



CITY OF OREGON CITY, OREGON

**2016 Oregon City Comparative Summary of
Parking Utilization in the
Historic Downtown**

DATA SUMMARY REPORT

Prepared for:

**City of Oregon City
Community Development Division**

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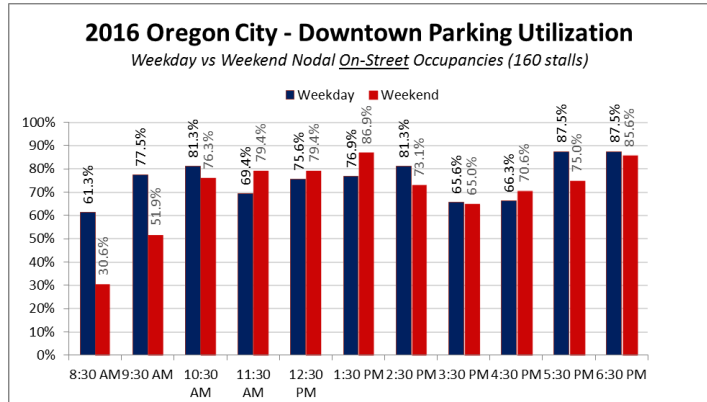
SEPTEMBER 2016

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C. 2016 Findings: High-Occupancy Node

Analysis of the larger study area indicated moderate use of the on-street supply. A more refined look found that data for the larger study area understates parking constraints in the southern end of the downtown.



A nodal analysis of this area was conducted. The area is bounded by 10th Street to the north, 99E to the south,

McLoughlin Boulevard to the west, and Railroad Avenue to the east. This narrow corridor includes 160 parking stalls, 39% of all on-street parking. It also includes a high number of block faces that do not allow parking, creating constraints not reflected in the larger study area.

Peak-hour parking in this high-occupancy node rises to 87.5% during the week and 86.9% on the weekend. This indicates a constrained supply that makes it difficult for users to find on-street parking in this area (see graphic at upper right).

More detailed analysis of the high-occupancy node is provided in Section VII.

D. 2016 Findings: Off-street Supply

The 2016 off-street system includes 758 parking stalls located on 40 sites in the downtown. Peak-hour occupancies reach just over 50% during the week and about 26% on the weekend. This leaves 353 stalls empty on the weekday and over 560 on the weekend. The unused off-street supply continues to present an opportunity to mitigate on-street constraints through shared-use arrangements, particularly in the high-occupancy node.

More detailed analysis of the off-street supply is provided in Section VIII.

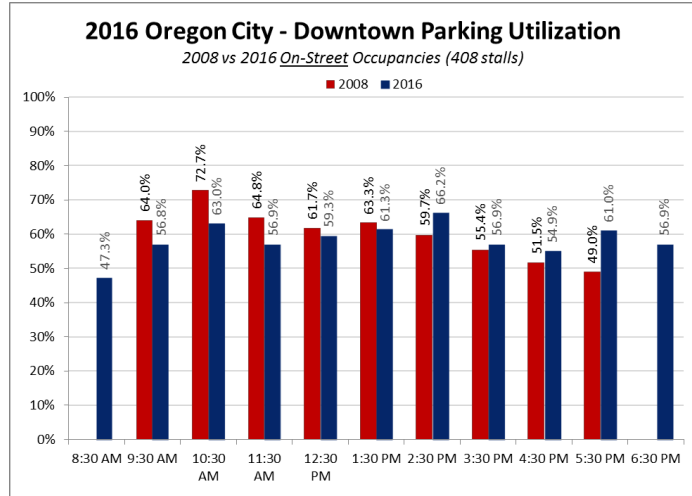
E. Comparative Findings (2008 vs. 2016)

This section compares system performance between the two study years. The 2008 study collected data only on a weekday; therefore the comparative analysis quantifies only the two weekday data sets.

On-street parking

Overall peak-hour occupancies have decreased from from 72.7% to 66.2%. In 2008 the peak hour was from 10:00 to 11:00 AM, while in 2016 it was from 2:00 tp 3:00 PM, a significant shift (see graphic at right).

Parking activity in 2008 was much higher in the morning, dropping every hour after 1:30 PM. In 2016, activity was lower than 2008 in the morning but higher in the afternoon. Data from 2016 shows a significant upward spike after 3:30 PM that was not evident in 2008. This is a sign of improving late afternoon/early evening business activity in the downtown.



Off-street parking

The off-street parking supply increased from 637 stalls in 2008 to 758 in 2016, an increase of 121 stalls (19%). Overall peak-hour occupancies are similar: 56.5% in 2008 versus 53.4% in 2016. In 2016 there were 353 empty stalls at the peak hour, compared to 277 in 2008. The number of vehicles parked in the peak hour has increased since 2008, from 360 to 405. Despite this increase, there is still a meaningful supply of empty off-street stalls that could be used to reduce constraints in the on-street system.

2016 Downtown Oregon City Combined Parking Utilization: Off-Street Comparative						
Type of Stall	Study Date	# of Stalls	Peak Hour	Peak Occupancy	Vehicles Parked	Empty Stalls
Off-Street Peak	2008	637	2:00 – 3:00 PM	56.5%	360	277
	2016	758	2:00 – 3:00 PM	53.4%	405	353

More detailed analysis comparing the two study years is provided in **Section IX**.

F. Summary

The dynamics of parking in downtown Oregon City have remained largely similar from 2008 to 2016. Peak-hour occupancies in the study area remain moderate, though on-street parking constraints in the south end of the downtown are significant. The off-street system is only moderately used, with a meaningful supply of empty parking distributed throughout the study area.

Since 2008, Oregon City has added more 2-Hour stalls on-street, resulting in a stronger turnover rate, especially in the high-occupancy node. Despite a decrease in peak-hour occupancy from 72.7% to 66.2%, the number of vehicle trips to downtown has grown from 986 to 1,382, and evening activity has increased. These are positive findings that reflect the economic growth of downtown Oregon City.

I. BACKGROUND

In 2008, the City of Oregon City conducted a comprehensive study that clearly described how parking was functioning in the downtown and on the Bluff. That effort led to the development of the Downtown Oregon City Parking Management Plan, which implemented a range of programs to improve the parking system, prioritizing uses, moving employees to off-street locations, and refining permit and pricing systems.

A 2016 study conducted by Rick Williams Consulting attempted to replicate the 2008 study methodology for the downtown area, specifically the area bounded by the Willamette River to the northwest, 16th Street to the northeast, Railroad Avenue and the Bluff to the southeast, and McLoughlin Boulevard/Highway 99 to the southwest.¹ The 2016 study provides updated information on how the system is performing and analyzes changes over the last eight years.

Data from 2008 and 2016 was examined to develop a comparative summary of the two studies. Only weekday data is compared, as weekend data was not collected in 2008.

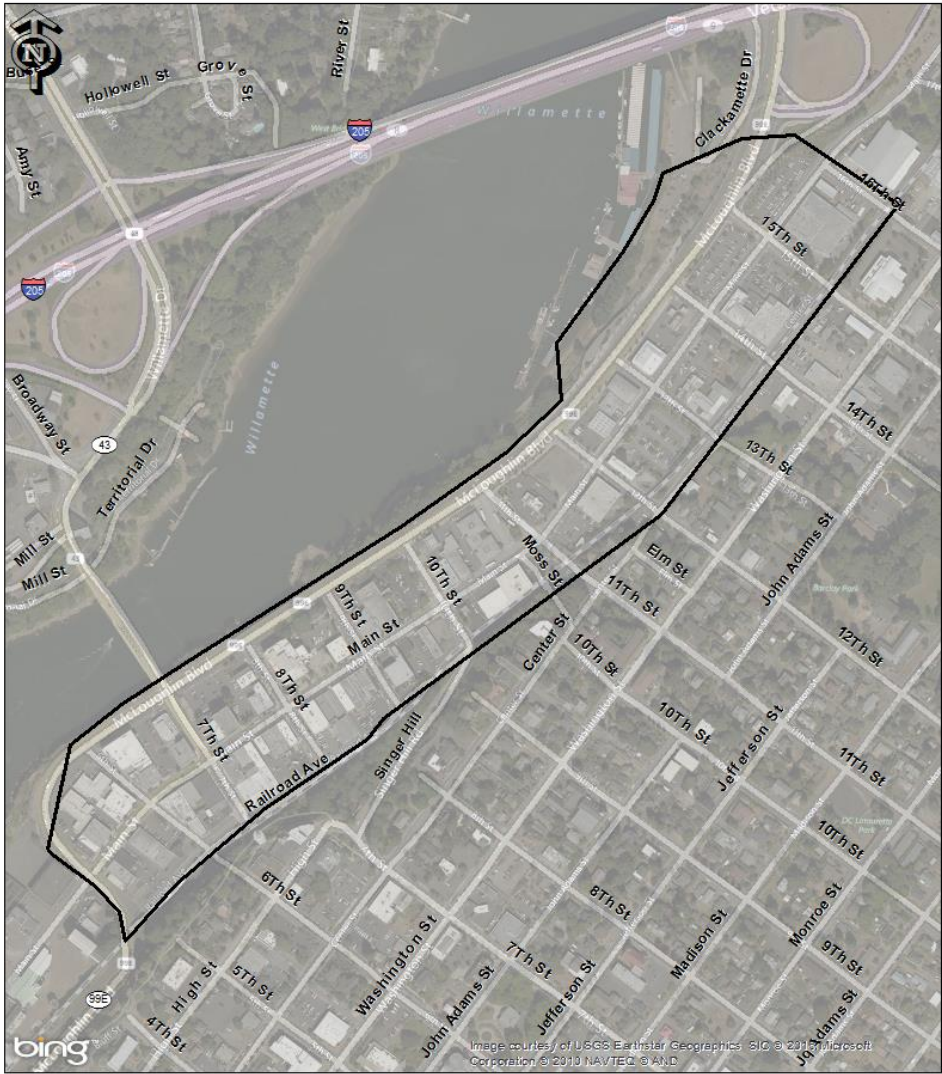
The findings presented herein can inform recommendations to maximize the efficiency of the current parking supply and to plan strategically for the future.

¹ Data collection on the Bluff was not included in the 2016 effort.

II. STUDY AREA

The study area was determined in the initial scoping process by the City of Oregon City and the consultant team. The area is bounded by the Willamette River to the northwest, 16th Street to the northeast, Railroad Avenue and the Bluff to the southeast, and McLoughlin Boulevard/Highway 99 to the southwest. See **Figure A**, below.

Figure A: Oregon City Parking Study Area



Oregon City

July 2016

RICK WILLIAMS CONSULTING
Parking & Transportation

0 65 130 260 390 520 Feet

III. METHODOLOGY

To be consistent with 2008 data and ensure comparable results, the 2016 survey attempted to match the previous study area as closely as possible.² Unlike the 2008 effort, in which RWC collected the data, the consultant team collaborated with the Downtown Oregon City Association (DOCA) to both inventory the parking supply and conduct the data collection. DOCA volunteers used methods provided by RWC, and RWC survey foremen helped train DOCA staff. RWC also provided supervisory assistance on the survey days.

