

## **Section I: Parking Inventory Analysis – Existing Conditions**

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In every downtown the issue of parking is central to stakeholders as they plan for, and perceive, the downtown's on-going economic success. The need to understand both the perception *and* reality of parking is essential if a comprehensive, effective and successful parking management strategy is to be developed and implemented. This section focuses on establishment of a clear understanding of the reality of current parking dynamics in Downtown Kirkland.

### **1. PURPOSE OF THE PARKING INVENTORY ANALYSIS**

The purpose of a parking utilization study is to derive a comprehensive and detailed understanding of actual use dynamics and access characteristics associated with parking in the downtown. Important elements of this section include:

- (1) Development of a data template for all parking in the study area, denoting all parking stalls, by time stay type, for on and off-street facilities in public control.
- (2) A complete survey of parking use over two “typical days.” This included a single Thursday and Saturday in August 2002. Additional analysis to assess usage in winter or “off-season” conditions was conducted on a single Thursday in February 2003.<sup>1</sup>
- (3) Analysis of parking utilization and turnover that included:
  - a. Quantification of total study area parking inventory.
  - b. Hourly occupancy counts (8 a.m. – 9 p.m.) for on and off-street inventory.
  - c. Parking turnover analysis (on and off-street).
  - d. Parking duration of stay analysis (on and off-street).
  - e. Derivation of built parking supply to total built square footage (i.e., true parking demand ratio).
  - f. Time stay abuse analysis.
- (4) Identification of parking surpluses and constraints in the parking supply.

In short, the purpose of the parking utilization study was to produce a succinct analysis of existing parking dynamics in Downtown Kirkland that can be employed over time to support and inform decision-making related to development and parking.<sup>2</sup>

### **2. STUDY AREA**

The parking inventory study area was determined in the initial project scoping process. The study area generally encompasses the area bounded by 4<sup>th</sup> Avenue (and the entire City Hall block) on the north, Kirkland Avenue/Kirkland Way to 3<sup>rd</sup> Street to 1<sup>st</sup> Avenue to Lake Street on the south,

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<sup>1</sup> A summary of this analysis and how it correlates with the summer data is presented in part 7 of this Section.

<sup>2</sup> Copies of all data templates have been provided to the City of Kirkland for future use. The data templates incorporate hourly parking counts for every stall, by block face and public garage, in the study area.

Market Street and Lake Washington on the west and 6<sup>th</sup> Street on the east. The first level of data analysis combined all parking data within the entire study area.

A more detailed analysis of the data was then conducted as a result of work with the project's Parking Work Group (PWG). This led to development of four distinct parking "activity" zones within the study area for which inventory data was sorted and analyzed.<sup>3</sup> These data collection zones are reflective of the PWG's understanding of current parking activity and land use densities in the downtown. These zones allowed for a more comprehensive look at parking patterns, trends and surpluses/deficits in the downtown.

The Library Garage (Data Zone 2) was treated as a separate activity center for purposes of the data analysis. Its unique location at the western edge of Data Zone 1 and its proximity/relationship to Peter Kirk Park require a focused understanding of its unique use characteristics.

Figure 1, on the following page illustrates the entire study area and the activity zones examined in the data collection.

### **3. METHODOLOGY**

Melvin Mark Development Company (MMDC) and Nelson/Nygaard (N/N) conducted the initial summer capacity/utilization and turnover inventory on two separate days, Thursday, August 15, 2002 and Saturday, August 17, 2002. The survey days were selected in consultation with the City and the Parking Work Group (PWG). Overall, both days were sunny (mid 80 degrees) with strong parking activity in all sectors of the downtown. The Thursday parking inventory was conducted between 8:00 a.m. to 9:00 p.m. The Saturday parking inventory was conducted between 11:00 a.m. and 9:00 p.m.

The project team's methodological approach to gathering parking utilization/capacity/turnover data began with a physical compilation of all public parking assets (on and off-street) within the study area and the activity zones. This physical assessment was conducted in advance of the survey days and documented all parking by location and type. This was used to create a data template necessary to conduct the utilization assessment.

The survey itself involved an hourly accounting of each occupied on-street parking stall in the study area using the last four digits of the parked vehicle's license plate. All public off-street facilities were similarly documented. "Publicly available" parking stalls in private parking facilities were assessed for capacity only. They were not surveyed for turnover or duration given that time stay limitations in these lots were not in place. In addition, private facilities were only surveyed during hours when they were posted and available for actual public use.

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<sup>3</sup> See Section IV of this report for further discussion of zones.

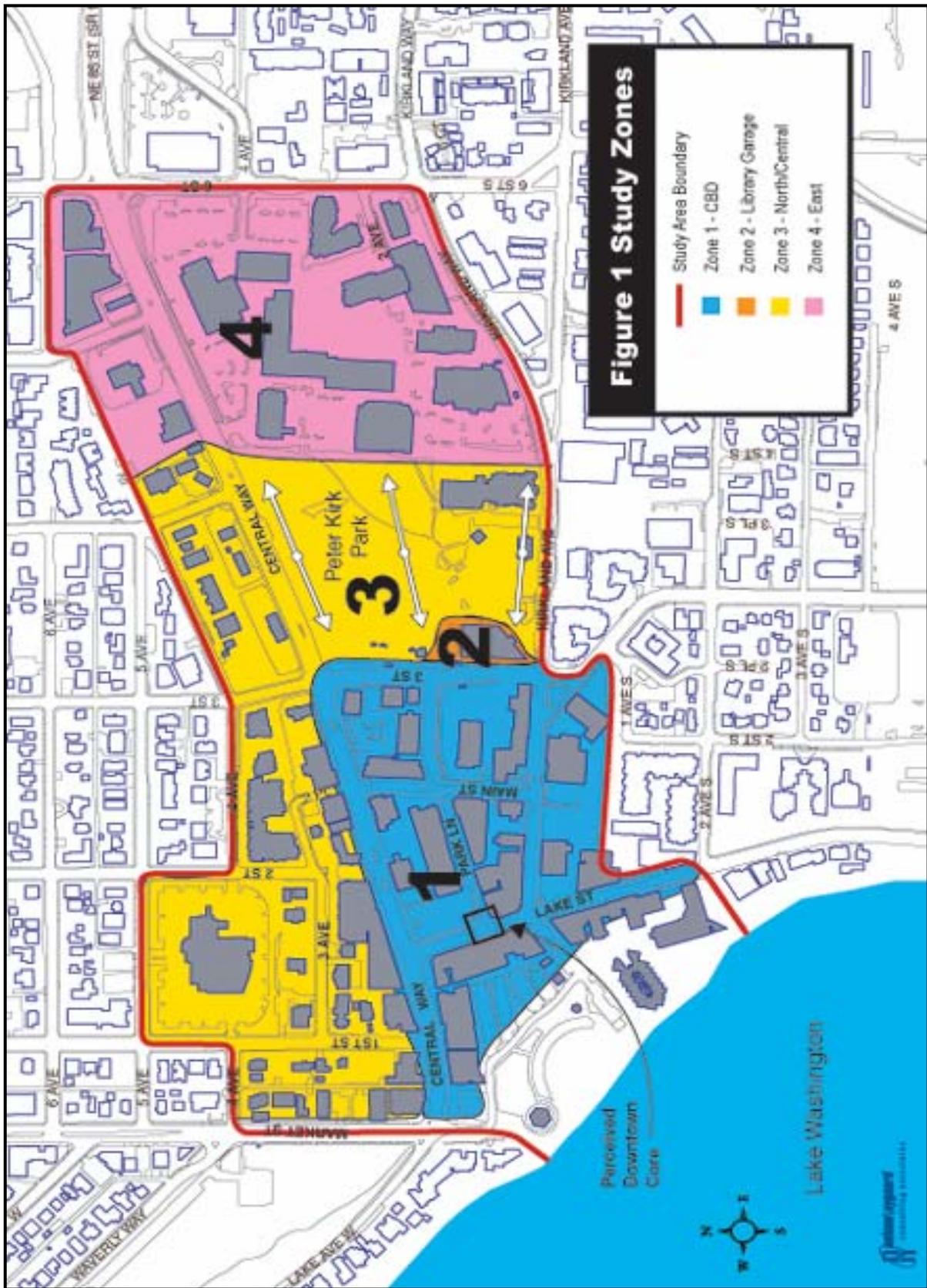


Figure 1 Map of Study Area

#### 4. GENERAL CHARACTERISTICS OF THE INVENTORY - STUDY AREA

##### A. Supply

A total of 1,094 parking stalls were identified within the study area boundaries. Publicly controlled stalls total 881 spaces, which include 329 on-street and 552 off-street stalls.<sup>4</sup> Parking in the public supply is provided without charge to both patrons and employees, with the exception of 10 meters located at the Lake and Central and Lakefront parking lots. An additional 213 stalls were located in private lots and available for public use during specific posted hours.

Table 1 breaks out the publicly available parking according to on and off-street supplies. Table 2 breaks out the same supply by data zone.

**Table 1**  
**2002 Parking Inventory by Area and Time Stay**

On-Street Stalls	30-minute	30
	2-Hour	270
	4-Hour	23
	Unlimited/Unstriped*	6
	<b>Sub-total (on-street)</b>	<b>329</b>
Off-Street Stalls	30-minute	8
	2-Hour	157
	4-Hour	169
	Unlimited/Unstriped*	0
	Permits	218
	<b>Sub-total (off-street)</b>	<b>552</b>
Private Lots		213
<b>Total Parking in Entire Study Area</b>		<b>1,094</b>

\*Estimated number of parking stalls on block faces not designated by striping or signage but utilized as parking.

**Table 2**  
**2002 Parking Inventory by Zone and Location**

Parking Zone/Location	Stall Type	Number of Stalls
Zone 1	On-Street	204
	Off-Street (public)	175
	Off-Street (private)	213
Zone 2 - Library Garage	Short-term (visitor)	159
	Long-term (permit)	218
Zone 3	On-Street	83
	Off-Street (public)	0
	Off-Street (private)	0
Zone 4	On-Street	42
	Off-Street (public)	0
	Off-Street (private)	0
<i>Sub-total by stall type</i>	<i>On-Street</i>	<i>329</i>
	<i>Off-street (public and private)</i>	<i>765</i>
<b>TOTAL (all stalls)</b>		<b>1,094</b>

<sup>4</sup> For purposes of this study handicap/disabled and loading zone stalls were removed from the study results, based on the assumption that such stalls are not readily available to general parking demand. The project team believes that if these stalls were included the study results would artificially overstate surplus supply.

