#VALUE!	#VALUE!

Current On-street parking demand gross estimates based parcel data, bylaw rates and ULI class

PARCEL_FAE	PARCEL_NAM	FEATURE_AR (sq	Block_ID	ZONE_CODE	ZONE_DES	Ex Use ULI	% developa	Avrg Floors	GFA (sqm)	GFA (sft)	Est. Units	Parking Rate	Gross Parking D	Off-Street Rate	Off-Street Supply	On-Street
645	Building Strata	1118.4252	E1	C-4	Downtown Commercial	Office	65%	2.5	1,817.44	19,552.76	0	2.84	56	2	37	19
1704	12023345	279.0846	E2	C-4	Downtown Commercial	Restaurant	65%	1	181.40	1,951.63	0	5.5	11	2	4	7
7051	Building Strata	702.1627	Z3	C-4	Downtown Commercial	Retail	65%	1	456.41	4,910.20	0	2.65	14	2	10	4
20969	11213094	279.565	E2	C-4	Downtown Commercial	Restaurant	65%	1	181.72	1,954.99	0	5.5	11	2	4	7
30993	7944489	559.1578	C2	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.17	2	1.83	4	1	2	2
37471	30327415	1114.3849	R1	I-1	Light Industrial	Industrial	65%	1	724.35	7,792.85	0	1.02	8	0.9	7	1
40207	12020893	559.1557	B2	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.15	2	1.83	4	1	2	2
46453	12001759	280.2211	L	C-4	Downtown Commercial	Restaurant	65%	1	182.14	1,959.57	0	5.5	11	2	4	7
49553	12022292	559.0681	D1	RS-2	Residential	Low Density Residential	65%	1	363.39	3,909.54	2	1.83	4	1	2	2
50217	12002771	550.8857	K1	C-4	Downtown Commercial	Retail	65%	1	358.08	3,852.32	0	2.65	11	2	8	3
52852	28426321	32.4015	Z3	C-4	Downtown Commercial	Retail	65%	1	21.06	226.58	0	2.65	1	2	1	0
56675	3030610	552.1239	I2	RS-2	Residential	Low Density Residential	65%	1	358.88	3,860.98	2	1.83	4	1	2	2
59391	11498421	951.0446	X1	RS-2	Residential	Low Density Residential	65%	1	618.18	6,650.62	4	1.83	8	1	4	4
69447	3167593	557.7205	R1	I-1	Light Industrial	Industrial	65%	1	362.52	3,900.12	0	1.02	4	0.9	4	0
72259	11816571	280.6914	Z3	C-4	Downtown Commercial	Retail	65%	1	182.45	1,962.86	0	2.65	6	2	4	2
72261	11816481	280.9461	Z3	C-4	Downtown Commercial	Retail	65%	1	182.61	1,964.64	0	2.65	6	2	4	2
72268	4067631	838.7386	B1	RS-2	Residential	Low Density Residential	65%	1	545.18	5,865.27	3	1.83	6	1	3	3
78657	12006351	559.1667	H2	RS-2	Residential	Low Density Residential	65%	1	363.46	3,910.23	2	1.83	4	1	2	2
78659	11997770	530.4233	N2	I-1	Light Industrial	Industrial	65%	1	344.78	3,709.23	0	1.02	4	0.9	4	0
83090	11760800	278.0172	F	C-4	Downtown Commercial	Retail	65%	1	180.71	1,944.16	0	2.65	6	2	4	2
82766	31062423	65.3764	O2	C-4	Downtown Commercial	Retail	65%	1	42.49	457.17	0	2.65	2	2	1	1
85193	11498617	607.2567	Y1	RS-2	Residential	Vacant	65%	0	-	-	0	0	0	0	0	0
85194	10496483	558.3943	A1	RS-2	Residential	Low Density Residential	65%	1	362.96	3,904.83	2	1.83	4	1	2	2
96278	7700857	1200.3141	V2	C-4	Downtown Commercial	Retail	65%	1	780.20	8,393.75	0	2.65	23	2	16	7
98030	12002429	273.6856	K2	P-3	Park and Public Use	Public Park	65%	1	177.90	1,913.87	0	#N/A	#N/A	#N/A	#N/A	#N/A
98035	11498340	557.9494	X2	RS-2	Residential	Low Density Residential	65%	1	362.67	3,901.72	2	1.83	4	1	2	2
101662	11993723	559.0224	Q1	CD-66	Artisan Village	Retail	65%	1	363.36	3,909.22	0	2.65	11	2	8	3
101872	12000876	557.5702	O1	I-1	Light Industrial	Industrial	65%	1	362.42	3,899.07	0	1.02	4	0.9	4	0
101768	3783359	3355.883	P	CD-37	Comprehensive Developme	Vacant	65%	0	-	-	0	0	0	0	0	0
101231	12005941	320.8456	H3	RS-2	Residential	Low Density Residential	65%	1	208.55	2,243.66	2	1.83	4	1	2	2
91525	12002721	279.8043	K2	C-4	Downtown Commercial	Retail	65%	1	181.87	1,956.66	0	2.65	6	2	4	2
91528	27420485	1116.9954	N3	I-1	Light Industrial	Industrial	65%	1	726.05	7,811.10	0	1.02	8	0.9	7	1
91529	12020419	678.6925	A1	RS-2	Residential	Low Density Residential	65%	1	441.15	4,746.07	3	1.83	6	1	3	3
110819	12020494	558.4199	A1	RS-2	Residential	Low Density Residential	65%	1	362.97	3,905.01	2	1.83	4	1	2	2
117124	12023515	1118.4855	E1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
123454	11816350	295.0049	Z2	C-4	Downtown Commercial	Restaurant	65%	1	191.75	2,062.96	0	5.5	12	2	4	8
133674	3822753	557.5659	O1	I-1	Light Industrial	Industrial	65%	1	362.42	3,899.04	0	1.02	4	0.9	4	0
127231	12006301	558.2584	H2	RS-2	Residential	Low Density Residential	65%	1	362.87	3,903.88	2	1.83	4	1	2	2
140041	Building Strata	559.1025	Q1	C-10	Artisan Village	Office	65%	2.5	908.54	9,774.45	0	2.84	28	2	19	9
146560	Building Strata	832.675	K2	C-4	Downtown Commercial	Office	65%	2.5	1,353.10	14,557.16	0	2.84	42	2	28	14
146459	11993588	560.7897	Q2	I-1	Light Industrial	Industrial	65%	1	364.51	3,921.58	0	1.02	5	0.9	4	1
152381	8310149	559.0571	D1	RS-2	Residential	Low Density Residential	65%	1	363.39	3,909.46	2	1.83	4	1	2	2
159538	9604090	559.122	I1	RS-2	Residential	Vacant	65%	0	-	-	0	0	0	0	0	0
149302	12001716	280.429	L	C-4	Downtown Commercial	Restaurant	65%	1	182.28	1,961.03	0	5.5	11	2	4	7
168511	12004154	558.2856	J1	P-2	District Assembly	Low Density Residential	65%	1	362.89	3,904.07	2	1.83	4	1	2	2
168512	12020486	558.3638	A1	RS-2	Residential	Low Density Residential	65%	1	362.94	3,904.62	2	1.83	4	1	2	2
162216	12020869	559.1238	B2	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.93	2	1.83	4	1	2	2
178766	12000817	557.5803	O1	I-1	Light Industrial	Industrial	65%	1	362.43	3,899.14	0	1.02	4	0.9	4	0
187649	12016462	572.0913	G2	RS-2	Residential	Low Density Residential	65%	1	371.86	4,000.61	2	1.83	4	1	2	2

184940	7794223	558.9888	Q2	I-1	Light Industrial	Industrial	65%	1	363.34	3,908.99	0	1.02	4	0.9	4	0
200626	11816554	280.883	Z3	C-4	Downtown Commercial	Retail	65%	1	182.57	1,964.20	0	2.65	6	2	4	2
213417	12023078	279.1267	E2	C-4	Downtown Commercial	Restaurant	65%	1	181.43	1,951.92	0	5.5	11	2	4	7
213421	7152183	558.4561	A2	RS-2	Residential	Low Density Residential	65%	1	363.00	3,905.26	2	1.83	4	1	2	2
207066	11498668	557.9158	Y1	RS-2	Residential	Low Density Residential	65%	1	362.65	3,901.48	2	1.83	4	1	2	2
223539	11995955	559.1492	M	I-1	Light Industrial	Industrial	65%	1	363.45	3,910.11	0	1.02	4	0.9	4	0
236257	9604120	559.1422	I1	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.06	2	1.83	4	1	2	2
236530	11760753	278.3987	F	C-4	Downtown Commercial	Retail	65%	1	180.96	1,946.83	0	2.65	6	2	4	2
229357	24531227	1664.041	D1	C-4	Downtown Commercial	Apartments	65%	4	4,326.51	46,546.29	39	1.2	47	1	39	8
251595	11498170	559.1209	B1	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.91	2	1.83	4	1	2	2
256266	11816601	653.3479	Z3	C-4	Downtown Commercial	Restaurant	65%	1	424.68	4,568.84	0	5.5	26	2	9	17
257960	12023060	279.0985	E2	C-4	Downtown Commercial	Hotel	65%	3	544.24	5,855.17	20	1	20	1	20	0
270632	12023540	1118.4569	E1	C-4	Downtown Commercial	Retail	65%	1	727.00	7,821.32	0	2.65	21	2	15	6
273866	12006521	559.1332	H2	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.00	2	1.83	4	1	2	2
274411	12005525	558.5964	I2	RS-2	Residential	Low Density Residential	65%	1	363.09	3,906.24	2	1.83	4	1	2	2
275319	30686032	2162.3148	V1	C-4	Downtown Commercial	Retail	65%	1	1,405.50	15,120.98	0	2.65	41	2	29	12
283452	23318082	735.6846	G2	RS-2	Residential	Low Density Residential	65%	1	478.19	5,144.61	3	1.83	6	1	3	3
289902	12020842	559.0872	B2	RS-2	Residential	Low Density Residential	65%	1	363.41	3,909.67	2	1.83	4	1	2	2
293557	11991984	557.9358	R2	RS-1	Residential	Low Density Residential	65%	1	362.66	3,901.62	2	1.83	4	1	2	2
287669	11760770	278.5707	F	C-4	Downtown Commercial	Retail	65%	1	181.07	1,948.03	0	2.65	6	2	4	2
302895	12023051	279.1099	E2	C-4	Downtown Commercial	Hotel	65%	3	544.26	5,855.41	20	1	20	1	20	0
306467	11993553	559.0309	Q2	I-1	Light Industrial	Industrial	65%	1	363.37	3,909.28	0	1.02	4	0.9	4	0
307483	9323988	1691.971	V3	C-2	Gasoline Service Station Co	Vacant	65%	0	-	-	0	0	0	0	0	0
319165	27727998	1119.1685	Q1	CD-61	Comprehensive Developme	Apartments	65%	4	2,909.84	31,305.20	27	1.2	33	1	27	6
331993	3331156	362.4514	O1	I-1	Light Industrial	Industrial	65%	1	235.59	2,534.61	0	1.02	3	0.9	3	0
321890	12016365	3604.0452	G2	P-1	Neighbourhood Civic	Church	65%	1	2,342.63	25,202.94	0	3.79	96	2	47	49
321891	11997559	570.1833	N3	I-1	Light Industrial	Industrial	65%	1	370.62	3,987.27	0	1.02	5	0.9	4	1
338344	12009326	551.8467	I1	RS-2	Residential	Low Density Residential	65%	1	358.70	3,859.04	2	1.83	4	1	2	2
353815	12001775	6156.775	L	P-3	Park and Public Use	Public Park	65%	1	4,001.90	43,054.08	0	#N/A	#N/A	#N/A	#N/A	#N/A
353816	11435151	559.1536	H1	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.14	2	1.83	4	1	2	2
353822	11497998	558.3967	A2	RS-2	Residential	Low Density Residential	65%	1	362.96	3,904.85	2	1.83	4	1	2	2
360210	11498145	559.1237	B1	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.93	2	1.83	4	1	2	2
363892	9604065	559.0842	I1	RS-2	Residential	Low Density Residential	65%	1	363.40	3,909.65	2	1.83	4	1	2	2
366490	12023019	281.9673	E2	C-4	Downtown Commercial	Restaurant	65%	1	183.28	1,971.79	0	5.5	11	2	4	7
357577	Building Strata	392.9621	I3	CD-86	Comprehensive Developme	Apartments	65%	4	1,021.70	10,991.87	10	1.2	12	1	10	2
372835	11498099	546.0973	B2	RS-2	Residential	Low Density Residential	65%	1	354.96	3,818.84	2	1.83	4	1	2	2
385731	6227040	940.8849	H1	RS-2	Residential	Low Density Residential	65%	1	611.58	6,579.57	4	1.83	8	1	4	4
385732	11498676	557.8668	Y1	RS-2	Residential	Low Density Residential	65%	1	362.61	3,901.14	2	1.83	4	1	2	2
379232	6648797	559.1338	B2	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.00	2	1.83	4	1	2	2
398418	11498111	546.6488	B1	RS-2	Residential	Low Density Residential	65%	1	355.32	3,822.69	2	1.83	4	1	2	2
404843	12006408	559.0972	H2	RS-2	Residential	Low Density Residential	65%	1	363.41	3,909.74	2	1.83	4	1	2	2
411247	12020826	559.1576	B2	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.17	2	1.83	4	1	2	2
417515	7933851	559.0967	B1	RS-2	Residential	Low Density Residential	65%	1	363.41	3,909.74	2	1.83	4	1	2	2
417521	12020222	558.4159	A2	RS-2	Residential	Low Density Residential	65%	1	362.97	3,904.98	2	1.83	4	1	2	2
415422	11760869	557.1305	F	C-4	Downtown Commercial	Retail	65%	1	362.13	3,895.99	0	2.65	11	2	8	3
430339	11498510	557.9246	Y2	C-4	Downtown Commercial	Retail	65%	1	362.65	3,901.54	0	2.65	11	2	8	3
427761	27534766	2156.3382	O2	CD-10	Comprehensive Developme	Restaurant	65%	1	1,401.62	15,079.19	0	5.5	83	2	29	54
446826	12002593	558.9143	K1	P-2	District Assembly	Public Park	65%	1	363.29	3,908.47	0	#N/A	#N/A	#N/A	#N/A	#N/A
446724	11993677	559.297	Q1	I-1	Light Industrial	Industrial	65%	1	363.54	3,911.14	0	1.02	4	0.9	4	0
436689	12002194	280.334	K2	C-4	Downtown Commercial	Hotel	65%	3	546.65	5,881.09	20	1	20	1	20	0

