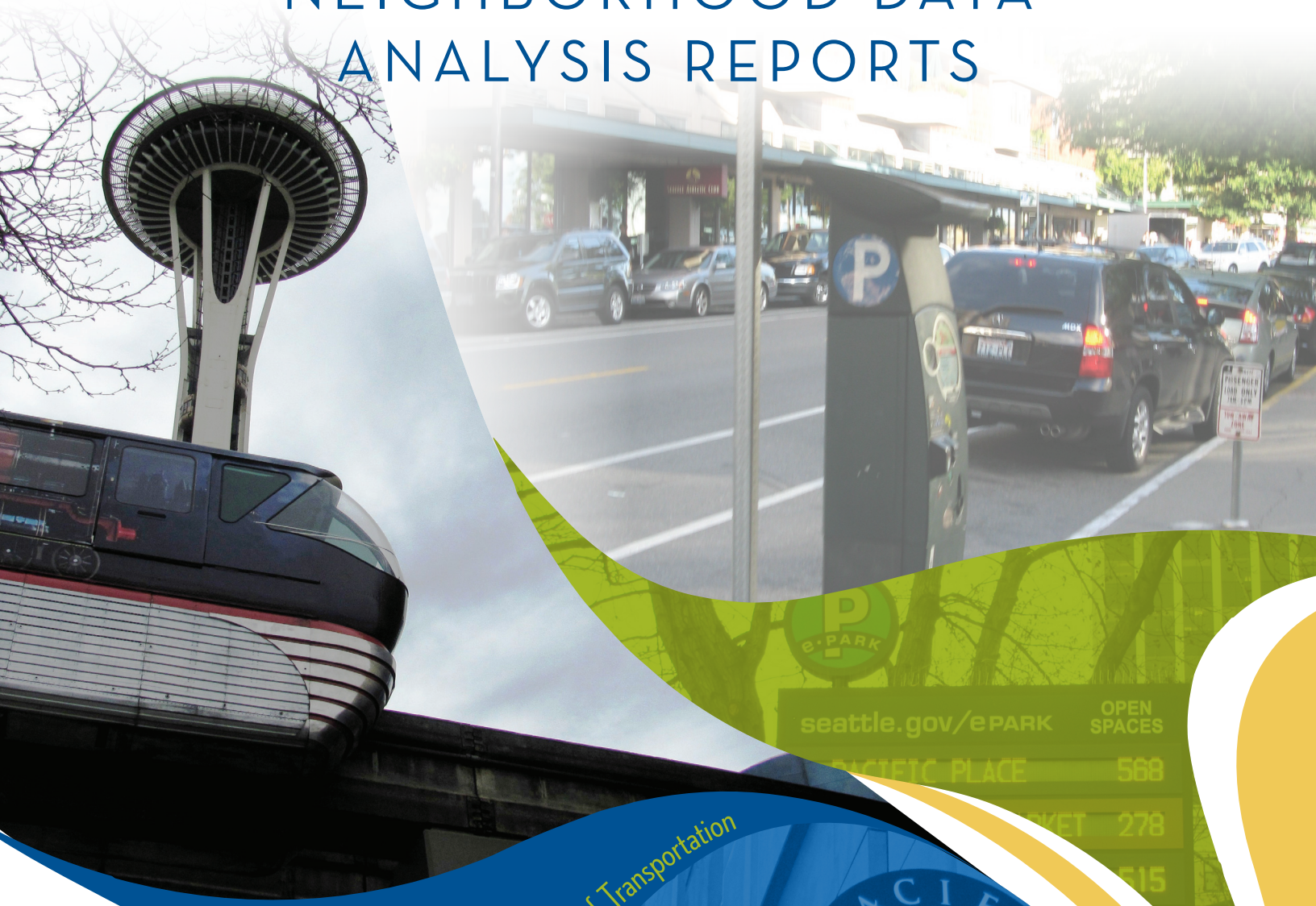
NEIGHBORHOOD DATA ANALYSIS REPORTS



The City of Seattle Department of Transportation

SDOT
Seattle Department of Transportation

AUGUST 2011

Kimley-Horn and Associates, Inc.

Performance-Based PARKING

—PRICING STUDY—

Neighborhood Data Analysis Reports

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12th AVENUE NEIGHBORHOOD

The 12th Avenue neighborhood is located between the Pike-Pine, First Hill, and Cherry Hill neighborhoods and includes a variety of retail, residential, and office uses. Seattle University is located to the west of 12th Avenue. The area of paid parking observation was generally along 12th Avenue, between Jefferson Street and Madison Street. The observed area included all of the blocks with paid parking. The map to the right gives the general location of the study area in relation to the Commercial Core. Paid parking was installed in 2005.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the 12th Avenue neighborhood on-street parking rates were kept constant at $1.50 per hour. Based on data collected in November 2010, the peak occupancies in the area were 80%, indicating that there was an appropriate mix of demand and available parking, based on the one to two spaces per blockface threshold.

Data Collection Methodology

As part of the June 2011 data collection process, 12th Avenue occupancy was measured on a typical weekday and weekend, between 8 am and 8 pm. The occupancy collection included total vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, allowing for an understanding of the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in **Chapter 3**).

General characteristics of the collection area include:

- 13 total block faces, with 65 on-street parking spaces
- Paid parking between 8am and 6pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are shown for overall parking utilization, and areas of high demand.

12TH AVENUE WEEKDAY PARKING DATA - June 15, 2011[1]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	75	22	29.3%	4.0%
9 AM - 10 PM	75	33	44.0%	18.0%
10 AM - 11 AM	71	32	45.1%	22.0%
11 AM - 12 PM	71	29	40.8%	32.0%
12 PM - 1 PM	65	46	70.8%	39.0%
1 PM - 2 PM	65	36	55.4%	50.0%
2 PM - 3 PM	75	33	44.0%	51.0%
3 PM - 4 PM	65	38	58.5%	49.0%
4 PM - 5 PM	71	32	45.1%	43.0%
5 PM - 6 PM	71	44	62.0%	38.0%
6 PM - 7 PM	71	59	83.1%	NA
7 PM - 8 PM	71	68	95.8%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the 12th Avenue neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). The 12th Avenue area had overall utilization between 29 and 71 % during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[1] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

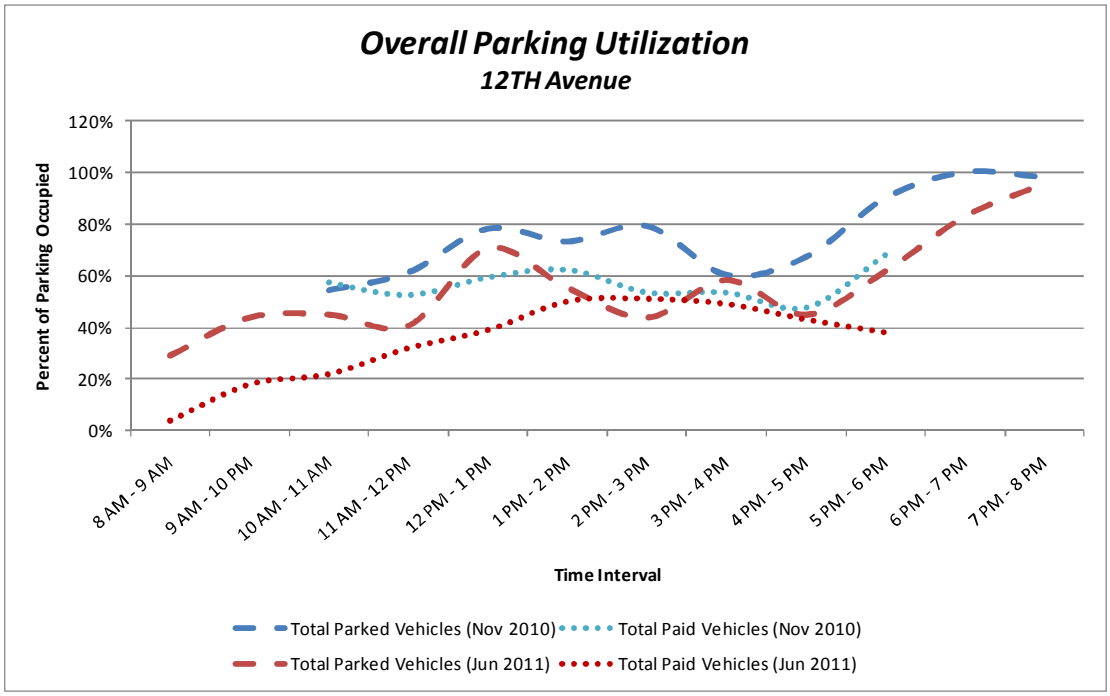
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization is relatively similar between November 2010 and June 2011. This is consistent with the expectations associated with keeping the rates at the same level between 2010 and 2011. Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	79.2%	2 PM - 3 PM
4 PM - 6 PM	90.1%	5 PM - 6 PM
6PM - 8 PM	100.0%	6 PM - 7 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	45.1%	10 AM - 11 AM
12 PM - 3 PM	70.8%	12 PM - 1 PM
3 PM - 6 PM	62.0%	5 PM - 6 PM
6 PM - 8 PM	95.8%	7 PM - 8 PM

The peak data comparison provides similar peaking conditions, with some variation, but not enough to conclude that utilization had either increased or decreased.

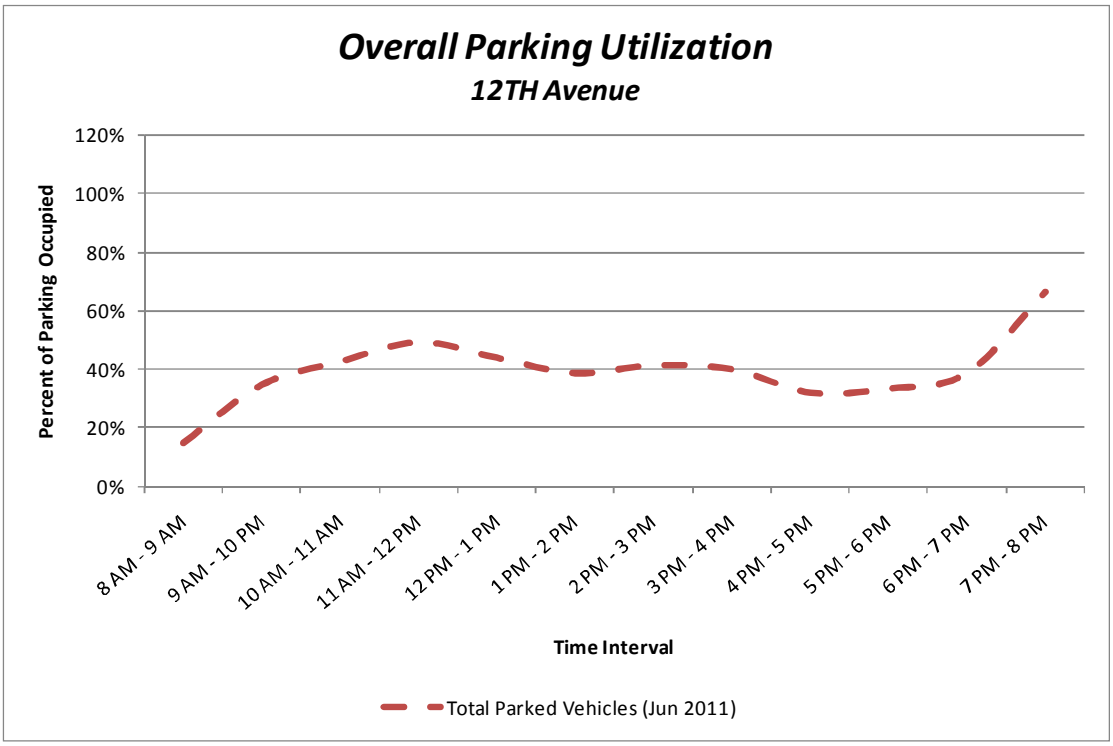
Weekend Parking Observations

Parking occupancy data was collected for the 12th Avenue area on a Saturday to measure the varying peaks and patterns of usage during the non-weekday peaking conditions. The following information provides a summary of both regular vehicular occupancy and disabled permit usage on the observed Saturday.

12TH AVENUE - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	75	11	14.7%
9 AM - 10 PM	75	26	34.7%
10 AM - 11 AM	75	32	42.7%
11 AM - 12 PM	75	37	49.3%
12 PM - 1 PM	75	33	44.0%
1 PM - 2 PM	75	29	38.7%
2 PM - 3 PM	75	31	41.3%
3 PM - 4 PM	75	30	40.0%
4 PM - 5 PM	75	24	32.0%
5 PM - 6 PM	75	25	33.3%
6 PM - 7 PM	75	29	38.7%
7 PM - 8 PM	75	50	66.7%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the 12th Avenue area for a typical Saturday. The 12th Avenue area had overall utilization between 15 and 49% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The chart below provides a breakdown of this utilization.

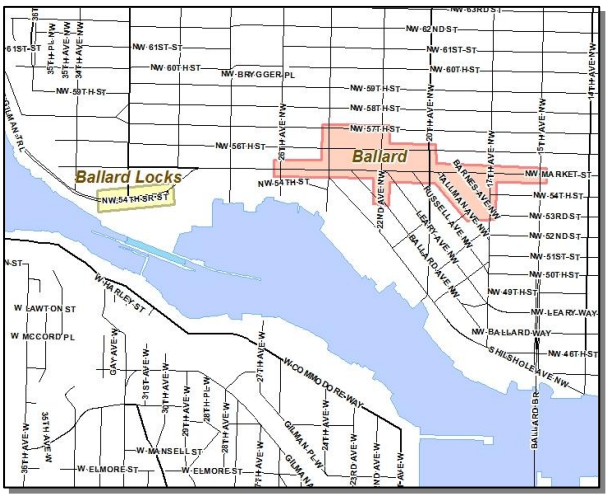


High Demand Areas

Given the fact that the study are only contains 13 linear block faces; it is not feasible to identify high demand areas. While the northern portions of the study area (closest to Madison Street) exhibit higher demands, the short length of the section of street does not lend itself to grouping specific areas of demand.

BALLARD NEIGHBORHOOD

The paid parking in the Ballard neighborhood is roughly bounded by 57th Street to the north, 17th Avenue to the east, Leary Way to the south, and 24th Avenue to the west. The map to the right shows the general location of the total paid parking area in relation to surrounding neighborhoods and Seattle community. The observed study area included a sample of the total paid parking area in the neighborhood. The area of paid parking observation was generally along Market Street and adjacent side streets north of Market Street, with some observations along 56th Street and 57th Street. Within the Ballard neighborhood, there is a mix of office, retail, restaurant, residential, and hospital uses. Swedish Hospital has a campus here.



2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Ballard neighborhood on-street parking rates were lowered from $2.00 per hour to $1.50 per hour. Based on data collected in November 2010, the peak occupancy in the Ballard neighborhood was 68%. This indicates that the demands were under the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% (a 3% increase in occupancy) in Ballard, which would theoretically increase demand along the neighborhood's block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Ballard occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in **Chapter 3**). The observed paid parking area

General characteristics of the collection area include:

- 28 total block faces, with 200 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and areas of high demand within the Ballard neighborhood.

BALLARD WEEKDAY PARKING DATA - June 14, 2011[2]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	198	27	13.6%	3.7%
9 AM - 10 PM	198	48	24.2%	8.5%
10 AM - 11 AM	198	63	31.8%	22.2%
11 AM - 12 PM	198	85	42.9%	33.3%
12 PM - 1 PM	198	104	52.5%	38.6%
1 PM - 2 PM	198	96	48.5%	41.8%
2 PM - 3 PM	198	91	46.0%	43.9%
3 PM - 4 PM	198	90	45.5%	42.9%
4 PM - 5 PM	198	99	50.0%	38.1%
5 PM - 6 PM	198	93	47.0%	45.0%
6 PM - 7 PM	198	191	96.5%	NA
7 PM - 8 PM	198	215	108.6%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Ballard neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The Ballard area had overall utilization ranging from 14% to 53% during the paid parking hours (8 a.m. to 6 p.m.) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[2] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

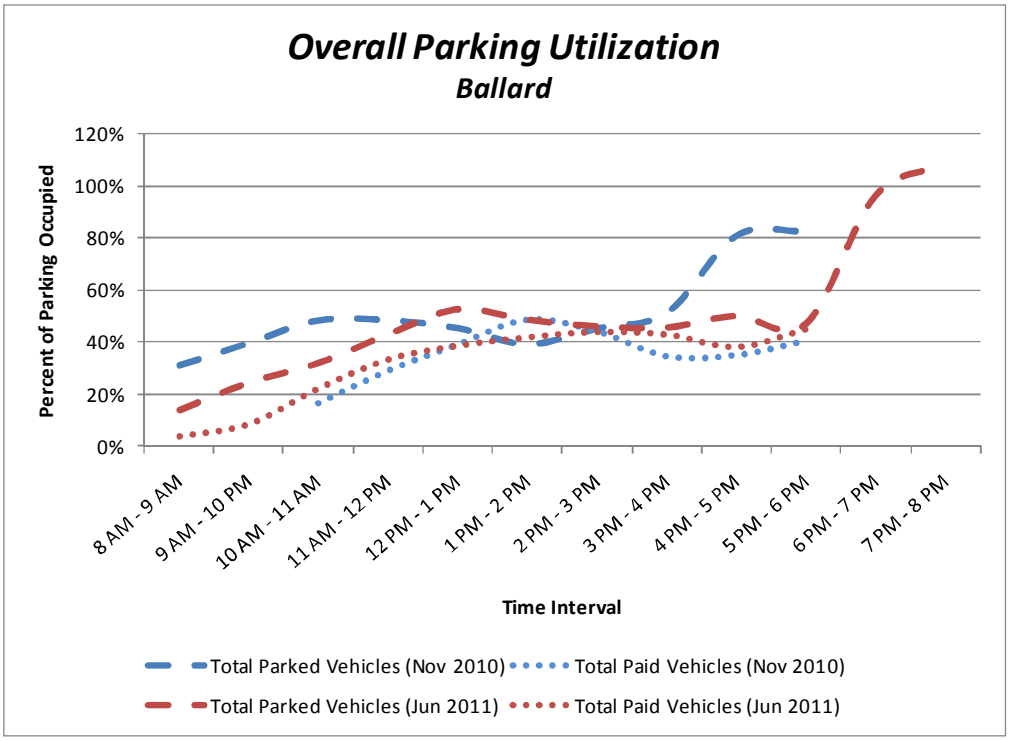
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization in Ballard was relatively similar between 8 am and 4 pm; however, the June 2011 utilization is lower than the November 2010 utilization between 4 pm and 6 pm. On the surface, this result indicates that reducing parking rates did not cause a change in behavior within the area; however, a review of other parking patterns in Ballard on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	48.2%	12 PM – 1 PM and 1 PM - 2 PM
4 PM - 6 PM	51.3%	5 PM - 6 PM
6PM - 8 PM	82.2%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	42.9%	11 AM – 12 PM
12 PM - 3 PM	52.5%	12 PM - 1 PM
3 PM - 6 PM	50.0%	4 PM - 5 PM
6 PM - 8 PM	108.6%	7 PM - 8 PM

The peak data indicates that overall parking utilization in the Ballard neighborhood was relatively unchanged during the paid parking hours between November 2010 and June 2011.

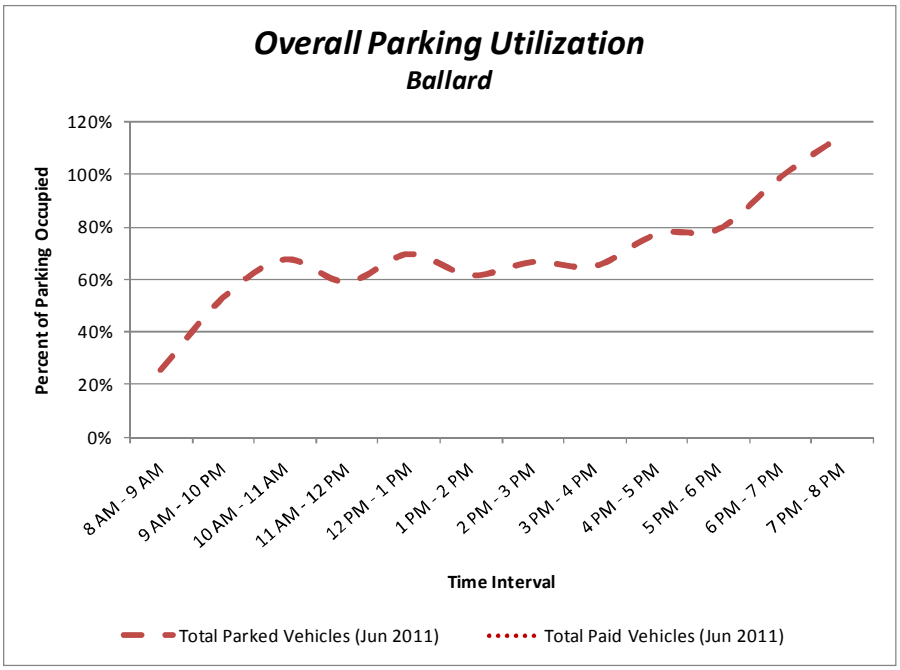
Weekend Parking Observations

Parking occupancy data was collected for the Ballard neighborhood on a Saturday to measure the varying peaks and patterns of usage during non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

BALLARD - SATURDAY PARKING DATA - June 11, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	198	51	25.8%
9 AM - 10 PM	198	105	53.0%
10 AM - 11 AM	198	134	67.7%
11 AM - 12 PM	198	117	59.1%
12 PM - 1 PM	198	138	69.7%
1 PM - 2 PM	198	122	61.6%
2 PM - 3 PM	198	132	66.7%
3 PM - 4 PM	198	129	65.2%
4 PM - 5 PM	198	153	77.3%
5 PM - 6 PM	198	157	79.3%
6 PM - 7 PM	198	196	99.0%
7 PM - 8 PM	198	228	115.2%

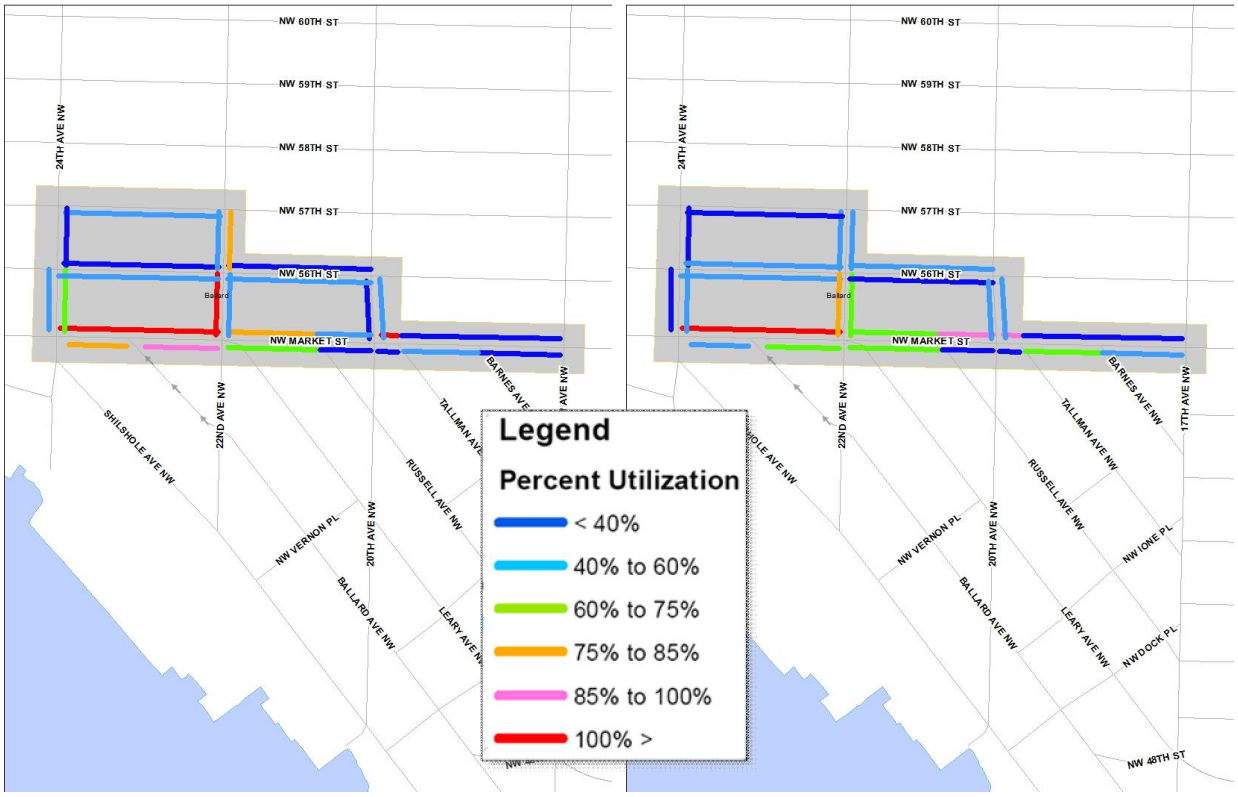
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Ballard neighborhood for a typical Saturday. The Ballard neighborhood had overall utilization ranging from 48% to 109% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The chart below provides a breakdown of this utilization.