As Table 1 indicates, the majority of the public parking supply (on and off-street) is dedicated to short-term access, with 657 (or 75%) of the 881 total stalls signed and enforced for stays of 4 hours, 2 hours and 30 minutes. Two hundred twenty-four (224) public stalls (primarily in the City's Library Garage) are preserved for long-term and/or employee permit-parking.

As mentioned above, 213 additional stalls of private supply are available to the public during specific hours (generally after 5:00 p.m.). The private supply provides short and long-term stay opportunities during specific hours. The private parking is provided for a fee to the user (i.e. hourly rate, daily maximum charge).

Table 2 breaks the supply out by data zone. Zone 1 contains the highest percentage supply of parking (592 stalls), with 379 stalls in public control and 213 in private lots. Zone 2 (the Library Garage) contains a fairly significant supply of both short-term parking (159 stalls) and employee parking (218 stalls). Zone 3, which represents a large "activity zone" contains only 83 publicly available spaces (all on-street).<sup>5</sup> Finally, Zone 4 also has few general public spaces (i.e., 42 on-street stalls) as the majority of parking in this zone is private accessory parking associated with private commercial uses in the zone.<sup>6</sup>

## **B. Peak Hour and General Occupancies**

Peak hour occupancy for the entire downtown is the period during the business day where the downtown experiences the highest utilization of parking stalls. In other words, the analysis attempts to determine that point in the day at which the greatest numbers of vehicles are parked in the downtown. The initial MMDC and N/N summer analysis was conducted over two separate days.

### **Weekday**

The highest weekday peak hour for the combined downtown parking inventory is between 6:00 p.m. and 7:00 p.m., at which time 81.4% of all parking stalls in the study area are occupied.<sup>7</sup> Furthermore, the weekday analysis also demonstrates a fairly substantial midday "peak" between noon and 1:00 p.m. when occupancy hit 78.0%.

Figure 2 summarizes occupancies by hour for weekday parking use.

During the 6:00 p.m. peak hour, 719 public stalls are occupied leaving 162 stalls available within the entire study area. However, using 85% as an optimum occupancy standard, the overall study area actually maintains a surplus of just 32 spaces in the peak hour.<sup>8</sup>

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<sup>5</sup> Although it is important to note that the Library Garage is immediately adjacent to Zone 3 at 3<sup>rd</sup> Street and Kirkland Avenue.

<sup>6</sup> There is a high probability the general public periodically uses these accessory spaces, particularly for activities associated with Peter Kirk Park. However, the scope of this analysis did not include mechanisms for tracking and accounting for this type of use.

<sup>7</sup> Kirkland's "evening peak" is unique from most cities the MMDC and N/N team has surveyed in the past. This late peak hour is clearly indicative of the strong restaurant trade in downtown and the popularity of the waterfront for after hours activities in the summer months.

<sup>8</sup> The 85% peak occupancy standard is a measure used to ascertain an optimum usage point within a parking supply. At 85% occupied, it is assumed that a parking system is effectively "full," leaving a cushion or buffer of 15% of

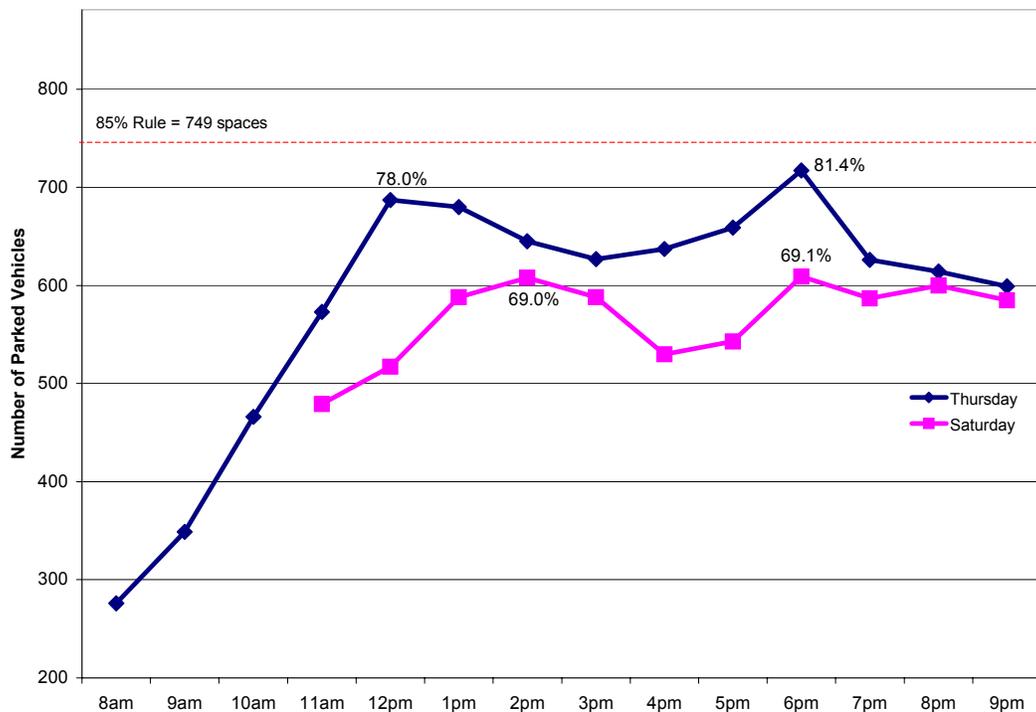
## Weekend

Like the weekday peak, the weekend also demonstrates a “dual peak” pattern with nearly identical peaks between 6:00 p.m. and 7:00 p.m. (69.1%) and 2:00 p.m. and 3:00 p.m. (69.0%).

Figure 2 also summarizes occupancies by hour for weekend parking use.

During the 6:00 p.m. peak hour, 611 public stalls are occupied leaving 270 stalls available within the entire study area. Using 85% as an optimum occupancy standard, the overall study area maintains a surplus of 138 spaces in the peak hour.

**Figure 2: Downtown Kirkland Parking Capacities**  
Total Public Parking Supply -- Short and Long Term (881 stalls)



### C. Usage Characteristics

The Kirkland public parking supply is a very high turnover and effectively utilized system. Several usage characteristics underscore this conclusion:

- The average stay in downtown for all parking stalls signed 4 hours or less is 1 hour and 24 minutes.

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supply to accommodate unexpected peaks and general growth within the supply. It also allows for a certain level of customer convenience (i.e. “float”) to find available parking stalls.

- The downtown averaged 3,615 unique vehicles between 8:00 a.m. and 9:00 p.m. on a “typical weekday” in stalls intended for customer/visitor use. On a “typical weekend” day, 2,663 unique vehicles access downtown between 11:00 a.m. and 9:00 p.m.
- The intended rate of turnover for a customer stall is 6.0 turns per day.<sup>9</sup> Actual observed turnover is 8.6 turns per day, indicating that the system is operating significantly above designed expectations.<sup>10</sup>
- Approximately 4.6% (weekday) and 6.8% (weekend) of all unique vehicles in the downtown exceed/violate the posted time stay. This is a fairly normal rate for violations.
- Enforcement personnel are issuing tickets at a rate of approximately one every six minutes over the course of the enforcement day. This is a very high rate of enforcement, which is evidence of an efficient enforcement program. Given the actual rate of violations (i.e. 4.6% and 6.8%, for weekdays and weekends respectively) additional enforcement personnel would likely result in increased system efficiency and offset the cost of the personnel added.

## 5. DATA ANALYSIS BY ZONE AND LOCATION

### A. Zone 1

Zone 1 represents the highest concentration of parking resources and land use activity in the downtown. As stated above, Zone 1 maintains 592 total parking stalls or 54% of all parking in the study area. Of this total, 379 stalls are in public control and 213 in private lots. Approximately 201 stalls are provided on-street. Three public off-street facilities provide short-term parking options, with the largest concentration in the City’s Lakefront Lot (107 stalls) followed by the Lake/Central Way Lot (52 stalls) and the small waterfront lot (16 stalls) at corner of Market and Central (Lot C). All publicly controlled parking in the zone is provided at no charge (patron and permit), with the exception of 10 meters located at the Lake and Central and Lakefront parking lots.

The 213 private lot spaces are distributed across nine locations, with the largest being Diamond Parking’s Lake Street Lot (40 spaces) and Ampco Parking’s Bank of America/Lake Street Lot (37 spaces).<sup>11</sup> Privately controlled parking is provided at a fee (hourly, daily and permit).