455787	11816562	280.8869	Z3	C-4	Downtown Commercial	Retail	65%	1	182.58	1,964.23	0	2.65	6	2	4	2
455788	12023281	279.1125	E2	C-4	Downtown Commercial	Retail	65%	1	181.42	1,951.82	0	2.65	6	2	4	2
449428	12002241	272.2845	K2	C-4	Downtown Commercial	Hotel	65%	3	530.95	5,712.22	20	1	20	1	20	0
465266	12022276	559.074	D1	RS-2	Residential	Low Density Residential	65%	1	363.40	3,909.58	2	1.83	4	1	2	2
465938	9604171	559.1505	I2	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.12	2	1.83	4	1	2	2
465939	Building Strata	3772.6955	H3	CD-36	Comprehensive Developme	Apartments	65%	4	9,809.01	105,529.23	88	1.2	106	1	88	18
465851	11993596	549.2548	Q2	I-1	Light Industrial	Vacant	65%	0	-	-	0	0	0	0	0	0
460042	11381931	278.6858	F	C-4	Downtown Commercial	Retail	65%	1	181.15	1,948.84	0	2.65	6	2	4	2
460043	12228036	556.1013	F	C-4	Downtown Commercial	Restaurant	65%	1	361.47	3,888.79	0	5.5	22	2	8	14
474985	12002321	272.336	K1	P-3	Park and Public Use	Public Park	65%	1	177.02	1,904.43	0	#N/A	#N/A	#N/A	#N/A	#N/A
481352	7711328	735.676	G2	RS-2	Residential	Low Density Residential	65%	1	478.19	5,144.55	3	1.83	6	1	3	3
487754	3331105	558.434	A2	RS-2	Residential	Low Density Residential	65%	1	362.98	3,905.11	2	1.83	4	1	2	2
491952	19154437	555.8013	F	C-4	Downtown Commercial	Restaurant	65%	1	361.27	3,886.70	0	5.5	22	2	8	14
498328	11760818	277.9139	F	C-4	Downtown Commercial	Retail	65%	1	180.64	1,943.44	0	2.65	6	2	4	2
497812	30673526	2191.2982	M	CD-88	Comprehensive Developme	Office	65%	2.5	3,560.86	38,309.15	0	2.84	109	2	72	37
513113	4927788	279.6088	E2	C-4	Downtown Commercial	Retail	65%	1	181.75	1,955.29	0	2.65	6	2	4	2
516803	11993600	552.855	Q1	I-1	Light Industrial	Industrial	65%	1	359.36	3,866.09	0	1.02	4	0.9	4	0
506716	11498374	558.023	X2	RS-2	Residential	Low Density Residential	65%	1	362.71	3,902.23	2	1.83	4	1	2	2
525909	4809157	3937.8922	E1	C-4	Downtown Commercial	Retail	65%	1	2,559.63	27,537.52	0	2.65	73	2	52	21
519552	6462928	557.0736	J1	RS-2	Residential	Low Density Residential	65%	1	362.10	3,895.59	2	1.83	4	1	2	2
536346	3783375	2208.5699	P	CD-37	Comprehensive Developme	Vacant	65%	0	-	-	0	0	0	0	0	0
545225	11816333	262.6469	Z2	C-4	Downtown Commercial	Restaurant	65%	1	170.72	1,836.68	0	5.5	11	2	4	7
545226	25874152	342.0814	Z3	C-4	Downtown Commercial	Retail	65%	1	222.35	2,392.16	0	2.65	7	2	5	2
549004	2902826	556.0724	R2	I-3	General Industrial	Industrial	65%	1	361.45	3,888.59	0	1.02	4	0.9	4	0
550029	11816597	276.8396	Z3	C-4	Downtown Commercial	Retail	65%	1	179.95	1,935.93	0	2.65	6	2	4	2
555550	4394551	362.7691	K1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
561759	11993537	559.1077	Q2	I-1	Light Industrial	Industrial	65%	1	363.42	3,909.82	0	1.02	4	0.9	4	0
567902	8109508	559.106	C1	RS-2	Residential	Low Density Residential	65%	1	363.42	3,909.81	2	1.83	4	1	2	2
568103	11992981	557.7635	R2	C-10	Artisan Village	Vacant	65%	0	-	-	0	0	0	0	0	0
570814	7800878	280.9473	Z3	C-4	Downtown Commercial	Retail	65%	1	182.62	1,964.65	0	2.65	6	2	4	2
574536	28025792	39.6918	J1	C-4	Downtown Commercial	Retail	65%	1	25.80	277.56	0	2.65	1	2	1	0
577180	12002712	280.0837	K2	C-4	Downtown Commercial	Retail	65%	1	182.05	1,958.61	0	2.65	6	2	4	2
577179	12002348	272.3446	K2	P-3	Park and Public Use	Public Park	65%	1	177.02	1,904.49	0	#N/A	#N/A	#N/A	#N/A	#N/A
577182	11498064	559.1371	B2	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.02	2	1.83	4	1	2	2
606340	11992034	557.8583	R2	I-1	Industrial	Industrial	65%	1	362.61	3,901.08	0	1.02	4	0.9	4	0
606379	Interest	94.1251	V2	C-4	Downtown Commercial	Retail	65%	1	61.18	658.21	0	2.65	2	2	2	0
607025	11760788	278.56	F	C-4	Downtown Commercial	Retail	65%	1	181.06	1,947.96	0	2.65	6	2	4	2
606456	12005371	559.1331	I1	P-1	Neighbourhood Civic	Vacant	65%	0	-	-	0	0	0	0	0	0
599636	12005991	311.3319	H3	RS-2	Residential	Low Density Residential	65%	1	202.37	2,177.13	2	1.83	4	1	2	2
613669	Building Strata	278.5638	F	C-4	Downtown Commercial	Retail	65%	1	181.07	1,947.99	0	2.65	6	2	4	2
613515	11381892	277.9899	F	C-4	Downtown Commercial	Retail	65%	1	180.69	1,943.97	0	2.65	6	2	4	2
619410	Building Strata	1115.5579	J1	C-4	Downtown Commercial	Apartments	65%	4	2,900.45	31,204.21	27	1.2	33	1	27	6
619601	Statutory RoW	61.3112	O2	C-4	Downtown Commercial	Retail	65%	1	39.85	428.75	0	2.65	2	2	1	1
609219	25502361	10527.8897	U	CD-2	Comprehensive Developme	Apartments	65%	4	########	294,484.45	246	1.2	296	1	246	50
609220	11498005	558.3603	A2	RS-2	Residential	Low Density Residential	65%	1	362.93	3,904.59	2	1.83	4	1	2	2
637900	29763096	2196.8964	G2	RS-2	Residential	Low Density Residential	65%	1	1,427.98	15,362.81	8	1.83	15	1	8	7
641159	11997575	561.1654	N3	I-1	Light Industrial	Industrial	65%	1	364.76	3,924.21	0	1.02	5	0.9	4	1
647612	12016446	571.1283	G2	RS-2	Residential	Low Density Residential	65%	1	371.23	3,993.88	2	1.83	4	1	2	2
654027	2718375	558.3528	G1	RS-2	Residential	Low Density Residential	65%	1	362.93	3,904.54	2	1.83	4	1	2	2
654028	12023221	280.1267	E2	C-4	Downtown Commercial	Retail	65%	1	182.08	1,958.91	0	2.65	6	2	4	2

660602	12023035	279.1178	E2	C-4	Downtown Commercial	Restaurant	65%	1	181.43	1,951.86	0	5.5	11	2	4	7
664243	Building Strata	392.9565	K3	CD-86	Comprehensive Developme	Apartments	65%	4	1,021.69	10,991.72	10	1.2	12	1	10	2
657999	12000612	557.583	O1	I-1	Light Industrial	Office	65%	2.5	906.07	9,747.89	0	2.84	28	2	19	9
657893	12000540	362.411	O1	I-1	Light Industrial	Industrial	65%	1	235.57	2,534.33	0	1.02	3	0.9	3	0
657178	2541386	559.0673	D1	RS-2	Residential	Low Density Residential	65%	1	363.39	3,909.54	2	1.83	4	1	2	2
673360	12020443	278.6672	A1	RS-2	Residential	Low Density Residential	65%	1	181.13	1,948.71	1	1.83	2	1	1	1
676762	11234474	559.1252	C2	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.94	2	1.83	4	1	2	2
666951	12016349	558.4069	G1	RS-2	Residential	Low Density Residential	65%	1	362.96	3,904.92	2	1.83	4	1	2	2
683282	11991291	559.343	R2	I-1	Industrial	Industrial	65%	1	363.57	3,911.46	0	1.02	4	0.9	4	0
683283	11993634	561.2958	Q1	I-1	Light Industrial	Industrial	65%	1	364.84	3,925.12	0	1.02	5	0.9	4	1
711522	12002291	272.2416	K2	C-4	Downtown Commercial	Hotel	65%	3	530.87	5,711.32	20	1	20	1	20	0
711524	11498463	427.3822	W	RS-2	Residential	Low Density Residential	65%	1	277.80	2,988.67	2	1.83	4	1	2	2
702556	4394585	181.3643	K1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
702745	Building Strata	3345.9368	O2	C-4	Downtown Commercial	Apartments	65%	4	8,699.44	93,592.01	78	1.2	94	1	78	16
718000	12002453	302.5078	K2	P-3	Park and Public Use	Public Park	65%	1	196.63	2,115.42	0	#N/A	#N/A	#N/A	#N/A	#N/A
722324	11381949	277.927	F	C-4	Downtown Commercial	Retail	65%	1	180.65	1,943.53	0	2.65	6	2	4	2
731075	5484120	736.4952	H1	RS-2	Residential	Low Density Residential	65%	1	478.72	5,150.28	3	1.83	6	1	3	3
731080	9597221	278.6031	A1	RS-2	Residential	Low Density Residential	65%	1	181.09	1,948.26	1	1.83	2	1	1	1
734573	9469303	559.1249	C1	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.94	2	1.83	4	1	2	2
734759	4877977	559.0771	Q2	I-1	Light Industrial	Industrial	65%	1	363.40	3,909.60	0	1.02	4	0.9	4	0
724522	12023191	279.1108	E2	C-4	Downtown Commercial	Retail	65%	1	181.42	1,951.81	0	2.65	6	2	4	2
741264	11993057	558.3631	R1	CD-6	Comprehensive Developme	Restaurant	65%	1	362.94	3,904.61	0	5.5	22	2	8	14
756693	12020915	559.1714	B1	RS-2	Residential	Low Density Residential	65%	1	363.46	3,910.26	2	1.83	4	1	2	2
779374	8440808	559.1301	C1	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.97	2	1.83	4	1	2	2
779532	11993065	557.8385	R1	I-1	Light Industrial	Industrial	65%	1	362.60	3,900.94	0	1.02	4	0.9	4	0
773218	12005380	559.9317	I2	RS-2	Residential	Low Density Residential	65%	1	363.96	3,915.58	2	1.83	4	1	2	2
773090	11993570	559.0254	Q2	I-1	Light Industrial	Industrial	65%	1	363.37	3,909.24	0	1.02	4	0.9	4	0
785662	12021148	568.345	C1	RS-2	Residential	Low Density Residential	65%	1	369.42	3,974.41	2	1.83	4	1	2	2
788620	12023442	227.9596	E1	C-4	Downtown Commercial	Retail	65%	1	148.17	1,594.11	0	2.65	5	2	3	2
792909	3783324	1119.8017	P	CD-37	Comprehensive Developme	Vacant	65%	0	-	-	0	0	0	0	0	0
792020	12021105	559.0938	C2	RS-2	Residential	Low Density Residential	65%	1	363.41	3,909.72	2	1.83	4	1	2	2
798754	4394569	362.7659	K1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
805000	11991950	557.9767	R2	RS-1	Residential	Low Density Residential	65%	1	362.68	3,901.91	2	1.83	4	1	2	2
794954	12002216	280.2737	K2	C-4	Downtown Commercial	Hotel	65%	3	546.53	5,879.83	20	1	20	1	20	0
814114	7616732	10706.5055	U	RM-3	Multiple Family Residential	Vacant	65%	0	-	-	0	0	0	0	0	0
820626	11816538	280.5249	Z3	C-4	Downtown Commercial	Retail	65%	1	182.34	1,961.70	0	2.65	6	2	4	2
824175	11234504	559.1599	C2	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.18	2	1.83	4	1	2	2
827164	11816473	280.9455	Z3	C-4	Downtown Commercial	Retail	65%	1	182.61	1,964.64	0	2.65	6	2	4	2
837515	25425714	3363.7719	Z1	C-4	Downtown Commercial	Restaurant	65%	1	2,186.45	23,522.72	0	5.5	130	2	44	86
830932	12002836	1112.0391	K1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
846460	12020214	558.4482	A2	RS-2	Residential	Low Density Residential	65%	1	362.99	3,905.21	2	1.83	4	1	2	2
846461	12020460	560.6567	A1	RS-2	Residential	Low Density Residential	65%	1	364.43	3,920.65	2	1.83	4	1	2	2
849630	5218969	559.0921	H2	RS-2	Residential	Low Density Residential	65%	1	363.41	3,909.71	2	1.83	4	1	2	2
850714	4310209	277.954	F	C-4	Downtown Commercial	Restaurant	65%	1	180.67	1,943.72	0	5.5	11	2	4	7
839996	7800886	280.9731	Z3	C-4	Downtown Commercial	Retail	65%	1	182.63	1,964.83	0	2.65	6	2	4	2
859283	6128971	559.2288	E1	C-4	Downtown Commercial	Retail	65%	1	363.50	3,910.66	0	2.65	11	2	8	3
859285	11816465	281.0199	Z3	C-4	Downtown Commercial	Retail	65%	1	182.66	1,965.16	0	2.65	6	2	4	2
862964	12002089	295.2531	K2	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
862970	11993227	559.9707	R1	CD-6	Comprehensive Developme	Retail	65%	1	363.98	3,915.85	0	2.65	11	2	8	3
862971	11992999	557.7574	R2	C-10	Artisan Village	Vacant	65%	0	-	-	0	0	0	0	0	0