High Demand Areas

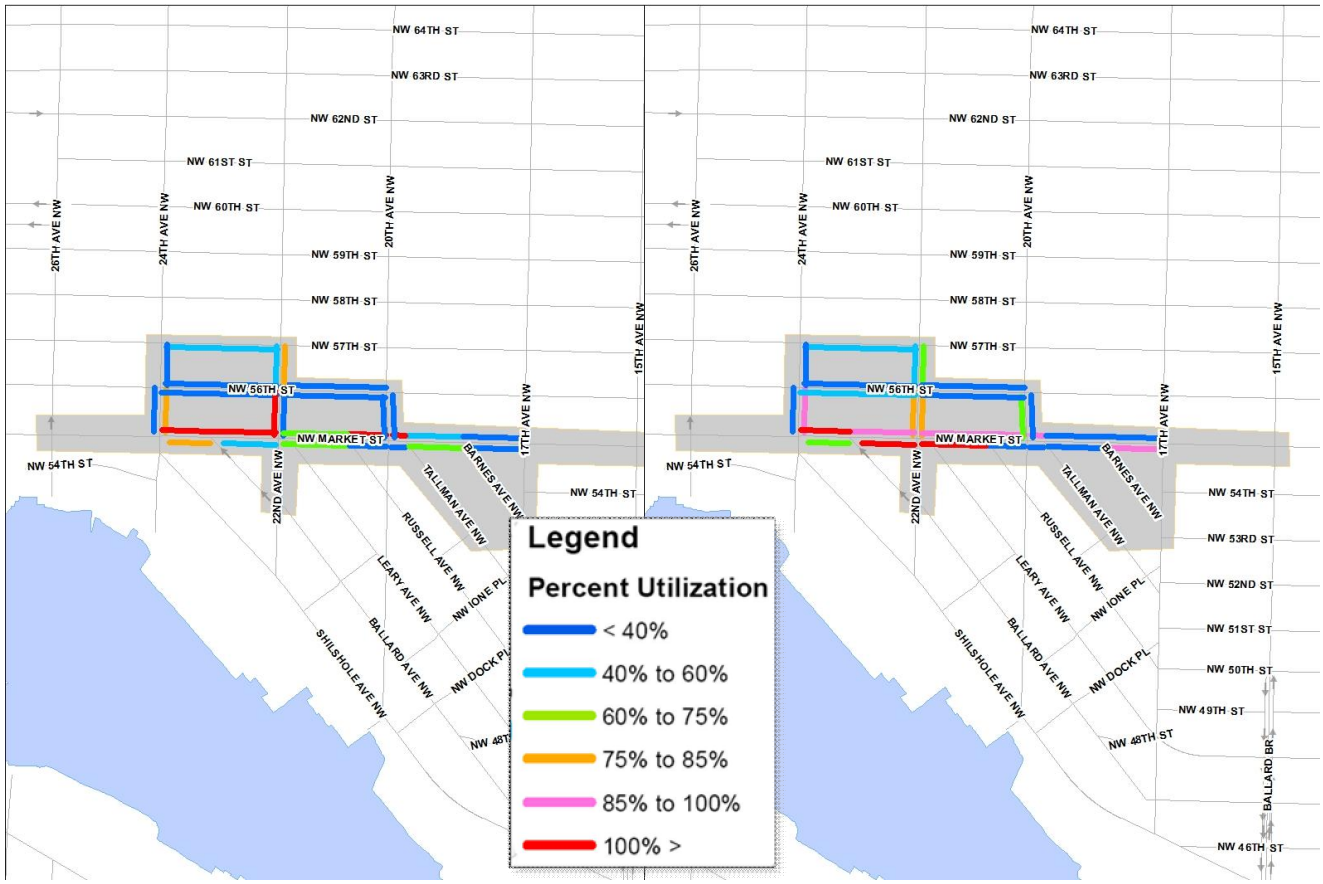
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the appendix of this document.

November 2010 vs June 2011 Average Occupancy – Ballard



November 2010 June 2011

November 2010 vs June 2011 Peak Occupancy – Ballard

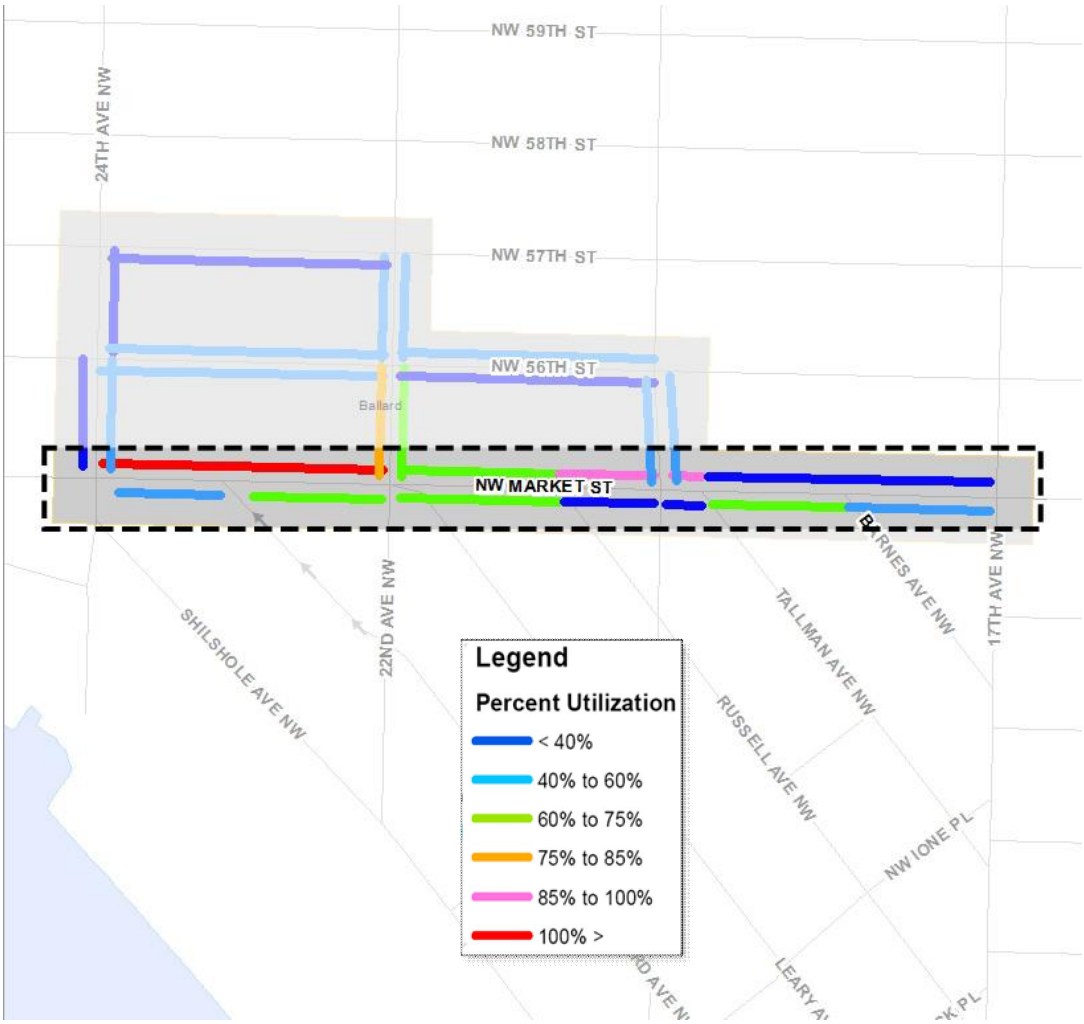


November 2010 **June 2011**

**Peak occupancy for the Ballard (2010) was 12 pm to 1 pm and (2011) was 12 pm to 1 pm. The maps above show the block face occupancies at that time period*

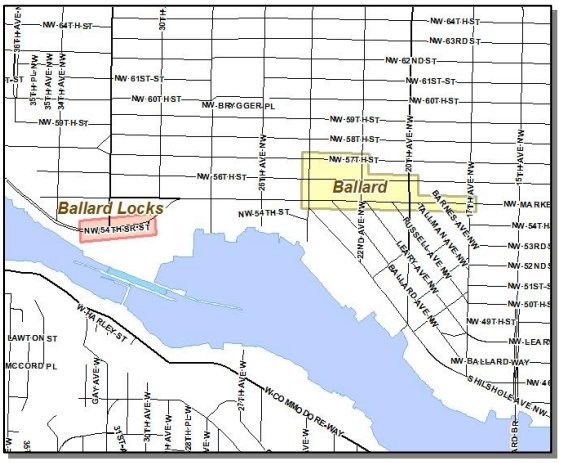
The two previous maps show that the highest average occupancy is along Market Street between 24th Avenue and 22nd Avenue. Based on peak utilization patterns, the majority of the blocks within Ballard could be considered high demand. Even though the Ballard neighborhood is fairly compact, it is evident, based on the average occupancy map, that Market Street could benefit from a different parking management strategy than the other portions of the observed paid parking area where demand is lower.

BALLARD - HIGH DEMAND AREA



BALLARD LOCKS NEIGHBORHOOD

The Ballard Locks parking area consists of three blocks along 54th Street between 30th Avenue and west of 32nd Avenue, although the area generally looks like an off-street parking lot. The observed area included all of the paid parking. The map to the right shows the general location of the Locks in relation to the surrounding neighborhoods. The parking primarily serves visitors going to see the Locks, as well as some retail and restaurant uses nearby. Paid parking was installed here in 2005.



2011 Rate Setting Decisions

As part of the 2011 rate setting process, specific parking data at the Locks were not collected. The on-street parking rates were lowered from $2.00 per hour to $1.50 per hour, similar to Ballard

Data Collection Methodology

As part of the June 2011 data collection process, Ballard Locks occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces

The block faces monitored included all blocks in the neighborhood. This approach allows for an understanding of the occupancy, demands, and general parking behaviors as a result of the rate changes.

General characteristics of the collection area include:

- 3 total block faces, with 80 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide the details of the parking data collected in June 2011. The results show overall parking utilization and overall areas of high demand within the Ballard Locks neighborhood.

BALLARD LOCKS WEEKDAY PARKING DATA - June 14, 2011[3]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	80	1	1.3%	1.0%
9 AM - 10 PM	80	7	8.8%	1.0%
10 AM - 11 AM	80	10	12.5%	6.0%
11 AM - 12 PM	80	25	31.3%	19.0%
12 PM - 1 PM	80	31	38.8%	36.0%
1 PM - 2 PM	80	38	47.5%	49.0%
2 PM - 3 PM	80	55	68.8%	70.0%
3 PM - 4 PM	80	48	60.0%	73.0%
4 PM - 5 PM	80	31	38.8%	65.0%
5 PM - 6 PM	80	14	17.5%	34.0%
6 PM - 7 PM	80	24	30.0%	NA
7 PM - 8 PM	80	35	43.8%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Ballard Locks neighborhood, including total occupancy. Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The Ballard Locks area had overall utilization ranging from 1% to 69% during the paid parking hours (8 am to 6 pm) and then there was slight increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization.

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[3] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

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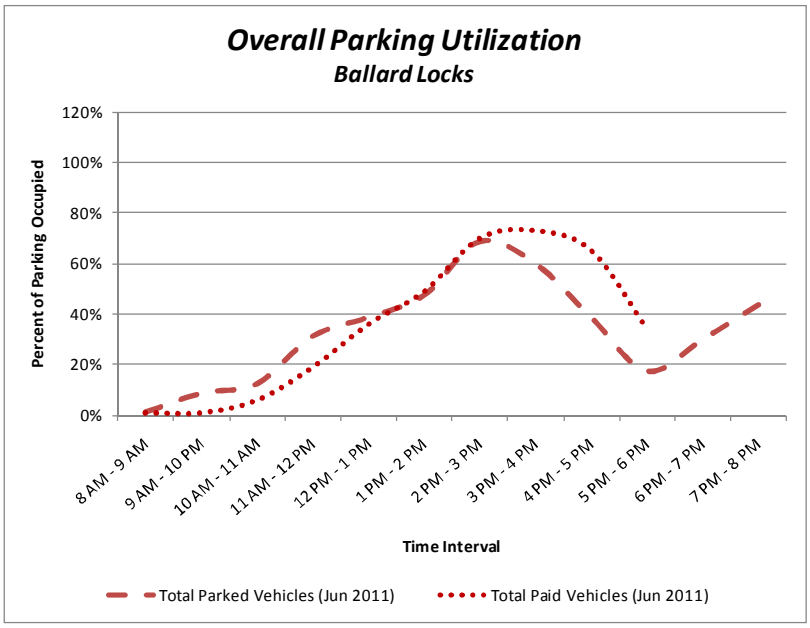


As the Ballard Locks neighborhood was not included in the November 2010 data analysis, the, information is provided only from the data collected in June 2011. The first chart shown indicates that the overall parking utilization in Ballard Locks experiences a peak at 2 pm and then steadily declines until 6 pm.

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	31.3%	11 AM – 12 PM
12 PM - 3 PM	68.8%	2 PM - 3 PM
3 PM - 6 PM	60.0%	3 PM - 4 PM
6 PM - 8 PM	43.8%	7 PM - 8 PM

The peak data clearly indicates high utilization during the mid-day hours, in line with the projections and theoretical approach of the 2010 rate setting process. For a further discussion of the effectiveness of the rate setting process and the elasticity of parking in the Seattle commercial core and neighborhoods, please see **Chapter 3**.

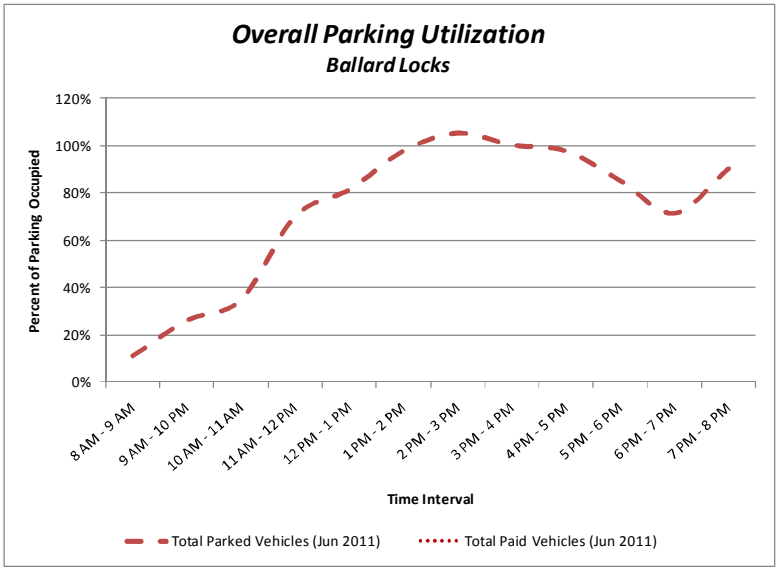
Weekend Parking Observations

Parking occupancy data was collected for the Ballard Locks neighborhood on a Saturday to measure the varying peaks and patterns of usage during a weekend day. The following information provides a summary of regular vehicular occupancy.

BALLARD LOCKS - SATURDAY PARKING DATA - June 11, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	80	9	11.3%
9 AM - 10 PM	80	21	26.3%
10 AM - 11 AM	80	28	35.0%
11 AM - 12 PM	80	56	70.0%
12 PM - 1 PM	80	65	81.3%
1 PM - 2 PM	80	78	97.5%
2 PM - 3 PM	80	84	105.0%
3 PM - 4 PM	80	80	100.0%
4 PM - 5 PM	80	78	97.5%
5 PM - 6 PM	80	68	85.0%
6 PM - 7 PM	80	57	71.3%
7 PM - 8 PM	80	72	90.0%

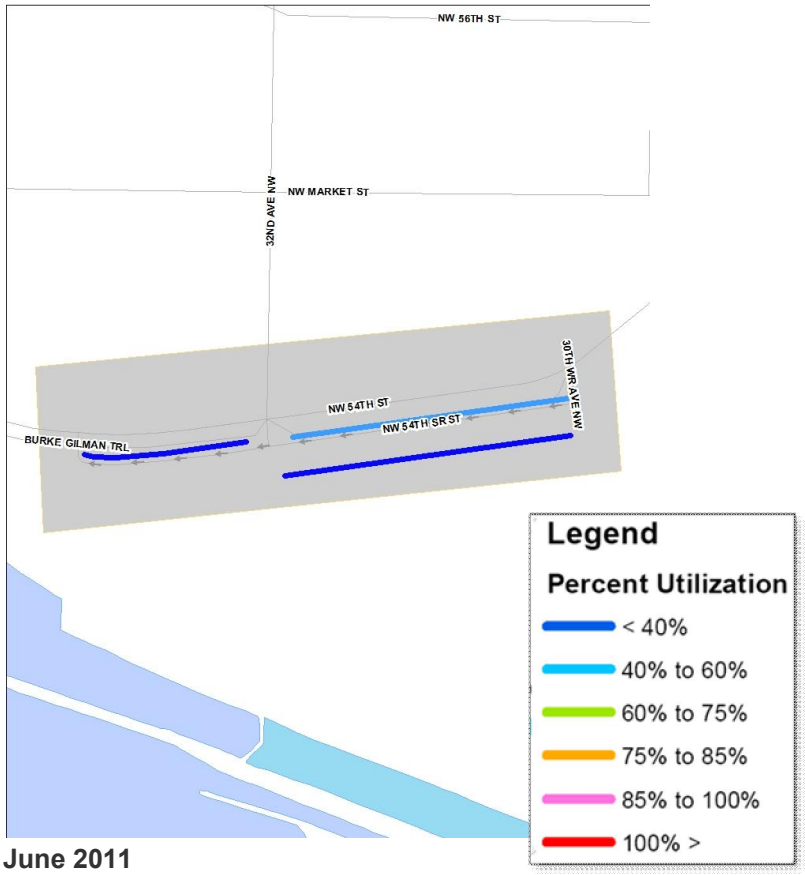
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Ballard Locks neighborhood for a typical Saturday. The Ballard Locks neighborhood had overall utilization ranging from 11% to 105% during the paid parking hours (8 am to 6 pm). Usage after paid parking hours decreased slightly at 6 pm but increased again at 7 pm. The chart below provides a breakdown of this utilization.



High Demand Areas

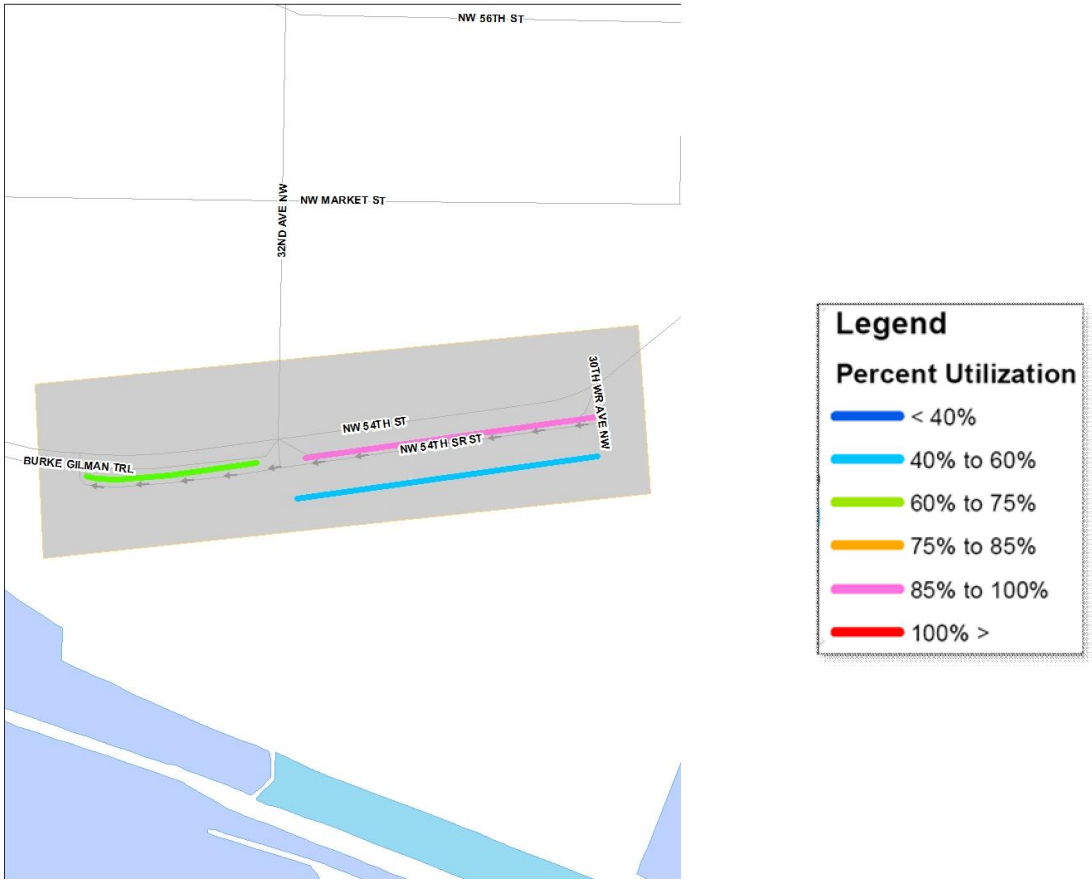
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the appendix of this document.