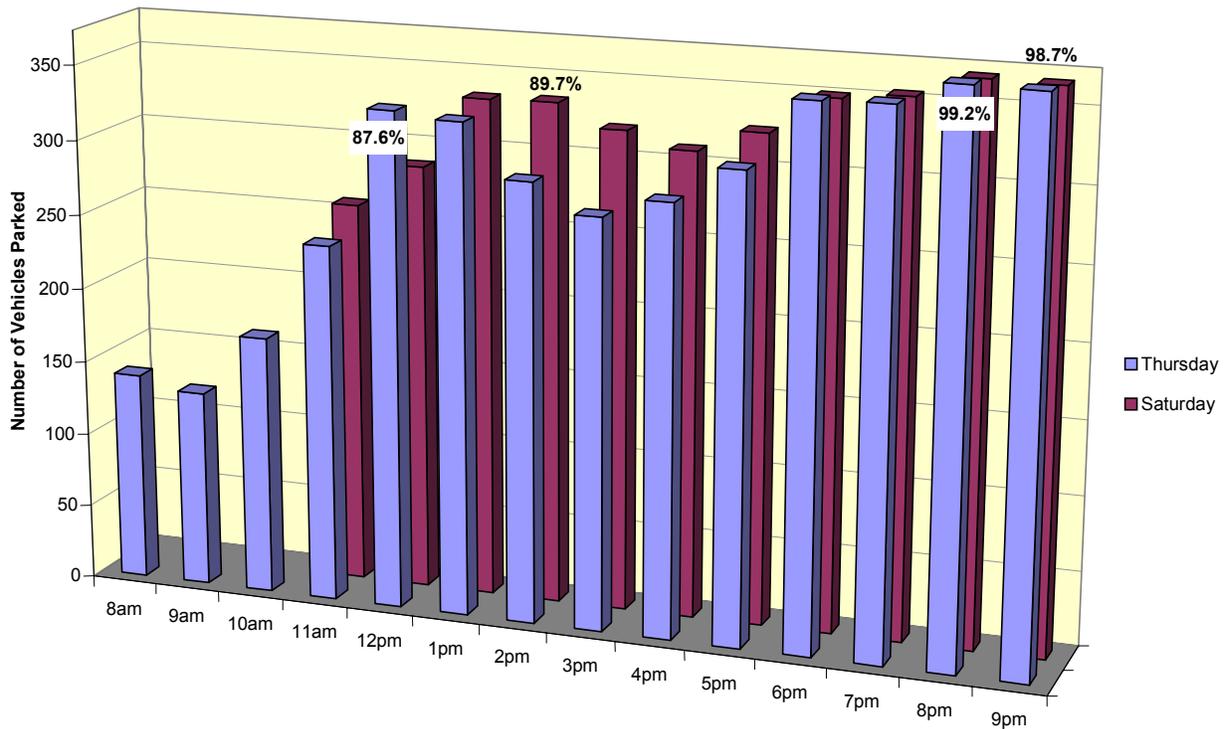
Figure 3 illustrates hourly parking utilization for Zone 1 for both the weekday and weekend survey, while Table 3 summarizes data gathered for Zone 1. A summary of findings follows the table.

<sup>9</sup> Intended turnover is a function of the allowed time stay for a given stall. The majority of on-street parking in the downtown is targeted for the short-term user at a maximum time stay of 2 hours. Given that the MMDC and N/N survey day was 12 hours, the intended turnover based a 2 hour posted time stay is 6.0 (i.e., 12 hour operating day divided by 2 hour time stay). If the turnover rate is above intended turnover, in this case 6.0, the system is operating efficiently. If the turnover rate were below 6.0, this would be an indicator of high abuse or system inefficiency.

<sup>10</sup> Interestingly, this turnover rate and average time stay also includes usage from the 4.0 hour stalls posted in the Library Garage, which demonstrates that customers are generally staying less than two hours and stalls are efficiently utilized.

<sup>11</sup> To reiterate, private spaces are not always available during the normal business day (i.e. 8:00 a.m. – 5:00 p.m.). However, all private lot spaces were available for public access after 5:00 p.m., which is important given Kirkland’s unique evening peak hour.

**Figure 3: Zone 1 Parking Capacity  
Weekday vs. Weekend**



**Table 3  
Zone 1 – Summary**

Parking stalls in Zone	Publicly Controlled Supply	Privately Controlled Supply*	Highest Peak Occupancy	Peak Hour	85% Deficit/Surplus @ Peak Hour**	Average # of Unique Vehicles/ % of All Unique Vehicles
<b>THURSDAY</b>						
592	379	213	99.2%	8 – 9 p.m.	<53>	2598 71.9%
<b>SATURDAY</b>						
592	379	213	98.7%	8 – 9 p.m.	<52>	2050 77.0%

\*Supply generally available to the public. Does not include “accessory” parking supply.

\*\*Deficit/Surplus calculated on public supply only. See discussion below on private parking supply considerations.

- Weekday peak hour occupancy is 99.2% between 8:00 p.m. and 9:00 p.m.
- Weekend peak hour occupancy is 98.2% between 8:00 p.m. and 9:00 p.m.
- Zone 1’s public supply has a deficit of 53 parking stalls at the peak hour if the goal were to assure an 85% optimum peak hour occupancy standard. This number is based on the highest level of use for the two survey days, which in this case occurred on the weekday survey.
- Average parking duration in Zone 1 is 1 hour 24 minutes (1.4 hours). This indicates the average visitor is being accommodated within the intended time stay established for the majority of the zone (i.e., 2 hours).

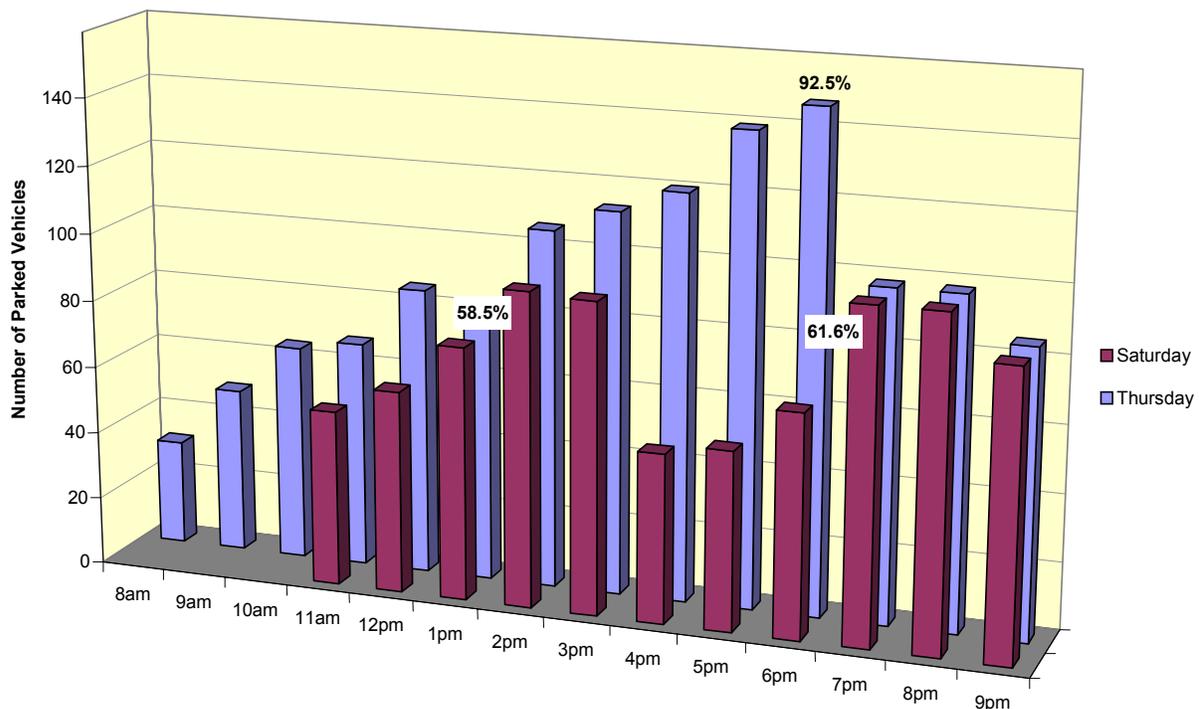
- The intended rate of turnover within the 12-hour survey period was 6.0. The actual rate of turnover during the survey period was 8.6. When the actual rate of turnover (8.6) exceeds the intended rate (6.0), this is an indication that the system is operating efficiently.
- Time stay violations occurred at an average rate of 1 violation for every 19.5 trips. This indicates about 5.1% of trips within the zone exceed the intended time stay.<sup>12</sup>
- The total number of unique vehicles using Zone 1 during the weekday survey was 2598. This represents 80% of all unique vehicles observed that day.
- The total number of unique vehicles using Zone 1 during the weekend survey was 2050. This represents 72% of all unique vehicles observed that day.

**B. Zone 2 – Library Garage**

The Library Garage represents a large supply of parking that is situated between Zones 1 and 4. The garage is divided on two levels to provide both customer/patron access and employee permit parking. The upper level of the garage is comprised of 159 parking stalls signed for stays of 4-hours or less. The lower level of the garage provides 218 spaces for employee permit parking. Currently, parking in the facility is provided at no charge to the user, except four slot box stalls.

Figure 4 illustrates hourly parking utilization for the *upper level* of the garage for both the weekday and weekend survey. Table 4 summarizes data gathered for the upper level. A summary of findings follows the table.

**Figure 4: Library Garage Upper Level (4-Hour) Capacities  
Weekday vs. Weekend**



<sup>12</sup> For purposes of this exercise, violation rates were calculated by averaging data from both survey days.

**Table 4  
Library Garage (Upper Level) – Summary**

Parking stalls in Zone	Publicly Controlled Supply	Privately Controlled Supply*	Highest Peak Occupancy	Peak Hour	85% Deficit/Surplus @ Peak Hour**	Average # of Unique Vehicles/ % of All Unique Vehicles	
<b>THURSDAY</b>							
159	159	0	92.5%	6:00 p.m. – 7:00 p.m.	<12>	647	17.9%
<b>SATURDAY</b>							
159	159	0	61.6%	7:00 p.m. – 8:00 p.m.	+38	347	13.0%