865805	11498404	649.1471	X2	RS-2	Residential	Low Density Residential	65%	1	421.95	4,539.46	3	1.83	6	1	3	3
878580	11997818	565.2984	N2	I-1	Light Industrial	Industrial	65%	1	367.44	3,953.11	0	1.02	5	0.9	4	1
878582	12002097	280.4055	K2	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
882023	11498226	546.0161	C1	RS-2	Residential	Low Density Residential	65%	1	354.91	3,818.27	2	1.83	4	1	2	2
884951	2932547	559.153	H1	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.13	2	1.83	4	1	2	2
884953	11498552	557.9636	Y2	C-4	Downtown Commercial	Retail	65%	1	362.68	3,901.82	0	2.65	11	2	8	3
891391	9452141	1326.3814	Z3	C-2	Gasoline Service Station Co	Vacant	65%	0	-	-	0	0	0	0	0	0
891394	11498579	557.9109	Y2	C-4	Downtown Commercial	Retail	65%	1	362.64	3,901.45	0	2.65	11	2	8	3
917281	11498056	559.1122	B2	RS-2	Residential	Low Density Residential	65%	1	363.42	3,909.85	2	1.83	4	1	2	2
923750	12020966	559.1357	B1	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.01	2	1.83	4	1	2	2
923752	27323536	4049.9814	U	CD-48	Comprehensive Developme	Apartments	65%	4	########	113,285.43	95	1.2	114	1	95	19
927421	24840823	1103.8212	R1	CD-6	Comprehensive Developme	Retail	65%	1	717.48	7,718.98	0	2.65	21	2	15	6
930167	12004243	559.0357	J2	C-4	Downtown Commercial	Retail	65%	1	363.37	3,909.31	0	2.65	11	2	8	3
930169	11498684	557.9475	Y1	RS-2	Residential	Low Density Residential	65%	1	362.67	3,901.70	2	1.83	4	1	2	2
921099	11659530	551.5048	I1	RS-2	Residential	Low Density Residential	65%	1	358.48	3,856.65	2	1.83	4	1	2	2
936655	12002119	280.3199	K2	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
936657	8606315	10028.8547	V4	CD-15	Comprehensive Developme	NA	65%	1	6,518.76	70,131.38	0	#N/A	#N/A	#N/A	#N/A	#N/A
940383	17445124	22827.061	T	I-6	Rail Transportation	Vacant	65%	0	-	-	0	0	0	0	0	0
940558	7081871	24001.3612	V2	C-4	Downtown Commercial	Retail	65%	1	########	167,840.56	0	2.65	445	2	313	132
946754	12000671	557.5815	O1	I-1	Light Industrial	Office	65%	2.5	906.07	9,747.86	0	2.84	28	2	19	9
946959	9045961	2191.9551	Z2	C-4	Downtown Commercial	Retail	65%	1	1,424.77	15,328.25	0	2.65	41	2	29	12
962095	11498498	557.8938	Y2	C-4	Downtown Commercial	Restaurant	65%	1	362.63	3,901.33	0	5.5	22	2	8	14
962096	2469073	558.4083	G1	RS-2	Residential	Low Density Residential	65%	1	362.97	3,904.93	2	1.83	4	1	2	2
955794	12002364	272.1744	K2	P-3	Park and Public Use	Public Park	65%	1	176.91	1,903.30	0	#N/A	#N/A	#N/A	#N/A	#N/A
972150	3331237	362.4369	O1	I-1	Light Industrial	Industrial	65%	1	235.58	2,534.51	0	1.02	3	0.9	3	0
974787	12022241	560.1449	D1	RS-2	Residential	Vacant	65%	0	-	-	0	0	0	0	0	0
981212	9597174	557.2506	A1	RS-2	Residential	Low Density Residential	65%	1	362.21	3,896.83	2	1.83	4	1	2	2
985909	9323996	602.0776	V3	C-4	Downtown Commercial	Retail	65%	1	391.35	4,210.30	0	2.65	12	2	8	4
984983	9604154	559.0669	I2	RS-2	Residential	Low Density Residential	65%	1	363.39	3,909.53	2	1.83	4	1	2	2
987550	12002402	273.7484	K2	P-3	Park and Public Use	Public Park	65%	1	177.94	1,914.31	0	#N/A	#N/A	#N/A	#N/A	#N/A
987553	12002275	280.4208	K2	C-4	Downtown Commercial	Hotel	65%	3	546.82	5,882.91	20	1	20	1	20	0
980420	29821657	975.8029	Z2	C-4	Downtown Commercial	Apartments	65%	4	2,537.09	27,295.00	23	1.2	28	1	23	5
997903	12005401	551.1617	I2	RS-2	Residential	Low Density Residential	65%	1	358.26	3,854.25	2	1.83	4	1	2	2
998437	11760834	274.5808	F	C-4	Downtown Commercial	Retail	65%	1	178.48	1,920.13	0	2.65	6	2	4	2
1017044	11993511	559.1229	Q2	I-1	Light Industrial	Industrial	65%	1	363.43	3,909.92	0	1.02	4	0.9	4	0
1013379	11997656	551.6635	N2	I-1	Light Industrial	Industrial	65%	1	358.58	3,857.76	0	1.02	4	0.9	4	0
1029726	12000833	557.5786	O1	I-1	Light Industrial	Industrial	65%	1	362.43	3,899.12	0	1.02	4	0.9	4	0
1030261	11381906	277.2949	F	C-4	Downtown Commercial	Retail	65%	1	180.24	1,939.11	0	2.65	6	2	4	2
1032418	11498544	557.8698	Y2	C-4	Downtown Commercial	Restaurant	65%	1	362.62	3,901.16	0	5.5	22	2	8	14
1026036	12006335	557.9679	H2	RS-2	Residential	Low Density Residential	65%	1	362.68	3,901.85	2	1.83	4	1	2	2
1042552	12002658	550.8252	K1	P-2	District Assembly	Public Park	65%	1	358.04	3,851.90	0	#N/A	#N/A	#N/A	#N/A	#N/A
1042553	12005398	559.0498	I2	RS-2	Residential	Low Density Residential	65%	1	363.38	3,909.41	2	1.83	4	1	2	2
1036649	11760826	277.9336	F	C-4	Downtown Commercial	Retail	65%	1	180.66	1,943.58	0	2.65	6	2	4	2
1036148	12002569	550.4739	K1	P-2	District Assembly	Public Park	65%	1	357.81	3,849.44	0	#N/A	#N/A	#N/A	#N/A	#N/A
1051600	6462901	556.2115	J1	RS-2	Residential	Low Density Residential	65%	1	361.54	3,889.56	2	1.83	4	1	2	2
1051601	12006050	556.3181	H1	RS-2	Residential	Low Density Residential	65%	1	361.61	3,890.31	2	1.83	4	1	2	2
1057923	25874161	435.5522	Z3	C-4	Downtown Commercial	Retail	65%	1	283.11	3,045.80	0	2.65	9	2	6	3
1049915	15804470	1952.3818	Z1	C-4	Downtown Commercial	Retail	65%	1	1,269.05	13,652.93	0	2.65	37	2	26	11
1048710	30472032	62.0787	C2	C-4	Downtown Commercial	Retail	65%	1	40.35	434.11	0	2.65	2	2	1	1
1074387	11993103	559.896	R1	I-1	Light Industrial	Industrial	65%	1	363.93	3,915.33	0	1.02	4	0.9	4	0