June 2011 Average Occupancy – Ballard Locks



June 2011

June 2011 Peak Occupancy – Ballard Locks



June 2011

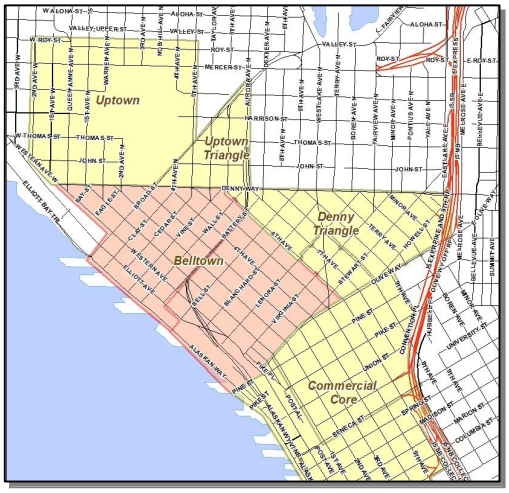
**Peak occupancy for the Ballard Locks (2011) was 2 pm to 3 pm. The map above shows the block face occupancies at that time period*

It does not make sense to consider introducing innovative parking management principles to high demand areas in Ballard Locks because the entire Ballard Locks area is fairly compact and would not necessarily benefit from the introduction of a tiered management structure. This is especially true considering that the high demand areas identified are only a short distance from one another.

As stated previously, Ballard Locks primarily serves users visiting the Locks. As such, the demand for parking in this area will increase during the summer and decrease during the winter. It is therefore recommended that two rates be set for this area to reflect the seasonal changes in demand. SDOT can establish these rates based on visitation records.

BELLTOWN NEIGHBORHOOD

In 2011, for purposes of paid parking rate setting, SDOT divided the Belltown neighborhood into Belltown North and Belltown South, separated by Battery Street. Belltown is adjacent to Uptown, Uptown Triangle, Denny Triangle, and the Commercial Core. The neighborhood is generally bounded by Alaskan Way to the east, a combination of Denny Way and 6th Avenue to the north, and Stewart Street to the south. Within the Belltown neighborhood, there is a mix of dense residential, office, retail, and restaurant uses. The map to the right shows the general location of the total paid parking area in relation to surrounding neighborhoods and Seattle community. The observed study area was a sample of the total paid parking area. The observation area was generally along the core streets of Belltown.



2011 Rate Setting Decisions

Belltown North

As part of the 2011 rate setting process, the Belltown North neighborhood on-street parking rate was lowered from $2.50 per hour to $2.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the Belltown North area was 46%. This indicates that the demands were well under the proposed capacity cushion of one to two spaces per block face.

Belltown South

As part of the 2011 rate setting process, the Belltown South neighborhood on-street parking rate was also lowered from $2.50 per hour to $2.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the Belltown South area was 65%. This indicates that the demands were under the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% (a 21% increase in occupancy in Belltown North and a 6% increase in Belltown South), which would theoretically reduce excess capacity along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Belltown occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm. During the weekday, the occupancy collection included vehicles in paid parking spaces and vehicles utilizing disabled permit parking permits in paid parking spaces (disabled parking permits were only counted in Belltown South). The weekend occupancy collection included only vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better

understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 181 total block faces, with 1,479 on-street parking spaces
- 7 block faces with peak hour restrictions

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand in the Belltown neighborhood.

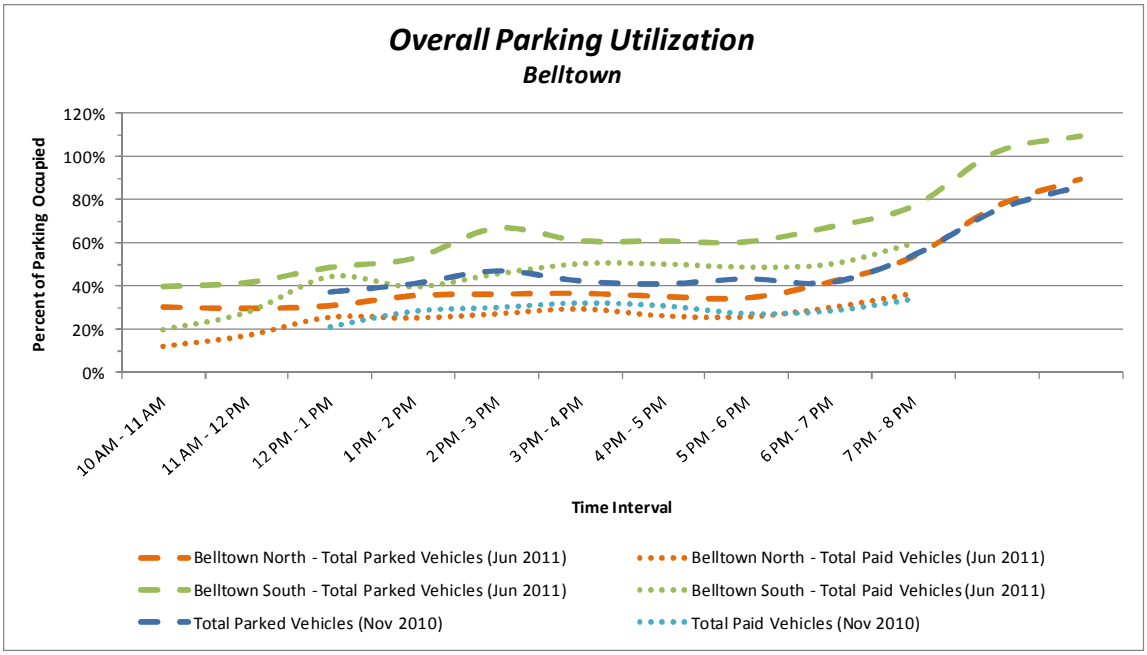
BELLTOWN WEEKDAY PARKING DATA - June 16, 2011[4]

	Hourly Parking Supply	Total Parked Vehicles	% Occupied Parking	% Available Parking	% Paid Occupancy
8 AM - 9 AM	1380	474	34.3%	65.7%	12.2%
9 AM - 10 PM	1386	480	34.6%	65.4%	17.2%
10 AM - 11 AM	1408	537	38.1%	61.9%	25.8%
11 AM - 12 PM	1405	599	42.6%	57.4%	25.5%
12 PM - 1 PM	1405	685	48.8%	51.2%	27.5%
1 PM - 2 PM	1405	655	46.6%	53.4%	29.7%
2 PM - 3 PM	1405	642	45.7%	54.3%	26.5%
3 PM - 4 PM	1352	611	45.2%	54.8%	26.0%
4 PM - 5 PM	1344	704	52.4%	47.6%	30.4%
5 PM - 6 PM	1360	864	63.5%	36.5%	37.0%
6 PM - 7 PM	1408	1228	87.2%	12.8%	NA
7 PM - 8 PM	1401	1368	97.6%	2.4%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Belltown neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide

[4] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.
Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.
Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.
Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.
Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.
% Parking Occupied denotes the percent of total spaces that were occupied.
% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.
% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.
NA = Not applicable, parking meters do not operate during this time or data not available.
All data collected was for legal paid parking spaces only.

the hourly distribution for the observed parking. The Belltown area had overall utilization ranging from 34% to 64% during the paid parking hours (8 am to 6 pm) and then highly increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.



The first chart shown indicates that the overall parking utilization in Belltown North was lower between November 2010 and June 2011, but increased in Belltown South. On the surface, this result indicates that reducing parking rates did not cause a change in behavior within the area; however, a review of disabled parking permit use in Belltown South on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	46.9%	12 PM - 1 PM
4 PM - 6 PM	54.2%	5 PM - 6 PM
6PM - 8 PM	86.5%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

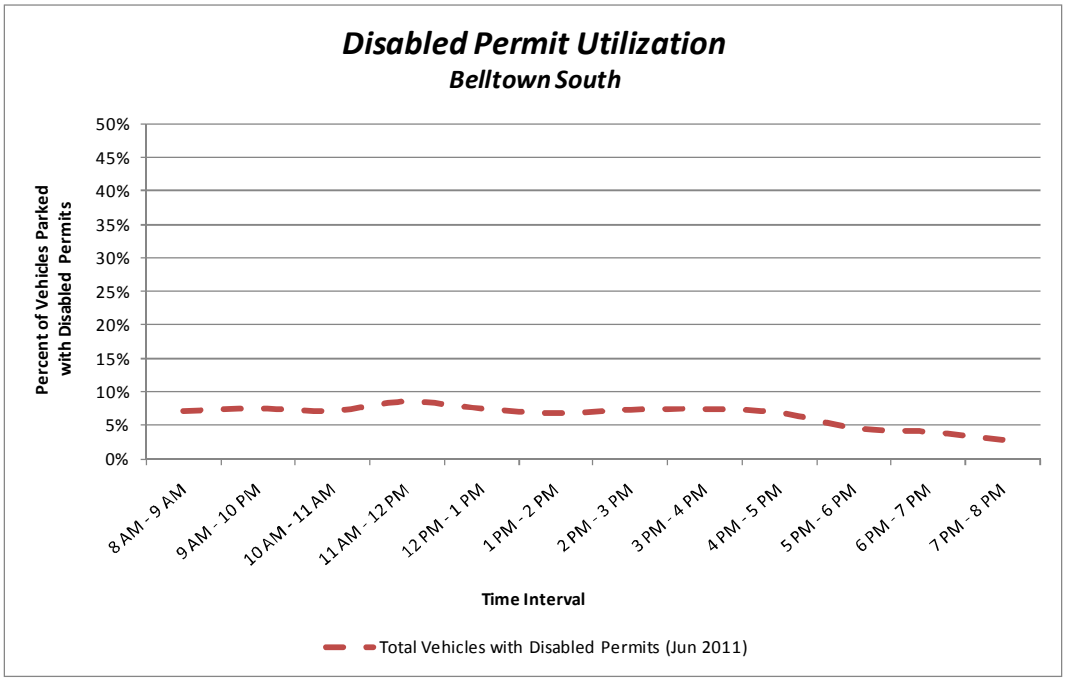
June 2011 Peak Parking Summary

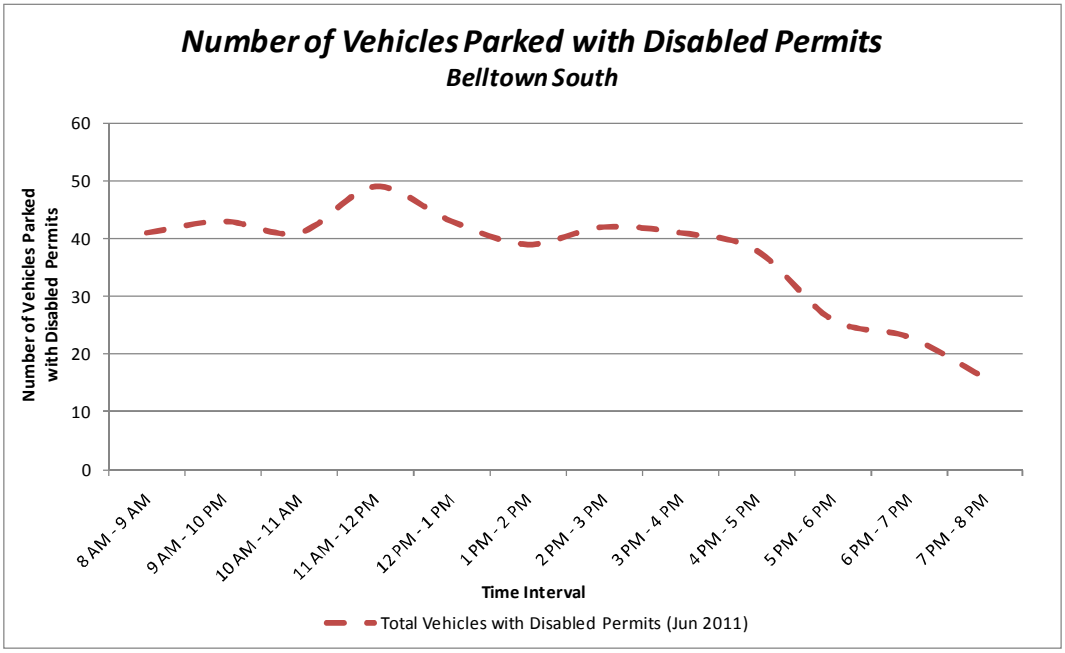
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	42.6%	11 AM - 12 PM
12 PM - 3 PM	48.8%	12 PM - 1 PM
3 PM - 6 PM	63.5%	5 PM - 6 PM
6 PM - 8 PM	97.6%	7 PM - 8 PM

The peak data indicates that overall parking utilization in the Belltown neighborhood was relatively unchanged between November 2010 and June 2011 during the morning and afternoon hours. However, parking utilization increased by 10% between 3 pm and 6 pm.

Weekday Disabled Permit Usage

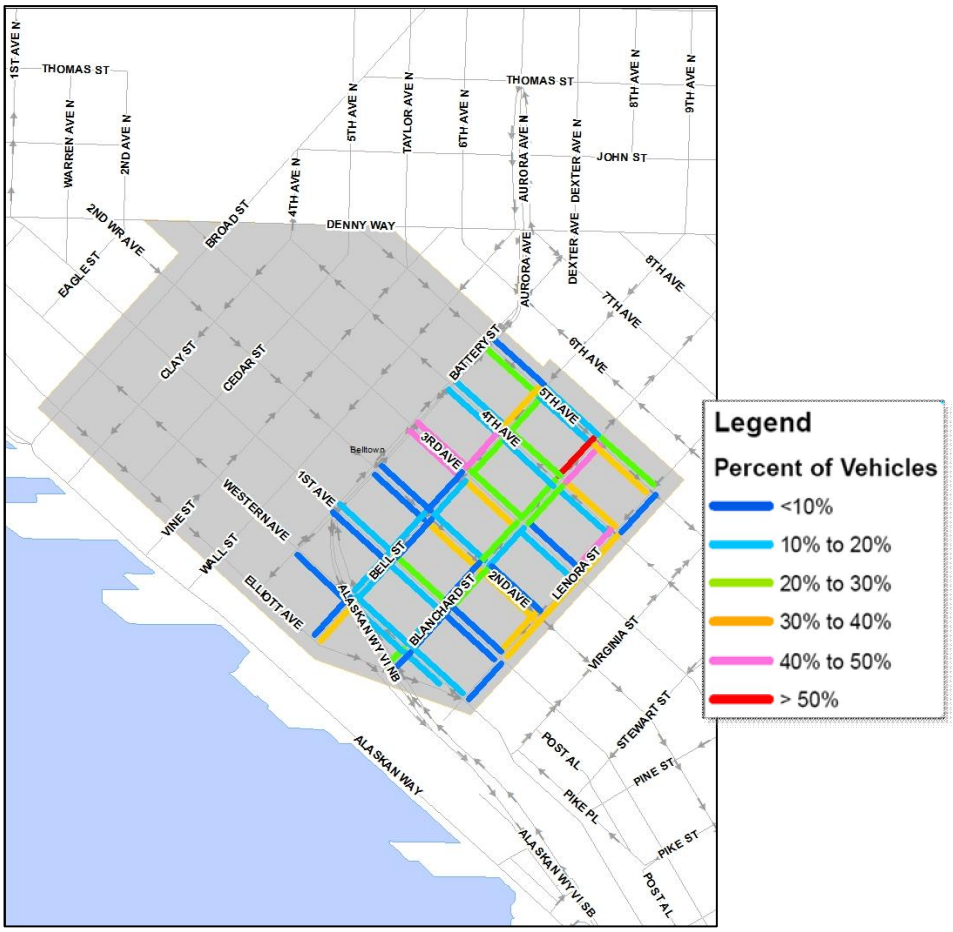
Disabled permits were not collected for the Belltown neighborhood during the November 2010 data collection period. However, the June 2011 data collection process included collecting disabled parking permits in Belltown South only. The 2011 disabled parking permit usage in Belltown South ranged from 3% to 9% of the available on-street parking spaces. The following charts provide a closer indication of the June 2011 disabled permit utilization data.





The following graphic provides a summary of peak disabled parking permit usage within Belltown South.

June 2011 Peak Disabled Parking Permit Usage – Belltown South



June 2011

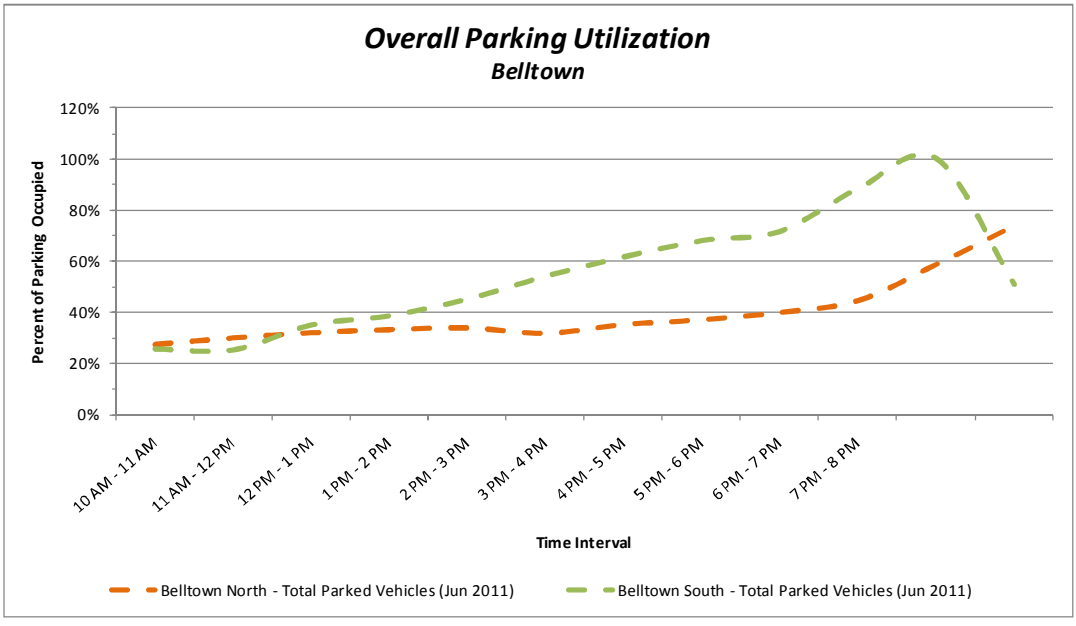
Weekend Parking Observations

Parking occupancy data was collected for the Belltown neighborhood on Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

BELLTOWN - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Occupied Parking
8 AM - 11 AM	1413	377	26.7%
9 AM - 11 AM	1413	397	28.1%
10 AM - 11 AM	1413	469	33.2%
11 AM - 12 PM	1413	500	35.4%
12 PM - 1 PM	1413	543	38.4%
1 PM - 2 PM	1413	576	40.8%
2 PM - 3 PM	1413	648	45.9%
3 PM - 4 PM	1413	700	49.5%
4 PM - 5 PM	1413	745	52.7%
5 PM - 6 PM	1413	879	62.2%
6 PM - 7 PM	1413	1066	75.4%
7 PM - 8 PM	1413	914	64.7%

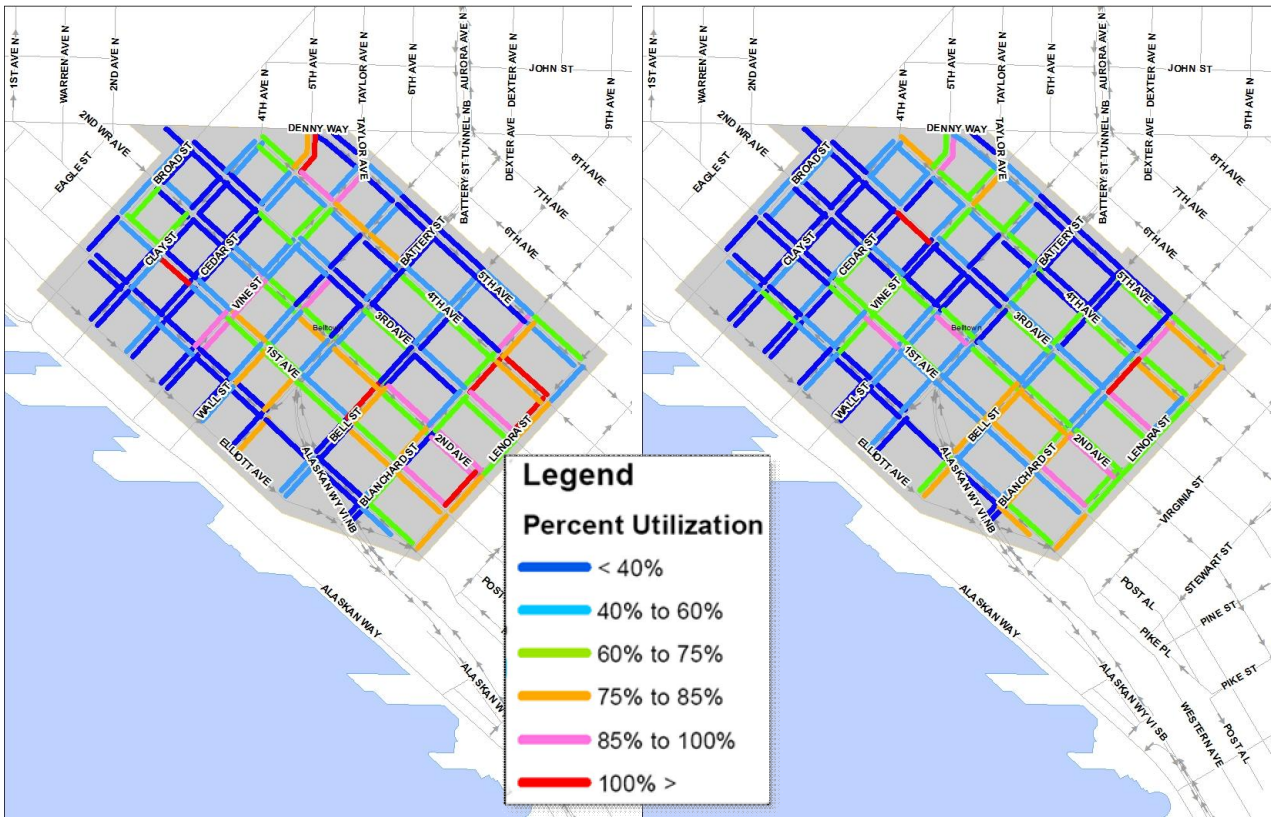
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Belltown neighborhood for a typical Saturday. The Belltown neighborhood had overall utilization ranging from 27% to 62% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The chart below provides a breakdown of this utilization.