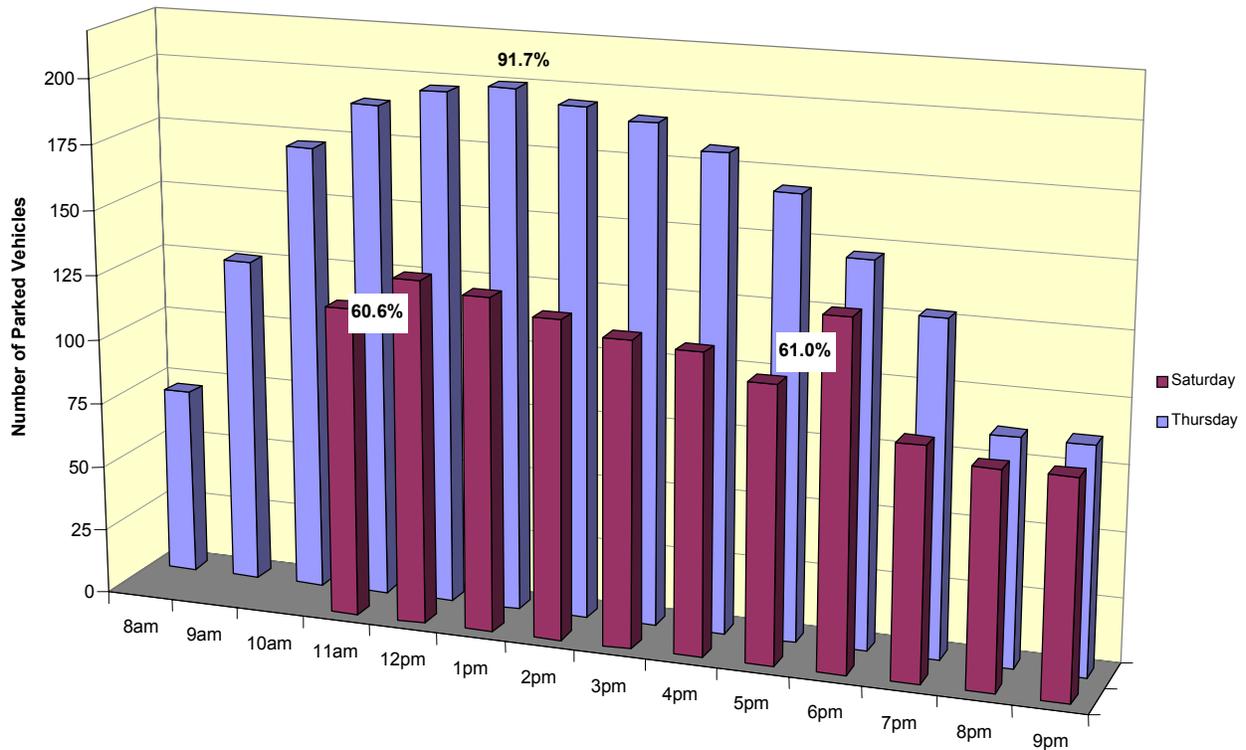
\*Supply generally available to the public. Does not include “accessory” parking supply.

\*\*Deficit/Surplus calculated on public supply only. See discussion below on private parking supply considerations.

- Weekday peak hour occupancy is 92.5% between 6:00 p.m. – 7:00 p.m.
- Weekend peak hour occupancy is 61.6% between 7:00 p.m. – 8:00 p.m.
- The upper level of the garage has a deficit of 12 parking stalls at the peak hour if the goal were to assure an 85% optimum peak hour occupancy standard. This number is based on the highest level of use for the two survey days, which in this case occurred on the weekday survey.
- Average parking duration in the upper level of the garage is 1 hour 42 minutes (1.7 hours). This indicates the average visitor is being accommodated within the intended time stay established for the majority of the zone (i.e., 4 hours).
- The intended rate of turnover within the 12-hour survey period was 3.0. The actual rate of turnover during the survey period was 7.1. When the actual rate of turnover (7.1) exceeds the intended rate (3.0), this is an indication that the system is operating efficiently.
- Time stay violations occurred at a rate of 1 violation for every 32.1 trips. This indicates about 3.1% of trips within the zone exceed the intended time stay.
- The total number of unique vehicles using the upper level of the garage during the weekday survey was 647. This represents 17.9% of all unique vehicles observed that day.
- The total number of unique vehicles using the upper level of the garage during the weekend survey was 347. This represents 13.0% of all unique vehicles observed that day.

Figure 5 illustrates hourly parking utilization for the *lower level* of the garage for both the weekday and weekend survey. Table 5 summarizes data gathered for the upper level. A summary of findings follows the table.

**Figure 5: Library Lot Lower Level (Permitted)  
Weekday vs. Weekend**



**Table 5  
Library Garage (Lower Level) – Summary**

Parking stalls in Zone	Publicly Controlled Supply	Privately Controlled Supply*	Highest Peak Occupancy	Peak Hour	85% Deficit/Surplus @ Peak Hour**	Average # of Unique Vehicles/ % of All Unique Vehicles	
<b>THURSDAY</b>							
218	218	0	91.7%	1:00 p.m. – 2:00 p.m.	<14>	N/A	N/A
<b>SATURDAY</b>							
218	218	0	61.0%	6:00 p.m. – 7:00 p.m.	+53	N/A	N/A

\*Supply generally available to the public. Does not include “accessory” parking supply.

\*\*Deficit/Surplus calculated on public supply only. See discussion below on private parking supply considerations.

- Weekday peak hour occupancy is 91.7% between 1:00 p.m. – 2:00 p.m.
- Weekend peak hour occupancy is 61.0% between 6:00 p.m. – 7:00 p.m.
- The lower level of the garage has a deficit of 14 parking stalls at the peak hour if the goal were to assure an 85% optimum peak hour occupancy standard. This number is based on the highest level of use for the two survey days, which in this case occurred on the weekday

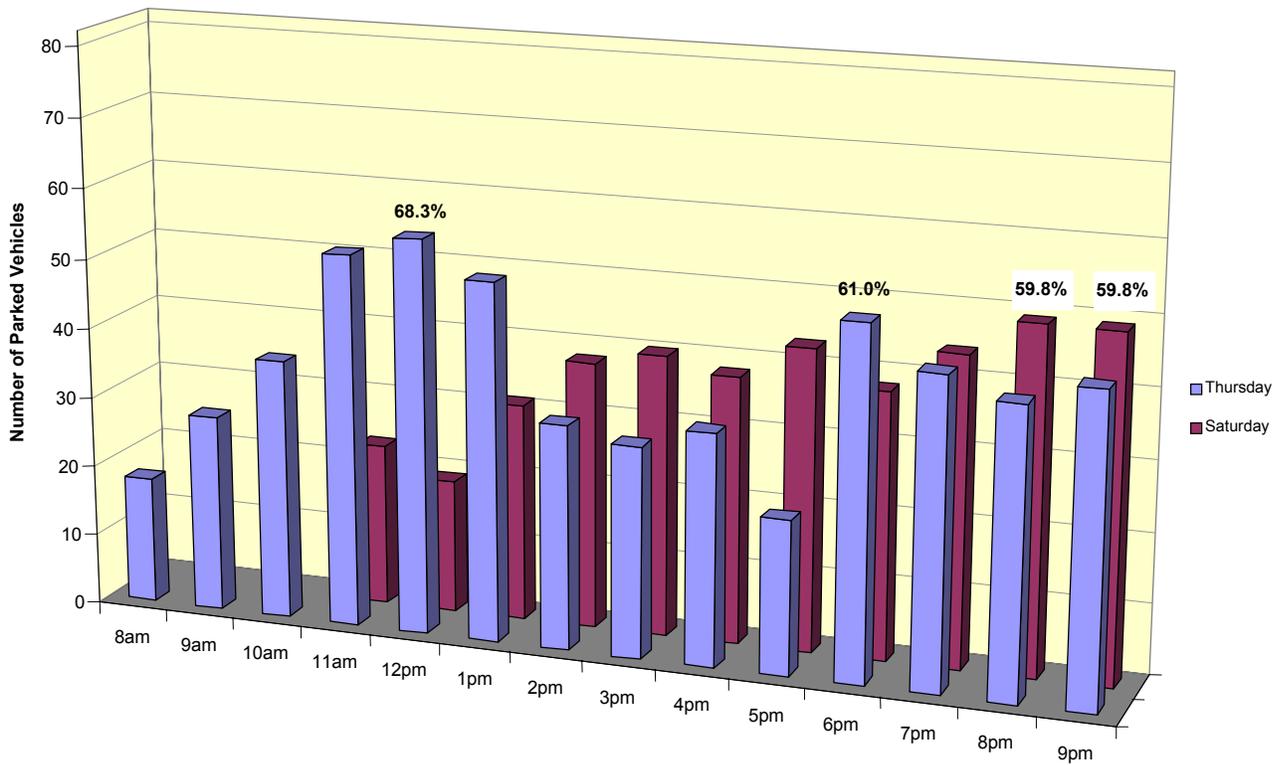
survey. This is notable given that this supply is dedicated for employee use and runs at maximum capacity. As employee demand grows, the competition for space between customer and employee parking will become more pronounced.

**C. Zone 3**

Zone 3 represents a large geographic area with little publicly accessible parking space during the normal business day. Zone 3 maintains just 83 total on-street parking stalls or 7.5% of all parking in the study area. Off-street parking does exist at the City Hall site but is not available to general weekday visitor trips unassociated with City Hall business. Peter Kirk Park is also served by the Library Garage, which for purposes of this analysis has been treated as a unique parking area.

Figure 6 illustrates hourly parking utilization for Zone 3 for both the weekday and weekend survey, while Table 6, on page 13, summarizes data gathered for Zone 3. A summary of findings follows the table.

**Figure 6: Zone 3 Parking Capacities  
Weekdays vs. Weekend**



**Table 6  
Zone 3 – Summary**

Parking stalls in Zone	Publicly Controlled Supply	Privately Controlled Supply*	Highest Peak Occupancy	Peak Hour	85% Deficit/Surplus @ Peak Hour**	Average # of Unique Vehicles/ % of All Unique Vehicles	
<b>THURSDAY</b>							
83	83	0	68.3%	Noon – 1 p.m.	+14	286	7.9%
<b>SATURDAY</b>							
83	83	0	59.8%	8 – 9 p.m.	+21	174	6.5%

\*Supply generally available to the public. Does not include “accessory” parking supply.

\*\*Deficit/Surplus calculated on public supply only. See discussion below on private parking supply considerations.