1074202	7944578	559.1701	C2	RS-2	Residential	Low Density Residential	65%	1	363.46	3,910.25	2	1.83	4	1	2	2
1077218	5762570	559.0837	H1	RS-2	Residential	Low Density Residential	65%	1	363.40	3,909.65	2	1.83	4	1	2	2
1096385	11498137	278.3911	B1	RS-2	Residential	Low Density Residential	65%	1	180.95	1,946.78	1	1.83	2	1	1	1
1099381	12022373	1117.8934	D2	C-4	Downtown Commercial	Office	65%	2.5	1,816.58	19,543.46	0	2.84	56	2	37	19
1093458	Building Strata	1116.3223	C2	C-4	Downtown Commercial	Apartments	65%	4	2,902.44	31,225.59	27	1.2	33	1	27	6
1109163	12023361	280.3845	E2	C-4	Downtown Commercial	Restaurant	65%	1	182.25	1,960.72	0	5.5	11	2	4	7
1115443	12023264	279.0997	E2	C-4	Downtown Commercial	Retail	65%	1	181.41	1,951.73	0	2.65	6	2	4	2
1115444	12002232	280.4215	K2	C-4	Downtown Commercial	Hotel	65%	3	546.82	5,882.93	20	1	20	1	20	0
1121891	11498081	559.1089	B2	RS-2	Residential	Vacant	65%	0	-	-	0	0	0	0	0	0
1131623	3161358	560.0411	C2	C-4	Downtown Commercial	Apartments	65%	4	1,456.11	15,665.38	14	1.2	17	1	14	3
1134567	12020311	558.3503	A2	RS-2	Residential	Low Density Residential	65%	1	362.93	3,904.52	2	1.83	4	1	2	2
1138266	11993499	558.9995	Q2	I-1	Light Industrial	Industrial	65%	1	363.35	3,909.06	0	1.02	4	0.9	4	0
1147463	23318091	735.6863	G2	RS-2	Residential	Low Density Residential	65%	1	478.20	5,144.62	3	1.83	6	1	3	3
1144939	12000493	362.4227	O1	I-1	Light Industrial	Industrial	65%	1	235.57	2,534.41	0	1.02	3	0.9	3	0
1153855	4496167	279.6059	E2	C-4	Downtown Commercial	Restaurant	65%	1	181.74	1,955.27	0	5.5	11	2	4	7
1153856	5260850	559.1077	B1	RS-2	Residential	Low Density Residential	65%	1	363.42	3,909.82	2	1.83	4	1	2	2
1151207	11993618	557.9427	Q1	I-1	Light Industrial	Industrial	65%	1	362.66	3,901.67	0	1.02	4	0.9	4	0
1170073	11992000	557.8497	R2	RS-1	Residential	Low Density Residential	65%	1	362.60	3,901.02	2	1.83	4	1	2	2
1170477	11760745	270.4961	F	C-4	Downtown Commercial	Retail	65%	1	175.82	1,891.57	0	2.65	6	2	4	2
1163919	15948722	559.1688	I2	RS-2	Residential	Low Density Residential	65%	1	363.46	3,910.25	2	1.83	4	1	2	2
1188924	12022306	559.0823	D1	RS-2	Residential	Low Density Residential	65%	1	363.40	3,909.64	2	1.83	4	1	2	2
1192286	12023132	281.0569	E2	C-4	Downtown Commercial	Restaurant	65%	1	182.69	1,965.42	0	5.5	11	2	4	7
1196959	6644601	1581.0407	Z2	C-4	Downtown Commercial	Retail	65%	1	1,027.68	11,056.15	0	2.65	30	2	21	9
1215241	11993022	559.0618	R2	I-3	General Industrial	Industrial	65%	1	363.39	3,909.50	0	1.02	4	0.9	4	0
1215242	11993219	557.5486	R1	CD-6	Comprehensive Developme	Retail	65%	1	362.41	3,898.92	0	2.65	11	2	8	3
1218053	11498633	557.9283	Y1	RS-2	Residential	Low Density Residential	65%	1	362.65	3,901.57	2	1.83	4	1	2	2
1208861	30624924	1115.7675	Q1	MUD-2	Mixed Use District	Apartments	65%	4	2,901.00	31,210.07	27	1.2	33	1	27	6
1230825	12002259	280.2556	K2	C-4	Downtown Commercial	Hotel	65%	3	546.50	5,879.45	20	1	20	1	20	0
1234556	18858813	1664.3668	J2	C-4	Downtown Commercial	Hotel	65%	3	3,245.52	34,916.55	117	1	117	1	117	0
1240365	12005932	310.8165	H3	RS-2	Residential	Low Density Residential	65%	1	202.03	2,173.53	2	1.83	4	1	2	2
1247274	12000906	557.5726	O1	I-1	Light Industrial	Industrial	65%	1	362.42	3,899.08	0	1.02	4	0.9	4	0
1249980	12004111	557.494	J1	RS-2	Residential	Low Density Residential	65%	1	362.37	3,898.53	2	1.83	4	1	2	2
1249982	11498030	559.1329	B2	RS-2	Residential	Low Density Residential	65%	1	363.44	3,909.99	2	1.83	4	1	2	2
1259410	12022217	557.5577	D2	C-4	Downtown Commercial	Office	65%	2.5	906.03	9,747.45	0	2.84	28	2	19	9
1260712	Building Strata	2790.1432	C1	CD-68	Comprehensive Developme	Office	65%	2.5	4,533.98	48,778.40	0	2.84	139	2	91	48
1265757	Building Strata	1668.0906	D2	C-4	Downtown Commercial	Apartments	65%	4	4,337.04	46,659.56	39	1.2	47	1	39	8
1256444	4369742	558.3478	A2	RS-2	Residential	Low Density Residential	65%	1	362.93	3,904.50	2	1.83	4	1	2	2
1275428	11816457	342.2576	Z3	C-4	Downtown Commercial	Retail	65%	1	222.47	2,393.39	0	2.65	7	2	5	2
1281850	11498196	559.1331	B1	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.00	2	1.83	4	1	2	2
1281851	7677103	2236.0621	J2	P-2	District Assembly	Office	65%	2.5	3,633.60	39,091.73	0	2.84	112	2	73	39
1281852	12006386	559.1306	H2	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.98	2	1.83	4	1	2	2
1281853	12002143	272.6122	K2	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
1279661	11760796	286.06	F	C-4	Downtown Commercial	Restaurant	65%	1	185.94	2,000.41	0	5.5	12	2	4	8
1291971	12002780	558.5739	K1	C-4	Downtown Commercial	Retail	65%	1	363.07	3,906.08	0	2.65	11	2	8	3
1292193	7189028	435.7326	Z2	C-4	Downtown Commercial	Retail	65%	1	283.23	3,047.06	0	2.65	9	2	6	3
1294642	12023167	279.09	E2	C-4	Downtown Commercial	Restaurant	65%	1	181.41	1,951.67	0	5.5	11	2	4	7
1304442	8480249	559.1357	C1	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.01	2	1.83	4	1	2	2
1304735	Building Strata	392.9223	I3	CD-86	Comprehensive Developme	Apartments	65%	4	1,021.60	10,990.76	10	1.2	12	1	10	2
1307360	12023302	279.9727	E2	C-4	Downtown Commercial	Retail	65%	1	181.98	1,957.84	0	2.65	6	2	4	2
1306322	Building Strata	559.2128	E1	C-4	Downtown Commercial	Retail	65%	1	363.49	3,910.55	0	2.65	11	2	8	3

1317012	23620030	3135.9928	J3	P-2	District Assembly	Institutional	65%	1	2,038.40	21,929.87	0	#N/A	#N/A	#N/A	#N/A	#N/A
1313700	12002135	280.3031	K2	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
1313701	3488616	559.1378	B1	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.03	2	1.83	4	1	2	2
1331071	11760842	281.7698	F	C-4	Downtown Commercial	Retail	65%	1	183.15	1,970.40	0	2.65	6	2	4	2
1324088	5218667	557.5645	O1	I-1	Light Industrial	Industrial	65%	1	362.42	3,899.03	0	1.02	4	0.9	4	0
1342810	12022225	561.0859	D2	C-4	Downtown Commercial	Retail	65%	1	364.71	3,923.65	0	2.65	11	2	8	3
1337062	7171595	558.892	I1	RS-2	Residential	Low Density Residential	65%	1	363.28	3,908.31	2	1.83	4	1	2	2
1349525	12021091	559.1177	C2	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.89	2	1.83	4	1	2	2
1349827	12002526	550.887	K1	P-2	District Assembly	Public Park	65%	1	358.08	3,852.33	0	#N/A	#N/A	#N/A	#N/A	#N/A
1356074	Building Strata	3095.37	N1	C-4	Downtown Commercial	Apartments	65%	4	8,047.96	86,583.19	73	1.2	88	1	73	15
1362269	11498242	559.1768	C1	RS-2	Residential	Low Density Residential	65%	1	363.46	3,910.30	2	1.83	4	1	2	2
1365225	7800860	140.1336	Z3	C-4	Downtown Commercial	Retail	65%	1	91.09	979.95	0	2.65	3	2	2	1
1368898	8737045	559.1145	Q2	I-1	Light Industrial	Industrial	65%	1	363.42	3,909.87	0	1.02	4	0.9	4	0
1375292	12005363	559.1126	I1	P-1	Neighbourhood Civic	Vacant	65%	0	-	-	0	0	0	0	0	0
1378093	6257194	557.949	Y2	C-4	Downtown Commercial	Retail	65%	1	362.67	3,901.72	0	2.65	11	2	8	3
1378094	28378903	2796.8867	N2	CD-43	Comprehensive Developme	Apartments	65%	4	7,271.91	78,234.07	66	1.2	80	1	66	14
1371638	12004162	558.6793	J1	P-2	District Assembly	Low Density Residential	65%	1	363.14	3,906.82	2	1.83	4	1	2	2
1384330	12020800	559.1242	B2	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.93	2	1.83	4	1	2	2
1390796	11760737	278.9459	F	C-4	Downtown Commercial	Retail	65%	1	181.31	1,950.66	0	2.65	6	2	4	2
1382677	11498595	858.4425	Y2	C-4	Downtown Commercial	Restaurant	65%	1	557.99	6,003.05	0	5.5	34	2	12	22
1381811	12002810	362.7353	K1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
1397264	11498447	557.9995	X1	RS-2	Residential	Low Density Residential	65%	1	362.70	3,902.07	2	1.83	4	1	2	2
1403615	12020435	558.3665	A1	RS-2	Residential	Low Density Residential	65%	1	362.94	3,904.63	2	1.83	4	1	2	2
1394288	12021075	557.3872	C2	RS-2	Residential	Low Density Residential	65%	1	362.30	3,897.79	2	1.83	4	1	2	2
1413005	12022268	557.9274	D1	RS-2	Residential	Vacant	65%	0	-	-	0	0	0	0	0	0
1420032	12005355	559.1103	I1	RS-2	Residential	Low Density Residential	65%	1	363.42	3,909.84	2	1.83	4	1	2	2
1419354	6119719	559.0271	D1	C-4	Downtown Commercial	Retail	65%	1	363.37	3,909.25	0	2.65	11	2	8	3
1426603	11993201	558.6041	R1	CD-6	Comprehensive Developme	Industrial	65%	1	363.09	3,906.30	0	1.02	4	0.9	4	0
1416265	4785461	559.0856	B2	RS-2	Residential	Low Density Residential	65%	1	363.41	3,909.66	2	1.83	4	1	2	2
1432870	12002798	181.4388	K1	C-4	Downtown Commercial	Vacant	65%	0	-	-	0	0	0	0	0	0
1432330	11435143	559.1467	H1	RS-2	Residential	Low Density Residential	65%	1	363.45	3,910.09	2	1.83	4	1	2	2
1445039	12022161	557.5506	D2	C-4	Downtown Commercial	Office	65%	2.5	906.02	9,747.32	0	2.84	28	2	19	9
1454721	12002682	281.1942	K2	C-4	Downtown Commercial	Retail	65%	1	182.78	1,966.38	0	2.65	6	2	4	2
1458426	Building Strata	392.9099	I3	CD-86	Comprehensive Developme	Apartments	65%	4	1,021.57	10,990.41	10	1.2	12	1	10	2
1457747	2541416	559.0663	D1	RS-2	Residential	Low Density Residential	65%	1	363.39	3,909.53	2	1.83	4	1	2	2
1458338	11993626	557.8803	Q1	I-1	Light Industrial	Retail	65%	1	362.62	3,901.23	0	2.65	11	2	8	3
1461037	11498692	557.9389	Y1	RS-2	Residential	Low Density Residential	65%	1	362.66	3,901.64	2	1.83	4	1	2	2
1461040	11497980	558.3624	A2	RS-2	Residential	Low Density Residential	65%	1	362.94	3,904.61	2	1.83	4	1	2	2
1451974	3991733	559.0934	Q2	I-1	Light Industrial	Low Density Residential	65%	1	363.41	3,909.72	2	1.83	4	1	2	2
1472133	9323970	1471.9215	V3	C-2	Gasoline Service Station Co	Vacant	65%	0	-	-	0	0	0	0	0	0
1467430	2949334	558.4309	G1	RS-2	Residential	Low Density Residential	65%	1	362.98	3,905.08	2	1.83	4	1	2	2
1503573	Building Strata	1189.5218	O2	CD-42	Comprehensive Developme	Apartments	65%	4	3,092.76	33,273.11	28	1.2	34	1	28	6
1506169	12020931	559.1226	B1	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.92	2	1.83	4	1	2	2
1499643	12004251	559.0218	J2	P-2	District Assembly	Office	65%	2.5	908.41	9,773.04	0	2.84	28	2	19	9
1512602	11997621	569.7912	N2	I-1	Light Industrial	Industrial	65%	1	370.36	3,984.53	0	1.02	5	0.9	4	1
1519065	12004138	557.8011	J1	RS-2	Residential	Low Density Residential	65%	1	362.57	3,900.68	2	1.83	4	1	2	2
1538300	12020524	558.4006	A1	RS-2	Residential	Low Density Residential	65%	1	362.96	3,904.87	2	1.83	4	1	2	2
1535636	11993031	559.0517	R2	MUD-2	Mixed Use District	Vacant	65%	0	-	-	0	0	0	0	0	0
1531881	12006017	559.1822	H1	RS-2	Residential	Low Density Residential	65%	1	363.47	3,910.34	2	1.83	4	1	2	2
1492530	28844211	68.7578	K2	C-4	Downtown Commercial	Retail	65%	1	44.69	480.82	0	2.65	2	2	1	1