A. Inventory

An updated inventory template for all parking in the study area was prepared in advance of data collection. On-street stalls were catalogued by time stay, and off-street parking by location. Differences between the 2008 and 2016 parking inventories are summarized in **Table 1** (page 4).

B. On-Street Supply

Data collection took place on Thursday, July 7th and Saturday, July 9th, 2016. The survey days were selected in consultation with the City of Oregon City and DOCA. The weekday was a good comparison to the 2008 survey day, which also occurred in July. The weather was cloudy, in the mid-60s, with some drizzle. Saturday, July 9th was overcast and in the low 70s.

Both surveys involved hourly counts of occupied on-street parking stalls in the study area. DOCA volunteers collected the license plate numbers of vehicles parked at each on-street parking stall over the 11-hour period from 8:30 AM to 6:30 PM.³ The survey represents a 100% sample of on-street parking in the study area.

C. Off-Street Supply

Off-street facilities were surveyed on the same days. Both public and privately owned facilities were categorized by block number and lot size and identified by tenant. A total of 758 off-street stalls were documented in 40 surface lots. Occupancy counts were conducted each hour over the course of the 11-hour survey day. Unlike the on-street system, license plates were not recorded. The off-street survey represents a 100% sample of off-street parking in the study area. See **Table 7** (page 21) for a breakout of all 40 off-street lots.

² The 2016 study did not collect data on the Bluff.

³ This is two additional hours compared to the 2008 study (9:30 AM – 5:30 PM). This was particularly important to downtown businesses, given growing interest in how late afternoon/early evening traffic performs.

D. General Methodology Notes

In 2016, parking data was gathered on both a weekday and weekend (Thursday, July 7th and Saturday, July 9th). Data from both days was used to analyze differences in parking patterns on a typical weekday versus a typical weekend day. As no weekend data was gathered in 2008, only weekday data was used in the comparative analysis of the 2008 and 2016 studies.

A discrepancy of 10 stalls was noted in the DOCA parking inventory for the 2016 on-street survey between the Thursday and Saturday counts. RWC ensured that occupancies for each day were accounted for and calibrated to the DOCA stall counts when occupancy is described for each unique day. When comparing 2008 to 2016, the Thursday (weekday) inventory was used as it better matched the two survey years. The discrepancies between the two days in 2016 are summarized in **Table 1**.

Table 1: Weekday and Weekend Inventory Format (2016)

Stalls by Type	Weekday		Weekend	
	All	% of Total	All	% of Total
2 Hours (Signed)	36	8.8%	36	9.0%
2 Hours (Metered)	227	55.6%	231	58.0%
4 Hours (Signed)	21	5.1%	17	4.3%
8 Hours (Metered)	28	6.9%	25	6.3%
ADA 'Accessible'	4	1%	4	1.0%
POB (Blue Permit)	30	7.4%	30	7.5%
POG (Green Permit)	9	2.2%	9	2.3%
Purple Permit	23	5.6%	23	5.8%
Red Permit	30	7.3%	23	5.8%
<i>On-Street Supply</i>	<i>408</i>	<i>35.0%</i>	<i>398</i>	<i>34.4%</i>
<i>Off-Street Supply</i>	<i>758</i>	<i>65.0%</i>	<i>758</i>	<i>65.6%</i>
Total Parking Supply	1,166	100%	1,156	100%

IV. FORMAT OF THE PARKING SUPPLY - INVENTORY

Table 2 compares the total parking inventory in 2016 and 2008. As the table indicates, a total of 1,166 stalls were documented in the downtown in 2016. Of these, 408 stalls are located on-street and 758 stalls are located off-street in 40 unique sites.

Table 2: 2016 & 2008 Oregon City Parking Inventory

Stalls by Type	2016		2008	
	All	% of Total	All	% of Total
30 Minutes	0	0%	16	4.1%
1 Hour	0	0%	11	2.8%
2 Hours (Signed)	36	8.8%	188 ⁴	48.0%
2 Hours (Metered)	227	55.6%		
4 Hours (Signed)	21	5.1%	7	1.8%
8 Hours (Metered)	28	6.9%	23	5.9%
ADA 'Accessible'	4	1%	0	0%
No Limit	0	0%	32	8.2%
POB (Blue Permit)	30	7.4%	28	1.4%
POG (Green Permit)	9	2.2%	31	7.9%
POP (Purple Permit)	23	0%	14	3.6%
Red Permit	30	7.3%	0	0%
County Corrections Only	0	0%	20	5.1%
County Courthouse Only	0	0%	12	3.1%
On-Street Supply	408	35.0%	392	38.1%
Off-Street Supply	758 (40 sites)	65.0%	637 (26 sites)	61.9%
Total Parking Supply	1,166	100%	1,029	100%

Since 2008, the overall supply has grown by 137 stalls. The on-street supply has increased by 16 stalls and the off-street supply by 121 stalls. Notable changes between survey years are a reduction in permits allowing parking on-street, and the elimination of No Limit parking. In 2008, 137 stalls were dedicated to these long-term uses; in 2016, only 92 stalls fall into these categories. These changes allowed for an increase in the number of 2-Hour parking stalls, from 188 to 263, greatly enhancing short-term visitor parking opportunities.

⁴ In 2008, these stalls were primarily metered parking.

As noted, the off-street supply increased by 121 stalls, while the number of off-street sites increased from 26 to 40. This may reflect both the addition of new lots and a difference in how a “unique off-street site” was defined in 2008 and 2016. DOCA staff are more aware of ownership distinctions than RWC was in 2008. RWC may have defined a site as unique when in fact there were multiple adjacent sites under different ownership.

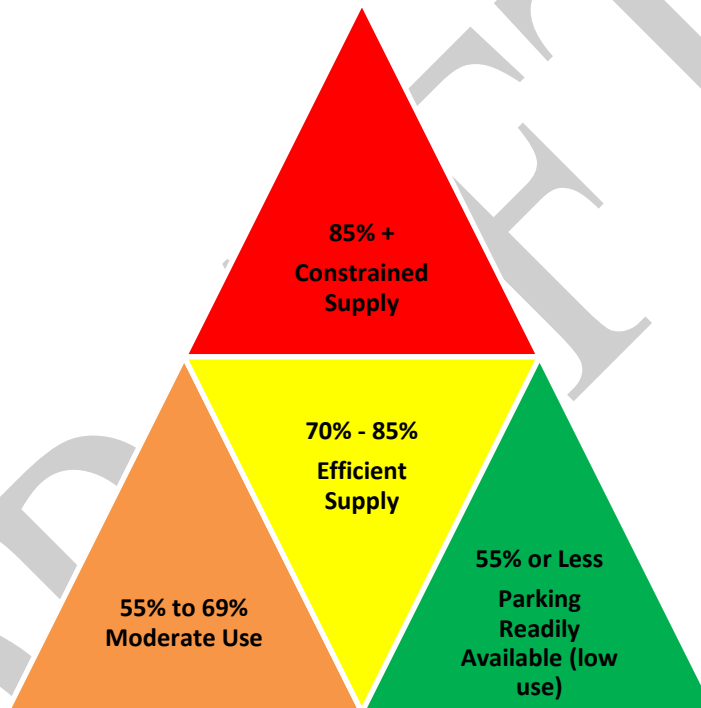
Overall, changes in the format of the on-street supply favor short-term parkers, a key goal of the 2008 plan. In addition, the amount of parking has grown both on and off-street, a positive for the downtown.

DRAFT

V. MEASURING PERFORMANCE

Parking is considered to be constrained when 85% or more of the available supply is routinely occupied during the peak hour. In a constrained system, finding an available spot is difficult, especially for infrequent users such as customers and visitors. This can cause frustration and negatively affect perceptions of the downtown. Continued constraint can make it difficult to absorb and attract new growth, or to manage fluctuations in demand—for example, seasonal or event-based spikes.

Occupancy rates of 55% or less indicate that parking is readily available. While availability may be high, this may also indicate a volume of traffic inadequate to support active and vital businesses.



Occupancy rates between these two thresholds indicate either moderate (55% to 69%) or efficient (70% to 85%) use. An efficient supply of parking shows active use but little constraint that would create difficulty for users. Efficient use supports vital ground-level businesses and business growth, is attractive to potential new users, and is able to respond to routine fluctuations.

RWC's analysis of parking in Oregon City uses these categories to evaluate the performance of the system.

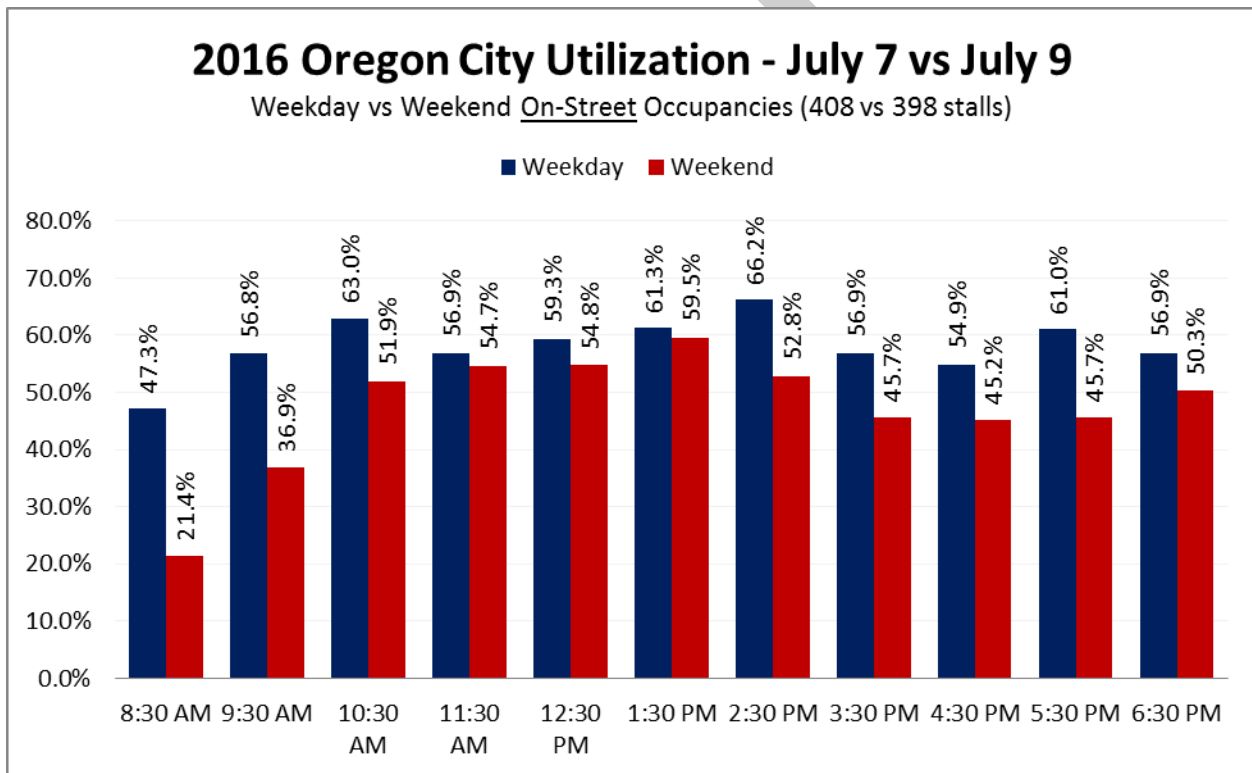
VI. CHARACTERISTICS OF ON-STREET PARKING (ENTIRE STUDY AREA)

A. Occupancy – Hourly Distribution (Weekday vs Weekend)

Figure B compares hourly occupancies between the weekday and weekend surveys.