- Weekday peak hour occupancy is 68.3% between noon and 1:00 p.m.
- Weekend peak hour occupancy is 59.8% between 8:00 and 9:00 p.m.
- Zone 3’s public supply has a surplus of 14 parking stalls at the peak hour if the goal were to assure an 85% optimum peak hour occupancy standard. This number is based on the highest level of use for the two survey days, which in this case occurred on the weekday survey.
- Average parking duration in Zone 3 is 1 hour 42 minutes (1.7 hours). This indicates the average visitor is being accommodated within the intended time stay established for the majority of the zone (i.e., 2 hours).
- The intended rate of turnover within the 12-hour survey period was 6.0. The actual rate of turnover during the survey period was 7.1. When the actual rate of turnover (7.1) exceeds the intended rate (6.0), this is an indication that the system is operating efficiently.
- Time stay violations occurred at a rate of 1 violation for every 7.8 trips. This indicates about 12.8% of trips within the zone exceed the intended time stay.
- The total number of unique vehicles using Zone 3 during the weekday survey was 286. This represents 7.9% of all unique vehicles observed that day.
- The total number of unique vehicles using Zone 3 during the weekend survey was 174. This represents 6.5% of all unique vehicles observed that day.

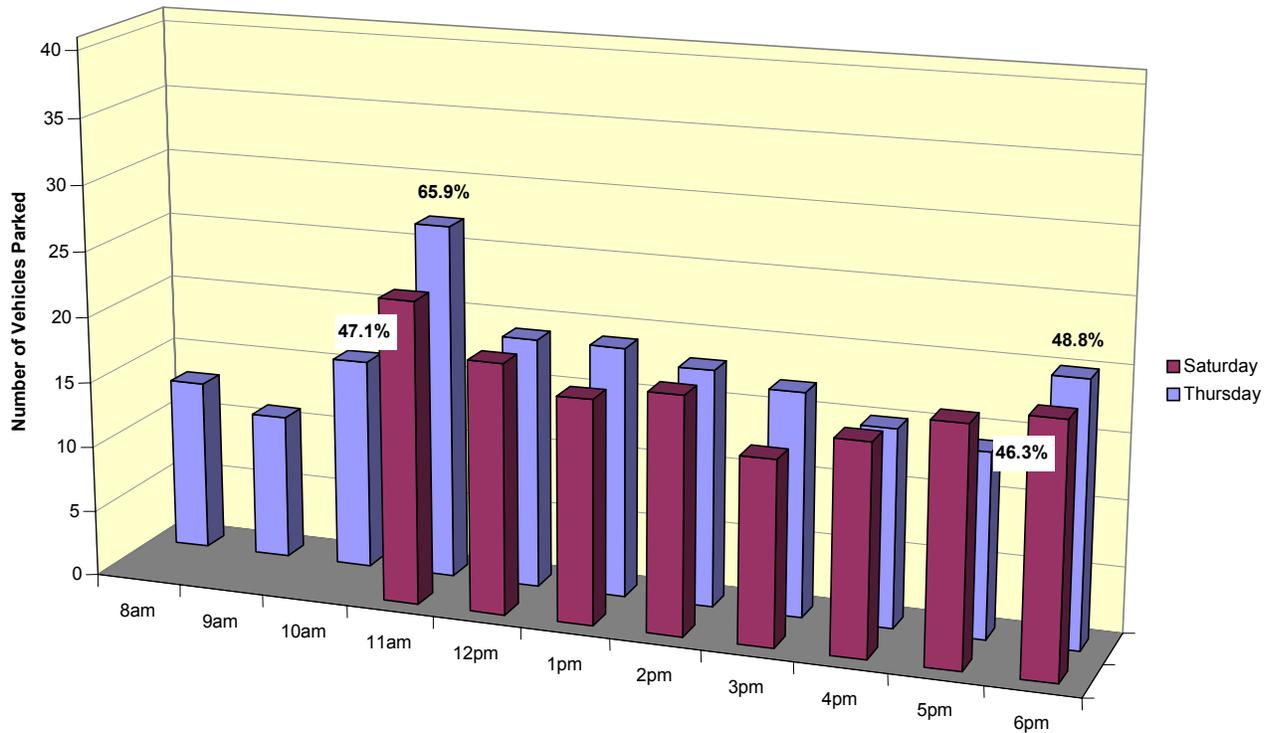
**D. Zone 4**

Zone 4 represents a large geographic area to the east of Peter Kirk Park. The area contains a large amount of private parking, though none of the private supply is intended for general public access. Rather, the majority of parking is “accessory” parking associated with the high concentration of office and retail land use in the zone. Accessory parking is managed to limit parking to only those patrons and employees of the commercial site(s) itself.

For public parking, Zone 4 maintains just 42 total on-street parking stalls or 3.8% of all parking in the study area.

Figure 7 illustrates hourly parking utilization for Zone 4 for both the weekday and weekend survey. Table 7 summarizes data gathered for Zone 4. A summary of findings follows the table.

**Figure 7: Zone 4 Parking Capacities  
Weekday vs. Weekend**



**Table 7  
Zone 4 – Summary**

Parking stalls in Zone	Publicly Controlled Supply	Privately Controlled Supply*	Highest Peak Occupancy	Peak Hour	85% Deficit/Surplus @ Peak Hour**	Average # of Unique Vehicles/ % of All Unique Vehicles	
<b>THURSDAY</b>							
42	42	0	65.9%	11 a.m. – noon	+8	117	3.2%
<b>SATURDAY</b>							
42	42	0	47.1%	11 a.m. – noon	+16	90	3.4%

\*Supply generally available to the public. Does not include “accessory” parking supply.

\*\*Deficit/Surplus calculated on public supply only. See discussion below on private parking supply considerations.

- Weekday peak hour occupancy is 68.3% between 11 a.m. – noon.
- Weekend peak hour occupancy is 59.8% between 11 a.m. – noon.
- Zone 4’s public supply has a surplus of 8 parking stalls at the peak hour if the goal were to assure an 85% optimum peak hour occupancy standard. This number is based on the highest level of use for the two survey days, which in this case occurred on the weekday survey.

- Average parking duration in Zone 4 is 1 hour 36 minutes (1.6 hours). This indicates the average visitor is being accommodated within the intended time stay established for the majority of the zone (i.e., 2 hours).
- The intended rate of turnover within the 12-hour survey period was 6.0. The actual rate of turnover during the survey period was 7.5. When the actual rate of turnover (7.5) exceeds the intended rate (6.0), this is an indication that the system is operating efficiently.
- Time stay violations occurred at a rate of 1 violation for every 9.8 trips. This indicates about 10.2% of trips within the zone exceed the intended time stay.
- The total number of unique vehicles using Zone 4 during the weekday survey was 117. This represents 3.2% of all unique vehicles observed that day.
- The total number of unique vehicles using Zone 4 during the weekend survey was 90. This represents 3.4% of all unique vehicles observed that day.

## 6. PEAK HOUR OCCUPANCY AND SURPLUS CAPACITY BY DATA ZONE

A more detailed look at peak hour occupancies by data zone allows for a clearer view of how actual occupancy patterns occur within the downtown.

As Table 8 indicates, different zones maintain varied peak hours that, when combined, tend to under-represent the most significant parking demand period that occurs in Zone 1 (evenings at 8:00 p.m.)<sup>13</sup> The column labeled “Peak Occupancy” shows the highest occupancy level achieved in each data zone, with the “Peak Hour” listed to the right. The far right hand column shows actual occupancy for each zone when Zone 1 is at its highest peak for the peak for the day.

**Table 8**  
**Peak Hour Occupancy by Data Zone versus 8:00 p.m. Zone 1 Peak Hour**

Area	Peak Occupancy	Peak Hour	Actual 8:00 p.m. Occupancy
<b>Zone 1</b>	<b>99.2%</b>	<b>8:00 – 9:00 p.m.</b>	<b>99.2%</b>
<b>Upper Library Garage (visitor parking)</b>	92.5%	6:00 – 7:00 p.m.	61.6%
<b>Lower Library Garage (employee parking)</b>	91.7%	1:00 – 2:00 p.m.	40.0%
<b>Zone 3</b>	68.3%	Noon – 1:00 p.m.	53.7%
<b>Zone 4</b>	65.9%	11:00 a.m. - noon	N/A
<b>COMBINED DOWNTOWN</b>	<b>81.4%</b>	<b>6:00 – 7:00 p.m.</b>	<b>69.4%</b>

This configuration of data gives us a look at where potential surplus parking is located that could provide capacity to the highest occupancy zone (i.e., Zone 1). Note that Zones 3, 4 and both the upper and lower levels of the Library Garage (Zone 2) are not at their highest peak use during the time when Zone 1 is fully maximized at 99.2%.

<sup>13</sup> For purposes of the Table 8 analysis, data from the weekday survey was used based on the assumption that overall weekday data represents a highest use (worst case) scenario when compared to weekend data.

Table 9, below, attempts to look at the overall parking supply as it relates to the Zone 1 peak hour and to quantify the amount of potential surplus. The first column shows each data zone/activity area by location and whether the parking is on or off-street. The second column calculates optimum parking conditions for each zone/area based on the 85% Rule, which represents the maximum number of stalls that should be parked in a given supply, while maintaining a 15 percent operating buffer. The third and fifth columns show the actual number of vehicles parked at the 8:00 p.m. – 9:00 p.m. peak, listed for both the weekday and weekend surveys. Finally, the fourth and sixth columns identify the deficit or surplus of parking in a specific zone or lot/garage at the stated peak hour.

**Table 9**  
**Optimum Parking – Deficit/Surplus Supply By Data Zone**  
**Weekday/Weekend at Zone 1 Peak Hour (8:00 p.m. – 9:00 p.m.)**

Location	Optimum # of Vehicles According to 85% Rule <hr/> Total Stalls	Weekday		Weekend	
		# of Parked Vehicles	Surplus/Deficit to 85% Occupied	# of Parked Vehicles	Surplus/Deficit to 85% Occupied
<b>Zone 1</b> (on-street)	173/204	201	<28>	202	<29>
<b>Zone 1</b> Lake/Central Way Lot	44/52	51	<7>	51	<7>
<b>Zone 1</b> Waterfront Lot	91/107	107	<16>	107	<16>
<b>Zone 1</b> Lot C	14/16	16	<2>	16	<2>
<b>Zone 1</b> <b>Sub-total</b>	<b>322/379</b>	<b>375</b>	<b>&lt;53&gt;</b>	<b>376</b>	<b>&lt;54&gt;</b>
<b>Library Garage</b> (upper level)	135/159	98	+37	90	+45
<b>Library Garage</b> (lower level)	185/218	80	+105	70	+115
<b>Zone 3</b>	70/83	41	+29	49	+21
<b>Zone 4</b>	35/42	20	+15	18	+17
<b>Garage, Zone 3 &amp; 4 Sub-total</b>	<b>425/502</b>	<b>239</b>	<b>+186</b>	<b>227</b>	<b>+198</b>
<b>TOTALS</b>	<b>747/881</b>	<b>614</b>	<b>+133</b>	<b>603</b>	<b>+144</b>

Table 9 provides an interesting view of parking activity. Zone 1 (combined on and off-street supply) currently operates at a peak hour deficit of 53 and 54 stalls for weekdays and weekends, respectively. However, significant surplus parking is available in the upper and lower levels of the Library Garage (142 weekdays/160 stalls weekends) as well as smaller surpluses in Zones 3 and 4.