1529195	12002623	558.6018	K1	P-2	District Assembly	Public Park	65%	1	363.09	3,906.28	0	#N/A	#N/A	#N/A	#N/A	#N/A
1525464	2859211	558.0063	X2	RS-2	Residential	Low Density Residential	65%	1	362.70	3,902.12	2	1.83	4	1	2	2
1554487	12021059	555.8991	C2	RS-2	Residential	Low Density Residential	65%	1	361.33	3,887.38	2	1.83	4	1	2	2
1561144	11992085	557.8304	R2	I-1	Industrial	Vacant	65%	0	-	-	0	0	0	0	0	0
1557458	2429811	1116.7486	G1	RS-2	Residential	Low Density Residential	65%	1	725.89	7,809.38	4	1.83	8	1	4	4
1557459	23175923	2236.0817	N3	I-1	Light Industrial	Retail	65%	1	1,453.45	15,636.83	0	2.65	42	2	30	12
1554788	Statutory RoW	77.7069	I3	CD-86	Comprehensive Developme	Apartments	65%	4	202.04	2,173.60	2	1.2	3	1	2	1
1477587	12005568	559.1319	I2	RS-2	Residential	Low Density Residential	65%	1	363.44	3,909.99	2	1.83	4	1	2	2
1477490	11993715	559.7981	Q1	I-1	Light Industrial	Apartments	65%	4	1,455.48	15,658.58	14	1.2	17	1	14	3
1605591	11996293	4473.2657	M	I-1	Light Industrial	Industrial	65%	1	2,907.62	31,281.37	0	1.02	32	0.9	27	5
1624627	7944527	559.0592	C2	RS-2	Residential	Low Density Residential	65%	1	363.39	3,909.48	2	1.83	4	1	2	2
1627592	12006459	559.125	H2	RS-2	Residential	Low Density Residential	65%	1	363.43	3,909.94	2	1.83	4	1	2	2
1627596	6462910	556.6352	J1	RS-2	Residential	Low Density Residential	65%	1	361.81	3,892.53	2	1.83	4	1	2	2
1627597	8310173	280.8035	Z3	C-4	Downtown Commercial	Retail	65%	1	182.52	1,963.65	0	2.65	6	2	4	2
1627602	11498013	932.2816	A2	RS-2	Residential	Apartments	65%	4	2,423.93	26,077.63	22	1.2	27	1	22	5
1634022	11816503	280.7321	Z3	C-4	Downtown Commercial	Retail	65%	1	182.48	1,963.15	0	2.65	6	2	4	2
1583024	12006483	559.1379	H2	RS-2	Residential	Low Density Residential	65%	1	363.44	3,910.03	2	1.83	4	1	2	2
1586576	11992051	557.7762	R2	I-1	Industrial	Retail	65%	1	362.55	3,900.51	0	2.65	11	2	8	3
1618721	7822952	8007.9788	V2	C-4	Downtown Commercial	Retail	65%	1	5,205.19	55,999.48	0	2.65	149	2	105	44
1614807	11997591	544.5876	N3	I-1	Light Industrial	Industrial	65%	1	353.98	3,808.28	0	1.02	4	0.9	4	0
1617909	30223890	2231.4168	D2	C-4	Downtown Commercial	Apartments	65%	4	5,801.68	62,416.83	53	1.2	64	1	53	11
1612690	4310225	277.9321	F	C-4	Downtown Commercial	Restaurant	65%	1	180.66	1,943.57	0	5.5	11	2	4	7
1567468	8737029	558.9909	Q2	I-1	Light Industrial	Vacant	65%	0	-	-	0	0	0	0	0	0
1567681	12000779	557.582	O1	I-1	Light Industrial	Office	65%	2.5	906.07	9,747.87	0	2.84	28	2	19	9
1574242	3660800	377.797	Z2	C-4	Downtown Commercial	Retail	65%	1	245.57	2,641.92	0	2.65	8	2	5	3
1576708	12023311	279.7649	E2	C-4	Downtown Commercial	Retail	65%	1	181.85	1,956.38	0	2.65	6	2	4	2
1573928	11993111	558.4829	R1	CD-6	Comprehensive Developme	Restaurant	65%	1	363.01	3,905.45	0	5.5	22	2	8	14

Appendix C: Future Shared Parking Model

Summary 5-year Development (As provided by the District)

OBJECTID	gis_id	pid	address	applicat_1	dwelling_u	commercial gfa office	commerci_GFA retail	light_indu_GFA	commercial gfa office	commerci_GFA retail	light_indu_GFA	likelyhood	townhouse_2 bedrooms	townhous_3 bdrooms	townhous_4 bedrooms	apartment_studio	apartmen_1 bedroom	apartmen_2_bedroom	apartmen_3brd	apartmen_4brds
1	1092681	3331156	1366 MAIN ST	DEV00107					0	0	0	0	0	0	0	0	0	0	0	0
2	1087819	23398892	101, 38026 SECOND A	DEV00122	31	2592	2695		2592	2695	0	1	0	0	0	8	15	8	0	0
3	1092681	12002836	1360 VICTORIA ST	DEV00046	32	3961	3110		3961	3110	0	1	0	0	0	0	15	17	0	0
4	1092681	11993723	37710 THIRD AVE	DEV00096	1				0	0	0	0	0	0	0	0	0	0	0	0
5	1092681	11993715	37718 THIRD AVE	DEV00093			559		0	0	0	0	0	0	0	0	0	0	0	0
6	1092681	12002089	37913 CLEVELAND A\	RZ000033	88	5475	55964		5475	55964	0	1	0	0	0	0	26	35	18	9
7	1092681	11760869	38016, 38018, 38020,	DEV00086	8				0	0	0	0	0	0	0	0	0	0	0	0
8	1092649	11498137	38074 FIFTH AVE	DEV00098	17		805		0	0	0	0	0	0	0	0	0	0	0	0
9	1092681	11993022	37773 CLEVELAND A\	DEV00065		1551			0	0	0	0	0	0	0	0	0	0	0	0
10	1092681	11996293	37861 THIRD AVE	DEV00151	0			5837	0	0	0	0	0	0	0	0	0	0	0	0
11	1092681	11993065	37780 SECOND AVE	DEV00131	16			1419	0	0	0	0	0	0	0	0	0	0	0	0
12	3076683	011-993-031		DP000500					0	0	0	0	0	0	0	0	0	0	0	0
13	3078522	009-045-961		RZ000013	46	9822	7573		9822	7573	0	1	0	0	0	0	29	11	0	6
14			1365 Victoria St	SA000021	33		3175		0	3175	0	1	0	0	0	0	12	16	5	0
15		025-502-3	38275 Third Ave	SA000073					0	0	0	0	0	0	0	0	0	0	0	0
16		011-992-0	37725 Cleveland Ave	SA000039					0	0	0	0	0	0	0	0	0	0	0	0
17			38012 Third Avenue	DEV00055	67		5072		0	5072	0	1	0	0	0	0	0	0	0	67
18	3077010	012-023-5	38044 SECOND AVE	SA000086	38		3401		0	3401	0	1	0	0	0	0	27	11	0	0
19	3120034	007-800-8	38148 CLEVELAND A\	SA000080	12		3456		0	3456	0	1	0	0	0	0	0	12	0	0
20	3119927	030-624-9	37762 THIRD AVE	SA000078	17			4398	0	0	4398	1	0	0	0	3	7	7	0	0
21	3078424	011-993-5	37781 SECOND AVE	RZ000019	20	4083	2334		4083	2334	0	1	0	0	0	0	12	4	4	0
22	3078606	012-021-0	38029 THIRD AVE	RZ000023	45		9745		0	9745	0	1	0	0	0	0	10	26	9	0
23				RZ000004	213	52255	38757		52255	38757	0	1	0	55	0	16	34	68	18	22
24	3077140	8737029	37707 SECOND AVE	RZ000026		10031			10031	0	0	1	0	0	0	0	0	0	0	0
25	3078366	12022306	38062 THIRD AVE	RZ000028	78		16832		0	16832	0	1	0	0	0	0	22	37	19	0
26	3077106	7616732	38201 THIRD AVE	DP000585	220		20037		0	20037	0	1	0	0	0	0	42	118	42	0
27	3119898	00959722	38048 SIXTH AVE	RZ000029					0	0	0	0	0	0	0	0	0	0	0	0
28	3078767	00378332	37870 CLEVELAND A\	SA000106	201	16587	23454		16587	23454	0	1	0	0	0	20	147	38	0	40
29	3078265	007-623-038		RZ000009	216		63461		0	63461	0	1	0	0	0	45	41	65	40	25
30			38060 Second Ave	DEV000155	31	3312	3309		3312	3309	0	1	0	0	0	0	0	0	0	0
									108,118.00	***262,375.00***	***4,398.00***		***0***	***55***	***0***	***92***	***439***	***473***	***155***	***169***

Summary 5-year Development (As provided by the District)

OBJECTID	applicat_1	Block_ID	adj. blockF1	adj. blockF2	adj. blockF3	Obs Rate Apartm. Weekends	Obs Rate Apartm Mid-Week	Obs Rate Townh. Weekends	Obs Rate Townh Mid-Week	Obs Rate Retail Weekends	Obs Rate Retail Mid-Week	Obs Rate Offi. Weekends	Obs Rate Offi Mid-Week	Obs Rate Light Ind Weekends	Obs Rate Light Ind. Mid-Week	Apartm. Weekends	Apartm Mid-Week	Townh. Weekends	Townh Mid-Week	Retail Weekends	Retail Mid-Week	Offi. Weekends	Offi Mid-Week	Light Ind Weekends	Light Ind. Mid-Week	Tot Parking Demand Weekends	Tot Parking Demand Mid-Week
1	DEV00107	O1	22	23	17	0.08613	0.071893	0.08613	0.071893	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0	0	0
2	DEV00122	E1	37	34		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	2.67002633	2.670026	0	0	1.575153	1.285454	0	1.43711	0	0	4.24518	5.392589
3	DEV00046	K1	36	35	54	0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	2.756156212	2.756156	0	0	1.817709	1.483399	0	2.196138	0	0	4.573866	6.435694
4	DEV00096	Q1	100	99		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0	0	0
5	DEV00093	Q1	100	99		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0.32672	0.26663	0	0	0	0	0.32672	0.26663
6	RZ000033	K2	42	18	43	0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	7.579429583	7.57943	0	0	32.70942	26.69355	0	3.035561	0	0	40.28885	37.30854
7	DEV00086	F	41	40		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0	0	0
8	DEV00098	B1	96			0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0.4705	0.383967	0	0	0	0	0.4705	0.383967
9	DEV00065	R2	107			0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0.859937	0	0	0	0.859937
10	DEV00151	M	9	10		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0.180494	0	0.180494
11	DEV00131	R1	102			0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	1.550337869	1.550338	0	0	0	0	0	0	0	0.043879	1.550338	1.594217
12	DP000500	R2	107			0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0	0	0
13	RZ000013	Z2	39	46		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	3.961974555	3.961975	0	0	4.42621	3.612148	0	5.445714	0	0	8.388185	13.01984
14	SA000021	E1	37	34	50	0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	2.842286094	2.842286	0	0	1.8557	1.514403	0	0	0	0	4.697986	4.356689
15	SA000073	U	1	2		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	19.98213254	19.98213	0	0	0	0	0	0	0	0	19.98213	19.98213
16	SA000039	R2	107			0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0	0	0
17	DEV00055	D1	6	5		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	5.770702069	5.770702	0	0	2.964444	2.419228	0	0	0	0	8.735146	8.18993
18	SA000086	E1	37	34		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	3.272935502	3.272936	0	0	1.987791	1.622199	0	0	0	0	5.260726	4.895135
19	SA000080	Z3	38	39		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	1.033558579	1.033559	0	0	2.019937	1.648433	0	0	0	0	3.053495	2.681992
20	SA000078	Q1	100	99		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	1.464207988	1.464208	0	0	0	0	0	0	0	0.135997	1.464208	1.600205
21	RZ000019	Q2	101	104		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	1.722597632	1.722598	0	0	1.364159	1.113265	0	2.26378	0	0	3.086756	5.099643
22	RZ000023	C2	5	6		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	3.875844673	3.875845	0	0	5.695684	4.648143	0	0	0	0	9.571529	8.523987
23	RZ000004	T	86			0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	13.6085213	13.60852	4.737143	4.737143	22.6524	18.4862	0	28.97228	0	0	40.99806	65.80415
24	RZ000026	Q2	105	106		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	5.561592	0	0	0	5.561592
25	RZ000028	D1	6	5		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	6.718130767	6.718131	0	0	9.837841	8.02848	0	0	0	0	16.55597	14.74661
26	DP000585	U	1	2		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	17.39823609	17.39824	0	0	11.71107	9.557192	0	0	0	0	29.10931	26.95543
27	RZ000029	A1	56	57		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	0	0	0	0	0	0	0	0
28	SA000106	P	20	55		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	21.101821	21.10182	0	0	13.70822	11.18702	0	9.196503	0	0	34.81004	41.48535
29	RZ000009		26	27		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	18.60405443	18.60405	0	0	37.09121	30.26945	0	0	0	0	55.69526	48.8735
30	DEV000155	E1	37	34		0.08613	0.08613	0.08613	0.08613	0.584472	0.476977	0	0.55444	0	0.030922	0	0	0	0	1.934019	1.578318	0	1.836307	0	0	1.934019	3.414624
																135.91	**135.91**	**4.74**	**4.74**	**154.15**	**125.80**	**-**	**60.80**	**-**	**0.36**	**294.80**	**327.61**