- The weekday peak hour is 2:00 to 3:00 PM, when occupancies reach 66.2%.
- The weekend peak hour is 1:00 to 2:00 PM, when occupancies reach 59.5%.
- Hourly occupancies are higher throughout the day on the weekday compared to the weekend.
- Hourly occupancies are substantially higher in the morning and late afternoon/evening on the weekday.
- Both the weekday and weekend show a small spike in the evenings after 4:00 PM, indicating that the downtown experiences a resurgence of activity at dinner time. The spike occurs earlier on the weekday (between 5:00 and 6:00 PM) than on the weekend (between 6:00 and 7:00 PM).

Figure B: 2016: On-street Occupancy by Hour (Weekday vs. Weekend On-Street)



B. Peak Hour Occupancy – Heat Map (Weekday vs. Weekend)

Figure C and Figure D (pages 10 and 11) illustrate peak hours for each of the survey days in a “heat map” format. Heat maps use color to show intensity of use by block face based on the diagram in Section V above.

There are a total of 82 block faces in the study area. Thirty-four block faces, 41% of the total; do not allow parking (shown in brown on the heat maps). This leaves just 48 block faces where parking is allowed.

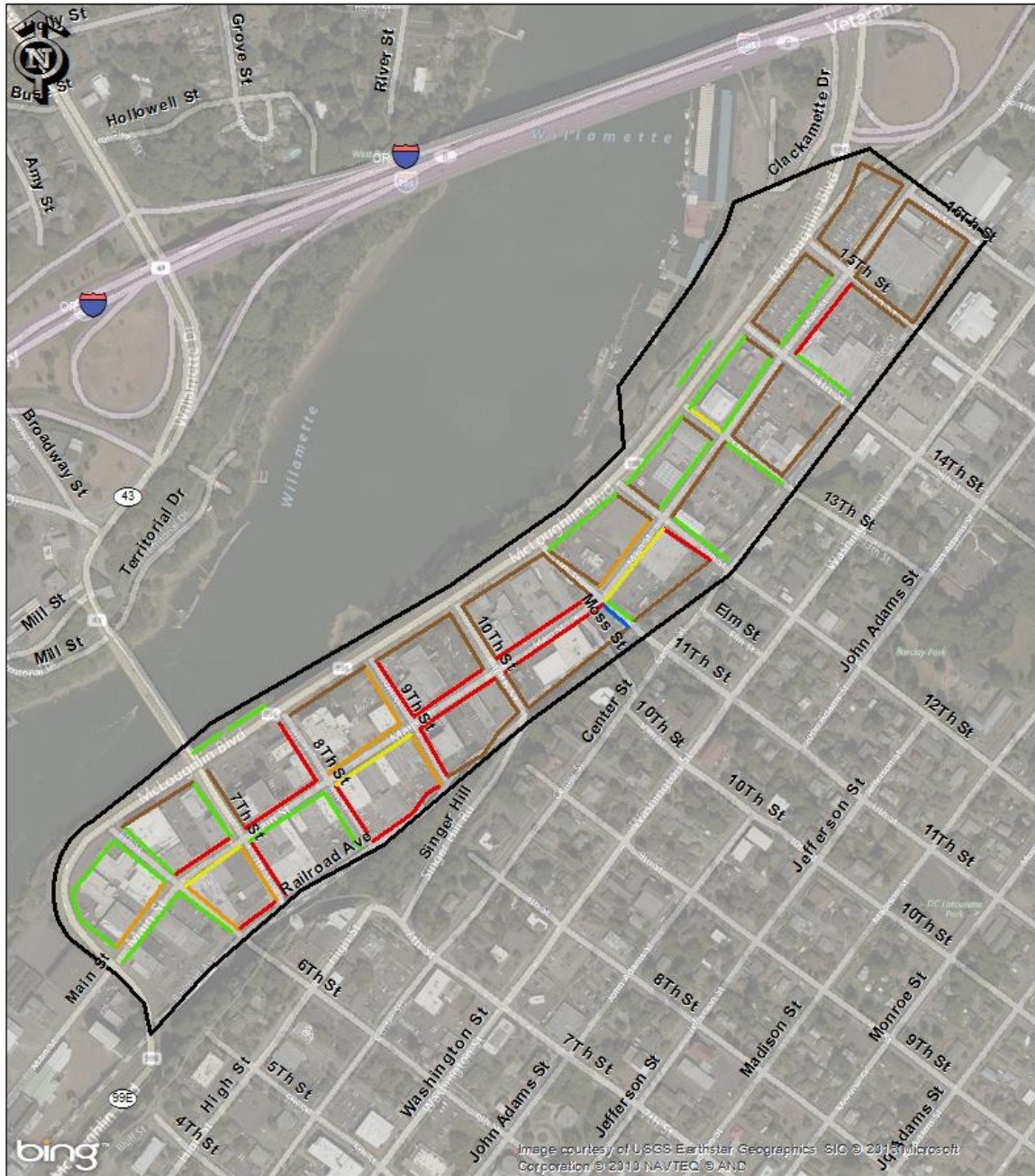
Weekday

As **Figure C** illustrates, 15 of 48 block faces that allow parking (31%) are constrained during the weekday peak hour, shown in red on the heat map. Ten of the 15 constrained block faces are south of 10th Street. Even though peak-hour occupancy for the entire study area is a moderate 66%, it is likely that this area of the downtown can feel quite constrained given the clustering of constrained (red) block faces.

Weekend (Saturday)

As **Figure D** illustrates, 21 of 48 block faces that allow parking (44%) are constrained during the weekend peak hour. Twenty of the 21 constrained block faces are located south of 11th Street. Even though overall peak-hour occupancy is lower on the weekend (59.5% versus 66.2%), the number of constrained block faces is higher. Again, this may create a perception among users that this area is constrained during the peak hour.

Figure C: 2016: Heat Map (Weekday Peak Hour)



Oregon City
 On-Street Parking Utilization
 [Black Outline] Parking Study Area
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 Parking & Transportation

- > 85%
- 84% - 70%
- 69% - 55%
- < 55%
- Construction
- No Parking

Weekday 2016
2:00 - 3:00 PM
 Peak Hour

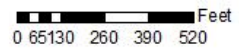
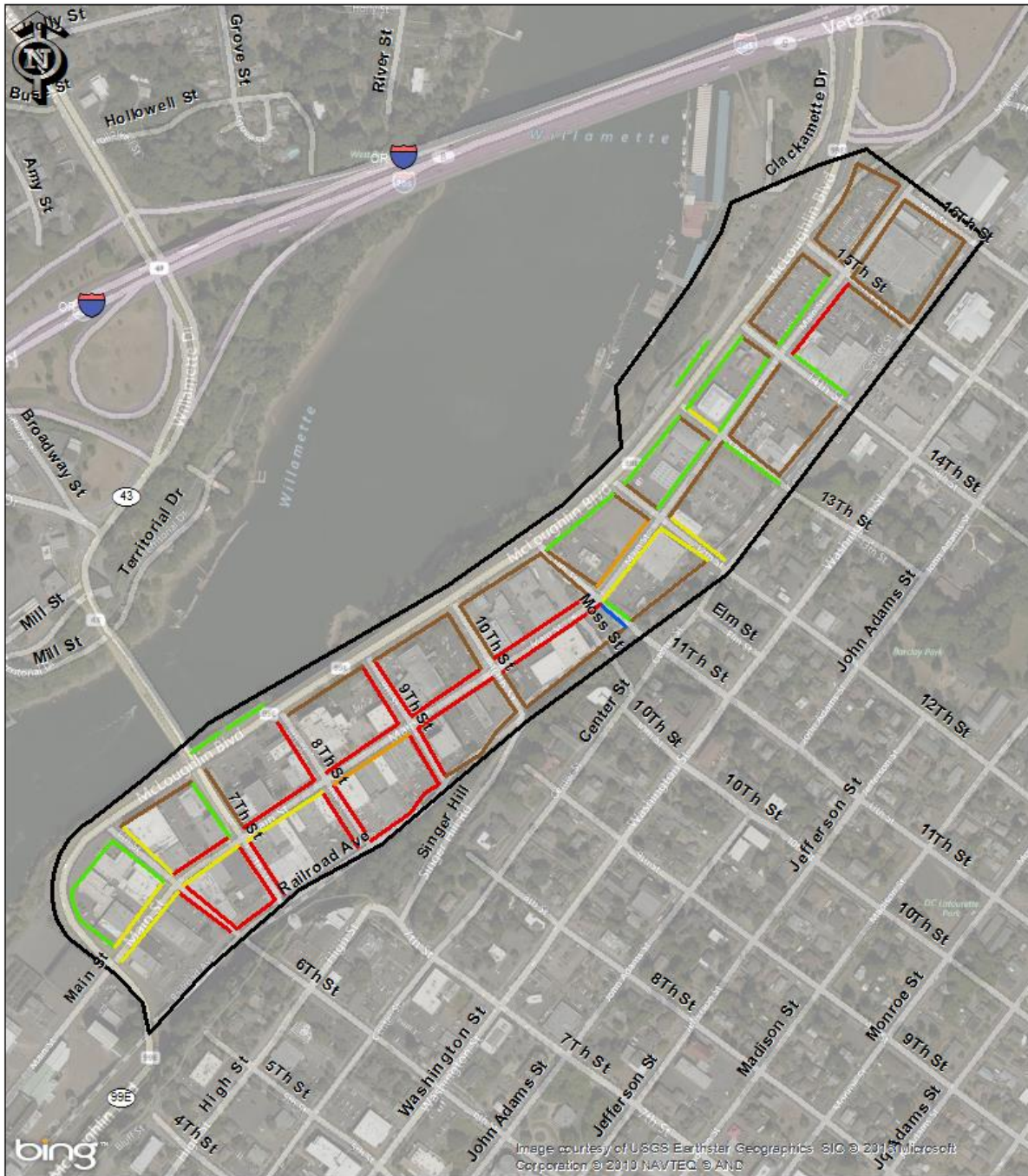


Figure D: 2016: Heat Map (Weekend Peak Hour) Utilization – by Stall Type



Oregon City
 On-Street Parking Utilization
 [Black Outline] Parking Study Area
RICK WILLIAMS CONSULTING
 Parking & Transportation

- > 85%
- 84% - 70%
- 69% - 55%
- < 55%
- Construction
- No Parking

Weekend 2016
1:00 - 2:00 PM
Peak Hour

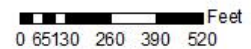


Table 3 (below) summarizes 2016 parking use patterns for each stall type over the two study days. Performance metrics include peak hour, peak occupancy, number of empty stalls, average duration of stay, and violation rate.