The Library Garage presents itself as a potential resource for available parking supply during those periods when Zone 1 is fully maximized, particularly in the very active evening peak hour. Zones

3 and 4 also offer some surplus, though the proximity of these zones to the “core” of Zone 1 may not be conducive to short-term customer access.

Using 85% occupancy as the generally accepted industry standard for optimum utilization of a parking supply, the survey demonstrates that the combined downtown maintains a modest surplus of parking. However, Zone 1 currently maintains a deficit of over 50 parking stalls. The ability of the City to encourage and influence patrons to find available surpluses within the supply versus building new supply will be challenging.

## **7. WINTER SURVEY – FOLLOW UP ANALYSIS**

In an effort to better understand the elasticity of demand for parking downtown throughout the year, the consulting team took additional capacity counts in the winter or ‘off-season’ months. The survey was conducted over two blocks of time representing the previously observed peak hours from the summer survey; counts were taken on Thursday, February 6, 2003 from 11:00 a.m. until 2:00 p.m. and from 4:00 p.m. until 9:00 p.m. Weather on the survey day was inclement with temperatures in the low to mid 50 degrees.

### **Findings**

The winter survey yielded some noteworthy findings:

- Capacities were approximately 20 percent lower on average across the entire study area.
- Occupancies in public parking stalls located in Zone 1 were only mildly affected in the winter months. The peak hour was occupied at 84.5 percent (between 6:00 p.m. and 7:00 p.m.).
- Significant occupancy drop-off occurs in outer zones (i.e., Zones 2, 3 and 4).
- The Library Garage experiences a dramatic drop in occupancy from summer to winter.
- 119 private stalls are available during the evening peak (8-9pm) in Zone 1.
- Antique lot (2nd/Park Ln.) is just 10 percent occupied at the evening peak (8-9pm).<sup>14</sup>

Figure 8 shows the occupancy comparison between the summer and winter surveys. As illustrated, weekday occupancies in the study area (between 10 a.m. and 2:00 p.m.) decrease approximately 14 percent from summer to winter. Evening occupancies (between 6:00 p.m. and 9:00 p.m.) drop 27.3 percent.

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<sup>14</sup> The Antique Mall lot is not publicly available at this time. Winter observations were conducted to assess this lot's potential for future shared use parking opportunities.

**Figure 8**  
**Downtown Kirkland (All Zones) Parking Occupancy**  
**Summer vs. Winter**

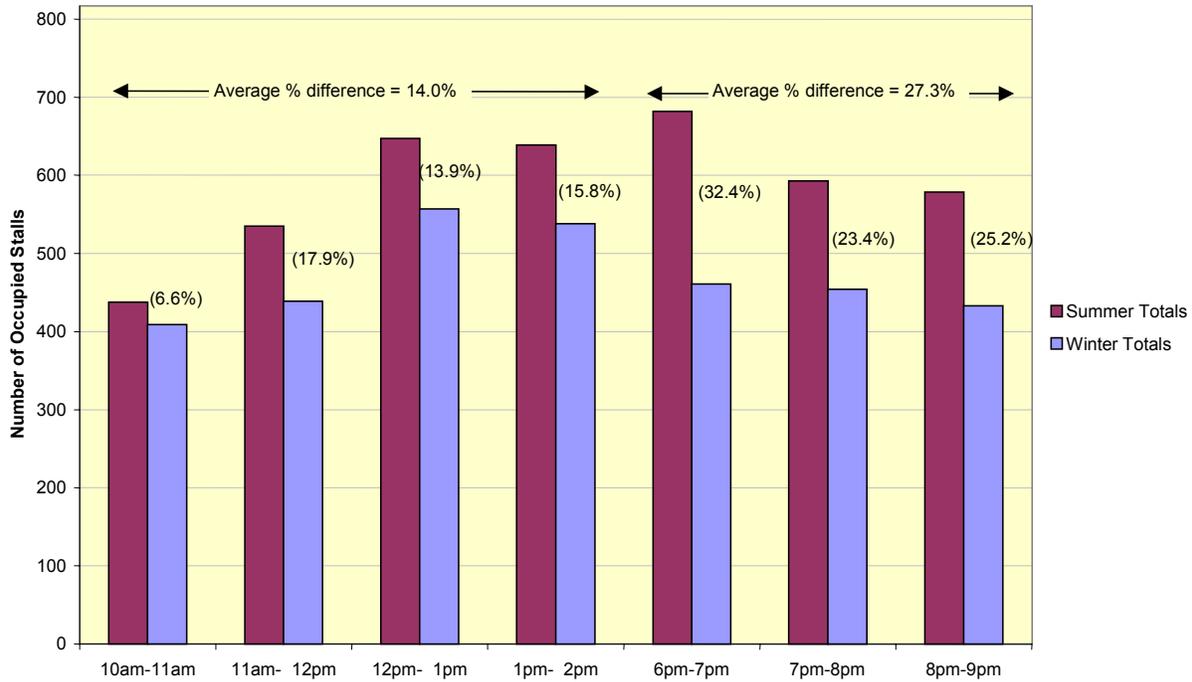


Table 10, summarizes summer versus winter parking activity as represented by the total *number of unique vehicles* estimated to have parked in the downtown during the seven hour survey period represented in Figure 8.<sup>15</sup> As illustrated, there is a ‘seasonal’ variation in total vehicles across the entire study area, with an overall 20 percent decrease in vehicles using downtown, summer to winter. Zone 1 has a much less prominent change, with a 9.1 percent decrease in vehicle traffic.

**Table 10**  
**Seasonal Parking Activity Variations**  
**Summer vs. Winter**

<b>Estimated unique vehicles (all zones)</b>	<b>2,938 (summer)</b>
	<b>2,351 (winter)</b>
	<b>20.0% decrease in total vehicles</b>
<b>Estimated unique vehicles (Zone 1)</b>	<b>1,578 (summer)</b>
	<b>1,435 (winter)</b>
	<b>9.1% decrease in total vehicles</b>

Overall, parking activity and utilization in the downtown decreases during the winter months. Occupancies in Zones 2, 3 and 4 are notably affected while Zone 1 continues to maintain a strong level of usage.

<sup>15</sup> For this example, the estimate for unique vehicles was derived by dividing actual vehicle hours parked by the average turnover rate for the downtown (i.e., 1.4 hours) for the comparable seven hour period for each survey.

## 8. PRIVATE SUPPLY CONSIDERATIONS

The deficit of publicly available parking in Zone 1 presents a challenge for the City and the PWG. Options for mitigating the identified deficit of parking include:<sup>16</sup>

- Directing patrons to available surpluses in other parking zones or the Library Garage during peak activity periods;
- Transitioning users, primarily employees, to alternative modes or satellite areas to free up parking supply in the “core”;
- Developing new supply;
- Utilizing surplus available in private facilities.

As a means to understand and address this last bullet point, the unique evening peak evident in Kirkland led the consultant team to conduct a review of the private facilities in the downtown that are currently available for public use.

As stated earlier, there are currently nine private facilities in the study area that are available to general parking public. All nine facilities are located within Zone 1 and, interestingly, are primarily available for public use after 5:00 p.m. This coincides with the increase in Zone 1 demand leading up to the 8:00 p.m. peak hour. Unlike the public supply, the parking in these private facilities requires a fee for use, generally between \$ 3.00 and \$5.00, depending on length of stay.

Table 11 presents a breakout of the private facilities, the number of total stalls, 8:00 p.m. occupancy, and number of available stalls during the peak hour (i.e., Surplus/<Deficit>).

**Table 11**  
**Private Parking Supply – Publicly Available**  
**8:00 p.m. Peak Occupancy – Surplus/Deficit**

Location	Stall Total	8:00 p.m. Occupancy	Surplus/<Deficit>
Ampco - Bank of America/Lake Street	37	89%	4
Ampco - Frontier Bank/Kirkland Way	11	55%	5
Ampco - Washington Fed/Kirkland Way	8	25%	6
Ampco - Eastside Trains/Central Way	25	8%	23
Ampco - US Bank/Central Way	33	73%	8
Ampco - Waterfront/Lakeshore Plaza	12	67%	3
Diamond @Lake Street	40	63%	14
Diamond @ Kirkland Way	30	50%	15
Diamond near waterfront	17	18%	13
<b>TOTAL</b>	<b>213</b>	<b>57%</b>	<b>91</b>

<sup>16</sup> Parking management strategies outlined in Sections IV, V & VII of this report provide strategy recommendations that would implement most of these measures.

Table 11 demonstrates two things in particular. First, the general public is using the private lots, even though there is a fee in place. Approximately 57 percent of the 213 spaces available in the peak hour (122 stalls) are occupied during the Zone 1, 8:00 p.m. peak hour. Second, a surplus of parking is still available at the peak hour, with Ampco’s Eastside Trains/Central Way and the three Diamond Parking locations comprising the largest portion of available supply.

The fact that these lots are located in Zone 1 is important to note given that the publicly controlled supply is in deficit at 8:00 p.m. Table 12 summarizes the overall impact on supply in Zone 1 when public and privately available parking are combined.