High Demand Areas

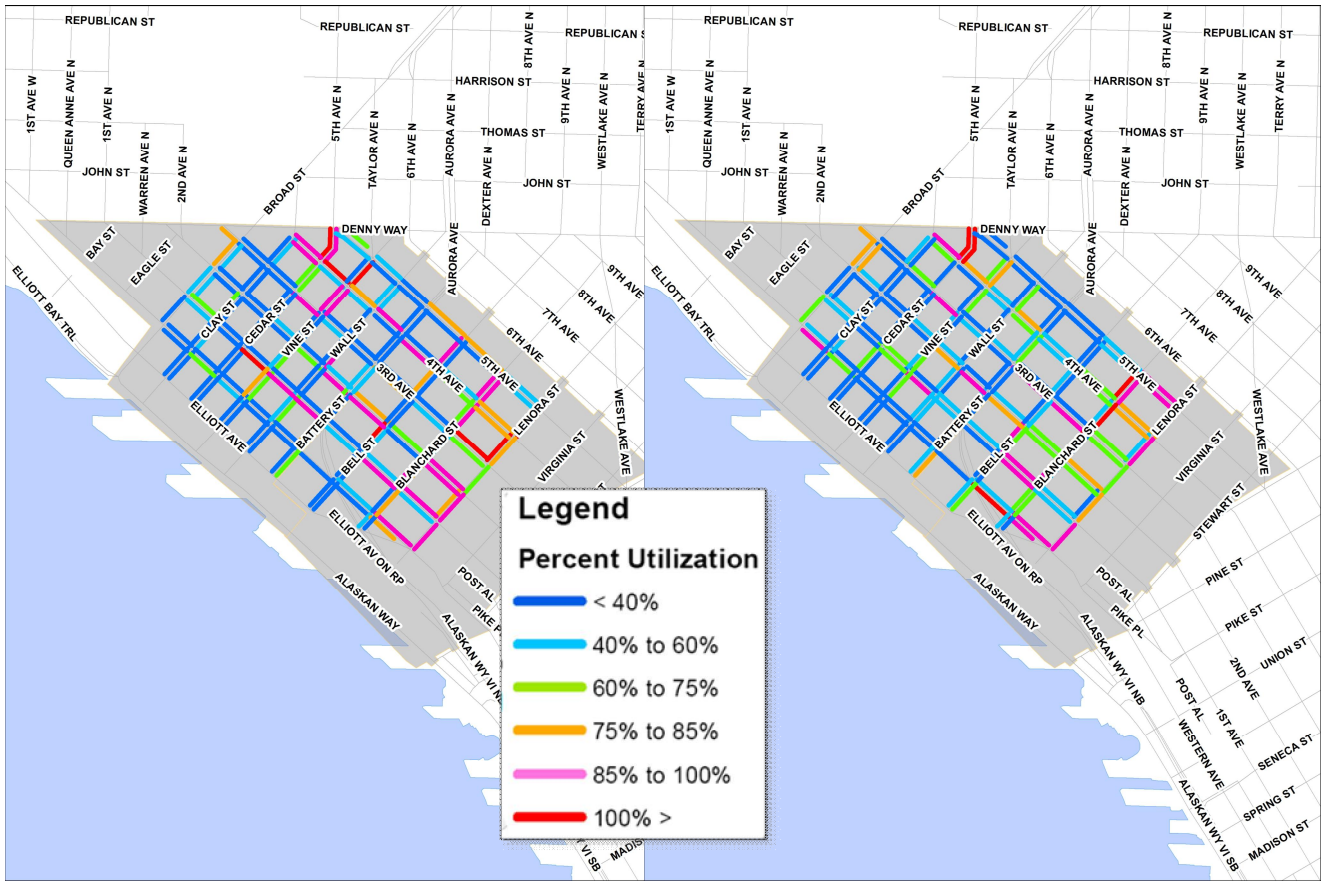
Using both series of data to analyze the area, it is possible to see and understand which areas have the highest demand in the neighborhood. As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour by hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – Belltown



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Belltown



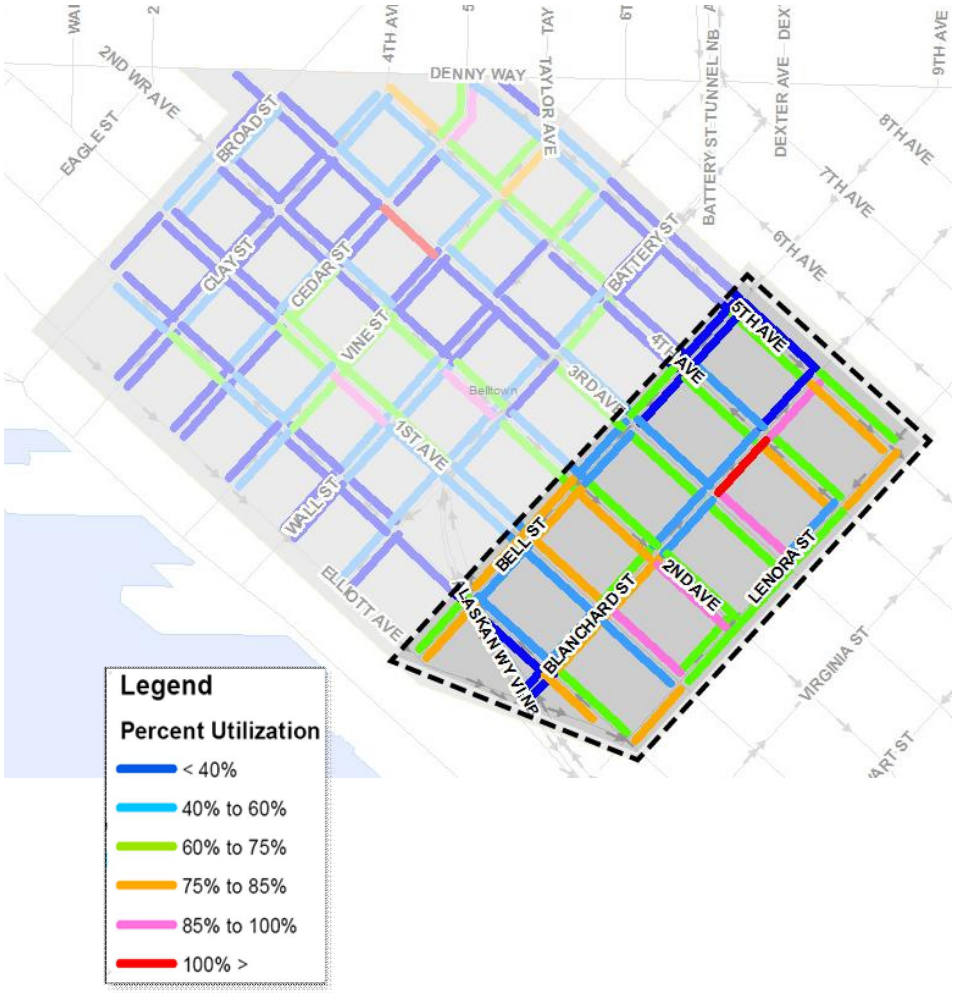
November 2010 **June 2011**

**Peak occupancy for the Belltown (2010) was 12 pm to 1 pm and (2011) was 12 pm to 1 pm. The maps above show the block face occupancies at that time period.*

The two previous maps show that average occupancy is clustered in the southern portion of the neighborhood in the area bounded by Lenora Street, Elliott Avenue, Bell Street, and 5th Avenue. Based on peak utilization patterns, 1st Avenue, 2nd Avenue and 3rd Avenue between Lenora Street and Vine Street could also be included in the high occupancy area.

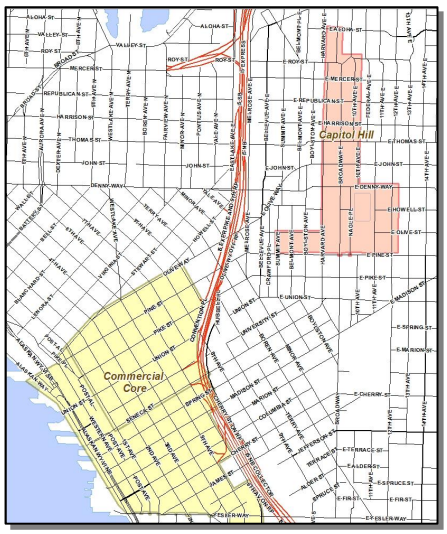
A summary of the contiguous high demand areas are shown on the following page.

BELLTOWN - HIGH DEMAND AREA



CAPITOL HILL NEIGHBORHOOD

The paid parking components of the Capitol Hill neighborhood are along Broadway north of Pike Pine. Capitol Hill includes a mix of retail, residential, educational, and entertainment uses. The map to the right shows the general location of the paid parking area in relation to surrounding neighborhoods. The observed area included a sample of the total paid parking area in the neighborhood. The area of paid parking observation was generally along Broadway and adjacent side streets, with some observations along Pine Street and 11th Avenue at Cal Anderson Park.



2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Capitol Hill neighborhood on-street parking rates were raised from $2.00 per hour to $3.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the core of the area was 89%, indicating demand exceeding the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, raising rates by $1.00 was projected to lower peak occupancy to 86% (3% drop in occupancy), which would theoretically create available capacity along the neighborhood's block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Capitol Hill occupancy was measured on a typical weekday and on a Saturday, between 8 am and 8 pm. The occupancy collection included total vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 27 total block faces, with 286 on-street parking spaces
- Paid parking between 8am and 6pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and areas of high demand.

CAPITOL HILL WEEKDAY PARKING DATA - June 15, 2011[5]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	271	66	24.4%	7.0%
9 AM - 10 PM	271	83	30.6%	12.0%
10 AM - 11 AM	271	101	37.3%	20.0%
11 AM - 12 PM	271	133	49.1%	25.0%
12 PM - 1 PM	271	158	58.3%	36.0%
1 PM - 2 PM	271	153	56.5%	44.0%
2 PM - 3 PM	271	146	53.9%	47.0%
3 PM - 4 PM	271	135	49.8%	39.0%
4 PM - 5 PM	271	136	50.2%	43.0%
5 PM - 6 PM	271	236	87.1%	45.0%
6 PM - 7 PM	271	306	112.9%	NA
7 PM - 8 PM	271	315	116.2%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Capitol Hill neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). The Capitol Hill area had overall utilization ranging from 24% and 87% during the paid parking hours (8 am to 6 pm) and then highly increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[5] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

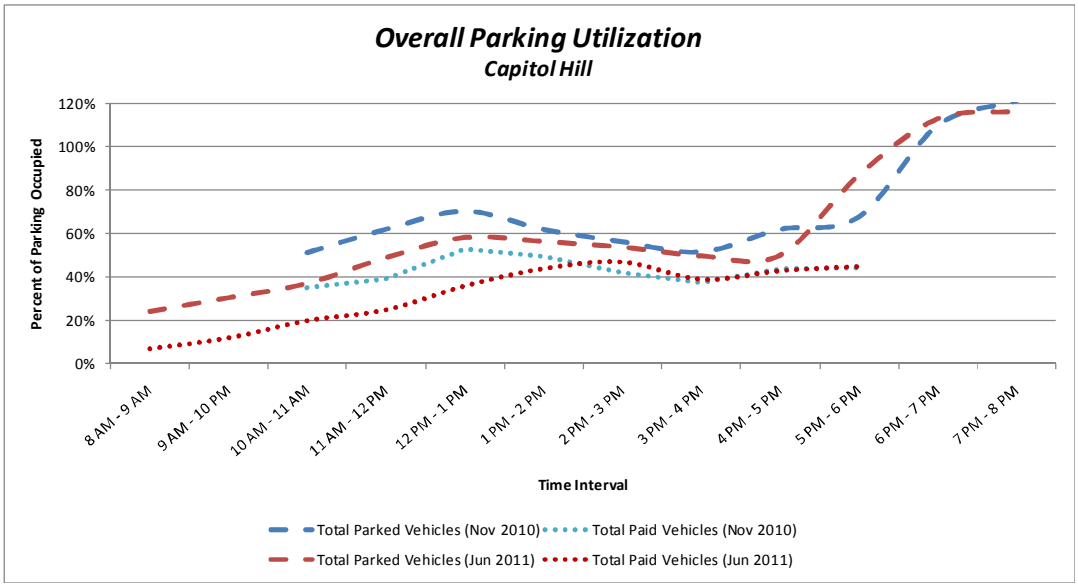
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization was relatively similar between November 2010 and June 2011. This is inconsistent with the expectations associated with raising the rates by $1.00 between 2010 and 2011. Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	70.1%	12 PM - 1 PM
4 PM - 6 PM	67.4%	5 PM - 6 PM
6PM - 8 PM	121.1%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	49.1%	11 AM - 12 PM
12 PM - 3 PM	58.3%	12 PM - 1 PM
3 PM - 6 PM	87.1%	5 PM - 6 PM
6 PM - 8 PM	116.2%	7 PM - 8 PM

The peak data comparison provides relatively similar peaking conditions, with some variation in the morning peak, but similar high evening peaks.

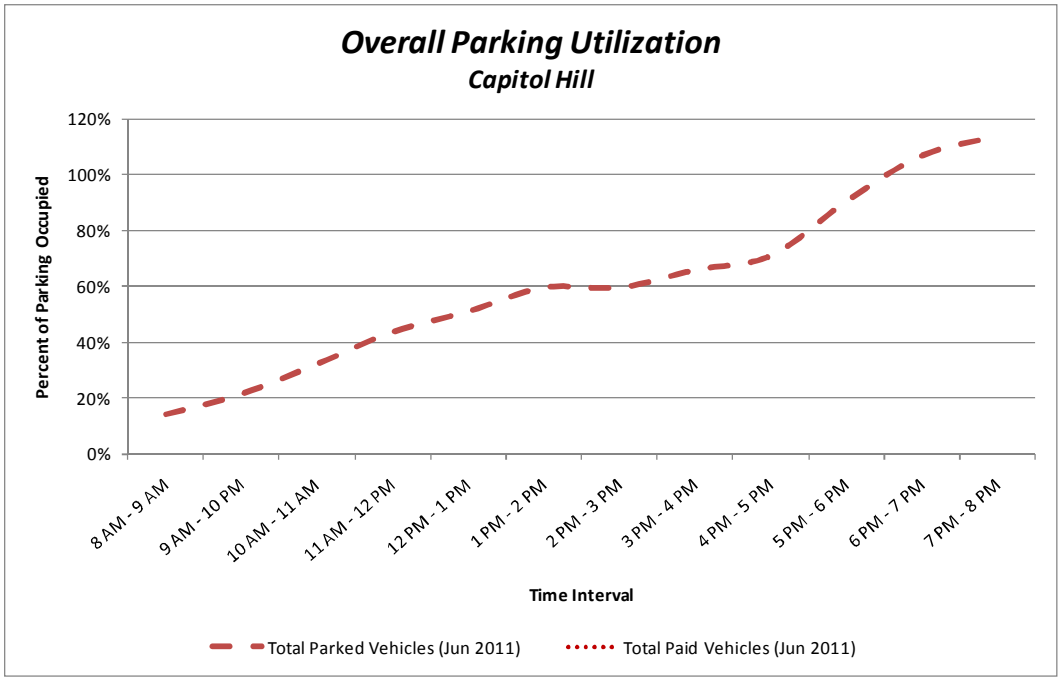
Weekend Parking Observations

Parking occupancy data was collected for the Capitol Hill area on a Saturday to measure the varying peaks and patterns of usage during the non-weekday peaking conditions. The following information provides a summary of both regular vehicular occupancy and disabled permit usage on the observed Saturday.

CAPITOL HILL - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	271	39	14.4%
9 AM - 10 PM	271	59	21.8%
10 AM - 11 AM	271	88	32.5%
11 AM - 12 PM	271	119	43.9%
12 PM - 1 PM	271	139	51.3%
1 PM - 2 PM	271	162	59.8%
2 PM - 3 PM	271	162	59.8%
3 PM - 4 PM	271	179	66.1%
4 PM - 5 PM	271	193	71.2%
5 PM - 6 PM	271	246	90.8%
6 PM - 7 PM	271	290	107.0%
7 PM - 8 PM	271	309	114.0%

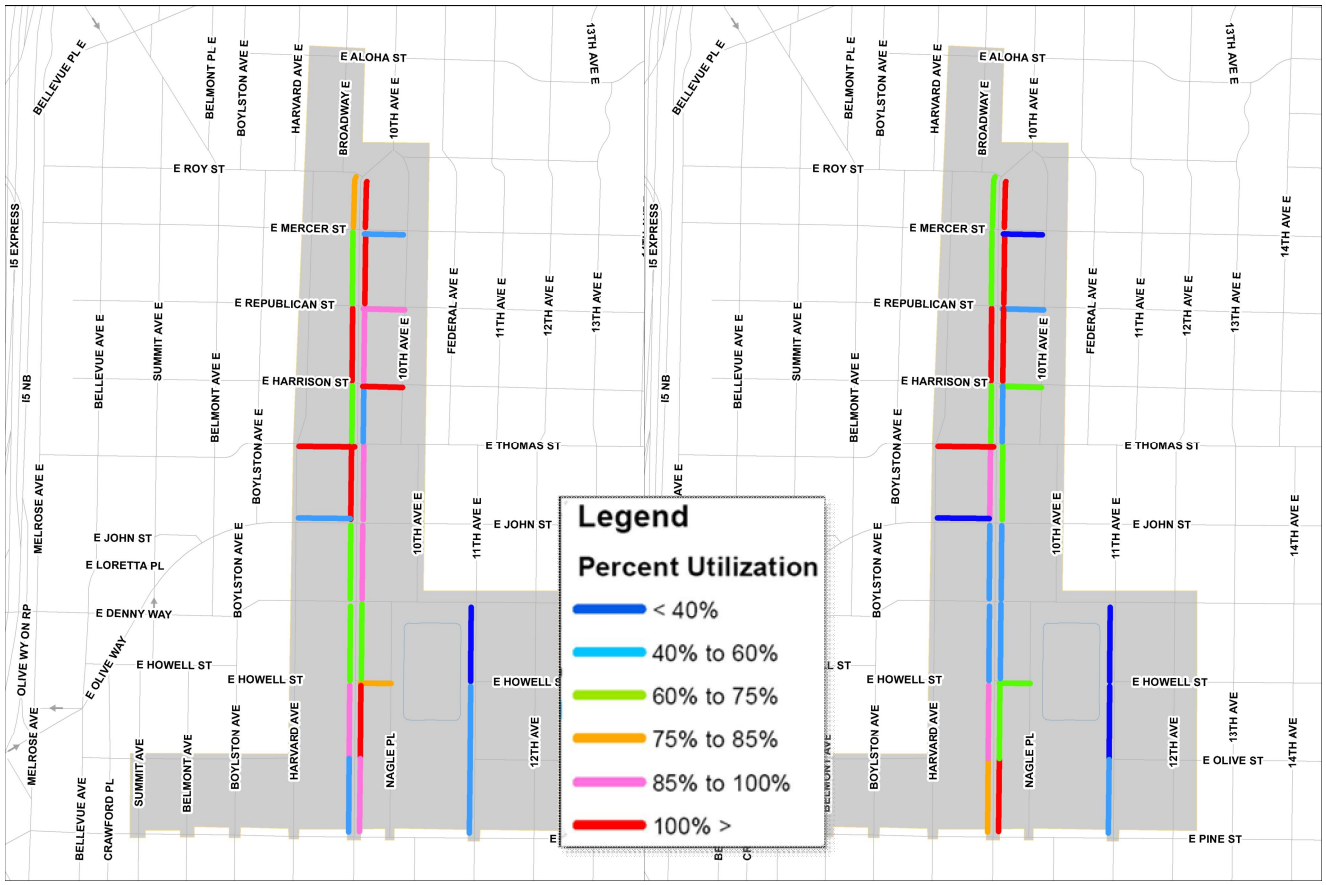
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Capitol Hill area for a typical Saturday. The Capitol Hill area had overall utilization ranging from 14% to 90% during the paid parking hours (8 am to 6 pm) and then highly increased usage after paid parking hours. The chart below provides a breakdown of this utilization.