- The peak hour for the on-street supply on the weekday was from 2:00 to 3:00 PM. Weekend use peaks one hour earlier, from 1:00 to 2:00 PM.
- Occupancy rates were slightly higher on the weekday (66.2%) compared to the weekend (59.5%). See **Figure B** (page 8).
- The average duration of stay was 1 hour 53 minutes on the weekday and 1 hour 54 minutes on the weekend.
- Violation rates are above industry best-practice targets of 5% to 7%). The weekday violation rate is 10.8%, and the weekend’s is 14.5%.
- Even with high rates of violation, the average duration of stay in 2-Hour stalls is well below two hours, indicating that these stalls are well calibrated to the needs of most customers.
- Both the weekday and weekend show a small spike in the evening after 4:00 PM, indicating that the downtown experiences a resurgence of activity at dinner time. The spike occurs earlier on the weekday (between 5:00 and 6:00 PM) than on the weekend (between 6:00 and 7:00 PM).
- As expected, occupancy rates for permit stalls were much higher during the weekday than on the weekend.
- 4-Hour signed stalls and 8-Hour metered stalls show a shorter duration of stay on average, indicating an insufficient time stay based on user need. Reducing the number of these stalls by converting them to 2- or 3-Hour time stays may be appropriate.
- The permit system is generally well utilized on weekdays, except for Purple Permits, which peak at just over 50% during the peak hour. Reducing the number of these stalls could allow for additional 2-Hour visitor stalls.
- At the weekday peak hour, there are 138 empty stalls across the entire on-street supply. On the weekend, the number of empty on-street stalls increases to 161.

Table 3: 2016 Oregon City On-Street Parking Utilization Comparative (Weekday and Weekend)

Type of Stall	Study Date	Stalls	Peak Hour	Peak Occupancy	Stalls Available	AVG Duration of Stay	Violation Rate
On-Street Peak	<i>Weekday</i>	408	2:00 – 3:00 PM	66.2%	138	1 hr./ 53 min	10.8%
	<i>Weekend</i>	398	1:00 – 2:00 PM	59.5%	161	1 hr./ 54 min	14.5%
Usage by Time Stay							
2 Hour (Signed)	Weekday	36	6:00 – 7:00 PM	44.4%	20	1 hr./ 21 min	3.3%
	Weekend		1:00 – 2:00 PM	47.2%	19	2 hr./ 4 min	16.1%

Type of Stall	Study Date	Stalls	Peak Hour	Peak Occupancy	Stalls Available	AVG Duration of Stay	Violation Rate
2 Hour (Metered)	Weekday	227	5:00 – 6:00 PM	78.0%	50	1 hr./ 33 min	11.4%
	Weekend	231	1:00 – 2:00 PM	73.2%	62	1 hr./ 44 min	15.0%
2 Hour (All)	Weekday	263	5:00 – 6:00 PM	71.9%	74	1 hr./ 33 min	11.0%
	Weekend	267	1:00 – 2:00 PM	69.7%	81	1 hr./ 46 min	15.0%
4 Hours (Signed)	Weekday	21	2:00 – 3:00 PM	57.1%	9	2 hr./ 26 min	17.9%
	Weekend	17	2:00 – 3:00 PM	23.5%	13	1 hr./ 42 min	0.0%
8 Hours (Metered)	Weekday	28	5:00 – 6:00 PM	50.0%	14	1 hr./ 50 min	1.9%
	Weekend	25	11:00 AM – 12:00 PM	40.0%	15	2 hr./ 10 min	3.2%
ADA 'Accessible'	Weekday	4	1:00 – 2:00 PM	100.0%	0	1 hr./ 20 min	N/A
	Weekend		1:00 – 2:00 PM	75.0%	1	2 hr./ 8 min	N/A
Permit Only (Blue)	Weekday	30	11:00 AM – 12:00 PM	83.3%	5	4 hr./ 34 min	N/A
	Weekend		12:00 – 1:00 PM	23.3%	23	1 hr./ 54 min	N/A
Permit Only (Green)	Weekday	9	9:00 – 11:00 AM 12:00 – 1:00 PM	88.9%	1	2 hr./ 13 min	N/A
	Weekend		4:00 – 5:00 PM	55.6%	4	3 hr./ 0 min	N/A
Permit Only (Purple)	Weekday	23	9:00 AM – 12:00 PM	52.2%	11	7 hr./ 12min	N/A
	Weekend		10:00 – 11:00 AM 2:00 – 3:00 PM	13.0%	20	3 hr./ 0 min	N/A
Permit Only (Red)	Weekday	30	10:00 AM – 12:00 PM 1:00 – 4:00 PM	86.7%	4	7 hr./30 min	N/A
	Weekend	23	11:00 AM – 2:00 PM	78.3%	5	6 hr./ 29 min	N/A

Table 4 compares additional weekday and weekend on-street performance metrics for 2016, including number of vehicles accessing the system, turnover rate, number of vehicles moving to evade citations, and long-term use of short-term stalls.

Table 4: Summary of On-Street Parking Use Characteristics – Oregon City – Weekday Vs Weekend

	Use Characteristics	Weekday	Weekend
1	Unique Vehicles	1,241	1,023
2	Turnover	5.83	5.77
3	Excessive Time Stays - Vehicles parked 5 hours or more in time limited stalls (% of unique vehicles)	32 (2.6%)	48 (4.7%)
4	Moving to Evade - Occurrence of vehicles observed moving between time limited stalls to evade citations (% of unique vehicles)	71 (5.7%)	27(2.6%)

1. Number of Unique Vehicles

The recording of license plate numbers allows us to identify the total number of unique vehicles using the on-street system.⁵

During the weekday survey, 1,241 unique license plate numbers were recorded on-street between 8:30 AM and 6:30 PM. This translates to approximately 113 vehicles arriving each hour over the course of an average business day. On the weekend, 1,023 unique license plate numbers were recorded, an average of 93 vehicles arriving each hour. Overall, the weekday vehicle load is 218 vehicles (~18%) higher than on the weekend.

2. Turnover: Efficiency of the Parking System

In most cities, the primary time limit allows for calculation of an *intended turnover rate*. For example, if the intended use for a stall is two hours, the stall should be expected to turn over 5.5 times during an 11-hour survey period.⁶ If the turnover rate were demonstrated to be less than 5.5, the system would not be operating at its intended efficiency. A rate in excess of 5.5 would indicate a system that is operating at or above its intended efficiency. Given that 64% of Oregon City's on-street supply is 2-Hour parking, this standard is useful for evaluating its efficiency.

In Oregon City, the downtown on-street parking system maintains an average turnover rate of 5.83 on a weekday and 5.77 on the weekend. Even with its mix of No Limit and permit parking stalls, the Oregon City system exceeds the 5.5 standard indicating an efficient system. Any future reductions in permit and No Limit stalls would likely improve this rate.

⁵This does not represent all vehicles in the study area, as license plate numbers were not recorded in off-street facilities.

⁶ Calculated by dividing the average time stay into the 11-hour study day.

3. Excessive Time Stay

The number of vehicles parked in time-limited stalls for five hours or more totaled 32 on the weekday and 48 on the weekend. This represents 2.6% and 4.7% of all vehicles observed for the weekday and weekend, respectively. It is likely that these vehicles belong to employees who do not have permits.

4. Moving to Evade

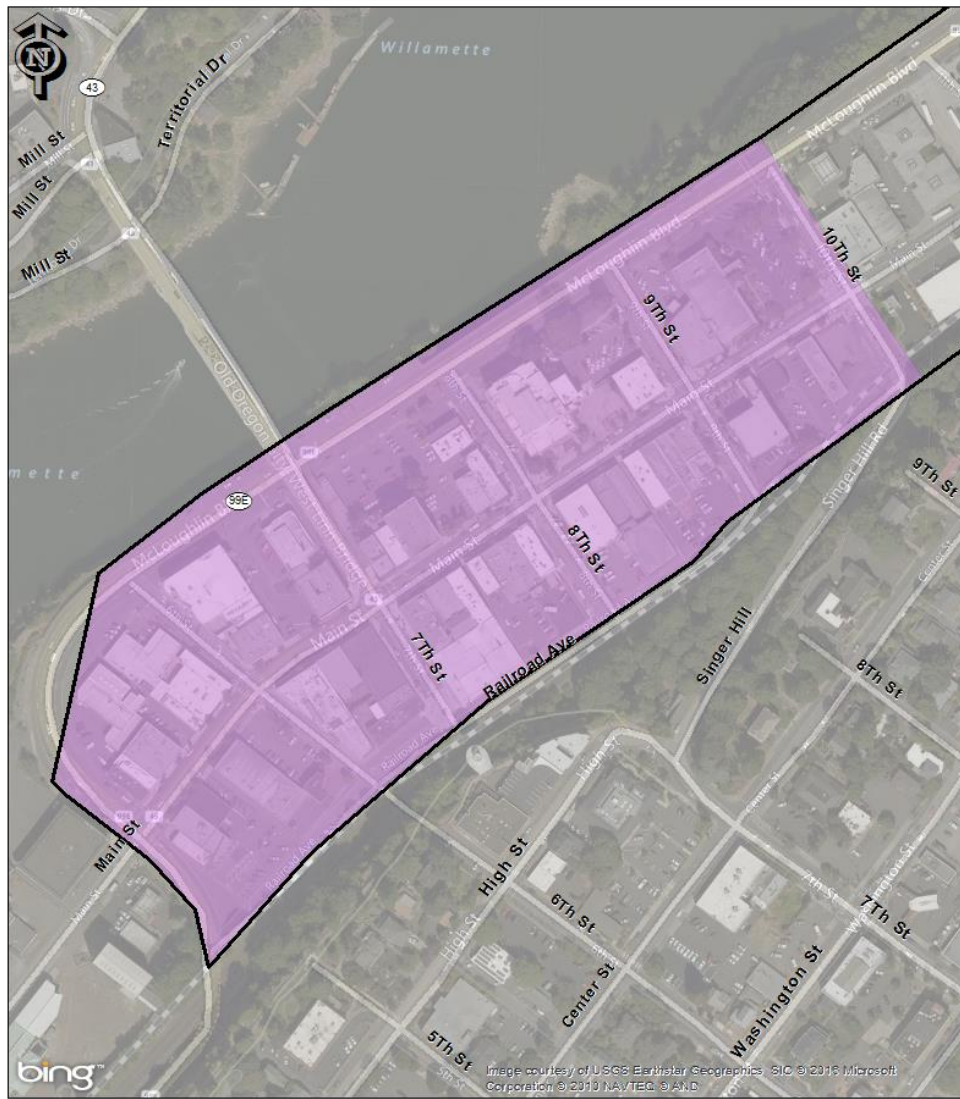
"Moving to evade" refers to moving vehicles between time-limited on-street stalls over the course of a day in order to avoid being cited. This metric can indicate abuse of the system, particularly if those moving their vehicles are employees. Users who shuffle their vehicle from one stall to the next reduce the number of on-street parking opportunities for visitors and customers, creating an artificial constraint on the system. Ideally, those wanting to park for longer periods of time would be directed to the permit program or off-street lots. This would preserve the on-street supply for higher turnover uses.