**Table 12**  
**Zone 1 Analysis w/ Private Supply**  
**8:00 p.m. Peak Occupancy – Surplus/Deficit**

Type of Parking	Total Stalls	Surplus/Deficit
Zone 1 - Public	379	<53>
Zone 1 - Private	213	+91
<b>TOTAL - ZONE 1</b>	<b>592</b>	<b>+38</b>

Though the private supply impact does not create a significant surplus of parking in Zone 1 it is apparent that additional efforts to influence/incent patrons to better utilize the available private parking supply will improve the constraint currently affecting Zone 1. This coupled with efforts to also encourage greater use of surplus supply in the Library Garage and other zones will facilitate more effective use of existing resources while strategies related to new supply and alternative access options are developed.

## 9. PARKING RATIOS – BUILT SUPPLY AND DEMAND

Parking ratios express the actual number of parking spaces available to serve demand for land uses (i.e., office, retail, residential and/or mixed-use development). The number of stalls represented by a parking ratio may exceed actual demand for parking or fall short of that demand. Demand ratios, on the other hand, are generally expressed in the context of peak hour use of a specific built supply of parking. In other words, demand ratios represent an estimate of the actual number of stalls occupied at the peak hour relative to land uses. Effectively managing the relationship between land uses, built and occupied parking supply is a fundamental challenge of parking management.

The exercise represented in this section is an attempt to develop a better understanding of parking supply and demand for Kirkland. To that end, the consultant team derived two “ratios” from the data analysis.

- The actual *Built Ratio* of publicly available parking stalls, in relation to total built land uses in Downtown Kirkland.
- The actual current *Demand Ratio* for parking stalls per total built land use, based on actual usage data from the “typical day” survey.

## A. Methodology

The City provided the consultant team with a comprehensive list of all land uses within the study area. This information was contained in a 2002 business license report. The file included information on business address, number of employees, total square footage, business type and zoning description. The consultant team then refined the data to (1) represent only those land uses located within the study zone and (2) exclude development with accessory parking, not available for public use. The resultant *built ratio* of parking to land use then is reflective of the total availability of non-accessory parking in a mixed-use environment in the downtown. The *demand ratio* reflects the public demand for parking stalls associated with that land use using actual peak occupancy data from the 2002 parking survey.<sup>17</sup> The consultant team was then able to express actual parking ratios per 1,000 square feet of mixed-use development for Kirkland's Downtown.<sup>18</sup>

## B. Findings

Parking demand ratio calculations revealed three different, but equally useful correlations:

- *Stalls to Built Land Use.* This represents the total number of existing stalls correlated to total existing land use square footage within the study area (minus those properties with accessory parking). At this time, **1.98 parking stalls per 1,000 square feet of built land use** have been developed within the study area.
- *Combined Demand to Built Land Use.* This represents peak hour occupancy within the entire study area, which was 81.4 percent. Current peak hour demand stands at a **ratio of 1.61 parking stalls per 1,000 square feet of built land use.**
- *Core Demand to Built Land Use.* Due to the elevated demand for parking in Zone 1 during the peak hour (99.4 percent occupancy), a ratio was correlated to total land use for Zone 1 only. This was accomplished by factoring in an additional 15 percent demand buffer, which would bring the core zone peak hour occupancy back to the stated goal of 85 percent. Based on this analysis, demand in the core would require **2.28 parking stalls per 1,000 square feet of built land use** to maintain the supply at a peak occupancy of 85 percent.

Table 13, next page, summarizes the analysis used to determine the built ratio of parking to land use (i.e., 445,039 total square feet) and general demand for that parking based on the peak hour occupancy/demand for all public parking available in the study area.

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<sup>17</sup> Upon consultation with the City, it was determined unlikely that the accessory supply would be made available for general public use.

<sup>18</sup> This analysis quantified the relationship between land uses, parking occupancy and built parking supply. Though not a definitive measure of demand by specific land use types, this exercise was useful in deriving estimates for overall demand in Kirkland based on actual parking activity in the downtown.

**Table 13**  
**Study Area Demand – Mixed Land Use to Built Supply**

Total Square Footage – Built Land Uses (Study Area)	Total Parking Supply (Public) <sup>19</sup>	Ratio of Built Parking to Total Land Use/1,000 gsf	Observed Peak Occupancy	Stalls Occupied at Peak Hour	Actual Parking Demand per 1,000 gsf
445,039	881	1.98	81.4%	717	1.61

Table 14, below, summarizes calculations for demand levels observed in Zone 1, which during the peak hour is at the maximum available capacity the parking system will allow, 99.4 percent occupancy.

**Table 14**  
**Zone 1 Demand – Mixed Land Use to Built Supply**

Total Square Footage – Built Land Uses (Zone 1)	Total Parking Supply (Public/Private)	Ratio of Parking to Total Land Use/1,000 gsf	Assumed Peak Occupancy	Stalls Occupied at Peak Hour	Actual Demand per 1,000 gsf to Maintain 85% Occupancy
N/A*	379	1.98	99.4%	377	2.28

\* For the purposes of this exercise, the ratio of stalls to built land use was held constant. To help derive the actual demand ratio for the core, the peak hour occupancy rate was directly correlated to the number of available stalls in Zone 1.

At 99.4 percent peak hour occupancy, total demand in the core zone is basically equal to the ratio of built supply, or 1.98 stalls per 1,000 square feet. If parking development in the core were to continue at 1.98 stalls per 1,000 square feet, peak hour accessibility would not meet the optimum operating efficiency desired within the 85% Rule. Therefore, to maintain optimum operating efficiency, mixed uses within the downtown would generate a parking demand of 2.28 parking stalls per 1,000 gross square feet of development.

In summary, parking has been *built* at an average rate of 1.98 stalls per 1,000 square feet of development. This rate appears to have been effective and the system currently operates at a high level of efficiency and turnover.

Land uses in Downtown Kirkland are generating parking *demand* ratios that range between 1.61 and 2.28 parking stalls per 1,000 square feet of development. The range is reflective of the location of development within the study area. The higher demand ratio could be applied as a development ratio for future developments scheduled for construction in Zone 1, whereas ratios at the lower end of the range would be more practically applied to peripheral areas of the downtown.<sup>20</sup>

<sup>19</sup> It is important to reiterate that only public supply was calculated during the peak hour of the combined study area (i.e., 6:00 p.m.). Private supply does not become readily available until just after this peak hour. The peak hour demand for Zone 1 reflects both public and private supply given that the private lots are open and readily available at the 8:00 p.m. Zone 1 peak hour.

<sup>20</sup> It is important to reiterate that the rates of 1.61 – 2.28 stalls per 1,000 SF do not reflect any existing parking that would/could be lost to new development. As such, a new development in the core would generate stall demand of 2.28/1,000 SF, but the loss of a 50 stall surface parking lot to accommodate that development would need to be

## 10. FORECASTING – IMPACTS TO THE SUPPLY

To facilitate future discussions regarding the parking supply, the consultant team developed a trend analysis to track growth in peak hour parking stall demand at two different levels of annual demand growth – 3 percent and 5 percent.<sup>21</sup>

To facilitate this exercise, the consultant team initiated the analysis using the following assumptions:

1. All existing publicly available parking in the downtown will remain in place, both on and off-street.
2. Stall demand generated at this time will not account for future new development.
3. 85 percent occupancy is considered optimum operating efficiency within a parking inventory.

By holding assumption (1) and (2) constant, base level demand (or status quo) for parking was calculated.<sup>22</sup>

### A. Growth Forecast – Study Area

Figure 9, next page, baselines current peak hour demand for the entire study area, showing the supply at 81.4 percent occupancy with 32 stalls of surplus per the 2002 parking survey of the downtown. The figure then trends the absorption of available parking for the ensuing five years at either 3 percent (low) or 5 percent (high) growth in demand.

This exercise demonstrates at which point in time the entire supply transitions into a deficit (while remaining consistent with the 85% Rule, bringing the system back to optimal occupancy). Using the low growth scenario (3 percent annual absorption), Downtown Kirkland surpasses the 85 percent threshold in 2004, with a 12 stall deficit. In contrast, under the high growth scenario (5 percent annual absorption), the downtown surpasses 85 percent occupancy in 2003, with a 4 stall deficit. Under both scenarios, the rate of peak hour stall absorption ranges from 23 – 40 stalls per year. By 2007, the overall supply of parking in the study area carries a deficit between 82 and 166 parking stalls.

In short, when the supply exceeds 85 percent occupancy, the expectation would be that new supply or alternative access options would need to be developed to absorb new demand and maintain an optimum level of overall access.

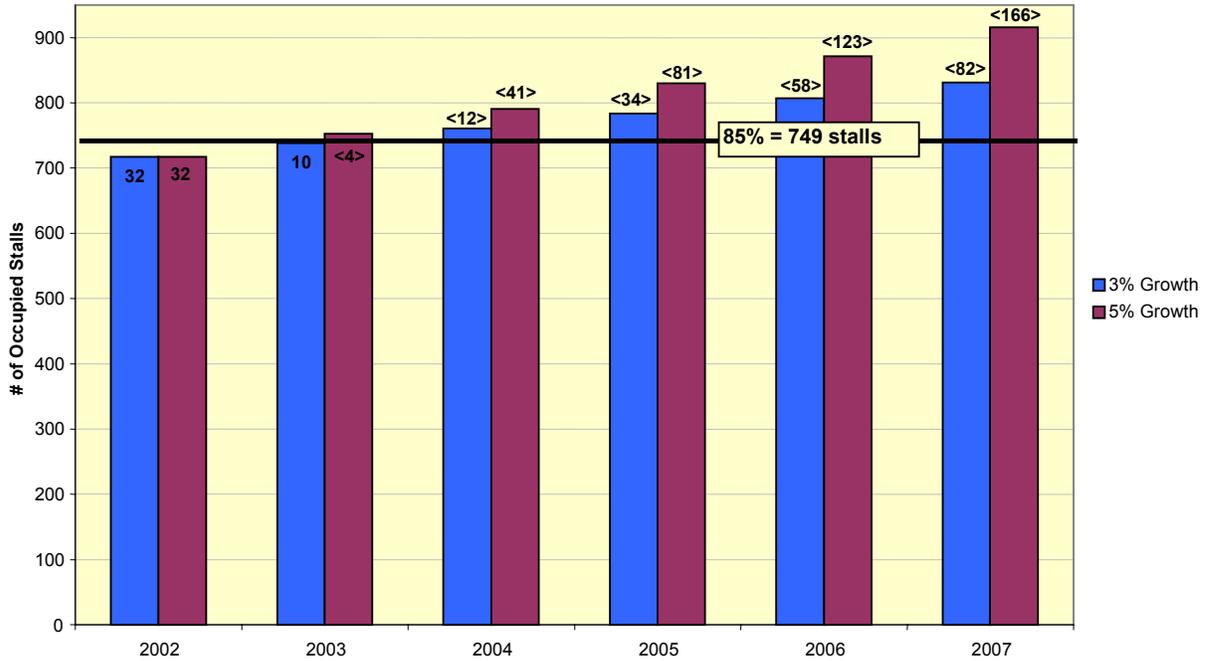
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considered in addition to the 2.28/1,000 SF ratio to maintain the optimum efficiency of access within the parking system.