High Demand Areas

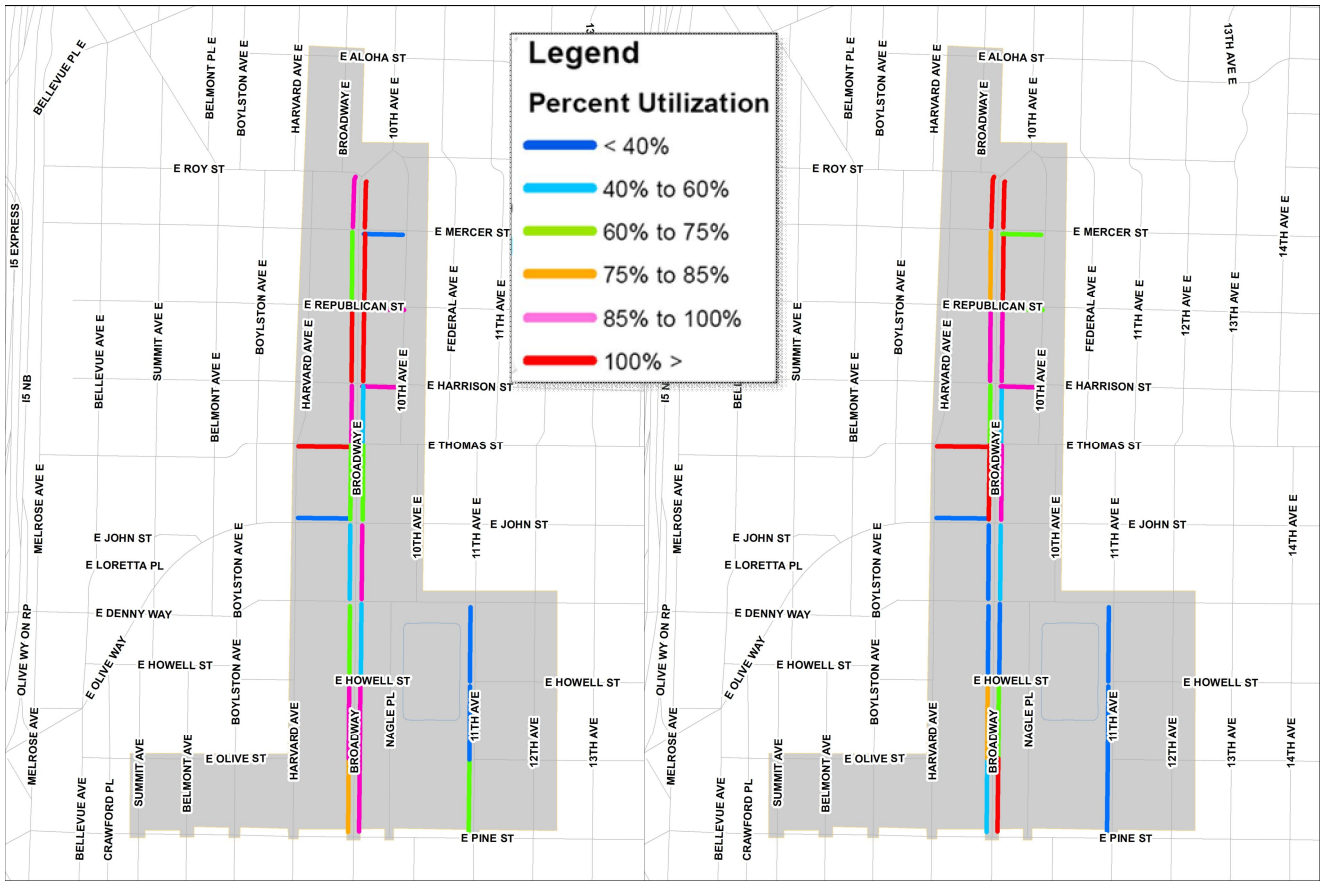
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – Capitol Hill



November 2010 June 2011

November 2010 vs June 2011 Peak Occupancy – Capitol Hill



November 2010 **June 2011**

Peak occupancy for the Capitol Hill (2010) was 12 pm to 1 pm and (2011) was 12 pm to 1 pm. The maps above show the block face occupancies at that time period

The two previous maps show that the highest average occupancy is clustered in the northern sections of Broadway, as well as at the intersection of Broadway and Pine Street. Based on peak utilization patterns, the 12th Avenue Area north of Pine Street could also be considered high demand, especially during weekend and evening peaks.

CHERRY HILL NEIGHBORHOOD

The Cherry Hill neighborhood is located east of the Commercial Core, and contains hospital and residential, uses. The area of paid parking observation was generally along Cherry Street, 18th Avenue, and Jefferson Street, surrounding the Swedish Medical Center - Cherry Hill Campus. The observed area included all of the blocks with paid parking. The map to the right gives the general location of the study area in relation to the Commercial Core.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Cherry Hill neighborhood on-street parking rates were kept constant at $1.50 per hour. Based on data collected in November 2010, the peak occupancies in the area were 85%, indicating that there was an appropriate mix of demand and available parking, based on the one to two spaces per blockface threshold.

Data Collection Methodology

As part of the June 2011 data collection process, Cherry Hill occupancy was measured on a typical weekday, between 8 am and 6 pm. The occupancy collection included vehicles in paid parking spaces and vehicles utilizing disabled parking permits.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 6 total block faces, with 62 on-street parking spaces
- Paid parking between 8 am and 6 pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization, disabled parking permit utilization, and overall areas of high demand within the Cherry Hill neighborhood.

CHERRY HILL WEEKDAY PARKING DATA - June 15, 2011[6]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking
8 AM - 9 AM	60	36	12	60.0%	23.0%	20.0%
9 AM - 10 PM	60	52	24	86.7%	38.0%	40.0%
10 AM - 11 AM	60	52	24	86.7%	40.0%	40.0%
11 AM - 12 PM	60	52	19	86.7%	38.0%	31.7%
12 PM - 1 PM	60	48	19	80.0%	33.0%	31.7%
1 PM - 2 PM	60	40	18	66.7%	28.0%	30.0%
2 PM - 3 PM	60	46	23	76.7%	32.0%	38.3%
3 PM - 4 PM	60	41	13	68.3%	32.0%	21.7%
4 PM - 5 PM	60	30	7	50.0%	38.0%	11.7%
5 PM - 6 PM	60	21	4	35.0%	27.0%	6.7%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Cherry Hill neighborhood, including total occupancy, disabled permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy and disabled permits provide an hourly distribution for the observed parking. The Cherry Hill area had overall utilization ranging from 60% to 87% during the paid parking hours (8 am to 6 pm). The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[6] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

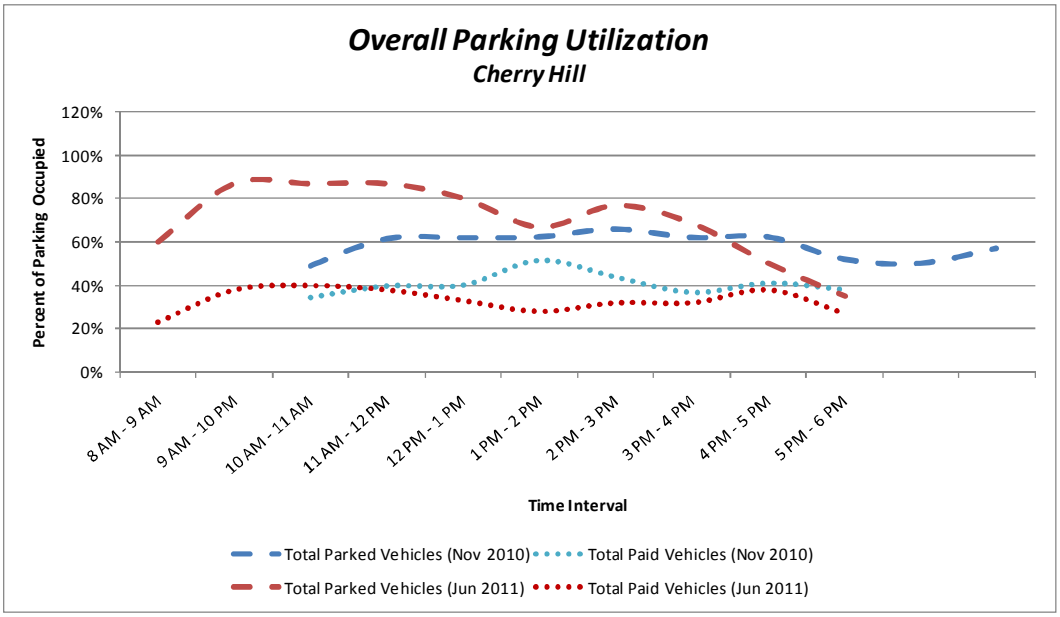
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization increased between November 2010 and June 2011 between 8 am and 4 pm. Since the rates stayed the same, some other factors have led to the parking occupancy change. A review of disabled parking permit use on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	78.3%	10 AM - 11 AM
4 PM - 6 PM	53.5%	4 PM - 5 PM
6PM - 8 PM	85.0%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

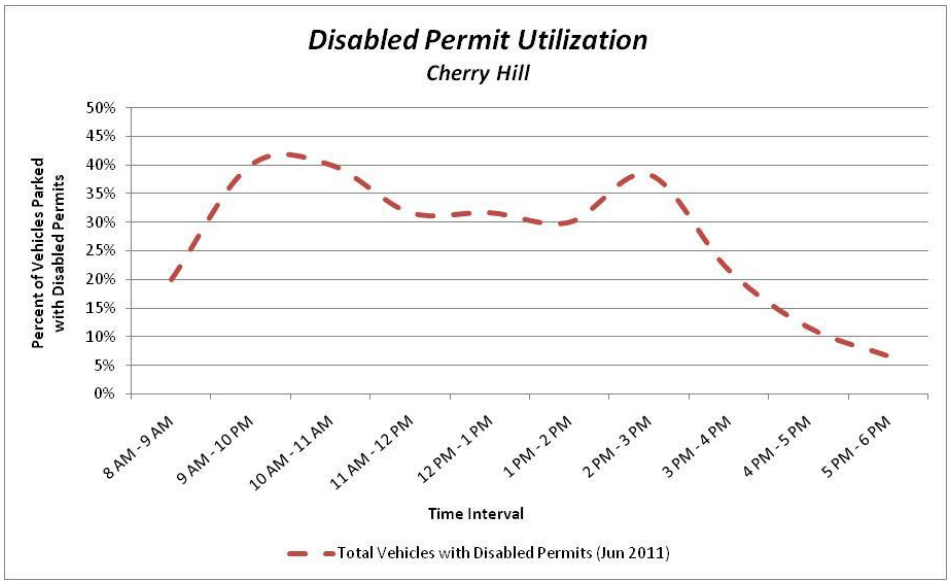
June 2011 Peak Parking Summary

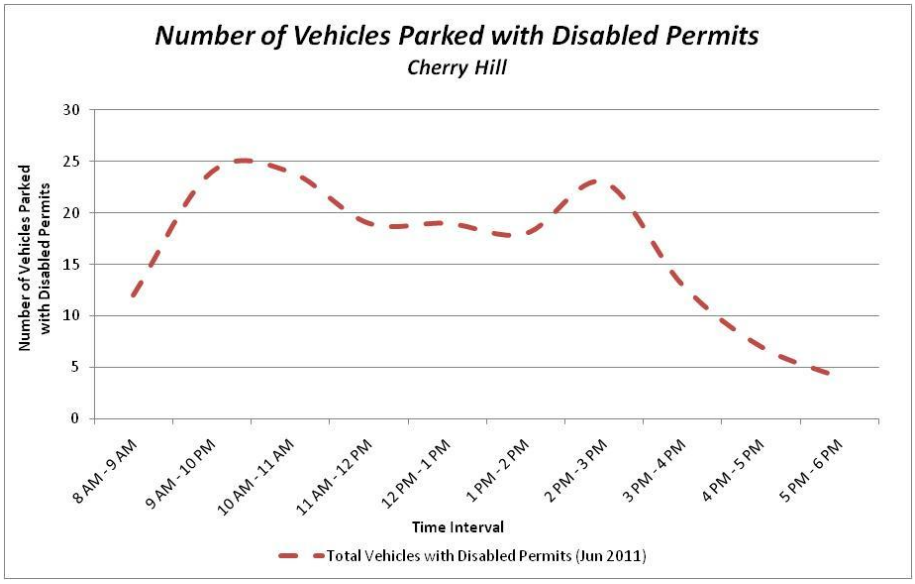
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	86.7%	9 AM – 10 AM
12 PM - 3 PM	80.0%	12 PM - 1 PM
3 PM - 6 PM	68.3%	3 PM - 4 PM

The peak data indicates that overall parking utilization in the Cherry Hill neighborhood increased between 10 am and 3 pm between November 2010 and June 2011.

Disabled Permit Usage

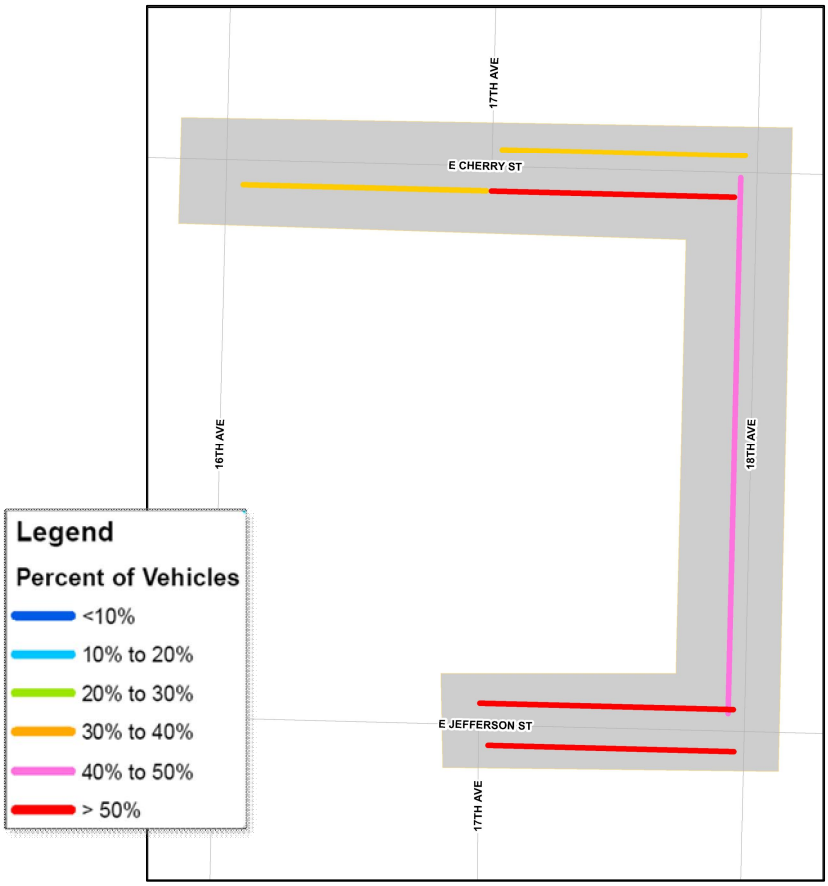
Disabled parking permit in Cherry Hill during the June 2011 observation period represented between 20% and 40% of the parking utilization throughout the paid hours (8 am – 6 pm) of weekday data collection period. There was no November 2010 data to compare against for this analysis. The level of disabled permit parking usage represents almost half of the actual parking activity within the area, which is not surprising given the location of the parking in relation to the hospital.





The map below provides the peak disabled permit usage from the June 2010 data collection period.

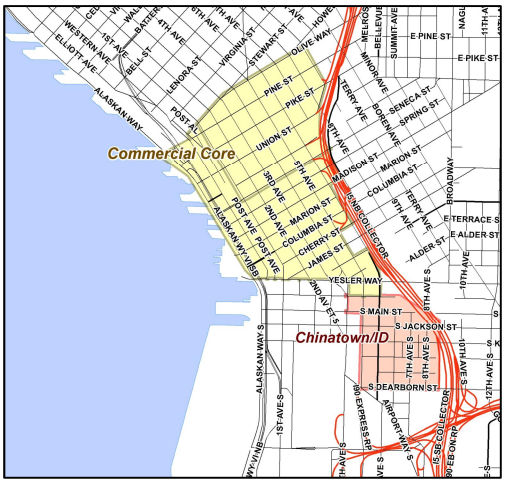
CHERRY HILL PEAK DISABLED PERMIT USAGE – JUNE 2010



High Demand Areas

Given the fact that the study are only contains six block faces, it is not feasible to identify high demand areas. The entire area has similar peaking patterns, in that during peak hospital usage times (morning and early afternoon) the spaces are utilized fairly consistently.

CHINATOWN/ INTERNATIONAL DISTRICT



The Chinatown/International District (ID) neighborhood is generally bounded by Washington Street to the north, 8th Avenue to the east, Dearborn Street to the south, and a combination of 5th Avenue and 4th Avenue to the west. Chinatown/ID is southeast of the sports stadium and experiences high demands during stadium events, including football, baseball, and soccer games, and concerts. Chinatown/International District has a unique mixture of multicultural restaurants, retail, and entertainment venues. The map to the right shows the general location of the total paid parking area in relation to the Commercial Core. The observed area included a sample of the total paid parking area in the neighborhood. The area of paid parking observation was generally along the core streets of the neighborhood.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Chinatown/ID neighborhood on-street parking rates were kept constant at $2.50 per hour. Based on data collected in November 2010, the peak occupancies in the area were 80%, indicating that there was an appropriate mix of demand and available parking, based on the one to two spaces per blockface threshold.

Data Collection Methodology

As part of the June 2011 data collection process, Chinatown/ID occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as a Saturday between 8 am and 8 pm, and a Sunday between 10 am and 6 pm Additionally, data was collected on a game day at Safeco Field to measure the effects of increased demand from a Seattle Mariners baseball game. The occupancy collection included vehicles in paid parking spaces, vehicles utilizing disabled parking permit s in paid parking spaces, and presence of either government exempt vehicles or vehicles displaying service hoods.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, allowing for an understanding of the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 78 total block faces, with 468 on-street parking spaces
- 3 block faces with peak hour restrictions
- Paid parking between 8 am and 6 pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011 for the typical weekday data. The previous study did not collect weekend or game day data; however, that data is provided in this report for reference and review. The results are compared for overall parking utilization, disabled parking permit utilization, and areas of high demand.

CHINATOWN/ID WEEKDAY PARKING DATA - June 9, 2011[7]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking
8 AM - 9 AM	416	83	28	20.0%	3.0%	6.7%
9 AM - 10 PM	416	139	46	33.4%	12.0%	11.1%
10 AM - 11 AM	416	184	70	44.2%	19.0%	16.8%
11 AM - 12 PM	416	246	83	59.1%	26.0%	20.0%
12 PM - 1 PM	416	325	86	78.1%	44.0%	20.7%
1 PM - 2 PM	416	291	72	70.0%	56.0%	17.3%
2 PM - 3 PM	416	288	87	69.2%	47.0%	20.9%
3 PM - 4 PM	397	222	75	55.9%	36.0%	18.9%
4 PM - 5 PM	397	203	58	51.1%	32.0%	14.6%
5 PM - 6 PM	397	222	42	55.9%	31.0%	10.6%
6 PM - 7 PM	416	317	40	76.2%	NA	9.6%
7 PM - 8 PM	423	377	30	89.1%	NA	7.1%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Chinatown/ID for a typical weekday, including total occupancy, disabled permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). Chinatown/ID had overall utilization ranging from 20% to 78% during the paid parking hours (8 am to 6 pm) and then above average usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[7] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

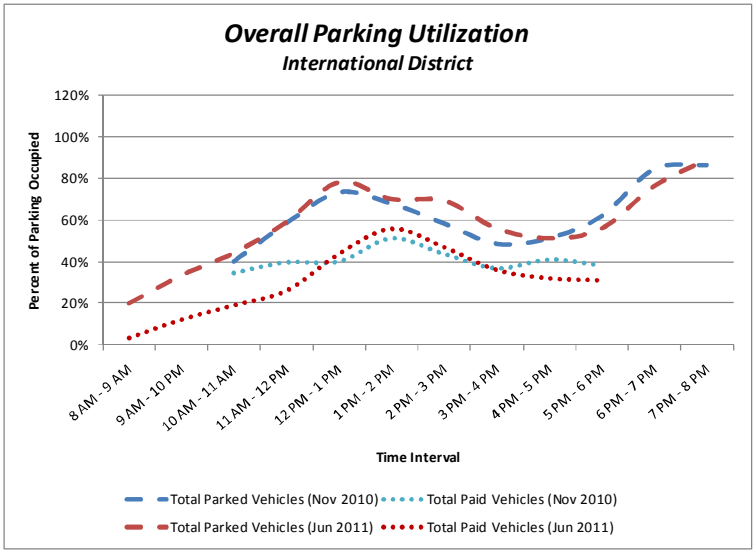
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The chart above indicates that the overall weekday parking utilization was mostly unchanged between November 2010 and June 2011. The overall occupancy follows the same trending behavior, which is consistent with the decision to maintain the same rate structure between 2010 and 2011.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	73.4%	12 PM - 1 PM
4 PM - 6 PM	62.0%	5 PM - 6 PM
6PM - 8 PM	86.5%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown in differing time bands, as follows:

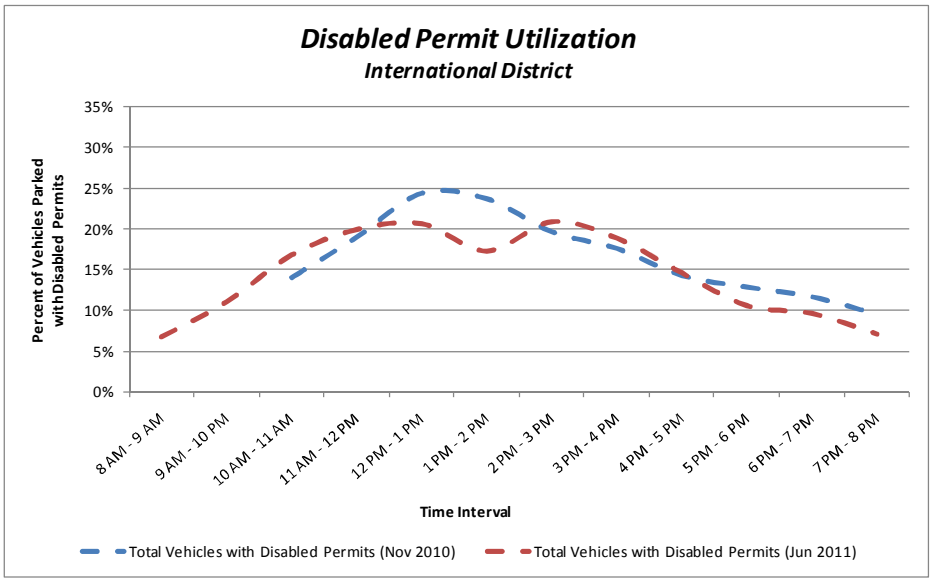
June 2011 Peak Parking Summary

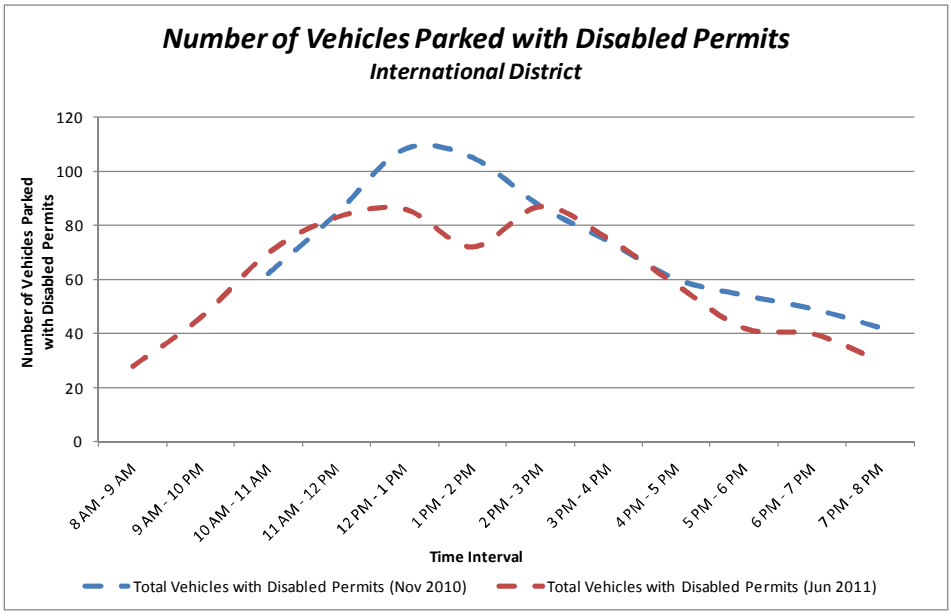
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	59.1%	11 AM - 12 PM
12 PM - 3 PM	78.1%	12 PM - 1 PM
3 PM - 6 PM	55.9%	3 PM - 4 PM
6 PM - 8 PM	89.1%	7 PM - 8 PM

The peak data indicates that overall parking utilization in Chinatown/ID was relatively unchanged between November 2010 and June 2011. There was a slight reduction in overall utilization in the afternoon peaks, but the reduction in utilization was not drastic and could be attributed to seasonal variations.