On the survey days, 71 (weekday) and 27 (weekend) vehicles were found to be moving to evade, representing 5.7% and 2.6% of all unique vehicles using the on-street system. When these numbers are combined with those for excessive time stays, it can be argued that a meaningful percentage of long-term users are using the short-term supply. Moving these vehicles into the off-street system would reduce abuse of short-term stalls and improve turnover and visitor access on-street.

VII. CHARACTERISTICS OF ON-STREET PARKING (HIGH-OCCUPANCY NODE)

Figure C and Figure D above indicate that peak-hour occupancy data for the larger study area understates the parking constraint in the southern end of the downtown. Therefore, a more refined analysis of the area was conducted. This “node of high occupancy” is bounded by 10th Street to the north, 99E to the south, McLoughlin Boulevard to the west, and Railroad Avenue to the east, and is illustrated in Figure E.

Figure E: 2016 Downtown Core Node of High Occupancy



Oregon City

July 2016

- Parking Study Area
- Downtown Node of Highest Occupancy

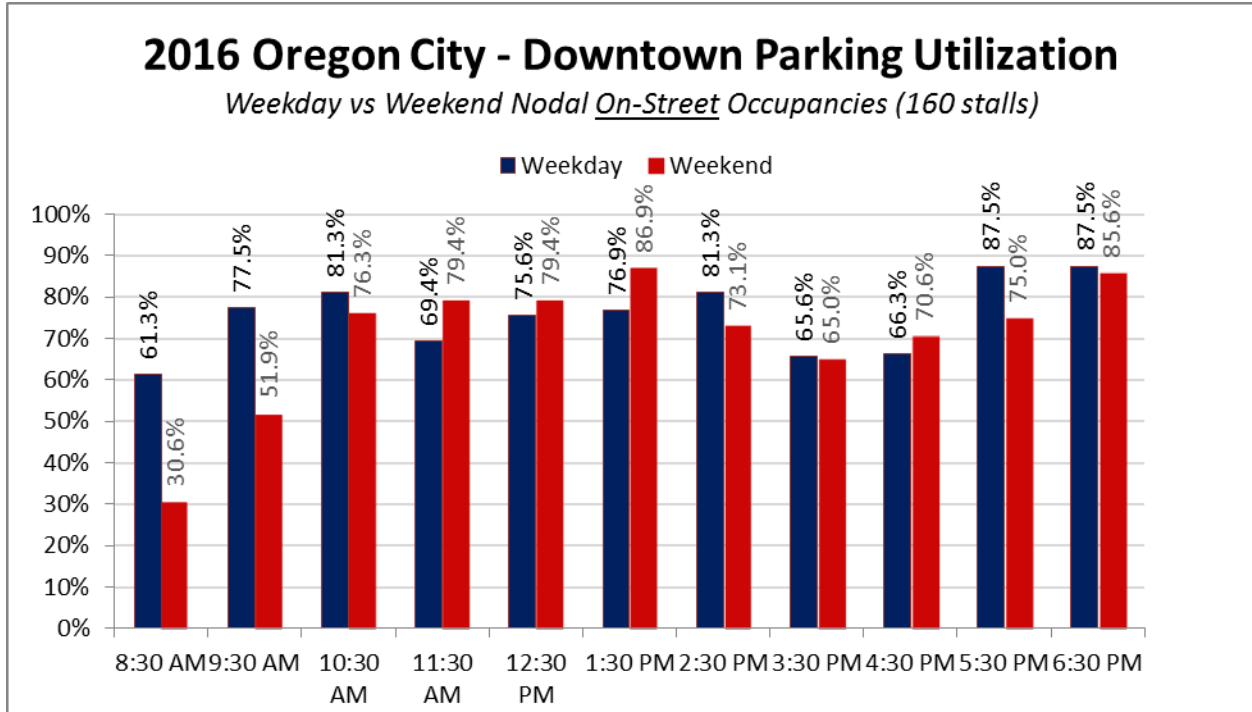
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Parking & Transportation

0 30 60 120 180 240 Feet

A. Occupancy (High Occupancy Node) – Hourly Distribution (Weekday vs Weekend)

Figure F compares hourly occupancies in the 160-stall high-occupancy node for each of the two survey days.

Figure F: 2016: On-street Occupancy by Hour (Weekday vs. Weekend) - High Occupancy Node



- Weekday occupancies are more robust in the early morning hours, as would be expected in an area of both employment and ground-level activity.
- Weekend activity does not become significant until approximately 10:30 AM.
- Parking activity begins to drop around 3:30 PM both days, and then ramps back up at approximately 5:30 PM, a sign of new traffic accessing the southern end of downtown for evening activities.
- The fact that the weekday peak is sustained between 5:00 and 7:00 PM indicates strong evening activity.

B. Occupancy (High Occupancy Node) – Use Characteristics (Weekday vs Weekend)

Table 5 (below) provides use metrics for the 160 parking stalls in the high-occupancy node for both the weekday and weekend data sets.

- The peak hour varies, extending for two hours late in the day on the weekday (5:00 to 7:00 PM) at 87.5% and for an hour on the weekend (1:00 to 2:00 PM) at 86.9%.
- Occupancy rates for both days are constrained, with peak occupancies in excess of 85%.

- The violation rate on the weekday is 8.0%, below the greater study area’s 10.8%, but still higher than the industry standard. The weekend violation rate is very high at 14.9%, but nearly identical to that of the entire study area.
- Only 20 (weekday) and 21 (weekend) stalls are empty during the peak hour, indicating a very constrained parking environment in this node.

Table 5: 2016 Oregon City On-Street Parking Utilization – High Occupancy Node

2016 Oregon City On-Street Parking Utilization Core Node – Weekday vs Weekend							
Type of Stall	Study Day	# of Stalls	Peak Hour	Peak Occupancy	Stalls Available	Average Length of Stay	Violation Rate
On-Street Peak	Weekday	160	5:00 – 7:00 PM	87.5%	20	1 hr./ 33 min	8.0%
	Weekend		1:00 – 2:00 PM	86.9%	21	1 hr./ 47 min	14.9%
Usage by Time Stay							
2 Hour (Signed)	Weekday	3	10:00 – 11:00 AM 5:00 – 7:00 PM	100%	0	1 hr./ 44 min	9.1%
	Weekend		10:00 AM – 12:00 PM	100%	0	2 hr./ 6 min	30.0%
2 Hour (Metered)	Weekday	139	6:00 – 7:00 PM	90.6%	13	1 hr./ 26 min	8.0%
	Weekend		6:00 – 7:00 PM	94.2%	8	1 hr./ 45 min	14.7%
2 Hour (All)	Weekday	142	6:00 – 7:00 PM	90.8%	13	1 hr./ 26 min	8.0%
	Weekend		6:00 – 7:00 PM	93.7%	9	1 hr./ 46 min	14.9%
ADA ‘Accessible’	Weekday	3	8:00 – 9:00 AM 10:00 – 11:00 AM 1:00 – 2:00 PM	100%	0	1 hr./ 12 min	N/A
	Weekend		1:00 – 2:00 PM	100%	0	1 hr./ 0 min	N/A
Permit Only (Blue)	Weekday	15	10:00 AM – 1:00 PM	100%	0	4 hr./ 38 min	N/A
	Weekend		12:00 – 1:00 PM	46.7%	8	2 hr./ 0 min	N/A

Table 6 (next page) provides some additional use characteristics for the high-occupancy node.

- The number of unique license plates recorded on the weekday was 794. This represents 64% of all on-street vehicle activity in the entire study area.
- The number of unique license plates recorded on the weekend was 666. This represents 65% of all on-street vehicle activity in the entire study area.
- The weekday and weekend turnover rates (7.12 and 6.18, respectively) are highly efficient, and significantly exceed the standard established for the entire study area (see Table 4).
- Few vehicles are parking longer than five hours at time-limited stalls.

- A small percentage of users are moving their vehicles between timed stalls: 32 (4.0% of total vehicles) on the weekday and 11 (1.7%) on the weekend.

Table 6: Summary of On-Street Parking Use Characteristics – Weekday Node

Use Characteristics	Weekday	Weekend
Number of Unique License Plates (% of all vehicles in total study area)	794 (64%)	666 (65%)
Actual turnover rate (number of cars to use a single occupied stall over a 11 hour period)	7.12	6.18
Actual number of vehicles parked for time stays over 5 hours (% of Unique License Plates)	6 (0.7%)	31 (4.5%)
Occurrence of license plates observed moving to evade parking citations - i.e., employees moving their car every few hours (% of unique vehicles)	32 (4.0%)	11 (1.7%)

VIII. CHARACTERISTICS OF OFF-STREET PARKING

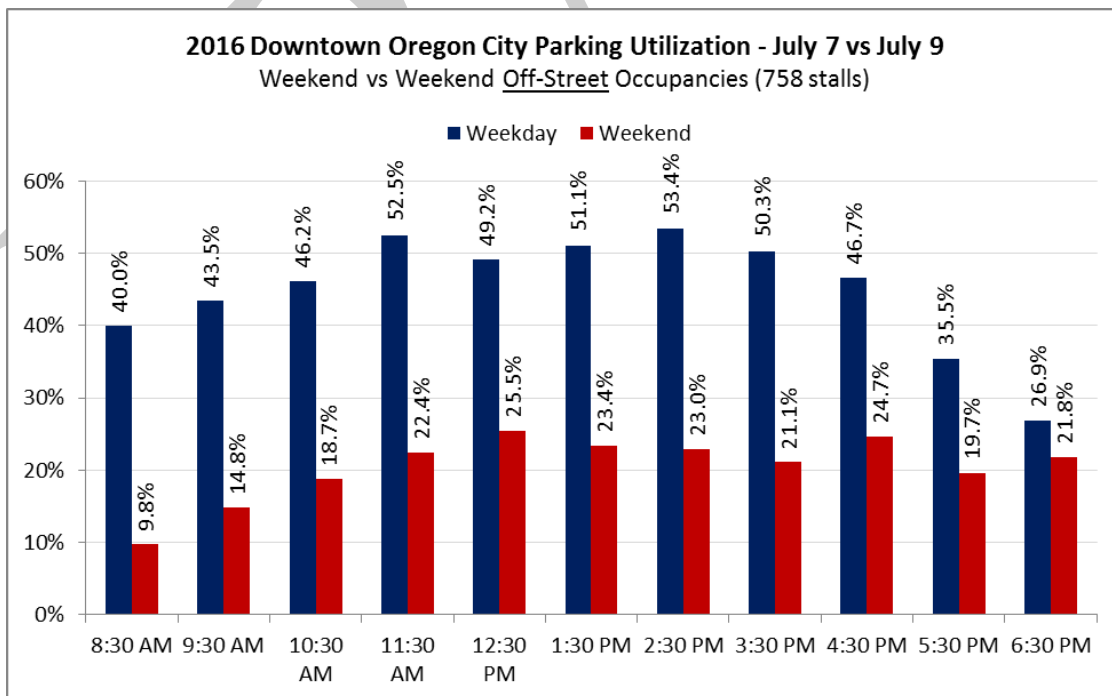
A. 2016: Occupancy by Hour - Weekday vs. Weekend (Off-street)

The 2016 off-street system includes 758 stalls on 40 sites in the downtown. A summary of each of these sites is provided in Table 7 (below).