Estimated 5-year On-Street Development Parking By Block

OBJECTID	applicat_1	Block_ID	Likelihood	Apartm. Weekends	Apartm Mid-Week	Townh. Weekends	Townh Mid-Week	Retail Weekends	Retail Mid-Week	Offi. Weekends	Offi Mid-Week	Light Ind Weekends	Light Ind. Mid-Week	Tot Parking Demand Weekends	Tot Parking Demand Mid-Week	Number of Blocksfaces Impacted	#ID	Demand Weekend	#ID	Demand Weekend	#ID	Demand Weekend	#ID	Demand Midweek	#ID	Demand Midweek	#ID	Demand Midweek	check weekend	check weekend	Check midweek	Check midweek
1	DEV00107	O1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	22	-	23	-	17.00	-	22	-	23	-	17.00	-	-	-	-	-
2	DEV00122	E1	1	2.136021	1.602016	0	0	1.389285	1.156908	0	1.43711	0	0	3.5253063	4.1960335	2	37	1.76	34	1.76	-	-	37	2.10	34	2.10	-	-	3.53	-	4.20	-
3	DEV00046	K1	1	2.204925	2.204925	0	0	1.60322	1.335059	0	2.196138	0	0	3.8081446	5.7361226	3	36	1.27	35	1.27	54.00	1.27	36	1.91	35	1.91	54.00	1.91	3.81	-	5.74	-
4	DEV00096	Q1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	100	-	99	-	-	-	100	-	99	-	-	-	-	-	-	-
5	DEV00093	Q1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	100	-	99	-	-	-	100	-	99	-	-	-	-	-	-	-
6	RZ000033	K2	1	6.063544	6.063544	0	0	28.84971	24.0242	0	3.035561	0	0	34.913249	33.123301	3	42	11.64	18	11.64	43.00	11.64	42	11.04	18	11.04	43.00	11.04	34.91	-	33.12	-
7	DEV00086	F	0	0	0	0	0	0	0	0	0	0	0	0	0	2	41	-	40	-	-	-	41	-	40	-	-	-	-	-	-	-
8	DEV00098	B1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	96	-	-	-	-	-	96	-	-	-	-	-	-	-	-	-
9	DEV00065	R2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	107	-	-	-	-	-	107	-	-	-	-	-	-	-	-	-
10	DEV00151	M	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9	-	10	-	-	-	9	-	10	-	-	-	-	-	-	-
11	DEV00131	R1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	102	-	-	-	-	-	102	-	-	-	-	-	-	-	-	-
12	DP000500	R2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	107	-	-	-	-	-	107	-	-	-	-	-	-	-	-	-
13	RZ000013	Z2	1	3.16958	3.16958	0	0	3.903917	3.250933	0	5.445714	0	0	7.0734968	11.866227	2	39	3.54	46	3.54	-	-	39	5.93	46	5.93	-	-	7.07	-	11.87	-
14	SA000021	E1	1	2.273829	2.273829	0	0	1.636727	1.362962	0	0	0	0	3.9105563	3.6367912	3	37	1.30	34	1.30	50.00	1.30	37	1.21	34	1.21	50.00	1.21	3.91	-	3.64	-
15	SA000073	U	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	-	2	-	-	-	1	-	2	-	-	-	-	-	-	-
16	SA000039	R2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	107	-	-	-	-	-	107	-	-	-	-	-	-	-	-	-
17	DEV00055	D1	1	4.616562	4.616562	0	0	2.61464	2.177305	0	0	0	0	7.2312016	6.7938671	2	6	3.62	5	3.62	-	-	6	3.40	5	3.40	-	-	7.23	-	6.79	-
18	SA000086	E1	1	2.618348	2.618348	0	0	1.753232	1.459979	0	0	0	0	4.3715799	4.0783279	2	37	2.19	34	2.19	-	-	37	2.04	34	2.04	-	-	4.37	-	4.08	-
19	SA000080	Z3	1	0.826847	0.826847	0	0	1.781584	1.48359	0	0	0	0	2.6084312	2.3104367	2	38	1.30	39	1.30	-	-	38	1.16	39	1.16	-	-	2.61	-	2.31	-
20	SA000078	Q1	1	1.171366	1.171366	0	0	0	0	0	0	0	0.081598	1.1713664	1.2529645	2	100	0.59	99	0.59	-	-	100	0.63	99	0.63	-	-	1.17	-	1.25	-
21	RZ000019	Q2	1	1.378078	1.378078	0	0	1.203188	1.001938	0	2.26378	0	0	2.5812661	4.6437966	2	101	1.29	104	1.29	-	-	101	2.32	104	2.32	-	-	2.58	-	4.64	-
22	RZ000023	C2	1	3.100676	3.100676	0	0	5.023593	4.183328	0	0	0	0	8.1242692	7.2840042	2	5	4.06	6	4.06	-	-	5	3.64	6	3.64	-	-	8.12	-	7.28	-
23	RZ000004	T	1	10.88682	10.88682	3.789715	2.842286	19.97942	16.63758	0	28.97228	0	0	34.655948	59.338972	1	86	34.66	-	-	-	-	86	59.34	-	-	-	-	34.66	-	59.34	-
24	RZ000026	Q2	1	0	0	0	0	0	0	0	5.561592	0	0	0	5.5615918	2	105	-	106	-	-	-	105	2.78	106	2.78	-	-	-	-	5.56	-
25	RZ000028	D1	1	5.374505	5.374505	0	0	8.676975	7.225632	0	0	0	0	14.05148	12.600137	2	6	7.03	5	7.03	-	-	6	6.30	5	6.30	-	-	14.05	-	12.60	-
26	DP000585	U	1	13.91859	13.91859	0	0	10.32917	8.601473	0	0	0	0	24.247757	22.520062	2	1	12.12	2	12.12	-	-	1	11.26	2	11.26	-	-	24.25	-	22.52	-
27	RZ000029	A1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	56	-	57	-	-	-	56	-	57	-	-	-	-	-	-	-
28	SA000106	P	1	16.88146	16.88146	0	0	12.09065	10.06832	0	9.196503	0	0	28.972104	36.146281	2	20	14.49	55	14.49	-	-	20	18.07	55	18.07	-	-	28.97	-	36.15	-
29	RZ000009		1	14.88324	14.88324	0	0	32.71444	27.2425	0	0	0	0	47.597688	42.125748	2	26	23.80	27	23.80	-	-	26	21.06	27	21.06	-	-	47.60	-	42.13	-
30	DEV000155	E1	1	0	0	0	0	1.705805	1.420486	0	1.836307	0	0	1.7058051	3.2567924	2	37	0.85	34	0.85	-	-	37	1.63	34	1.63	-	-	1.71	-	3.26	-
				91.50	**90.97**	**3.79**	**2.84**	**135.26**	**112.63**	-	**59.94**	-	**0.08**	**230.55**	**266.47**	-		**125.50**		**90.84**		**14.21**		**155.82**		**96.48**		**14.17**				

Summary of development withing the next five years

Development Type	Unit	Yield	Parking Rate: Est. Local Rate Mid-week	Parking Rate: Est. Local Rate Weekend	Parking Rate: Std. ITE*	Est. Future On-Steet Parking Demand Mid-week	Est. Future On-Steet Parking Demand Weekend
Residential	Dwelling Units	1,383	0.0719	0.086	1.20	100	120
Commercial	Per 1,000 sqft (GFA)	262,375	0.4770	0.584	2.65	126	154
Office	Per 1,000 sqft (GFA)	108,118	0.5544	0.000	2.84	60	0
Light Industrial	Per 1,000 sqft (GFA)	4,398	0.0309	0.000	0.75	1	0
						287	**274**

* ITE average weekday (midweek) including all demand on and off-street

Estimated Demand by BlockFace ID

Blockface ID	Weekend Dem	Blockface ID	Midweek Demand		Blockface ID	Weekend Dem	Midweek Dem
22	0	22	0		1	12	11
37	1.762653133	37	2.098016767		2	12	11
36	1.269381543	36	1.912040872		3	0	0
100	0	100	0		4	0	0
100	0	100	0		5	14	13
42	11.63774982	42	11.04110044		6	14	13
41	0	41	0		7	0	0
96	0	96	0		8	0	0
107	0	107	0		9	0	0
9	0	9	0		10	0	0
102	0	102	0		11	0	0
107	0	107	0		12	0	0
39	3.536748419	39	5.933113428		14	0	0
37	1.30351878	37	1.212263733		15	0	0
1	0	1	0		16	0	0
107	0	107	0		17	0	0
6	3.615600781	6	3.396933568		18	11	11
37	2.185789966	37	2.039163943		19	0	0
38	1.304215576	38	1.155218359		20	14	18
100	0.585683195	100	0.626482259		21	0	0
101	1.290633053	101	2.321898307		22	0	0
5	4.062134585	5	3.642002096		23	0	0
86	34.655948	86	59.33897159		24	0	0
105	0	105	2.78079591		25	0	0
6	7.025739974	6	6.300068342		26	23	21
1	12.12387841	1	11.26003082		27	23	21
56	0	56	0		28	0	0
20	14.48605217	20	18.07314036		29	0	0
26	23.79884408	26	21.06287405		30	0	0
37	0.852902548	37	1.628396216		31	0	0
23	0	23	0		32	0	0
34	1.762653133	34	2.098016767		33	0	0
35	1.269381543	35	1.912040872		34	6	6
99	0	99	0		35	1	1
99	0	99	0		36	1	1
18	11.63774982	18	11.04110044		37	6	6
40	0	40	0		38	1	1
0	0	0	0		39	4	7
0	0	0	0		40	0	0
10	0	10	0		41	0	0
0	0	0	0		42	11	11
0	0	0	0		43	11	11
46	3.536748419	46	5.933113428		44	0	0
34	1.30351878	34	1.212263733		45	0	0
2	0	2	0		46	3	5
0	0	0	0		47	0	0
5	3.615600781	5	3.396933568		48	0	0
34	2.185789966	34	2.039163943		49	0	0
39	1.304215576	39	1.155218359		50	1	1
99	0.585683195	99	0.626482259		51	0	0
104	1.290633053	104	2.321898307		52	0	0
6	4.062134585	6	3.642002096		55	14	18
0	0	0	0		56	0	0
106	0	106	2.78079591		57	0	0
5	7.025739974	5	6.300068342		58	0	0
2	12.12387841	2	11.26003082		59	0	0
57	0	57	0		60	0	0
55	14.48605217	55	18.07314036		61	0	0
27	23.79884408	27	21.06287405		62	0	0
34	0.852902548	34	1.628396216		63	0	0
17	0	17	0		64	0	0
0	0	0	0		65	0	0
54	1.269381543	54	1.912040872		66	0	0
0	0	0	0		67	0	0
0	0	0	0		68	0	0
43	11.63774982	43	11.04110044		69	0	0
0	0	0	0		70	0	0
0	0	0	0		72	0	0
0	0	0	0		75	0	0
0	0	0	0		76	0	0
0	0	0	0		77	0	0
0	0	0	0		86	34	59
0	0	0	0		91	0	0
50	1.30351878	50	1.212263733		92	0	0
0	0	0	0		93	0	0
0	0	0	0		95	0	0
0	0	0	0		96	0	0
0	0	0	0		99	0	0
0	0	0	0		100	0	0
0	0	0	0		101	1	2
0	0	0	0		102	0	0
0	0	0	0		104	1	2
0	0	0	0		105	0	2
0	0	0	0		106	0	2
0	0	0	0		109	0	0
0	0	0	0		110	0	0

Aggregated 5-Year Demand Model Weekend

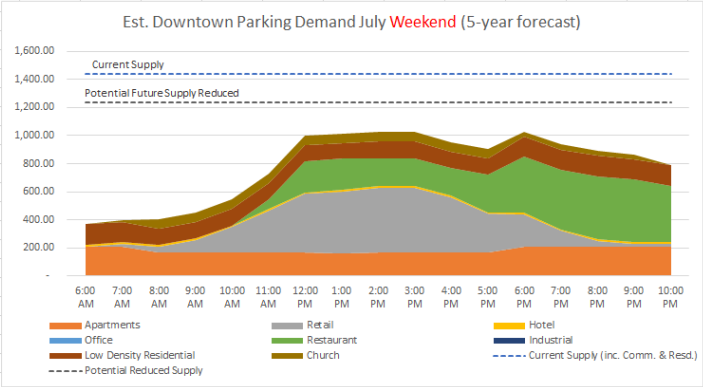
	Weekend Demand	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Apartments/Townhouse	95.29	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retail	135.26	71%	85%	91%	90%	92%	100%	98%	92%	93%	93%	81%	67%
Office	-	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	80%
Light Industrial	-	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%