Weekday Disabled Permit Usage

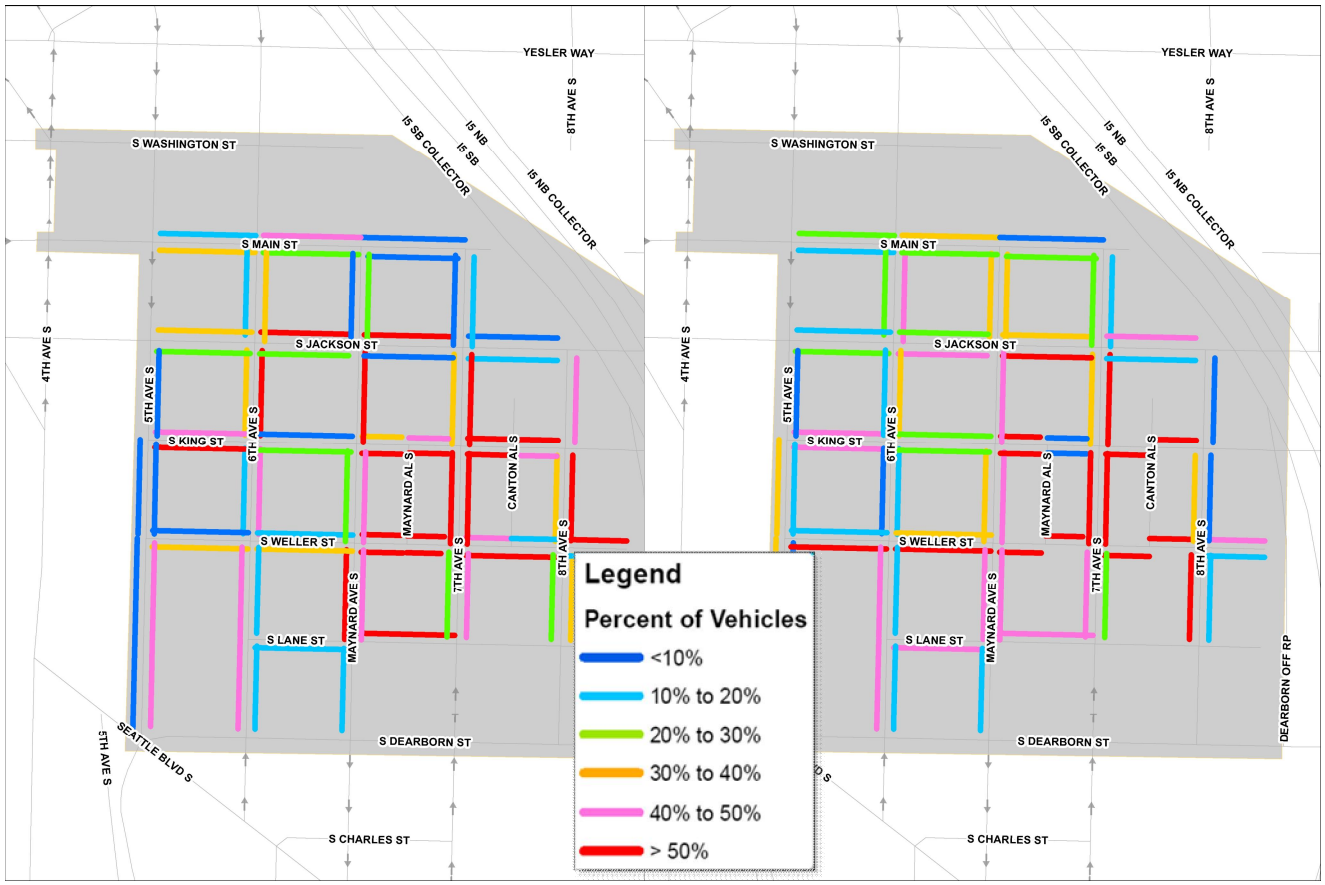
During the November 2010 data collection period, disabled permit usage ranged from 13% to 25% of all available paid on-street parking spaces. Using the same methodology for the June 2011 data collection process, the disabled permit usage ranged from 7% to 21% of the available on-street parking spaces. Much like the overall vehicle utilization, the use of disabled parking permits in Chinatown/ID was largely unchanged between November 2010 and June 2011. While the overall peak was higher in 2010, the daily peaking follows the same trends. The variance in peak conditions could be an anomaly in the data from November 2010. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphics provide a comparison of peak disabled permit usage within Chinatown/ID.

November 2010 vs June 2011 Peak Disabled Permit Usage – Chinatown/ID



November 2010 **June 2011**

Weekend Parking Observations

Parking occupancy data was collected for Chinatown/ID on both Saturday and Sunday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy on both days.

CHINATOWN/ID - SATURDAY PARKING DATA - June 11, 2011

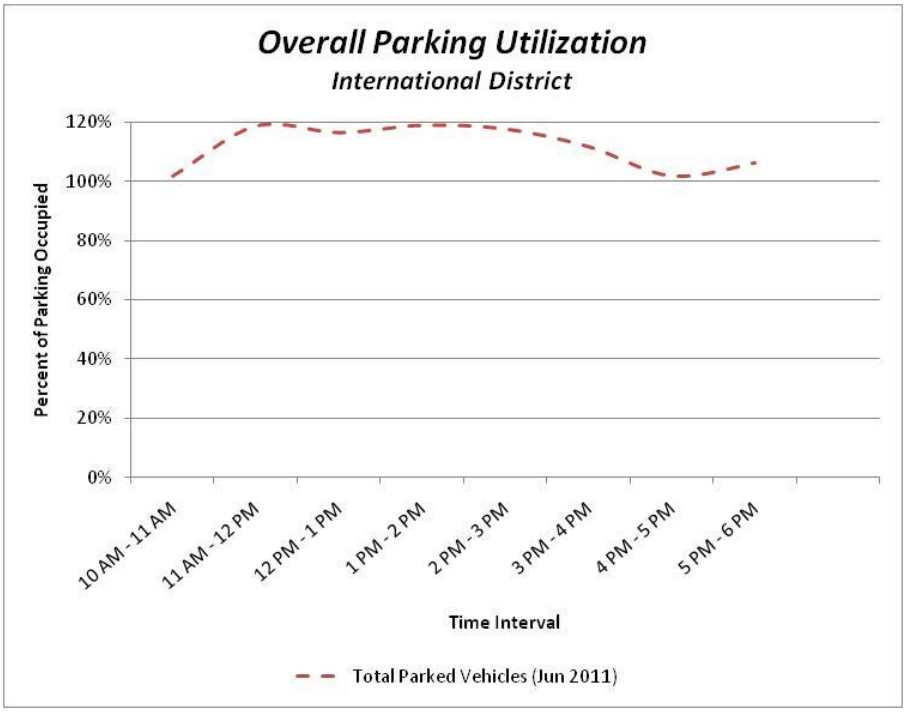
	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	401	69	17.2%
9 AM - 10 PM	401	126	31.4%
10 AM - 11 AM	401	260	64.8%
11 AM - 12 PM	401	292	72.8%
12 PM - 1 PM	401	347	86.5%
1 PM - 2 PM	401	320	79.8%
2 PM - 3 PM	401	299	74.6%
3 PM - 4 PM	401	256	63.8%
4 PM - 5 PM	401	273	68.1%
5 PM - 6 PM	401	408	101.7%
6 PM - 7 PM	401	465	116.0%
7 PM - 8 PM	401	516	128.7%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Chinatown/ID for a typical Saturday. Chinatown/ID had overall utilization ranging from 17% to 100% during the paid parking hours (8 am to 6 pm) and then highly increased usage after paid parking hours (which could possibly be attributed to an evening Sounders game at Qwest Field). The chart below provides a breakdown of this utilization throughout the day.

CHINATOWN/ID - SUNDAY PARKING DATA - June 12, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
10 AM - 11 AM	401	408	101.7%
11 AM - 12 PM	401	476	118.7%
12 PM - 1 PM	401	467	116.5%
1 PM - 2 PM	401	477	119.0%
2 PM - 3 PM	401	472	117.7%
3 PM - 4 PM	401	448	111.7%
4 PM - 5 PM	401	408	101.7%
5 PM - 6 PM	401	426	106.2%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Chinatown/ID for a typical Sunday. Chinatown/ID had overall utilization above 100% during the observation hours. Because parking is free on Sunday, there is a much higher use of the parking spaces, primarily by long-term parkers. While this study did not measure parking turnover and duration, visual observations throughout Chinatown/ID showed the same vehicles parked in the same spaces throughout the entire length of the observations. The chart below provides a breakdown of this utilization throughout the day.



Game Day Parking Observations

Parking occupancy data was collected for Chinatown/ID from 8 am to 8 pm on the day of a Seattle Mariners baseball game, to better understand how event parking demands impact the on-street parking system. The following information provides a summary of regular vehicular occupancy during game day collection conditions.

CHINATOWN/ID – GAME DAY PARKING DATA - June 14, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Disabled Permit Parking
8 AM - 9 AM	392	83	28	21.2%	7.1%
9 AM - 10 PM	392	139	46	35.5%	11.7%
10 AM - 11 AM	392	184	70	46.9%	17.9%
11 AM - 12 PM	392	246	83	62.8%	21.2%
12 PM - 1 PM	392	325	86	82.9%	21.9%
1 PM - 2 PM	392	291	72	74.2%	18.4%
2 PM - 3 PM	392	288	87	73.5%	22.2%
3 PM - 4 PM	356	222	75	62.4%	21.1%
4 PM - 5 PM	356	203	58	57.0%	16.3%
5 PM - 6 PM	356	222	42	62.4%	11.8%
6 PM - 7 PM	375	317	40	84.5%	10.7%
7 PM - 8 PM	392	377	30	96.2%	7.7%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Chinatown/ID for the game day collection period. The area had overall utilization ranging from 21% to 83% during the paid parking hours (8 am to 6 pm) and then usage moderately increased after paid parking hours. Disabled permit usage ranged from 7% to 22%. The chart below compares peak occupancy for the game day and non-game day collection periods.

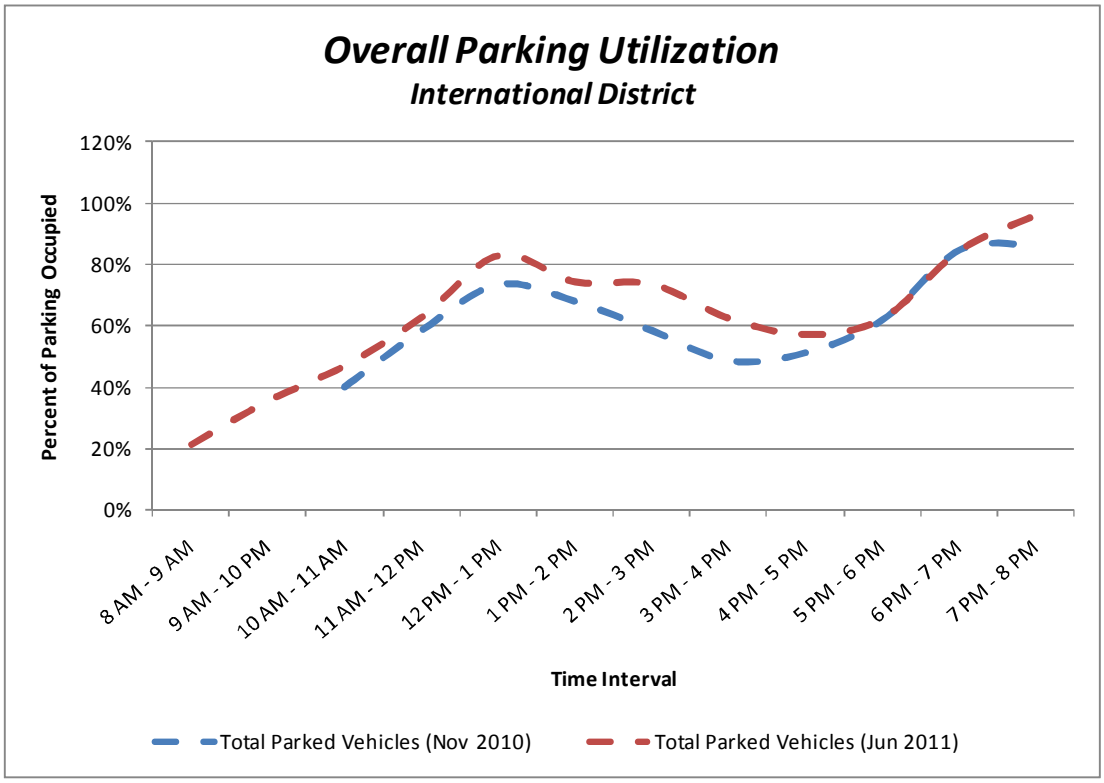
June 2011 Peak Parking Summary – Game Day vs Non Game Day

Time Period	Game Day		Non Game Day	
	% Occupied Parking	Peak Hour	% Occupied Parking	Peak Hour
8 AM - 12 PM	59.1%	11 AM - 12 PM	62.8%	11 AM - 12 PM
12 PM - 3 PM	78.1%	12 PM - 1 PM	82.9%	12 PM - 1 PM
3 PM - 6 PM	55.9%	3 PM - 4 PM	62.4%	3 PM - 4 PM
6 PM - 8 PM	89.1%	7 PM - 8 PM	96.2%	7 PM - 8 PM

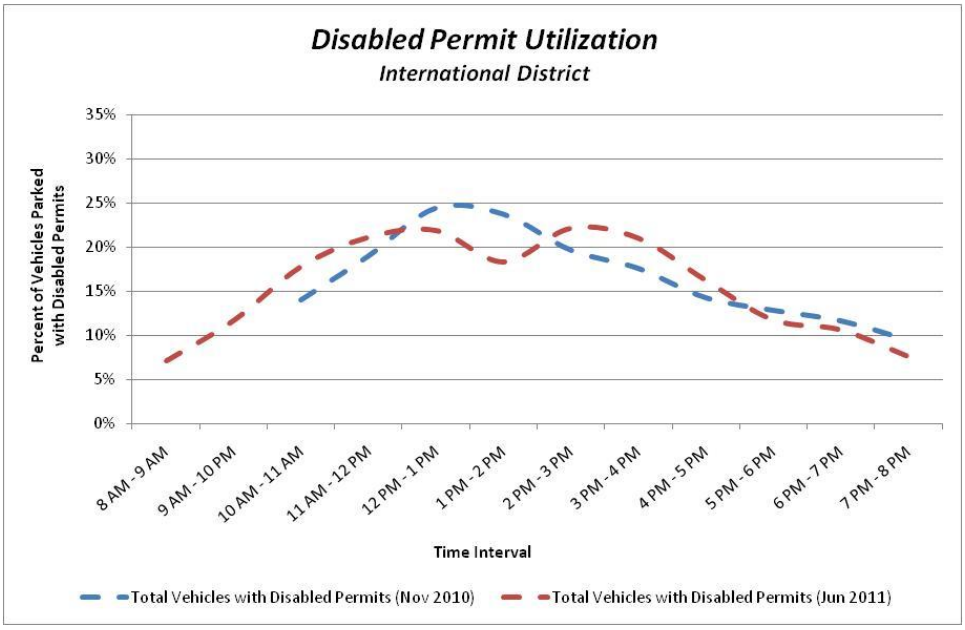
The data in the chart shows that for a traditional game day, with an event in the evening, parking demand is largely unchanged until just before the event begins. When comparing all three time periods prior to 6 pm, the demand is virtually the same. However, after 6 pm the variance in demand is slightly larger (approximately 6%), which accounts for some demand from the game and the presence of free parking

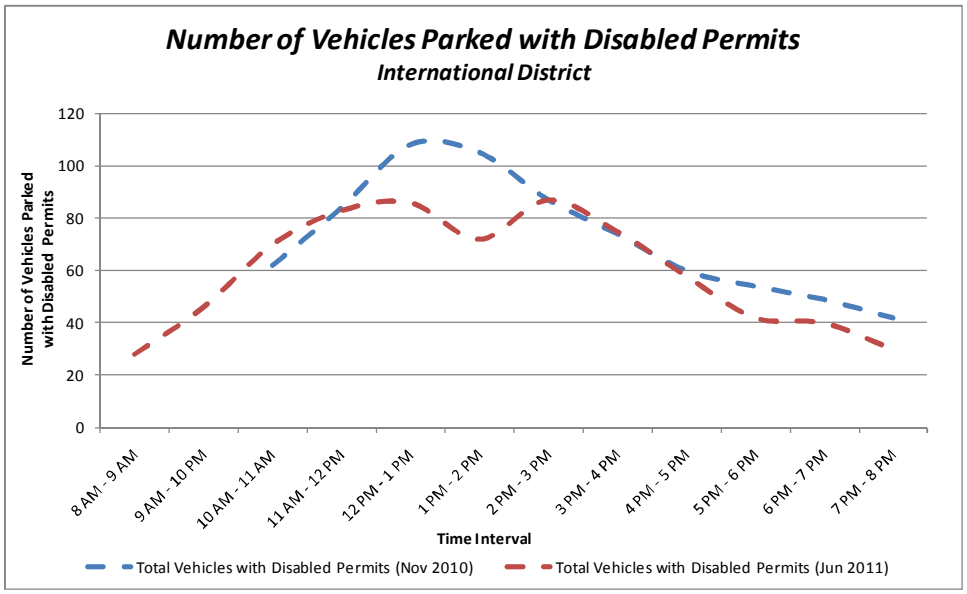
on-street after 6 pm in the Chinatown/ID area. Unlike Pioneer Square, the Chinatown/ID area does not appear to be as affected by event demands, particularly for weekday Seattle Mariners games.

The chart below provides a comparison of the game day utilization pattern versus the November 2010 data (collected on a non-game day). Again, until 6 pm the trends and utilization levels were largely unchanged from November 2010 to June 2011.



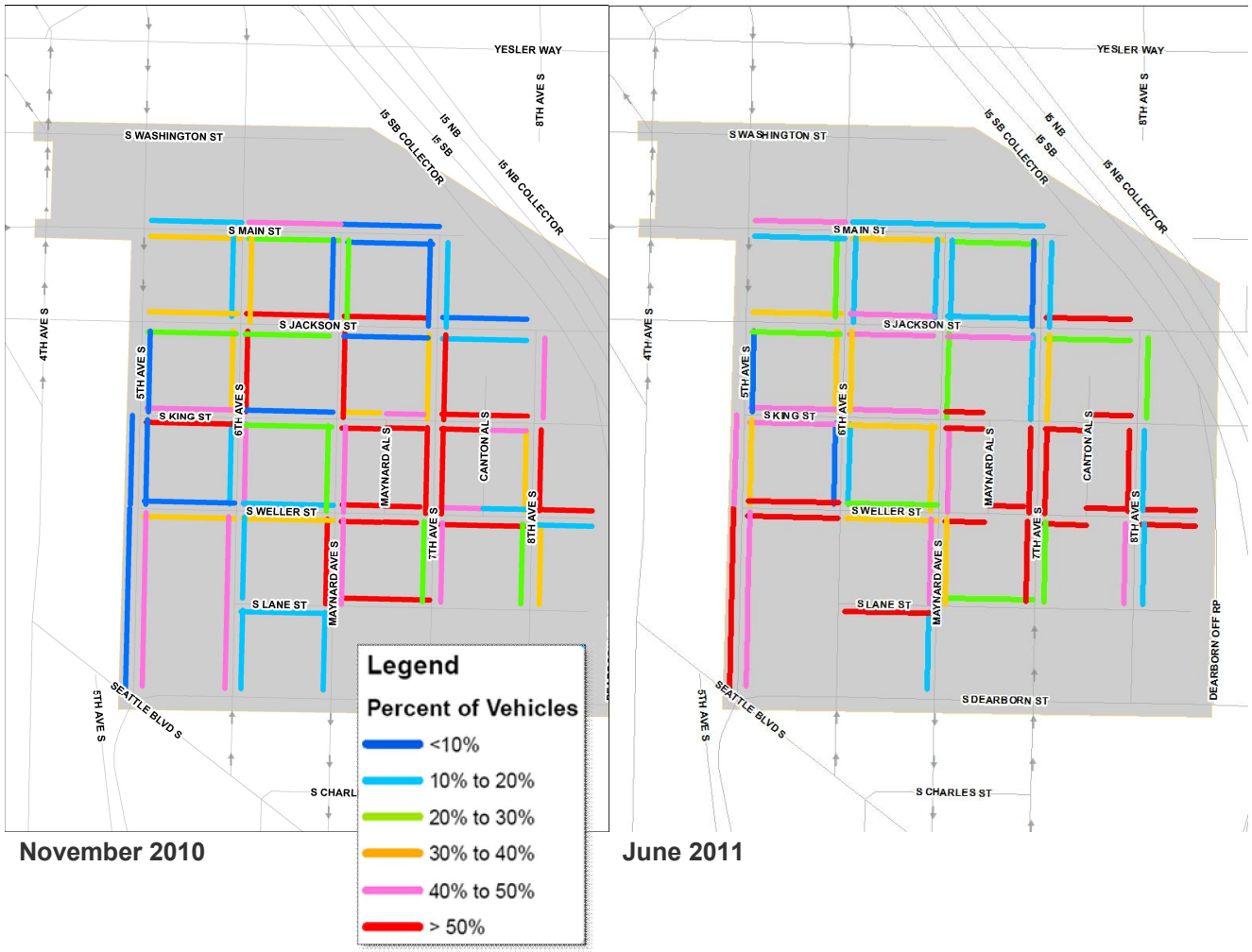
The charts below provide a breakdown of disabled permit usage on game day, compared to the November 2010 data collection period. Much like the non-game day, the data indicates that disabled permit usage is not altered greatly between the two time periods. In some observations, disabled permit utilization is slightly lower, but the variation between the two peaks is not drastic.