Figure G compares hourly occupancies between the weekday and weekend surveys of the off-street lots.

- Weekday peak occupancy is 53.4% and occurs between 2:00 and 3:00 PM.
- Weekend peak occupancy is 25.5% and occurs between noon and 1:00 PM.
- Hourly occupancy rates are higher throughout the day on the weekday compared to the weekend.
- Hourly occupancy rates are relatively consistent on the weekday and taper off after 4:30 PM.
- Both weekday and weekend occupancy rates are not constrained and show ample room to absorb additional vehicles.
- At the weekday peak hour, 405 vehicles are parked, leaving 353 stalls empty. At the weekend peak hour, 193 vehicles are parked, leaving 565 stalls empty. Both days yield surplus space to which existing or new users could be directed.
- County parking (#16 and #17 in Table 7) are constrained during the weekday, reaching 100% and 112.5%.⁷

Figure G: 2016 Weekday vs. Weekend Off-Street Utilization



⁷ A lot or supply that exceeds 100% is recorded when vehicles are parked in areas of a supply not designated or striped for parking (e.g., illegally parked, double parked, etc.). When this occurs, the supply can exceed 100%.

B. 2016: Utilization by Unique Lot – Weekday vs. Weekend (Off-street)

Table 7 provides usage information for all 40 off-street lots in the study area, contrasting the weekday and weekend supply. Cumulative numbers for the entire off-street system are summarized at the end of the table. Metrics include peak occupancy hours, stall totals, and the number of stalls at the peak hour.

Table 7: 2016 Oregon City Off-Street Parking Utilization – Weekday Vs. Weekend

Lot Number	Facility Identification	Survey Date	# of Stalls	Peak Occupancy/ Hour	Stalls Available
1	OC Transmission	Weekday	13	53.8% 3:00 – 4:00 PM	6
		Weekend		15.4% 4:00 – 5:00 PM	11
2	Harding Adjacent	Weekday	8	112.5% 12:00 – 1:00 PM 4:00 – 7:00 PM	-1
		Weekend		100% 6:00 – 7:00 PM	0
3	Private Permit Lot (West)	Weekday	22	36.3% 2:00 – 3:00 PM 4:00 – 5:00 PM	14
		Weekend		31.8% 12:00 – 1:00 PM	15
4	Private Permit Lot (East)	Weekday	17	52.9% 3:00 – 4:00 PM	8
		Weekend		29.4% 11:00 AM – 1:00 PM	12
5	Private Permit Lot (North)	Weekday	9	88.9% 11:00 AM – 12:00 PM 1:00 – 2:00 PM	1
		Weekend		11.1% 10:00 AM – 12:00 PM 1:00 – 5:00 PM	8
6	Private Lot (Tandem Spaces)	Weekday	4	100% 4:00 – 5:00 PM	0
		Weekend		125.0% 4:00 – 5:00 PM	-1
7	Private Lot Territorial Building	Weekday	36	69.4% 10:00 – 11:00 AM	11
		Weekend		16.7% 11:00 AM – 1:00 PM	30
8	Private Lot Bus Depot	Weekday	17	29.4% 10:00 AM – 4:00 PM	12
		Weekend		5.9% 8:00 AM – 7:00 PM	16
9	Elks Lodge	Weekday	42	88.1% 5:00 – 7:00 PM	5
		Weekend		19.0% 11:00 AM – 12:00 PM	34

10	Private Lot (Courtyard)	Weekday	6	16.7% 8:00 – 6:00 PM	5
		Weekend		0% N/A	6
11	Elks Private Permit Lot	Weekday	47	59.6% 11:00 AM – 12:00 PM 2:00 PM- 3:00 PM	19
		Weekend		6.4% 12:00 – 1:00 PM	44
12	Private Permit Lot (North)	Weekday	7	142.9% 2:00 – 3:00 PM	-3
		Weekend		0% N/A	7
13	Private Permit Lot (South)	Weekday	40	77.5% 11:00 AM – 12:00 PM	9
		Weekend		27.5% 12:00 - 1:00 PM 6:00 – 7:00 PM	29
14	Private Lot (West/Tune McMillan)	Weekday	25	92.0% 1:00 PM – 2:00 PM	2
		Weekend		16.0% 5:00 – 7:00 PM	21
15	Private Lot (Jansen)	Weekday	16	43.8% 10:00 AM – 11:00 AM 12:00 PM – 1:00 PM 2:00 PM – 3:00 PM	9
		Weekend		81.3% 4:00 – 5:00 PM	3
16	County Permit Street Parking on 8th	Weekday	14	100% 11:00 AM – 12:00 PM	0
		Weekend		64.3% 6:00 – 7:00 PM	5
17	County Parking In Lot	Weekday	16	112.5% 2:00 – 3:00 PM	-2
		Weekend		81.3% 4:00 – 5:00 PM	3
18	McMenamins	Weekday	9	100% 2:00 – 4:00 PM	0
		Weekend		77.8% 3:00 – 6:00 PM	2
19	Private Lot (Busch Furniture)	Weekday	16	112.5% 2:00 – 3:00 PM	-2
		Weekend		100% 6:00 – 7:00 PM	0
20	Private Lot (Half Cup Holdings)	Weekday	8	87.5% 9:00 AM – 12:00 PM	1
		Weekend		12.5% 1:00 – 2:00 PM	7
21	Private Lot (T5 Equities)	Weekday	6	100% 12:00 – 2:00 PM	0
		Weekend		16.7%	5

				11:00 AM – 7:00 PM	
22	Private Lot (9th and RR)	Weekday	12	100% 6:00 – 7:00 PM	0
		Weekend		100% 2:00 – 3:00 PM	0
23	US Bank	Weekday	11	90.9% 11:00 AM – 12:00 PM	1
		Weekend		54.5% 1:00 – 2:00 PM	5
24	River Crossing	Weekday	42	78.6% 2:00 – 3:00 PM	9
		Weekend		52.4% 10:00 – 11:00 AM 12:00 – 1:00 PM	20
25	Private Lot (Settlers Corner Rear)	Weekday	15	93.3% 1:00 – 2:00 PM	1
		Weekend		26.7% 10:00 – 11:00 AM	11
26	Private Lot (Settlers Corner Front)	Weekday	5	100% 10:00 – 11:00 AM 1:00 – 2:00 AM	0
		Weekend		80.0% 4:00 – 5:00 PM	1
27	Private Lot (Tselnik)	Weekday	18	55.6% 1:00 – 2:00 PM	8
		Weekend		5.6% 8:00 – 9:00 AM	17
28	Private Lot (914-916 Main)	Weekday	14	71.4% 2:00 – 4:00 PM	4
		Weekend		42.8% 10:00 – 11:00 AM 3:00 – 4:00 PM	8
29	Clackamas Autoparts	Weekday	9	88.9% 9:00 – 10:00 AM	1
		Weekend		55.6% 10:00 AM – 12:00 PM 1:00 – 4:00 PM	4
30	Chevron Gas Station	Weekday	6	66.7% 1:00 – 2:00 PM 3:00 – 4:00 PM	2
		Weekend		66.7% 9:00 – 10:00 AM 2:00 – 3:00 PM	2
31	Clackamas Workforce	Weekday	23	43.5% 8:00 – 9:00 AM 3:00 – 4:00 PM	13
		Weekend		56.5% 2:00 – 3:00 PM	10
32	Dutch Bros. Coffee	Weekday	7	28.5% 12:00 – 1:00 PM 5:00 – 7:00 PM	5
		Weekend		28.6%	5

				9:00 – 10:00 AM 11:00 AM – 12:00 PM 5:00 – 7:00 PM	
33	Oregon City Sports	Weekday	9	88.9% 12:00 – 1:00 PM	1
		Weekend		66.7% 3:00 – 5:00 PM	3
34	Clackamas County Corrections	Weekday	23	43.5% 8:00 – 9:00 AM 3:00 – 4:00PM	13
		Weekend		21.7% 10:00 – 11:00 AM 12:00 – 1:00 PM 2:00 – 3:00 PM	18
35	KFC	Weekday	23	69.6% 1:00 – 2:00 PM	7
		Weekend		56.5% 11:00 AM – 12:00 PM 1:00 – 2:00 PM	10
36	Clackamas County	Weekday	37	0% N/A	37
		Weekend		0% N/A	37
37	Municipal Lot	Weekday	92	54.3% 8:00 – 10:00 AM	42
		Weekend		16.3% 4:00 – 5:00 PM	77
38	LEER Truck Accessories Lot	Weekday	17	100% 8:00 – 9:00 AM	0
		Weekend		82.4% 12:00 – 1:00 PM 3:00 – 4:00 PM	3
39	76 Gas Lot	Weekday	6	50.0% 8:00 – 9:00 AM 1:00 – 2:00 PM	3
		Weekend		66.7% 4:00 – 5:00 PM	2
40	Trails End Saloon Parking	Weekday	11	72.7% 1:00 – 2:00 PM	3
		Weekend		118.2% 4:00 – 5:00 PM	-2
Off-Street Supply Studied (40 sites)		Weekday	758	53.4% 2:00 – 3:00 PM	353
		Weekend		25.5% 12:00 – 1:00 PM	565

C. Peak Hour Occupancy – Heat Map (Weekday vs Weekend)

Figure H and Figure I (pages 26 and 27) illustrate peak hours for each of the survey days in a “heat map” format. Off-street occupancies are displayed in combination with on-street occupancy for the weekday and weekend survey days.