	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments/Townhouses	100%	100%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	100%	100%	100%	100%	100%
Retail	1%	5%	10%	20%	40%	65%	90%	100%	100%	100%	85%	60%	50%	25%	10%	5%	5%
Office	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Light Industrial	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

EST. 5-YEAR DEMAND WEEKEND JUL	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments/Townhouses	95.29	95.29	76.24	76.24	76.24	76.24	76.24	76.24	76.24	76.24	76.24	76.24	95.29	95.29	95.29	95.29	95.29
Retail	1.33	6.63	13.26	26.51	53.02	86.16	119.30	132.55	132.55	132.55	112.67	79.53	66.28	33.14	13.26	6.63	6.63
Office	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Light Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CURRENT EST. JULY WEEKEND JULY	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Supply	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
Apartments	110.6769	110.6769	88.54152	88.54152	88.54152	88.54152	88.54152	82.81487	88.54152	88.54152	88.54152	88.54152	110.6769	110.6769	110.6769	110.6769	110.6769
Retail	3.330651	16.65325	33.30651	66.61301	133.226	216.4923	299.7586	311.5232	333.0651	333.0651	283.1053	199.839	166.5325	83.26626	33.30651	16.65325	16.65325
Hotel	12.38133	12.38133	11.72968	10.42638	9.123086	9.123086	8.471437	7.923525	9.123086	9.123086	9.774735	10.42638	11.07803	11.07803	11.72968	12.38133	12.38133
Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Restaurant	0	0	0	0	0	66.72886	222.4295	228.8477	200.1866	200.1866	200.1866	266.9154	400.3732	422.6161	444.8591	444.8591	400.3732
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Density Residential	145.3281	145.3281	116.2625	116.2625	116.2625	116.2625	116.2625	108.7429	116.2625	116.2625	116.2625	116.2625	145.3281	145.3281	145.3281	145.3281	145.3281
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	3.392712	13.57085	67.85425	67.85425	67.85425	67.85425	67.85425	63.4656	67.85425	67.85425	67.85425	67.85425	33.92712	33.92712	33.92712	33.92712	3.392712

TOTAL DEMAND JUL WEEKEND	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Current Supply (inc. Comm. & Resd.)	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
Potential Reduced Supply	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833	1237.833
Apartments	205.97	205.97	164.78	164.78	164.78	164.78	164.78	159.05	164.78	164.78	164.78	164.78	205.97	205.97	205.97	205.97	205.97
Retail	4.66	23.28	46.56	93.12	186.25	302.65	419.05	444.07	465.62	465.62	395.77	279.37	232.81	116.40	46.56	23.28	23.28
Hotel	12.38133	12.38133	11.72968	10.42638	9.123086	9.123086	8.471437	7.923525	9.123086	9.123086	9.774735	10.42638	11.07803	11.07803	11.72968	12.38133	12.38133
Office	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Restaurant	0	0	0	0	0	66.72886	222.4295	228.8477	200.1866	200.1866	200.1866	266.9154	400.3732	422.6161	444.8591	444.8591	400.3732
Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Density Residential	145.3281	145.3281	116.2625	116.2625	116.2625	116.2625	116.2625	108.7429	116.2625	116.2625	116.2625	116.2625	145.3281	145.3281	145.3281	145.3281	145.3281
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	3.392712	13.57085	67.85425	67.85425	67.85425	67.85425	67.85425	63.4656	67.85425	67.85425	67.85425	67.85425	33.92712	33.92712	33.92712	33.92712	3.392712



Aggregated 5-year Demand Model Weekday

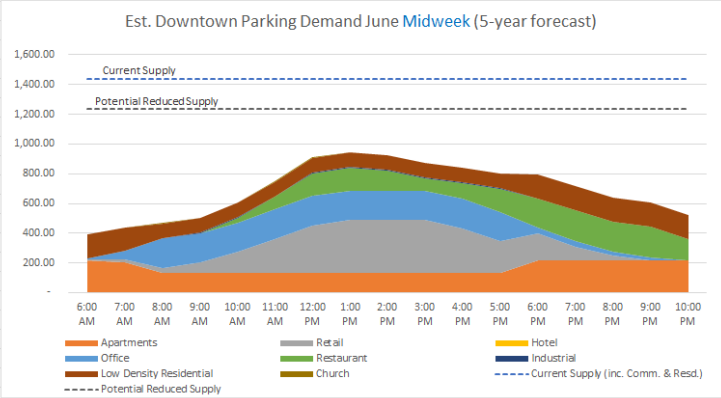
	Mid-Week Demand	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Apartments/Townhouse	93.81	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retail	112.63	71%	85%	91%	90%	92%	100%	98%	92%	93%	93%	81%	67%
Office	59.94	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	80%
Light Industrial	0.08	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%

	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments/Townhouses	100%	95%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	100%	100%	100%	100%	100%
Retail	1%	5%	10%	20%	40%	65%	90%	100%	100%	100%	85%	60%	50%	25%	10%	0%	0%
Office	5%	30%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	20%	20%	10%	10%	0%
Light Industrial	0%	0%	0%	0%	15%	40%	75%	75%	65%	40%	50%	75%	95%	100%	100%	100%	70%

EST. 5-YEAR DEMAND MID-WEEK JUN	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Apartments/Townhouses	93.81	89.12	56.29	56.29	56.29	56.29	56.29	56.29	56.29	56.29	56.29	56.29	93.81	93.81	93.81	93.81	93.81
Retail	1.13	5.63	11.26	22.53	45.05	73.21	101.37	112.63	112.63	112.63	95.74	67.58	56.32	28.16	11.26	-	-
Office	3.00	17.98	59.94	59.94	59.94	59.94	59.94	59.94	59.94	59.94	59.94	59.94	11.99	11.99	5.99	5.99	-
Light Industrial	-	-	-	-	0.01	0.03	0.05	0.05	0.04	0.03	0.03	0.05	0.06	0.07	0.07	0.07	0.05

CURRENT EST. JUN Mid-Week																
JUN MIDWEEK	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Supply	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
Apartments	123.1771017	117.0182466	73.90626099	73.90626099	73.90626099	73.90626099	73.90626099	73.90626099	73.90626099	73.90626099	73.90626099	73.90626099	123.1771017	123.1771017	123.1771017	123.1771017	123.1771017
Retail	2.446274215	12.23137108	24.46274215	48.9254843	97.8509686	159.007824	220.1646794	244.6274215	244.6274215	244.6274215	207.9333083	146.7764529	122.3137108	61.15685538	24.46274215	0	0
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office	6.878347499	41.27008499	137.56695	137.56695	137.56695	137.56695	137.56695	137.56695	137.56695	137.56695	137.56695	137.56695	27.51339	27.51339	13.756695	13.756695	0
Restaurant	0	0	0	0	30.92234506	82.45958683	154.6117253	154.6117253	133.9968286	82.45958683	103.0744835	154.6117253	195.8415187	206.1489671	206.1489671	206.1489671	144.304277
Industrial	0.299308845	1.795853071	5.986176903	5.986176903	5.986176903	5.986176903	5.986176903	5.986176903	5.986176903	5.986176903	5.986176903	5.986176903	1.197235381	1.197235381	0.59861769	0.299308845	0
Low Density Residential	161.7418952	153.6548004	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	161.7418952	161.7418952	161.7418952	161.7418952	161.7418952
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	0	0	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	1.128164109	1.128164109	1.128164109	0	0

TOTAL DEMAND																
JUN MIDWEEK	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM
Current Supply (inc. Comm. & Resd.)	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
Potential Reduced Supply	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333	1237.833333
Apartments	216.99	206.14	130.19	130.19	130.19	130.19	130.19	130.19	130.19	130.19	130.19	130.19	216.99	216.99	216.99	216.99	216.99
Retail	3.57	17.86	35.73	71.45	142.90	232.22	321.53	357.26	357.26	357.26	303.67	214.36	178.63	89.31	35.73	-	-
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office	9.88	59.25	197.51	197.51	197.51	197.51	197.51	197.51	197.51	197.51	197.51	197.51	39.50	39.50	19.75	19.75	-
Restaurant	0	0	0	0	30.92234506	82.45958683	154.6117253	154.6117253	133.9968286	82.45958683	103.0744835	154.6117253	195.8415187	206.1489671	206.1489671	206.1489671	144.304277
Industrial	0.30	1.80	5.99	5.99	6.00	6.01	6.04	6.04	6.03	6.01	6.02	6.04	1.26	1.26	0.66	0.36	0.05
Low Density Residential	161.7418952	153.6548004	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	97.0451371	161.7418952	161.7418952	161.7418952	161.7418952	161.7418952
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Church	0	0	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	2.256328217	1.128164109	1.128164109	1.128164109	0	0



Appendix D – Additional Research Paid Parking Best Practice Review Summary

Additional Research Paid Parking Best Practice Review Summary

There is a wealth of literature and resources out there that provide plenty of discussion and case studies illustrating best-practice parking management strategies and implementation in cities and municipalities of various sizes across North America.

Parking Charges to Manage Parking Demand

No other strategy out there appears to be as effective in managing on-street parking demand as the implementation of parking-pricing schemes. Practitioners indicate though, that pricing alone is not enough, and it should be accompanied by supporting policy, agreements, coordination, branding, communication/education, and technology.

Donald Shoup, a well-respected and influential parking expert in North America, encapsulates best practices in parking pricing under three basic recommendations:

- **Charge the 'right' price for curbside parking**, 'right price' meaning the lowest price to ensure one or two open spaces on every block. In his words: 'No one could argue for a shortage of parking if wherever you go you will find one or two open spaces'.
- **Make paid-parking politically popular** or at least acceptable by returning the meter revenue to the metered neighborhood. Localizing the revenue to gain local support is the key for success.
- Once the above is done, **remove all off-street parking requirements (see section below)** as these put a burden of new developments while subsidizing driving, promoting congestion and air pollution.

As demand varies throughout the day and by location, pricing should be adjusted spatially and temporally to curve demand to target occupancy levels. This strategy is referred to as variable pricing. Meter rates are set (and periodically adjusted) with the goal of achieving an occupancy level of approximately 85%. This will need to be determined based on periodic occupancy surveys.

Most recent advancement in technology, including smart meters and computer models, are able to monitor occupancy data in real-time, allowing municipalities to 'dynamically' change prices depending on the occupancy level trends. Timetable of prices are created in advance and are changed every few weeks.

Recommended Implementation Strategies for paid-parking schemes coincide in incremental/transitional approaches until market-based pricing is possible. Transitional approaches in best practice case-studies include:

1) Adjusting on-street time limits
2) Leasing unused spaces for public parking (see shared parking agreements below)
3) Introduce parking meters–as pilot projects- for a nominal fee on high demand streets where parking is a premium.
4) Stakeholder involvement is crucial. Before parking meters are in full operation, a public relations campaign should be launched. For instance, first month "parking ambassadors" may provide help at the parking meters and for a short-period (weeks/months) only warning tickets are issued for first offenses.
5) Return revenue to the metered street by means of beautification or other visible improvements/benefits

6) Broker shared parking. Brokers can write up agreements between property owners that outline the rules and obligations of each party
7) Promoting walking, biking, and transit
8) Reform zoning as needed
9) Expand the metered program to other streets after a positive pilot testing

Shared Parking Opportunities

Shared parking is a land use/development strategy that optimizes parking capacity by allowing complementary land uses to share spaces, rather than producing separate spaces for separate uses. Distinct but complementary patterns, such as 'office parking' that is generally empty in the evenings and on weekends and 'residential parking' that is generally fuller in the evenings, offer an opportunity for cities to better satisfy residents and commuters without increasing supply.

Some municipalities incorporate language in their zoning ordinances to permit shared parking agreements. If shared parking is deemed appropriate for a site, some municipalities allow shared-parking to meet minimum parking requirements for uses located within the same lot or building. Also, off-site shared parking arrangements to meet on-site parking requirements for complementary uses are allowed within a defined area typically based on acceptable walking distances.

In addition to revisions to local zoning ordinances to enable shared parking, shared parking arrangements can be implemented through shared parking agreements between individual developers, parking leases between the municipality and private owners, or the construction of public parking facilities. In some cases, shared parking can be a formal or informal agreement among different peak users on different days.

The municipality can play a major role in directing/facilitating shared parking agreements. The City of San Clemente, California, decided to directly engage in such agreements instead of building new and costly parkades. The City approached property owners and offered short-term leases for the portion (or time-of-day) they did not need. The space commitment does not need to be large, 8 to 30 spaces. The city pays $35 per month per space, typically on a month-to-month leases. Enforcement can be shared between the City and/or the BIA (if available).