Disabled Permit Utilization
International District
Percent of Vehicles Parked with Disabled Permits
35%
30%
25%
20%
15%
10%
5%
0%
8 AM - 9 AM
9 AM - 10 PM
10 AM - 11 AM
11 AM - 12 PM
12 PM - 1 PM
1 PM - 2 PM
2 PM - 3 PM
3 PM - 4 PM
4 PM - 5 PM
5 PM - 6 PM
6 PM - 7 PM
7 PM - 8 PM
Time Interval
Total Vehicles with Disabled Permits (Nov 2010)
Total Vehicles with Disabled Permits (Jun 2011)


Number of Vehicles Parked with Disabled Permits
International District
Number of Vehicles Parked with Disabled Permits
120
100
80
60
40
20
0
8 AM - 9 AM
9 AM - 10 PM
10 AM - 11 AM
11 AM - 12 PM
12 PM - 1 PM
1 PM - 2 PM
2 PM - 3 PM
3 PM - 4 PM
4 PM - 5 PM
5 PM - 6 PM
6 PM - 7 PM
7 PM - 8 PM
Time Interval
Total Vehicles with Disabled Permits (Nov 2010)
Total Vehicles with Disabled Permits (Jun 2011)

The following graphics provide a comparison of peak disabled permit usage within Chinatown/ID.

November 2010 vs June 2011 Peak Disabled Permit Usage – Chinatown/ID



November 2010 **June 2011**

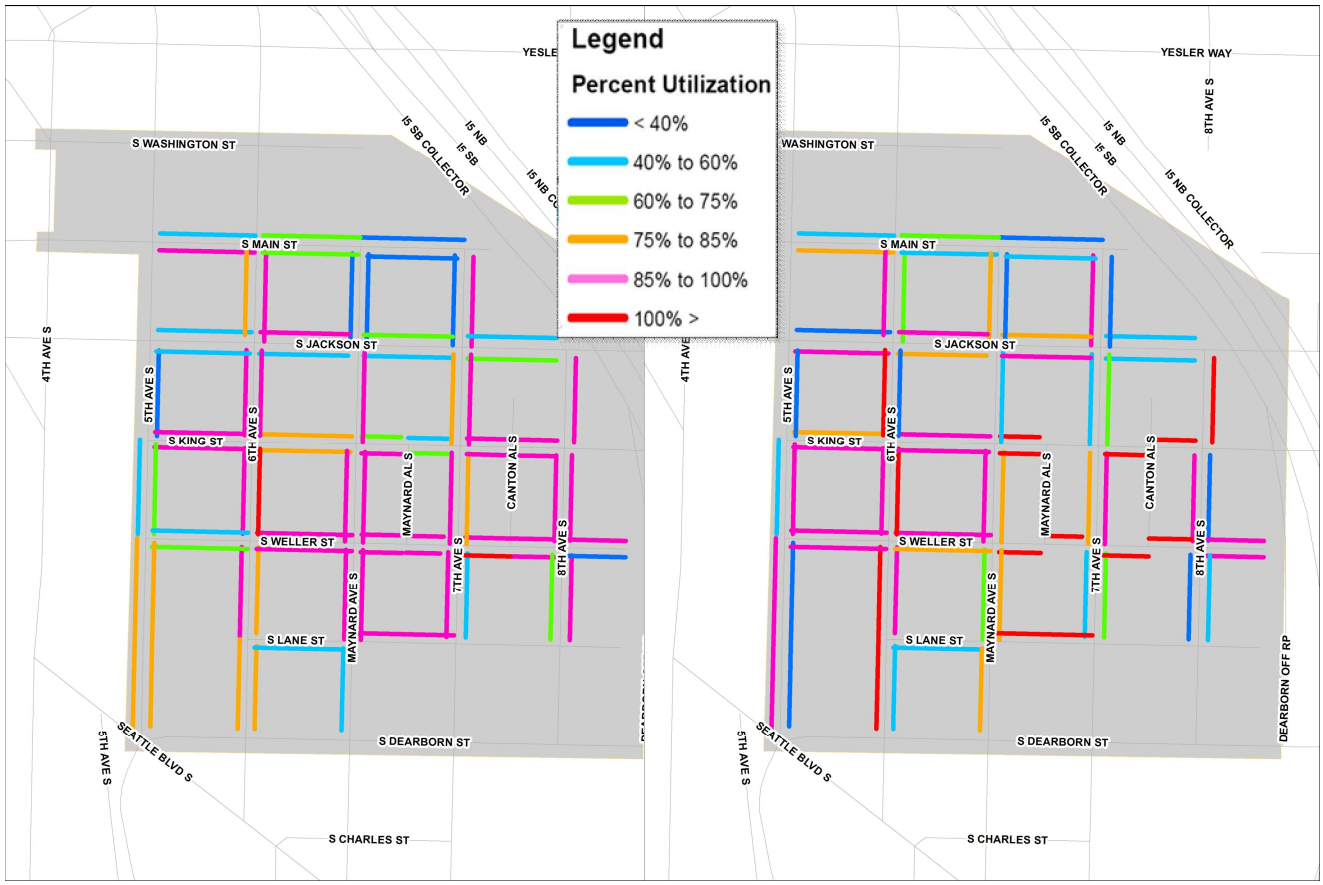
High Demand Areas

As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Weekday Occupancy – Chinatown/ID

November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Chinatown/ID



November 2010 **June 2011**

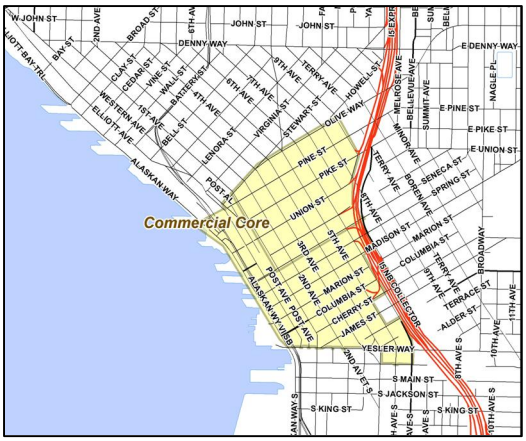
**Peak occupancy for the Chinatown/ID (2010) was 12 pm to 1 pm and (2011) was 12 pm to 1 pm. The maps above show the block face occupancies at that time period*

The first two maps show that the highest average occupancy is located in the area bound by King Street to the North, Weller Street to the South, Maynard Avenue to the west, and 8th Avenue to the east. From a peak occupancy standpoint, most of the Chinatown/ID area operates at elevated occupancy during peak conditions. With that in mind, the entire area could be considered high demand when evaluating parking management strategies and time-of-day pricing policies. However, when looking at average demands, only the previously defined section exhibits the high demand characteristics.

A summary of the contiguous high demand area is shown on the following page.

CHINATOWN/ID - HIGH DEMAND AREA

COMMERCIAL CORE



The Commercial Core is the defined central business district for Seattle and contains a dense clustering of office, retail and entertainment uses. The Commercial Core contains the retail core (Pacific Place), the Financial/Government Center, Pike Place Historic Market, and the central waterfront area. For the purposes on the parking study, the neighborhood is generally bounded by Interstate 5 (I-5) to the east, Olive Way and Stewart Street to the north, Yesler Way to the south, and Elliott Bay to the west. The map to the right shows the general location of the Commercial Core. The observed area included a sample of the total paid parking area in the Commercial Core. The area of paid parking observed was generally along core streets near Pacific Place, the Financial/Government Center, Pike Place Historic Market, and along Western Avenue in the central waterfront area.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Commercial Core on-street parking rates were raised from $2.50 per hour to $4.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the area was 97%, indicating demands exceeding the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, the raising of rates by $1.50 was projected to lower peak occupancy to 86% (11% drop in occupancy), which would theoretically create available capacity along the area's block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Commercial Core occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as a Saturday between 8 am and 8 pm, and a Sunday between 10 am and 6 pm. The occupancy collection included vehicles in paid parking spaces, vehicles utilizing disabled parking permits in paid parking spaces, and presence of either government exempt vehicles or vehicles displaying service hoods.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 127 total block faces, with 884 on-street parking spaces
- 59 block faces with peak hour restrictions

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011 for the typical weekday data. The previous study did not collect weekend data; however, data results collected on the weekend during the June 2011 period are provided in this report for reference and review. The results are compared for overall parking utilization, disabled parking permit utilization, government vehicle utilization, and overall areas of high demand within the Commercial Core.

COMMERCIAL CORE WEEKDAY PARKING DATA - June 14, 2011[8]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking
8 AM - 9 AM	635	386	134	60.8%	21.0%	21.1%
9 AM - 10 PM	791	509	141	64.3%	23.0%	17.8%
10 AM - 11 AM	788	588	158	74.6%	39.0%	20.1%
11 AM - 12 PM	782	609	181	77.9%	43.0%	23.1%
12 PM - 1 PM	794	655	183	82.5%	49.0%	23.0%
1 PM - 2 PM	786	654	176	83.2%	49.0%	22.4%
2 PM - 3 PM	794	597	142	75.2%	44.0%	17.9%
3 PM - 4 PM	596	488	119	81.9%	47.0%	20.0%
4 PM - 5 PM	578	422	103	73.0%	47.0%	17.8%
5 PM - 6 PM	570	377	81	66.1%	43.0%	14.2%
6 PM - 7 PM	657	442	55	67.3%	NA	8.4%
7 PM - 8 PM	793	555	48	70.0%	NA	6.1%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Commercial Core for a typical weekday, including total occupancy, disabled parking permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). The Commercial Core had overall utilization ranging from 60% to 83% during the paid parking hours (8

[8] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

% Parking Occupied denotes the percent of total spaces that were occupied.

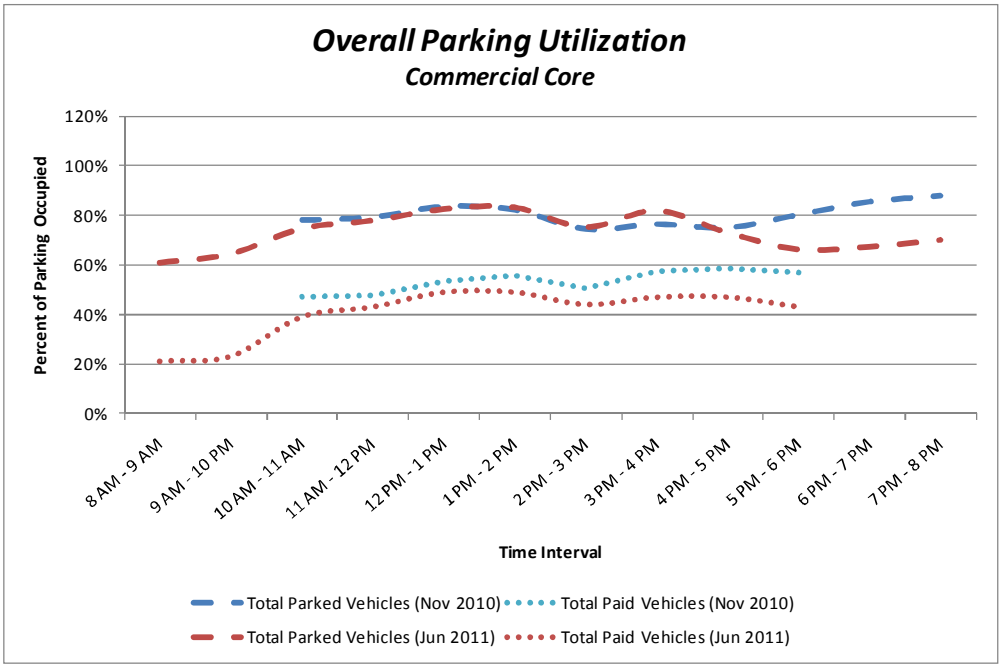
% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.

am to 6 pm) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.



The first chart shown indicates that the overall weekday parking utilization was mostly unchanged between November 2010 and June 2011. On the surface, this result indicates that raising parking rates did not cause a change in behavior within the area; however, a review of disabled parking permit use on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	83.7%	12 PM – 1 PM
4 PM - 6 PM	80.3%	5 PM - 6 PM
6PM - 8 PM	88.1%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

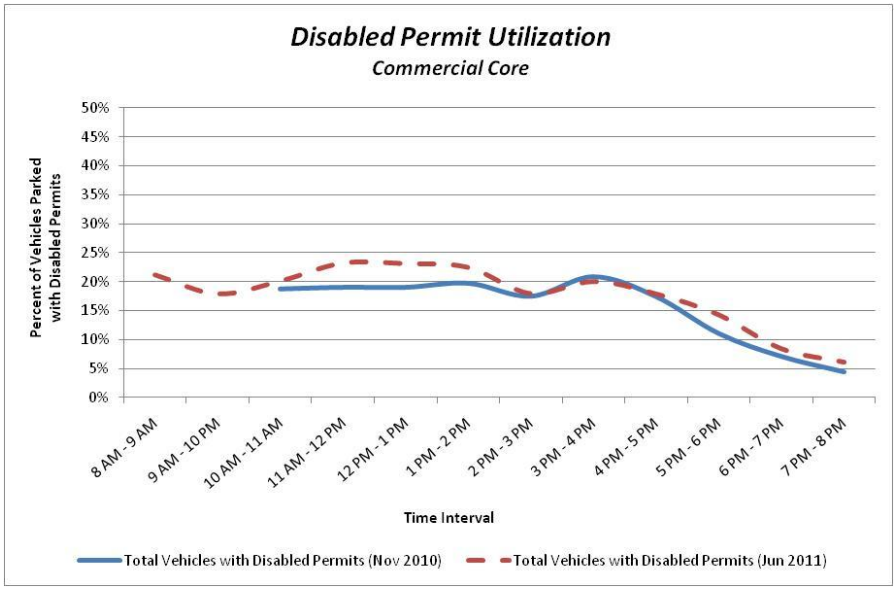
June 2011 Peak Parking Summary

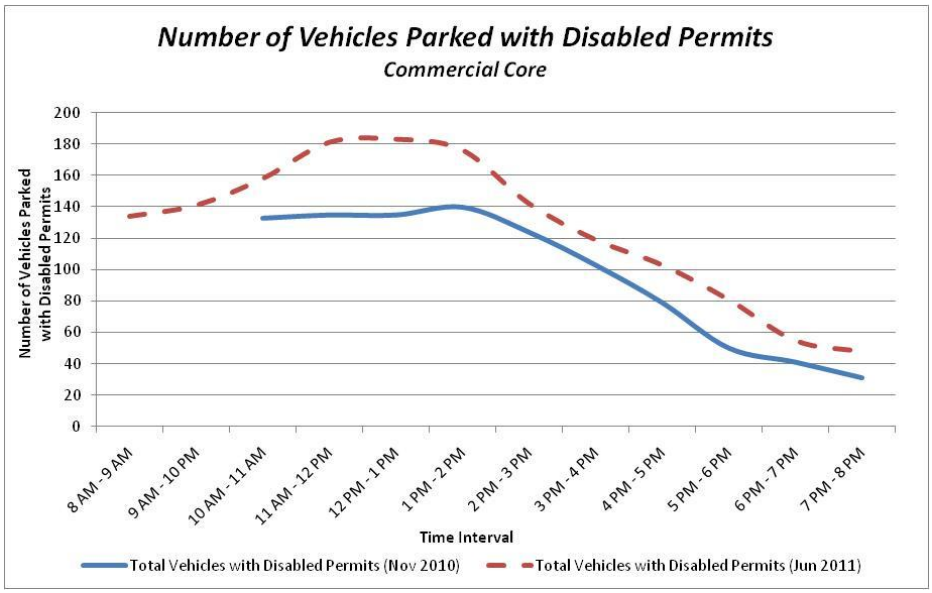
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	77.9%	11 AM - 12 PM
12 PM - 3 PM	83.2%	1 PM - 2 PM
3 PM - 6 PM	81.9%	3 PM - 4 PM
6 PM - 8 PM	70.0%	7 PM - 8 PM

The peak data clearly indicates that overall parking utilization in the Commercial Core is relatively unchanged between November 2010 and June 2011. The following section related to disabled parking permit usage provides a little more insight into the changes in parking behavior and utilization before and after the recent parking rate changes.

Weekday Disabled Permit Usage

During the November 2010 data collection period, disabled parking permit usage ranged from 11% to 21% of all available paid on-street parking spaces. Using the same methodology for the June 2011 data collection process, the disabled parking permit usage ranged from 14% to 23% of the available on-street parking spaces. The consistency with this data indicates that some of the additional capacity created by the rate change is being consumed by vehicles parking for free with disabled parking permits. While the variance in the percentage occupied does not indicate a large difference, when reviewing raw numbers the gap between 2010 and 2011 could be as high as 60 additional vehicles displaying disabled parking permits. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphics provide a comparison of peak disabled parking permit usage within the Commercial Core.

November 2010 vs June 2011 Peak Disabled Permit Usage – Commercial Core

November 2010 **June 2011**

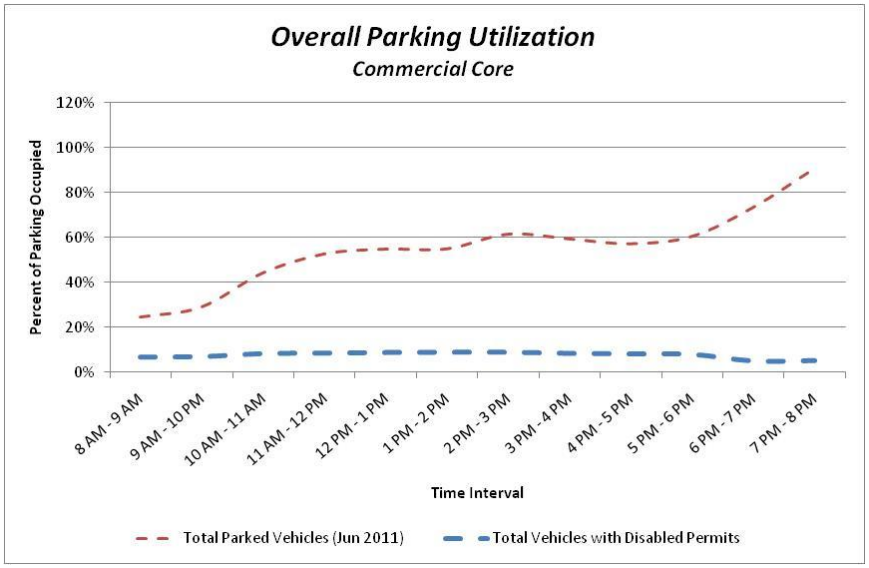
Weekend Parking Observations

Parking occupancy data was collected for the Commercial Core on both Saturday and Sunday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of both regular vehicular occupancy and disabled parking permit usage on both days.

COMMERCIAL CORE - SATURDAY PARKING DATA - June 11, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Disabled Permit Parking
8 AM - 9 AM	783	192	54	24.5%	6.9%
9 AM - 10 PM	772	224	55	29.0%	7.1%
10 AM - 11 AM	795	351	67	44.2%	8.4%
11 AM - 12 PM	795	418	69	52.6%	8.7%
12 PM - 1 PM	795	435	71	54.7%	8.9%
1 PM - 2 PM	795	436	72	54.8%	9.1%
2 PM - 3 PM	795	488	72	61.4%	9.1%
3 PM - 4 PM	795	471	68	59.2%	8.6%
4 PM - 5 PM	795	454	66	57.1%	8.3%
5 PM - 6 PM	765	462	62	60.4%	8.1%
6 PM - 7 PM	750	550	39	73.3%	5.2%
7 PM - 8 PM	745	675	40	90.6%	5.4%

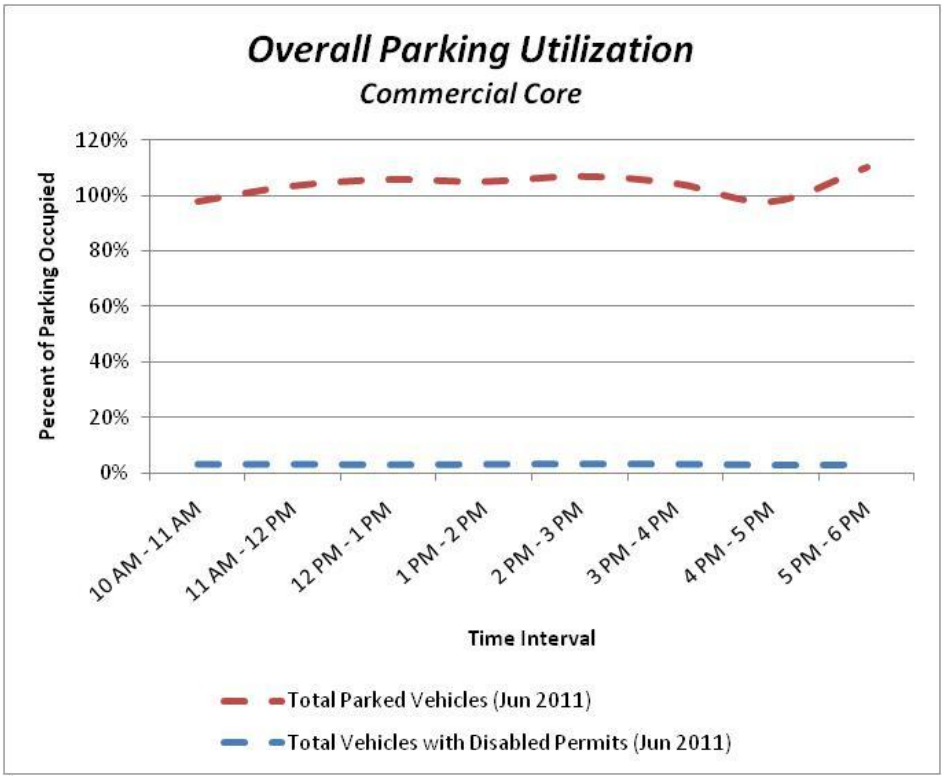
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Commercial Core for a typical Saturday, including total occupancy and disabled parking permit usage. The Commercial Core had overall utilization ranging from 25% to 61% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. Disabled parking permit usage ranged from 7% to 9%. The chart below provides a breakdown of this utilization and a comparison of disabled parking permit usage in relation to total occupancy.