<sup>21</sup> Percentage growth estimates were recommended by the City of Kirkland's Transportation Division as consistent with historical traffic and access trends for the downtown.

<sup>22</sup> Over the course of the next several years it is likely that changes will occur in the downtown that can and will impact the parking supply and how it is used. This can include increases/decreases to the supply itself; demand created by new development and/or parking and transportation demand management strategies designed to influence parking activity. In the case of demand, this exercise attempts to hold the supply and land uses constant to derive baseline-parking ratios.

**Figure 9: Estimated Peak Hour Stall Absorption  
for Study Area (881 Stalls) @ 3% and 5% Growth Rates  
Surplus/<Deficit> to 85% Occupancy**



**B. Growth Forecast – Zone 1**

A similar trend forecast was developed for Zone 1 alone, using both the 3 and 5 percent growth scenarios. The information displayed in Figure 10, below, illustrates stall absorption forecasts for Zone 1.

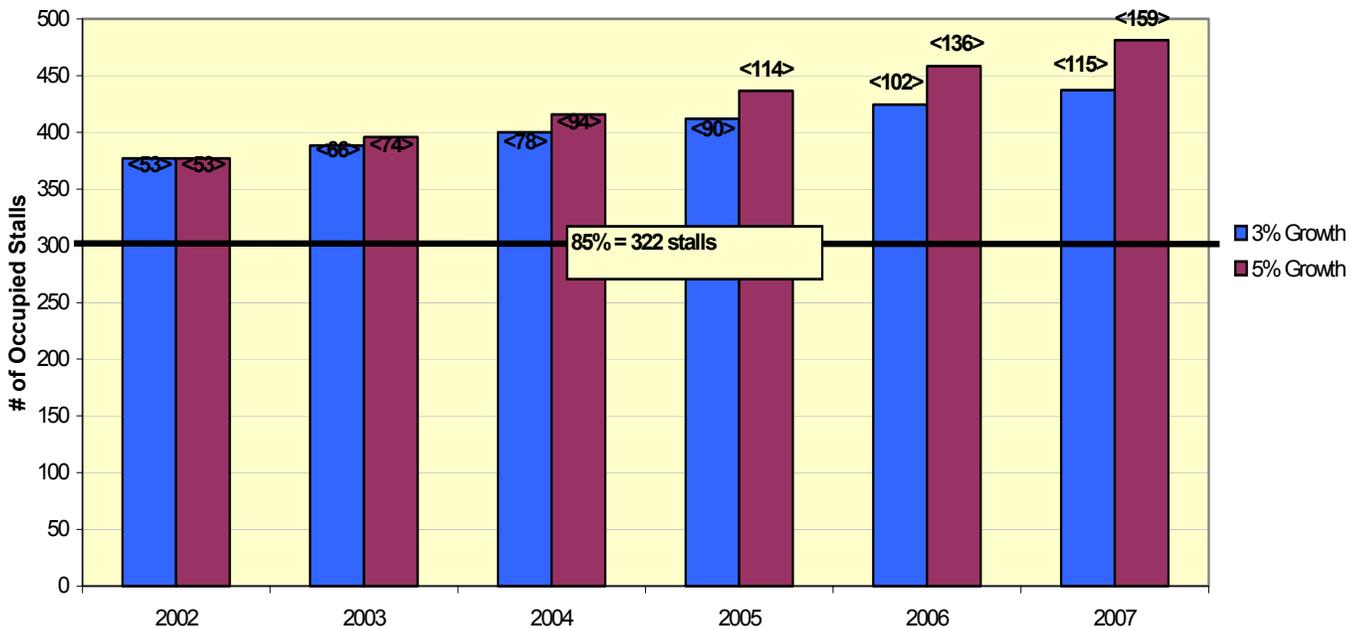
The zone begins with a 2002 deficit of 53 parking stalls, already in excess of the optimum 85 percent threshold.<sup>23</sup> The low and high growth scenarios simply exacerbate that deficit. Under the low growth scenario (3 percent), peak hour stall absorption would occur at an average rate of 12 stalls annually over a five-year period. At the high growth rate, peak hour stall absorption would occur at an average rate of 21 per year over the same period. By 2007, if Zone 1 were to meet its own demand needs (without utilizing private supply or surplus in other zones/areas) the zone would be in deficit of 115 to 159 parking stalls.<sup>24</sup>

As with the analysis for the entire supply, when the supply in Zone 1 exceeds 85 percent occupancy, the expectation would be that new supply or alternative access options would need to be developed to absorb new demand and maintain an optimum level of overall access.

<sup>23</sup> It is important to note that the deficits represented here do not account for private supply that might be available or surplus in adjacent parking zones.

<sup>24</sup> The analysis does not attempt to estimate "latent" demand for parking that may currently be diverted to other areas based on a perception by the user that Kirkland may be difficult to access due to parking constraints. The consultant team recognizes the strong demand for parking access in Kirkland, but to estimate beyond data from the inventory would be speculative.

Figure 10: Estimated Peak Hour Stall Absorption  
for Zone 1 (379 Stalls) @ 3% and 5% Growth Rates  
Surplus/<Deficit> to 85% Occupancy



## 11. MOVING TO EVADE

The PWG was interested in whether employees of the downtown were parking on street and in short-term public lots and then moving their vehicles throughout the day to avoid receiving a parking violation. This activity, called “moving to evade,” could deny patrons access to convenient short-term parking, particularly if the level of moving to evade was significant.

The consultant team conducted a non-scientific, manual count of unique license plate numbers that re-occur throughout the study area during the survey days. This manual count was conducted from the overall collected data. The consultant team also reviewed enforcement records from the survey days, which identify employee license plate numbers to substantiate/confirm the manual counts taken.

In general, it was found that between 2 and 3 percent of all unique vehicles identified during the survey period could be described as moving to evade. This level of activity would not appear to compromise the overall level of customer access downtown given the high rate of stall turnover observed and documented.

## 12. ENFORCEMENT

Any parking management plan or system is only as strong as its enforcement program. Good enforcement assures turnover at desired levels, directs patrons to appropriate time stay locations and reduces abuse in the system (i.e., moving to evade). The data inventory of the downtown

clearly demonstrated that the current system of parking enforcement in Kirkland is effective and efficient. Given the strong levels of parking activity and the unusually high ratio of turnover to posted time stay, it is apparent that enforcement activity is appropriate to Kirkland's current level of parking demand.

### **13. SUMMARY**

The data analysis for parking in Downtown Kirkland reveals a system that is operating at a very high level of turnover. While the overall supply of parking in the downtown currently operates at about 81 percent occupancy in the peak hour, the core zone of the downtown exceeds capacity for the majority of the operating day and into the evening hours. Opportunities to create additional capacity within the parking supply do exist. Coordinated management of the parking supply at the Library Garage and in available private spaces will serve to mitigate existing constraints. However, growth in demand for parking in downtown will soon lead the City to look to new supply opportunities and alternative mode options to fully balance access choices to meet demand and future development plans.

Major findings from the analysis include:

- The City controls 881 stalls of publicly available parking within the study area. An additional 213 parking stalls are available to the public throughout the operating day (particularly evenings).
- The majority of public parking in the downtown is designated for customer parking (stays of less than four hours).
- The highest weekday peak hour for the combined downtown parking inventory is between 6:00 p.m. and 7:00 p.m. when 81.4 percent of all parking stalls in the study area are occupied. The weekend peak hour for the combined study area is also between 6:00 p.m. and 7:00 p.m., when 69.1 percent of all spaces are occupied.
- The average parking stay downtown is 1 hour and 24 minutes.
- The intended rate of turnover downtown is 6.0 turns per day. Actual turnover is 8.6 turns per day, indicating that the system is operating significantly above designed expectations.
- Violations/abuse of the system occur within a normal rate for violations and enforcement personnel are very efficient. Additional enforcement personnel would likely result in increased revenue to the City.
- The 2002 parking inventory indicates that the core area of the downtown (Zone 1) currently operates at a deficit of approximately 54 parking stalls if the 85% Rule is used as a gauge for optimum system performance. The deficit raises to between 115 and 159 stalls by the year 2007 if other strategies are not put into place.
- Surplus parking is available in other parking zones, the Library Garage and in private lots. The feasibility and appropriateness of strategies to direct customers to available surpluses in the downtown should be explored in the next phase of the parking study.
- Current demand for parking ranges from 1.61 to 2.28 parking stalls per 1,000 square feet of commercial building area, depending on location within the downtown. Currently, parking is being provided at a rate of approximately 1.98 parking stalls per 1,000 square feet of commercial building area.

- Absorption of parking stall at the peak hour will be between 23 and 40 stalls per year within the combined study area, at assumed growth rates of 3 and 5 percent. Under status quo conditions, this would result in a deficit of parking in the downtown of between 82 and 166 parking stalls by 2007. The rate of absorption will be greater in Zone 1.

Information from the parking utilization analysis was used extensively by the PWG in its detailed examination of parking management strategies to address growing demand for parking in the downtown. These strategies and recommendations are included in the sections to follow, particularly Sections IV and VIII.