Developers can also coordinate access to shared-parking of underutilized, nearby parking facilities in other buildings, as way to reduce minimum requirements. This strategy has been successful in Montgomery County, Maryland, Boulder, Colorado, and Cambridge, Massachusetts.

Reduction of Parking Requirements and "Unbundled' Parking

The principle behind reduction or elimination of parking minimums for development is to eliminate 'old' subsidies for automobile driving and 'free' parking in support for more sustainable modes of transportation and the environmental and other benefits that come with them.

Municipalities can also encourage developers to stop including parking as part of a complete package in new construction projects. 'Unbundling' parking from the sale of dwelling units, may be seen as an affordability tool, as developers often include ('bundle') parking into the sale of the unit or leases for office space, thereby forcing developers and their tenants to pay for parking that they may not want or need. Price of units becomes more affordable and parking is provided on a need-cost basis. Spaces become priced for the users and not 'subsidized' by the general public.

The reduction or elimination of off-street parking requirements is most effective in areas with high-quality transit service, parking pricing and a walkable environment. These conditions reduce the demand for parking and impact of spillover parking into a neighborhood.

One key component to effectively implement reduced parking requirements is to consider these policies within the context of Transit Oriented Development. That is, reduced or flexible parking requirements can be linked to a development's proximity to transit and good pedestrian infrastructure. The initial step is for the municipality to develop TOD friendly parking requirements in the context of development goals and community vision.

Coordinate On- and Off-street Parking Management and Pricing

Successful on and off-street parking systems are understood as "one-system' by the customer offering comparable standards and qualities across an area.

A coordinated pricing approach influences efficiency of on-street parking by pushing non-priority users to off-street facilities, typically underutilized. A closer level of parity between the two will reduce parkers' tendency to search for on-street parking.

A common strategy approach is to change parking pricing with a view to increase availability of prime on-street parking (short-term customers) and increase utilization of its off-street municipal parking structures (long-term visitors and employees). Consistent signage, wayfinding and branding are essential.

Parking Benefit Area (PBD) and Business Improvement Areas (BIA)

This has proven a successful win-win strategy, especially in locations where priced-parking has been politically infeasible. BIAs are proven innovations for overcoming local resistance to new or increasing on- street parking charges as revenues are returned to the neighborhood in the form of enhanced public services and improved streetscapes.

The organization and governance of PBDs varies with various levels of responsibilities and management shared by a municipality or a private entity such as a Business Improvement Area. Typically, they serve a downtown or neighbourhood. A large number of PBDs around the U.S. and Canada, are managed by business improvement areas and others by special purpose boards.

Supply Enhancement

If necessary, a municipality faced with demand for parking that is in excess of supply might initially attempt to increase capacity by maximizing available space of parking facilities. While the construction of new facilities may improve parking vacancy rates, without appropriate management, oversaturation for prime locations will persist. Supply can be generally enhanced through:

- Moderately increasing/optimizing space and configuration of existing facilities. Examples of supply enhancements include Tandem/Stackers and Angle Parking;
- Improving availability information presented to the driver; and
- Making more efficient use of existing facilities with excess capacity.

Attachment 2 – Paid-Parking Phased Implementation Strategy

- **Short:** *0-2 years to implement*
- **Medium:** *2-7 years to implement*
- **Long:** *7-10 years to implement*

Rec	Description	Timeframe
01	Allocate resources to increase enforcement of existing parking regulations. Before the DoS can explore other recommendations, a culture of enforcement around parking must be developed. Expanding the capacity of the Bylaw Enforcement will support the DoS in transitioning towards a new regulatory framework for pricing parking.	Short
02	Update District By-Laws and Policies as required to support the recommendations of this Paid Parking Management Strategy.	Short
03	Develop a communications plan that informs residents of each change to the existing paid parking system as they occur and provides information to the public on the added features and operation of paid parking system and any new technology and hardware introduced.	Short
04	Establish Parking Performance Metrics for on-street parking to identify required modifications to time limit restrictions (Section 2.3). As a starting point, typical industry standards include: • Overall on-street occupancy rate: 85% (practical capacity); • Average duration of stay in on-street spaces: 70-120% of time posted limits; • Design turnover rate: 5.0 vehicles (10-hr day)[26] • Overtime/meter violation rate: 5-7%; • Overtime/meter capture rate: 20-25%; • Check for duplicate offenders (between warning tickets and tickets)	Short
05	Transition downtown commercial area on-street parking spaces to paid parking along Cleveland Ave and Second Ave.	Short
06	Develop Residents Parking Zone (RE) Exempt permit program for eligible residents of either zone Commercial or Residential	Short
07	Implement (or maintained if existing) 2-hour zones on: - Pemberton Ave. between Second Ave and Loggers Lane - Second Ave. between Main St. and Vancouver St. - Cleveland Ave. between Main St. and Vancouver St. - Winnipeg St. between Third Ave and Second Ave. - Main St. between Third Ave and Second Ave. - Vancouver St. between Third Ave and Second Ave.	Short
08	Initial implementation period for paid parking from 10 AM to 3 PM for both weekend and midweek applying seasonal base rate variations (section 7.3.5)	Short
09	Paid on-street parking will, by design, shift parking demands within the downtown area. Parking demands are likely to increase in surrounding residential areas with unregulated on-street parking. Prior to implementing on-street paid parking, notice should be given to all residents and businesses within 400 m of proposed metered blocks.	Short
10	Procure and incorporate approximately 27 pay stations (multi-space meter hardware) to manage parking on recommended streets. Multi-space metres are one of the most effective hardware options currently in the industry.	Short

11	Consider early adoption of smart meters which allow use of both coins and credit cards and can provide real-time information to the end-user and system manager (occupancy data).	Short
12	Conduct an engagement process to determine the appropriate parameters for a parklette program and develop the necessary policy and tools to implement such a program.	Completed
13	Develop a public engagement strategy the recommendations parking Strategy for further public discussion. This strategy should include a plan for how the input received will be incorporated into the resulting recommendations and decisions.	Short
14	Bring forward a recommendation to council on how to manage Residential Parking Permits (RPP) within the Downtown based on Section 6.3.7 of this study.	Short
15	Conduct a public engagement process to gather feedback on the proposed paid-parking strategy and residential permit (RPP) program and incorporate feedback into the plan.	Short
16	Maintain existing parking space arrangements with local business for use of parking spaces as parklets/patios in front of their business regardless of changes to the paid parking system along Cleveland Ave and Second Ave.	Short
17	Maintain existing parking arrangements with on-street food-truck vendors in the short term while reviewing mid-term compatibility with BIA interest and overall paid parking program.	Short / Medium
18	Develop a process for residents and local business to propose changes to on-street parking regulations, usually it involves a) filling an on-line application, b) staff review, and if warranted recommend bylaw update to Council, c) bylaw update and change implemented. Medium	Short/Medium
19	Establish effective and adequate enforcement to ensure the efficacy of parking regulations. As a starting point, basic enforcement goals should include. Overtime capture rate: 20-25%	Short/Medium
20	Develop guidelines/policy for Revenue Allocation. The majority, if not all, revenue collected from the parking program should be reinvested within the downtown (commercial and residential). This is critical for the success of the of program as residents and business owners can directly see the benefits. Possible uses of parking net revenues back into the community include street cleaning, beatification, wayfinding, improvement of parks and schools, reduction of property taxes or business licensing, marketing and communication.	Short/Medium
21	Facilitate a path for private parking owners to share their parking facilities with the public (See section 5.1)	Short/Medium
22	Encourage and facilitate the use of rent-my-parking-space type app-base businesses where private parking owners (i.e., Churches, business, residents, etc.) rent out (short or long-term) their parking spaces to the public.	
23	Develop a policy of setting the price of the annual residential parking permit based on a revenue neutral price target based on recouping the cost to the District of administering and enforcing the program.	Medium
24	Adopt a policy of setting time and location specific rates for parking meters and permits based on demand.	Medium
25	Adopt a policy of implementing duration-based pricing found to be appropriate (as suggested in Section 6.3.2) as a tool to manage turnover and demand while providing flexibility to users.	Medium
26	Procure a pay-by-phone parking application to supplement/integrate with on-the-ground system and so to expand accessibility and convenience	Medium
27	Examine the viability of establishing a Parking Benefit Area (PBA) to manage pay-parking scheme within the area in coordination with the Downtown BIA and other stakeholders.	Medium

28	Delegate the authority to staff to make minor changes to the residential parking permits (RPP) available, such as: application process, definitions of intended permit use, and eligibility criteria to align with and support the intent of the RPP program.	Medium
29	Engage with the BIA and business/institutions along Cleveland and Second Ave to determine the parking needs of their employees and customers and develop parking permit rates that are appropriate for these needs. This should include consideration for permits that vary in cost based on employment type.	Medium
30	In consultation with the BIA, consider the feasibility/appropriateness of Hourly Wage Employee Parking Monthly Permit program for eligible low income employees to offer low cost parking within the paid parking zone.	Medium
31	Consider implementation of Home Care Service Parking Permit program (i.e. Hamilton ON). for residents who are confined to their home and require essential services. These permits allow health care service workers to park their vehicle in a permit parking zone for up to two hours.	Medium
32	Consider Accessible On-Street Permit Parking program for eligible applicants with one "No Parking Except by Permit" parking space near their home and issues a permit to the applicant. (i.e., Hamilton ON)	Medium
33	To ensure consistency, establish performance-based metrics (and data collection program) for future rate adjustment process: • Hourly occupancy by block, collected over at least one weekday and weekend during hours when meters are enforced. • Average duration of stay by block and posted time limit, collected over at least one weekday and weekend during hours when meters are enforced. • Violation rates, calculated based on observed duration of stay data and posted time limits. • Annual on-street meter and SmartPark (app if and when available) pay station transactions as a check to review the total number and redistribution of transactions between public parking areas within the meter district. • Citation (ticket) rates as a check to confirm levels of enforcement. Best practices recommend data collection once every 12 months using consistent processes to allow for year-to-year comparisons.	Medium
34	Review the Paid Parking Management Strategy every five years to ensure the content and recommendations remain relevant and continue to align with District's vision.	Medium/Long
35	Adopt a policy of allowing price, stay duration, and other incentives within the paid parking system to encourage desired parking behaviour (such as cashless payment or frequent turnover). Examples include first 30min free parking with cashless payment". Incentives could be offered periodically or during an introductory period to encourage transition to the pay-by-phone app.	Medium/Long
36	Consider adoption/promotion of mobile technologies for payment option, wayfinding and supply and demand matching smartphone application.	Medium/Long
37	Review standard metered parking pricing and recommend to Council adjustments of up to $0.25 per hour (increase or decrease) up to once per calendar year.	Medium/Long
38	Review effectiveness of the Residential Permit Program and consider implementation of Commuter and Business Employee categories. Once paid parking is implemented, regular commuters and local business employees may choose being exempted from regular paid-parking when buying a seasonal pass/sticker from the District.	Medium/Long
39	Coordinate the installation of new meter hardware with any roadway improvement projects that may arise from time to time.	Medium/Long

40	Delegated authority to staff to introduce paid parking in areas of high parking demand that would benefit from managed parking.	Medium/Long
41	Improve district walkability by all-year sidewalk maintenance, completing missing sidewalks gaps, improved pedestrian crossing treatments along pedestrian desire lines and intersections, pedestrian-only streets or blocks when feasible and practical.	Medium/Long
42	Lead by example - Make on-site parking at City Hall, other local government offices, and other city-owned facilities (such as swimming pools, libraries, parks and so on) open to the general public to the extent possible.	Medium/Long
43	Establish a cashless system as an end goal for paid parking in the District and ensure the transition to a cashless system be planned and managed carefully in recognition of social equity issues (i.e.. segments of population who do not have access to credit cards or digital wallets). On the other hand, cashless payment options eliminate the risk of theft and provide added security benefits and efficiencies providing increased system auditing ability and eliminate cash handling costs.	Long
44	Eliminate minimum parking requirements and build fewer parking spaces for individual demand generators (i.e. offices, stores, multi-family building, hotels, etc.). At a minimum, relax parking minimums and add flexibility in ways that promote Walkable Parking (i.e. TDM options in lieu of parking like in Vancouver, No parking min. for social/affordable housing, developer pay in-lieu parking schemes)	Long
45	Review district's off-site parking standards to make parking design more compatible with walking urbanism (i.e., prevent parking in frontages or between buildings and sidewalks, discourage surface parking lots at street level, encourage ped connectivity across parking areas, no direct driveway access (curb cuts), encourage private-public parking by default)	Long
46	Install new meters with the cash payment option disabled, in carefully targeted areas, as part of a phased trial of a cashless replacement program for new parking meter hardware.	Long