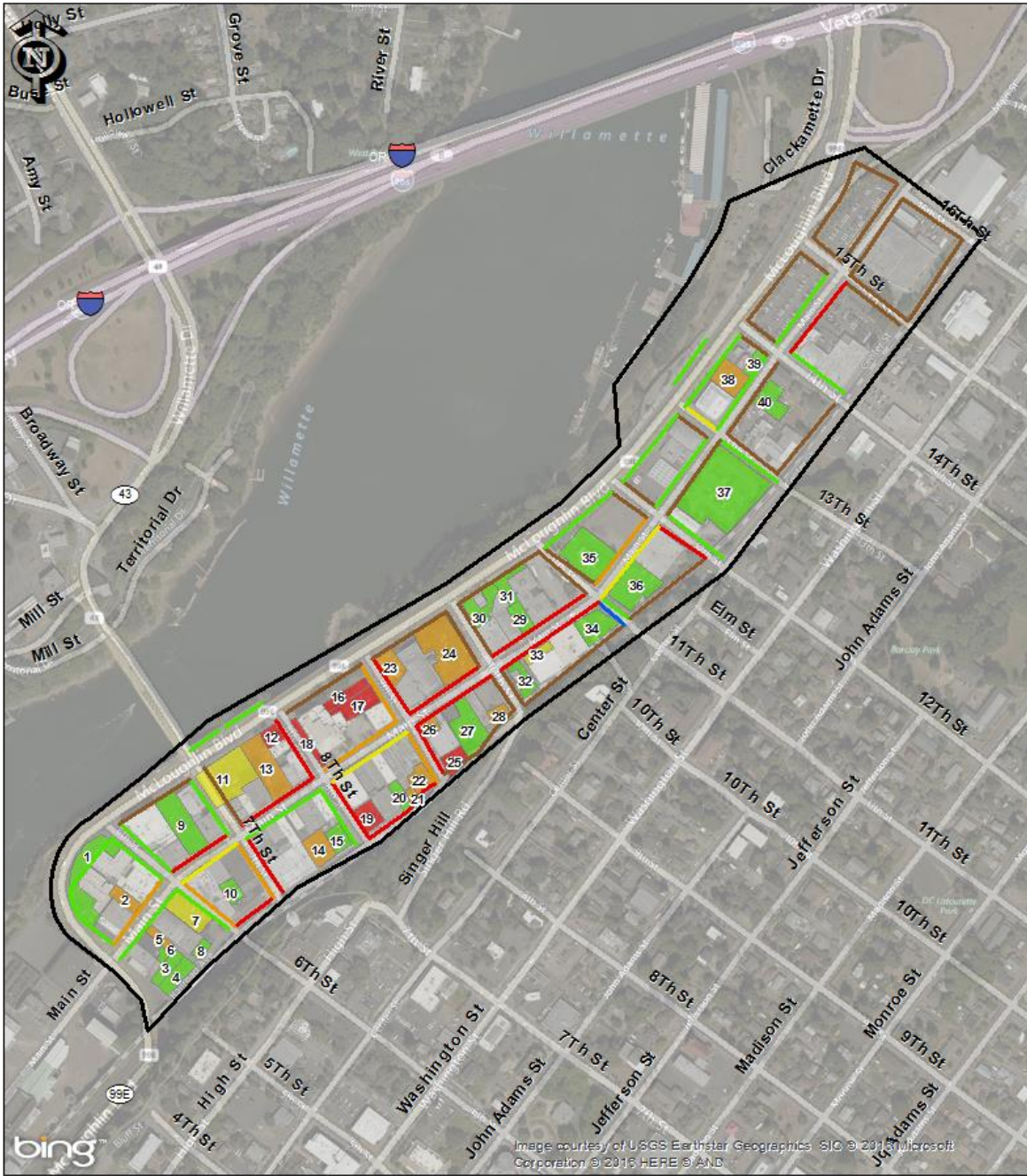
Weekday (Thursday)

As **Figure H** illustrates, on-street parking in the high occupancy node is (as discussed earlier) is particularly constrained between 7th Street and 11th Street. Off-street parking is particularly constrained in the area between 8th Street and 9th Street (e.g., Lots 16, 17, 18, 19 and 25). Nonetheless, off-street parking opportunities are available within walking distance to most areas of the downtown (e.g., Lots 9, 11, 24, 34, 36 and 37). At present, these lots may not allow for general users or non-accessory employees to access them. However, off-street stalls are empty at the peak hour and efforts to augment current shared use parking efforts should be continued.

Weekend (Saturday)

As **Figure I** illustrates, on-street parking is highly constrained between 6th Street and 11th Street; even more so than on the weekday. However, the off-street supply is significantly underutilized in lots that span the length of the larger downtown study area. Opportunities to direct users into these facilities through shared use agreements should continue to be pursued and communicated.

Figure H: 2016: Heat Map – Off-Street/On-Street (Weekday Peak Hour)



Oregon City
 Combined Parking Utilization
 [Black Outline] Parking Study Area
RICK WILLIAMS CONSULTING
 Parking & Transportation

- > 85%
- 84% - 70%
- 69% - 55%
- < 55%
- Construction
- No Parking

Weekday 2016
2:00 - 3:00 PM
 Peak Hour

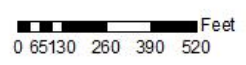
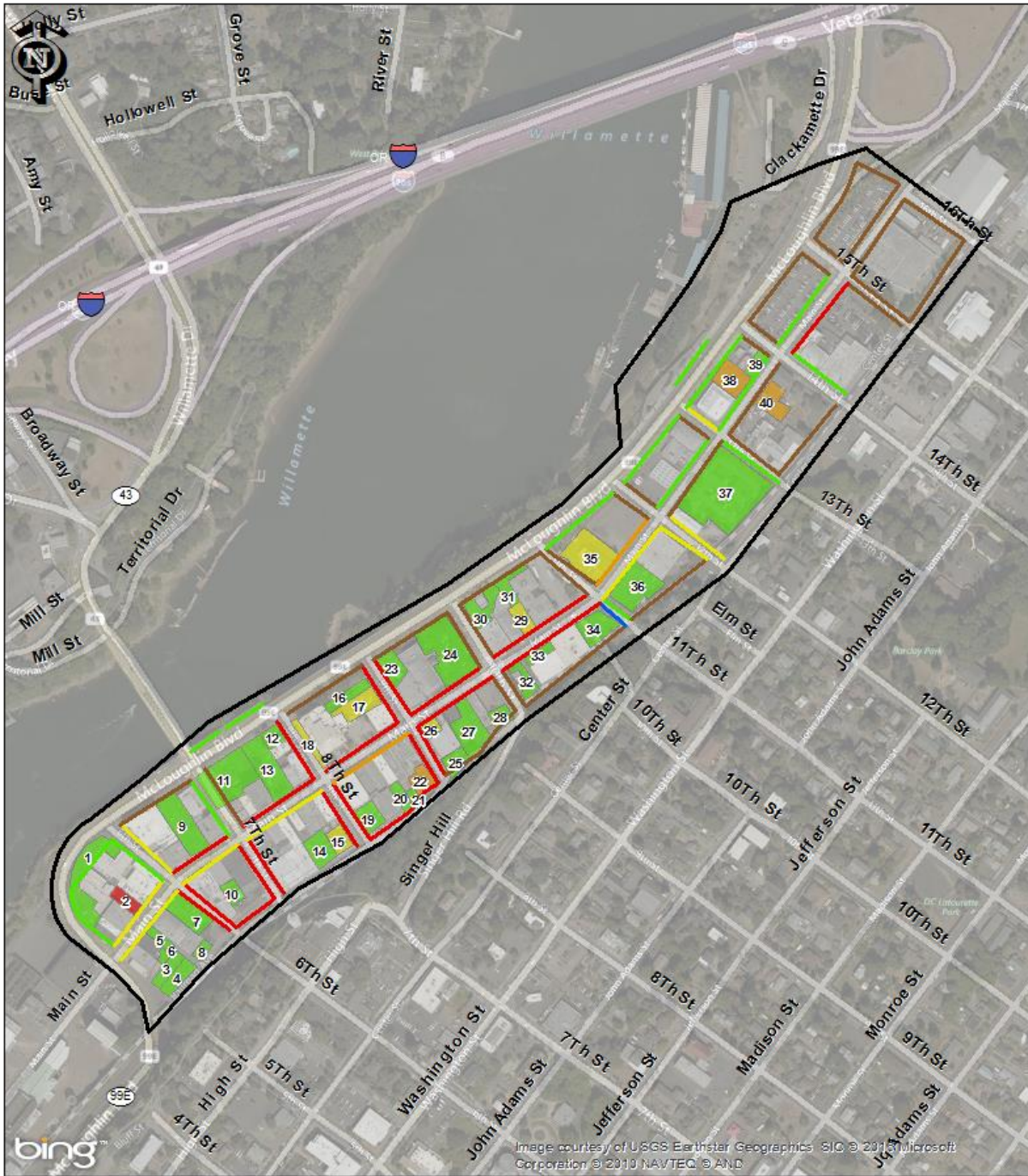


Figure I: 2016: Heat Map – Off-Street/On-Street (Weekend Peak Hour)



Oregon City

Combined Parking Utilization

Parking Study Area

RICK WILLIAMS CONSULTING
Parking & Transportation

- | | | | |
|--|--------------|--|-----------|
| | > 85% | | > 85% |
| | 84% - 70% | | 84% - 70% |
| | 69% - 55% | | 69% - 55% |
| | < 55% | | < 55% |
| | Construction | | |
| | No Parking | | |

Weekend 2016

1:00 - 2:00 PM
Peak Hour

Feet
0 65 130 260 390 520

IX. COMPARATIVE FINDINGS: 2008 VS 2016 STUDY YEARS

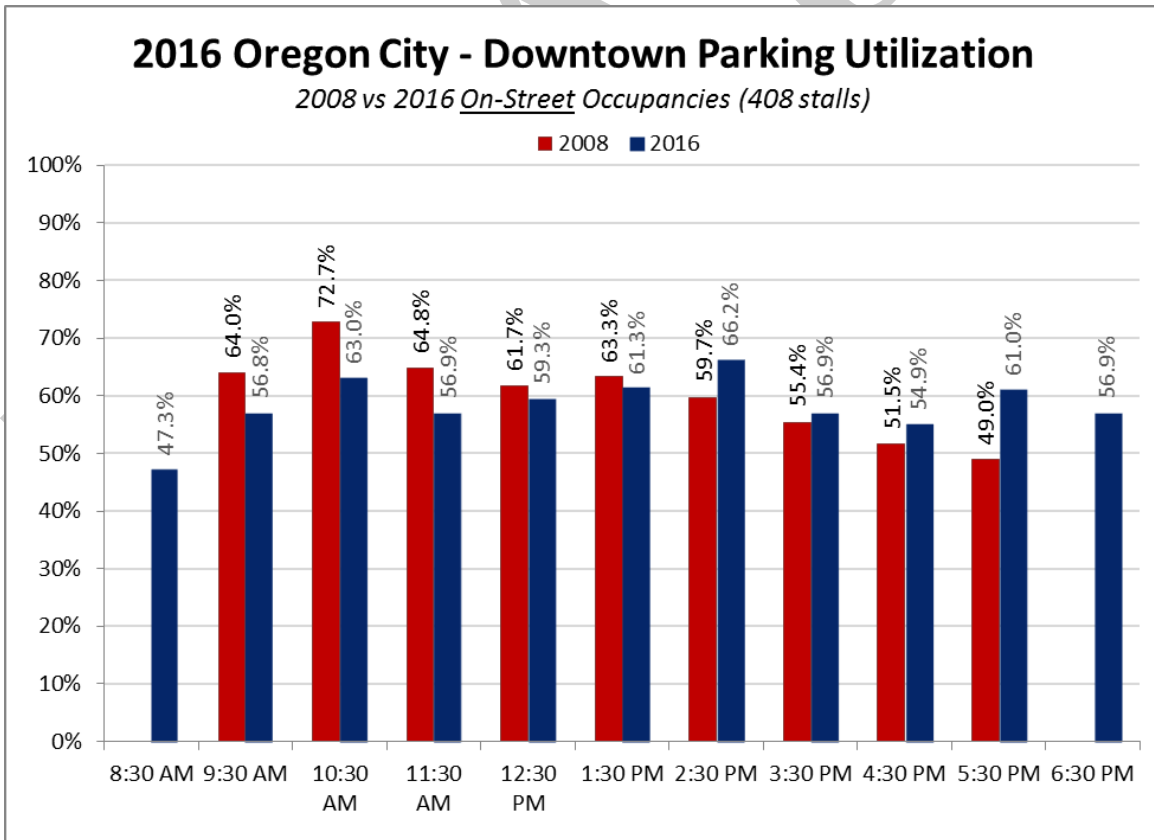
As the 2008 study did not collect weekend data, this comparative analysis quantifies only the two weekday data sets.

A. 2016: Occupancy by Hour – 2008 vs. 2016 (On-street)

Figure J compares hourly occupancy rates from the 2008 and 2016 surveys.

- The peak hour has shifted significantly. In 2008, the peak hour was from 10:00 to 11:00 AM, when the occupancy rate reached 72.7%. In 2016, the peak rate of 66.2% was reached from 2:00 to 3:00 PM.
- In 2008, parking activity was much higher in the morning hours, dropping every hour after 1:30 PM. In 2016, activity is lower than 2008 in the morning hours but higher in the early and late afternoon.
- Data from 2016 shows a significant upward spike after 3:30 PM that was not evident in 2008. This is a sign of improving late afternoon/early evening business activity in the downtown.

Figure J: 2016: On-street Occupancy by Hour (2008 vs 2016 Weekday Comparison)



B. 2016: Utilization by Stall Type – 2008 vs. 2016 (On-street)

Table 8 summarizes key utilization changes between 2008 and 2016.

- Peak-hour occupancy decreased from 72.7% in 2008 to 66.2% in 2016.
- Average length of stay decreased from 2 hours10 minutes to 1 hour 53 minutes. This is likely due to the reduced number of No Limit stalls and on-street employee permits.
- The violation rate increased slightly from 9.6% to 10.8%.
- The number of 2-Hour stalls increased from 188 to 263, yet the occupancy rate decreased little, from 76.5% to 71.9%. This indicates an increase in use by visitors since 2008.
- The most-used stalls are still Permit Only stalls, which maintained occupancies over 80% in the peak hour in 2016. This rate is higher than that of any other stall type.

Table 8: On-Street Parking Utilization Comparative (2008 vs 2016)

2016 Oregon City On-Street Parking Utilization – Comparative							
Type of Stall	Study Year	# of Stalls	Peak Hour	Peak Occupancy	Stalls Available	AVG Duration of Stay	Violation Rate
On-Street Peak	2008	392	10:00 – 11:00 AM	72.7%	107	2 hr./ 10 min.	9.6%
	2016	408	2:00 – 3:00 PM	66.2%	138	1 hr./ 53 min	10.8%
Usage by Time Stay (all users)							
2 Hour (All)	2008	188	1:00 – 2:00 PM	76.5%	48	1 hr./ 31 min.	9.6%
	2016	263	5:00 – 6:00 PM	71.9%	74	1 hr./ 33 min	11.0%
4 Hours (Signed)	2008	7	10:00 – 11:00 AM	14.3%	6	1 hr./ 0 min.	0%
	2016	21	2:00 – 3:00 PM	57.1%	9	2 hr./ 26 min	17.9%
8 Hours (Metered)	2008	23	1:00 – 2:00 PM	100%	0	2 hr./ 28 min.	3.0%
	2016	28	5:00 – 6:00 PM	50.0%	14	1 hr./ 50 min	1.9%
Permit Only (Blue)	2008	38	2:00 – 3:00 PM	57.9%	16	5 hr./ 11 min.	N/A
	2016	30	11:00 AM – 12:00 PM	83.3%	5	4 hr./ 34 min	N/A
Permit Only (Green)	2008	31	10:00 – 11:00 AM	83.9%	5	6 hr./ 4 min.	N/A
	2016	9	9:00 – 11:00 AM 12:00 – 1:00 PM	88.9%	1	2 hr./ 13 min	N/A

Table 9 compares use characteristics in the 2008 and 2016 studies. Performance metrics include average length of stay, number of vehicle trips, turnover rate, and violation rate.

- The average duration of stay decreased from 2 hours 10 minutes to 1 hour 52 minutes. This is likely the result of fewer employee permit stalls and the elimination of No Limit stalls.
- The actual number of vehicle trips increased from 986 to 1,382, a 40% increase in volume. This likely reflects both the two additional survey hours in 2016 and new trip activity.
- The turnover rate increased significantly from 4.64 to 5.83, a sign that the downtown is operating very efficiently and that fewer long-term users are parking on-street.
- The violation rate remained relatively high: 9.8% in 2008 versus 10.8% in 2016.

Table 9: Summary of On-Street Parking Use Characteristics – Oregon City – 2008 vs. 2016

Use Characteristics	2008	2016
Average duration of stay	2 hr./ 10 min	1 hr./ 53 min
Unique Vehicle trips	986	1,382
Turnover rate	4.64	5.83
Violation rate	9.6%	10.8%

C. 2016: Comparative Analysis – 2008 vs. 2016 (Off-street)

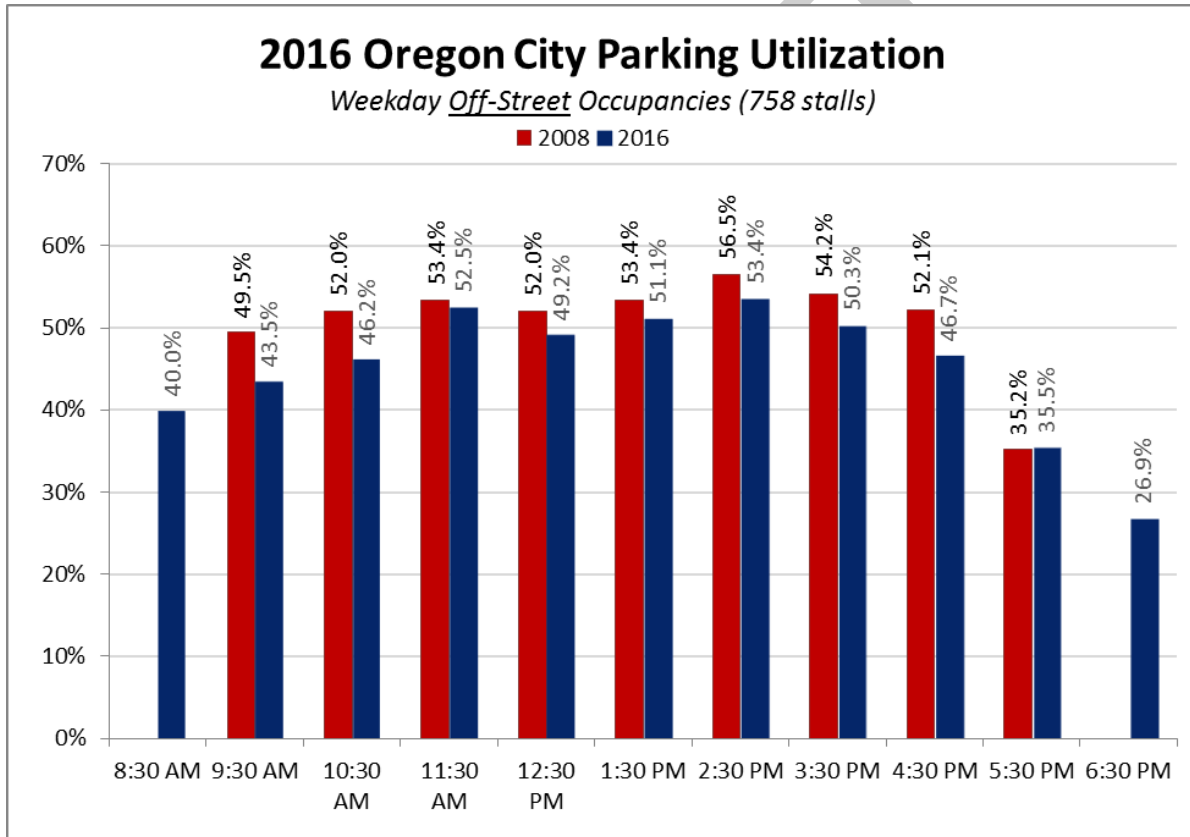
Table 10 and **Figure K** (below) compare hourly occupancies for off-street parking between the two survey years. The off-street supply increased from 637 to 758 stalls, an increase of 121 stalls (19%).

- Peak-hour occupancy in 2008 was 56.5% from 2:00 to 3:00 PM. In 2016, occupancy reached 53.4% in the same hour, a drop of about three percentage points.
- Occupancies in 2008 were higher for each hour surveyed versus 2016. This may reflect the 121-stall increase in the supply.
- At the peak hour in 2016 there are 353 empty stalls, compared to 277 in 2008.
- The number of vehicles parked in the peak hour has increased since 2008, from 360 to 405.
- While there has been an increase in vehicles parking off-street, there is still a meaningful supply of empty stalls that could be useful in reducing constraints in the on-street system.

Table 10: Off-Street Parking Utilization Comparative

2016 Downtown Oregon City Combined Parking Utilization – Comparative						
Type of Stall	Study Date	# of Stalls	Peak Hour	Peak Occupancy	Vehicles Parked	Empty Stalls
Off-Street Peak	2008	637	2:00 – 3:00 PM	56.5%	360	277
	2016	758	2:00 – 3:00 PM	53.4%	405	353

Figure K: 2016 Weekday vs. Weekend Off-Street Utilization



X. SUMMARY

While the dynamics of parking in downtown Oregon City have remained largely similar from 2008 to 2016, some key changes reflect a growing retail environment. The addition of more 2-Hour stalls has encouraged a strong turnover rate, especially in the retail area. The average length of stay in on-street stalls has decreased from 2 hours 10 minutes to 1 hour 53 minutes. Despite the peak occupancy rate of 66.2% being well below that reached in 2008, the number of vehicle trips to the downtown increased from 986 to 1,382, a positive sign of economic growth.

While occupancy rates for the off-street supply have decreased slightly, this reflects an increase in the number of stalls from 637 to 758. The actual number of vehicles parking off-street has increased from 360 to 405.

Both the on and off-street systems are used more during the week than on the weekend. However, neither system is constrained, with a peak occupancy rate of 66.2% on-street and 53.4% off-street. Only the nodal analysis yielded an area of constraint where peak occupancy reached 87.5%. Interestingly, the peak hour for this high-occupancy node was from 5:00 to 7:00PM, indicating that after-work and dinner time activity is popular and on-street parking is heavily used. Further analysis may warrant changes to time stays. Additional enforcement may also be needed, as violation rates were high throughout the study area.