COMMERCIAL CORE - SUNDAY PARKING DATA - June 12, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Disabled Permit Parking
10 AM - 11 AM	796	781	26	98.1%	3.3%
11 AM - 12 PM	793	821	26	103.5%	3.3%
12 PM - 1 PM	747	790	23	105.8%	3.1%
1 PM - 2 PM	738	775	24	105.0%	3.3%
2 PM - 3 PM	712	761	24	106.9%	3.4%
3 PM - 4 PM	686	716	23	104.4%	3.4%
4 PM - 5 PM	667	654	20	98.1%	3.0%
5 PM - 6 PM	678	746	21	110.0%	3.1%

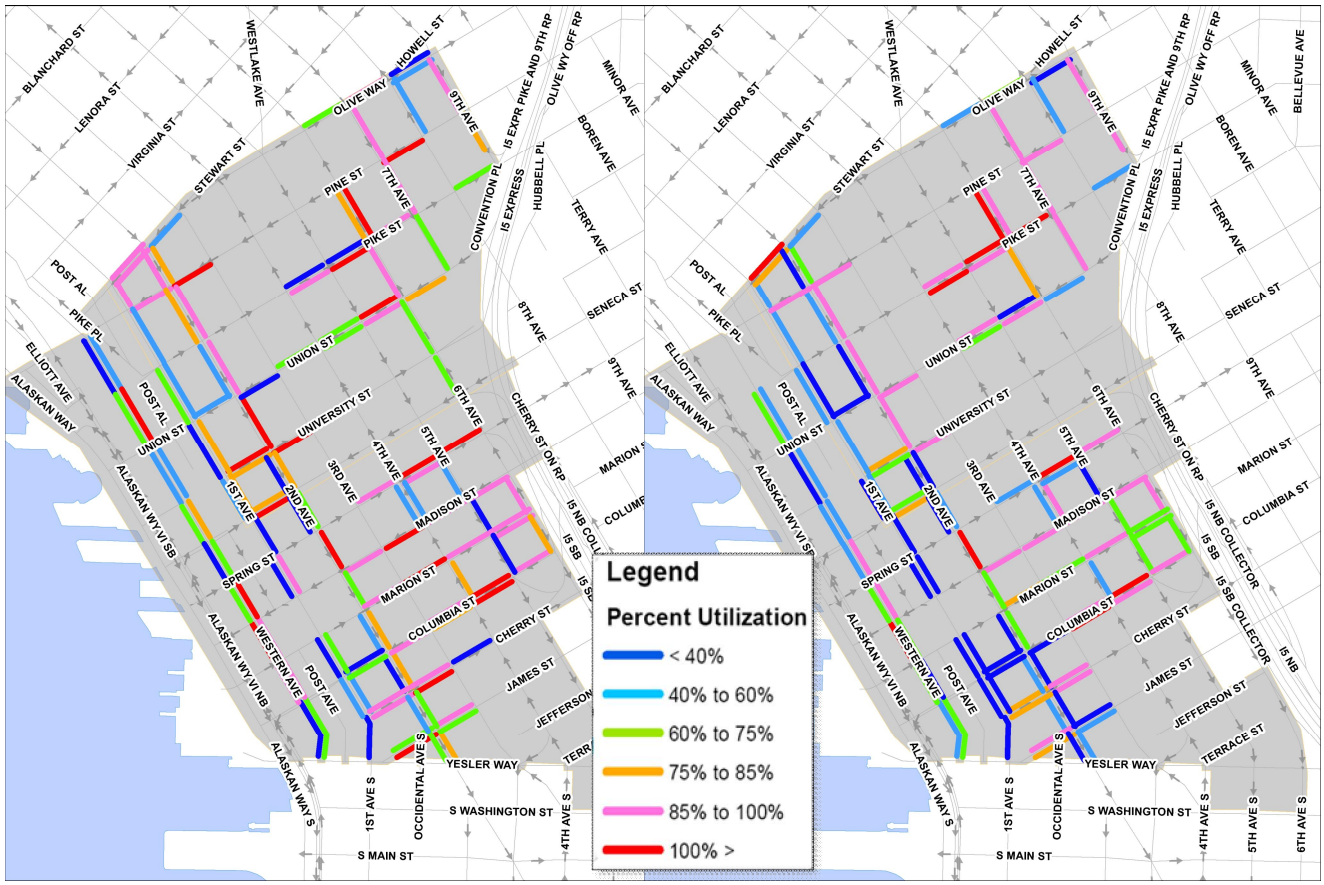
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Commercial Core for a typical Sunday, including total occupancy and disabled parking permit usage. The Commercial Core had overall utilization ranging from 98% to 110% during the observation hours. Disabled parking permit usage ranged from 3% to 3.5%. Because parking is free on Sunday, there is a much higher use of the parking spaces, primarily by long-term parkers. While this study did not measure parking turnover and duration, visual observations throughout the Commercial Core showed the same vehicles parked in the same spaces throughout the entire length of the observations. The chart below provides a breakdown of this utilization and a comparison of disabled parking permit usage in relation to total occupancy.



High Demand Areas

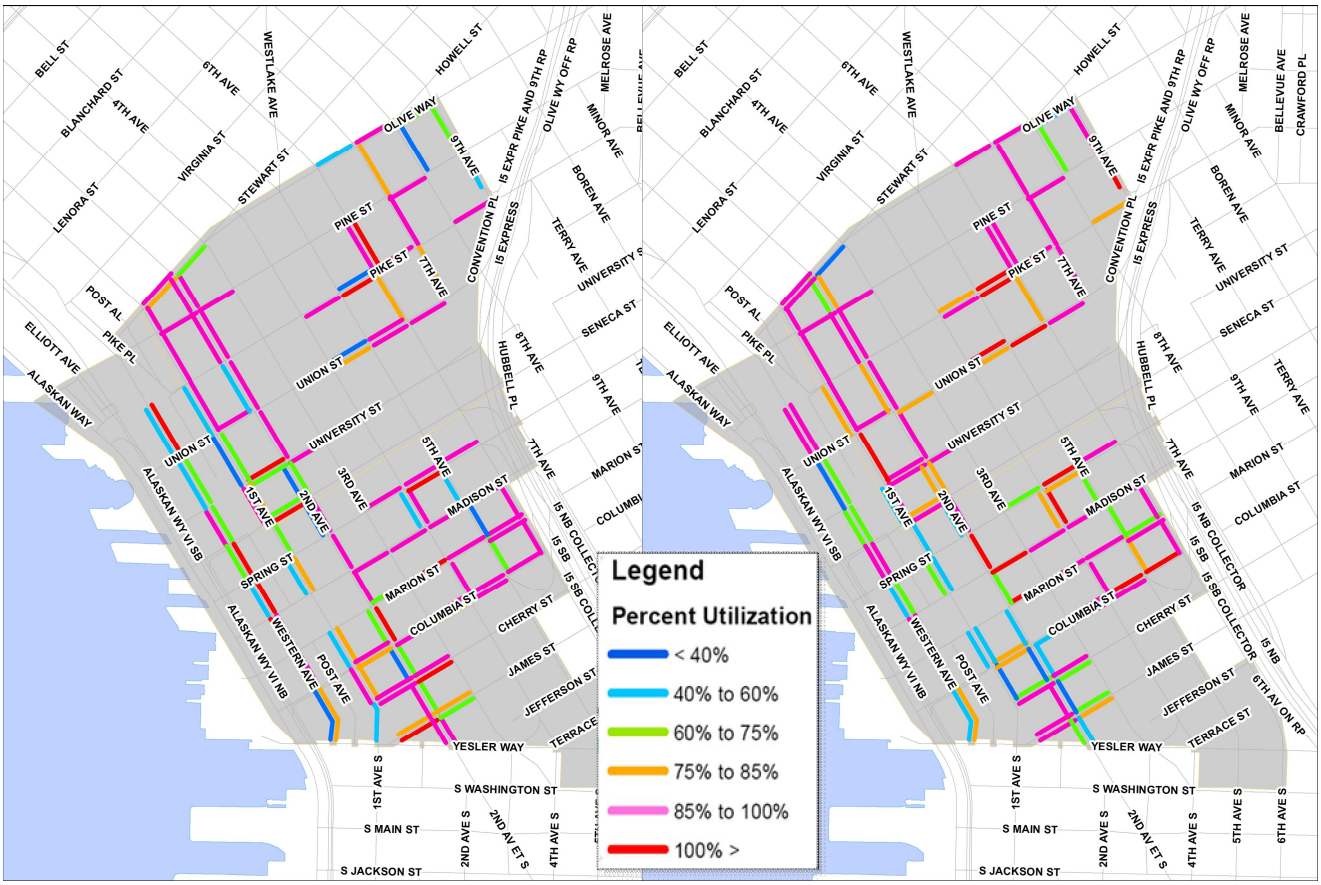
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Weekday Occupancy – Commercial Core



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Commercial Core



November 2010 **June 2011**

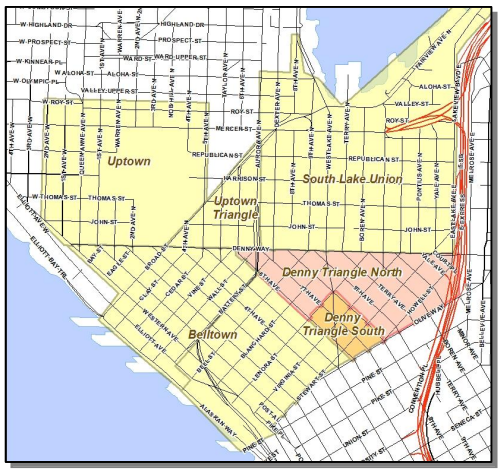
**Peak occupancy for the Commercial Core (2010) was 12 pm to 1 pm (2011) was 1 pm to 2 pm. The maps above show the block face occupancies at that time period.*

The two previous maps show that average occupancy is randomly clustered throughout the area. From an average occupancy standpoint, Pacific Place and the Financial District both exhibit high average demands throughout the areas. From a peak occupancy standpoint, nearly the entire Commercial Core area experiences greater than 85% occupancy.

With the random nature of the average occupancy and the overall coverage of the peak occupancy, it is difficult to define specific high demand areas within the Commercial Core. While certain areas like Pacific Place and the Financial District exhibit sustained peak occupancy, given the nature of demands throughout the Commercial Core, there are no specific areas that are central to managing and mitigating parking demands.

DENNY TRIANGLE NEIGHBORHOOD

The Denny Triangle neighborhood is adjacent to Belltown neighborhood, separated roughly by 6th Avenue, and to South Lake Union, separated by Denny Way. Another neighborhood in close proximity to Denny Triangle is Uptown Triangle. The neighborhood is generally bounded by Denny Way to the north, Interstate 5 to the east, Olive Way to the south, and 6th Avenue to the west. The map to the right gives the general location of the neighborhood in relation to the surrounding neighborhoods. Within the Denny Triangle neighborhood, there is a mix of office, retail, and restaurant uses. The data collection effort collected data from a sample of streets in the neighborhood.



2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Denny Triangle neighborhood was divided into two sub-areas, Denny Triangle North and Denny Triangle South, because the occupancies in the blockfaces closer to downtown were significantly higher. The on-street parking rates in Denny Triangle North were lowered from $2.50 per hour to $2.00 per hour. The on-street parking rates in Denny Triangle South remained at $2.50 per hour. Based on data collected in November 2010, the peak occupancies in the Denny Triangle North area were 42%. This indicates that the demands were under the proposed target occupancy of one to two spaces per block face. In Denny Triangle South, they were 71%, which indicates that the demands were meeting, but not exceeding, the target occupancy.

Based on national and international research of parking demand elasticity, reducing rates in the Denny Triangle North area was projected to increase peak occupancy to 71% (29% increase in occupancy), which would theoretically increase demand along the neighborhood's block faces. The demand in Denny Triangle South would theoretically remain at 71%.

Data Collection Methodology

As part of the June 2011 data collection process, the Denny Triangle area occupancy was measured on a typical weekday, between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces and vehicles utilizing disabled parking permits in paid parking spaces. Due to the varied occupancies, Denny Triangle North and Denny Triangle South were analyzed separately.

The block faces monitored included the same streets used in the November 2010 study, although since the November data collection, the area was split in two. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 57 total block faces, with 380 on-street parking spaces
- 1 block face with peak hour restrictions

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within the Denny Triangle neighborhood. Denny Triangle North and South are analyzed separately. It should be noted that the November 2010 did not analyze Denny Triangle North and South separately. Therefore, in the following data, charts and maps, the June 2011 for both the northern and southern areas are compared against data for the entire neighborhood in November 2010.

DENNY TRIANGLE NORTH WEEKDAY PARKING DATA - June 16, 2011[9]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking
8 AM - 9 AM	243	34	3	14.0%	6.4%	1.2%
9 AM - 10 PM	243	55	10	22.6%	8.4%	4.1%
10 AM - 11 AM	243	67	15	27.6%	18.7%	6.2%
11 AM - 12 PM	243	77	14	31.7%	19.7%	5.8%
12 PM - 1 PM	243	80	10	32.9%	23.6%	4.1%
1 PM - 2 PM	243	79	10	32.5%	26.6%	4.1%
2 PM - 3 PM	243	79	11	32.5%	24.1%	4.5%
3 PM - 4 PM	243	90	12	37.0%	20.2%	4.9%
4 PM - 5 PM	235	95	9	40.4%	27.0%	3.8%
5 PM - 6 PM	235	120	9	51.1%	40.5%	3.8%
6 PM - 7 PM	238	147	8	61.8%	NA	3.4%
7 PM - 8 PM	238	195	4	81.9%	NA	1.7%

[9] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

% Parking Occupied denotes the percent of total spaces that were occupied.

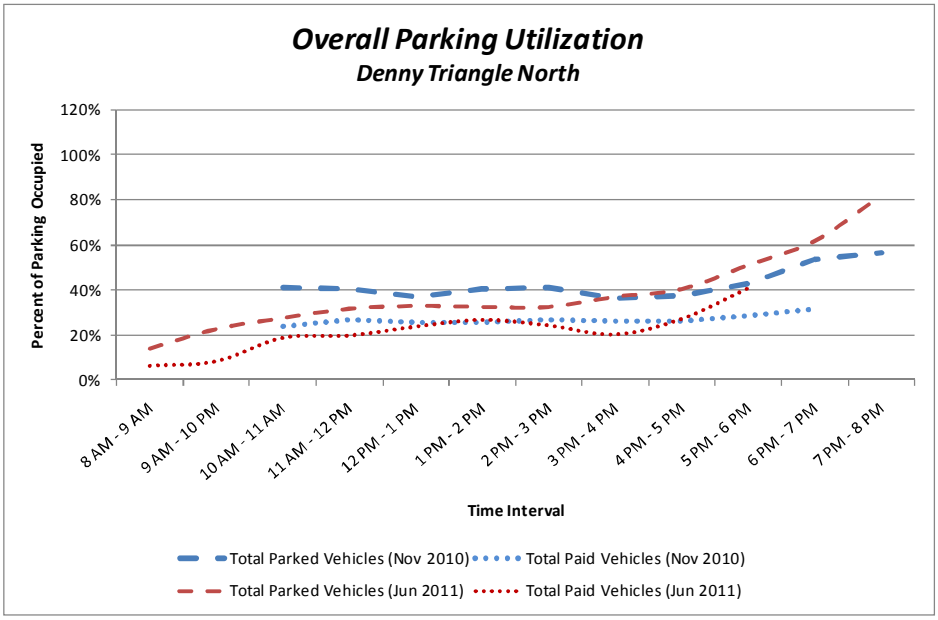
% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Denny Triangle North neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy and disabled permit occupancy provide the hourly distribution for the observed parking. The Denny Triangle North area had overall utilization ranging from 14% to 51% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours.



The first chart shown indicates that the overall parking utilization in Denny Triangle North was relatively similar between November 2010 and June 2011. On the surface, this result indicates that reducing parking rates did not cause a change in behavior within the area; however, a review of disabled permit use in Denny Triangle North later in this report provides additional insight into this observation. The following pages contain the analysis for Denny Triangle South.

DENNY TRIANGLE SOUTH WEEKDAY PARKING DATA - June 16, 2011[10]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking
8 AM - 9 AM	105	37	10	35.2%	17.2%	9.5%
9 AM - 10 PM	105	75	17	71.4%	25.8%	16.2%
10 AM - 11 AM	105	71	17	67.6%	37.6%	16.2%
11 AM - 12 PM	105	82	19	78.1%	39.8%	18.1%
12 PM - 1 PM	105	79	19	75.2%	49.5%	18.1%
1 PM - 2 PM	105	79	18	75.2%	50.5%	17.1%
2 PM - 3 PM	105	83	10	79.0%	41.9%	9.5%
3 PM - 4 PM	105	78	10	74.3%	49.5%	9.5%
4 PM - 5 PM	105	86	12	81.9%	53.8%	11.4%
5 PM - 6 PM	105	95	13	90.5%	63.4%	12.4%
6 PM - 7 PM	105	111	10	105.7%	NA	9.5%
7 PM - 8 PM	105	113	7	107.6%	NA	6.7%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Denny Triangle South neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy and disabled permit occupancy provide the hourly distribution for the observed parking. The Denny Triangle South area had overall utilization ranging from 35% to 91% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

[10] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

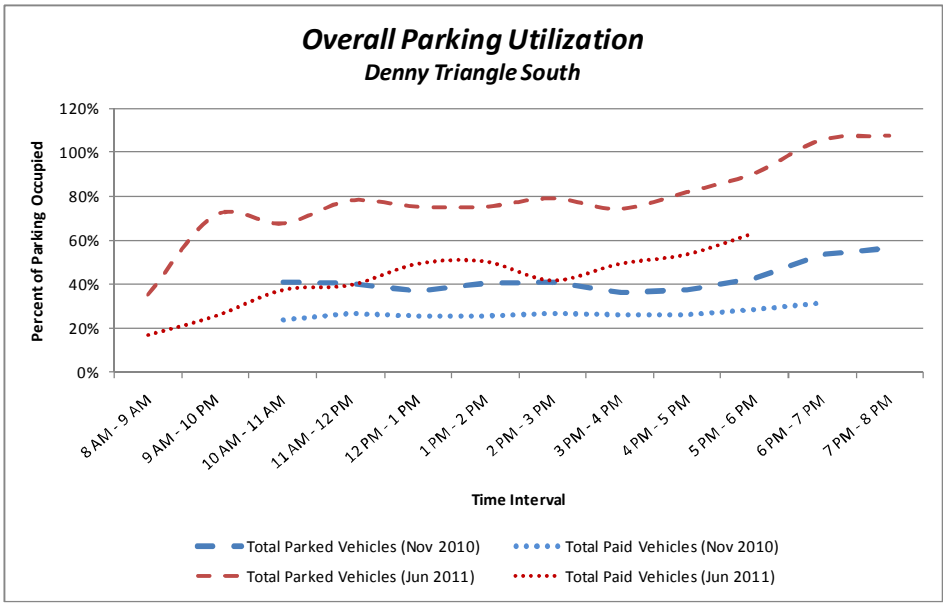
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown clearly indicates that the overall parking utilization in Denny Triangle South increased between November 2010 and June 2011. On the surface, this result indicates that maintaining parking rates did not cause a change in behavior within the area; however, a review of disabled permit use in Denny Triangle on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	41.2%	2 PM - 3 PM
4 PM - 6 PM	42.7%	5 PM - 6 PM
6PM - 8 PM	56.7%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary – Denny Triangle North

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	31.7%	11 AM - 12 PM
12 PM - 3 PM	32.9%	12 PM - 1 PM
3 PM - 6 PM	51.1%	5 PM - 6 PM
6 PM - 8 PM	81.9%	7 PM - 8 PM

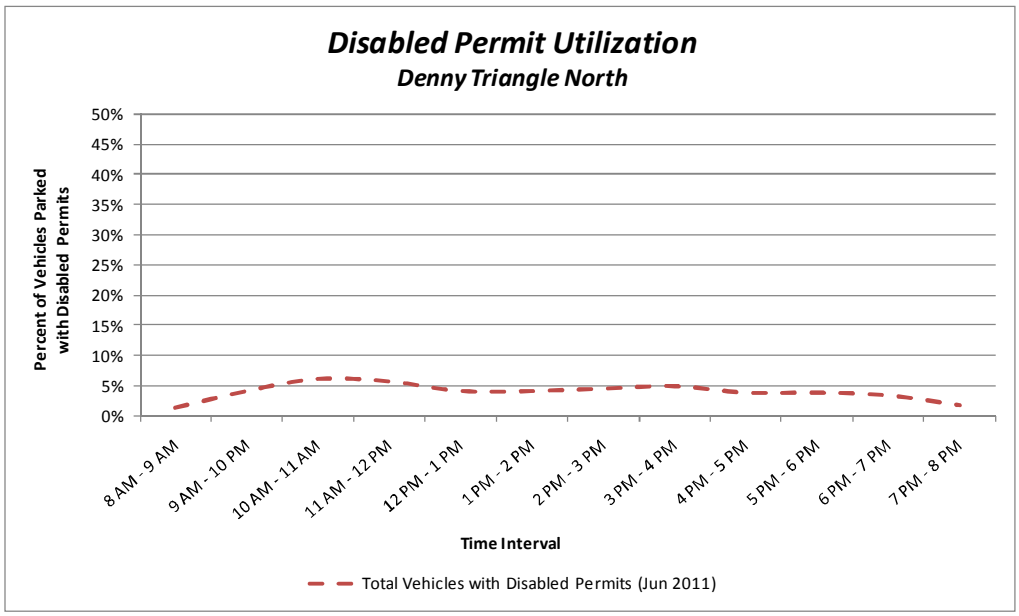
June 2011 Peak Parking Summary – Denny Triangle South

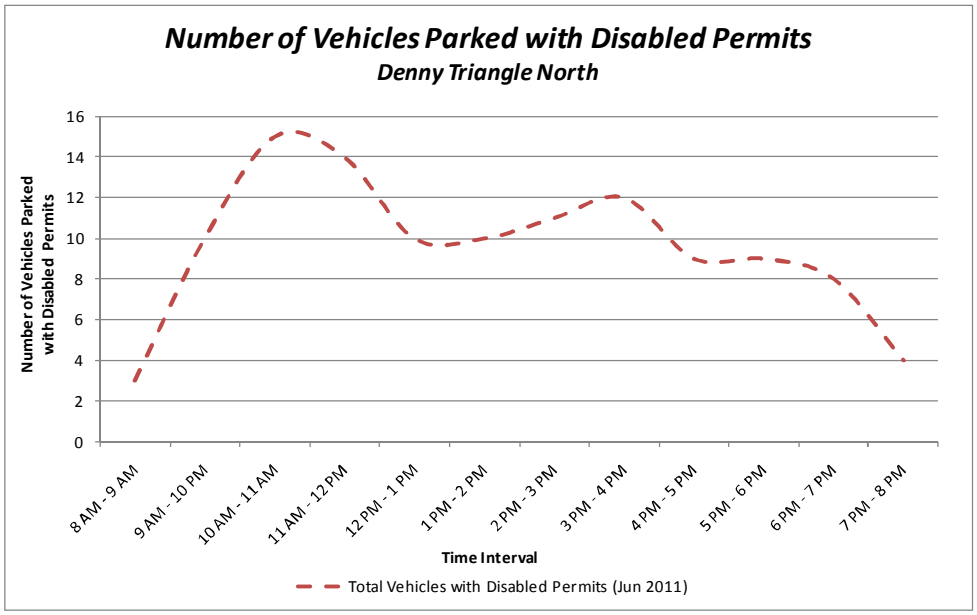
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	78.1%	11 AM - 12 PM
12 PM - 3 PM	79.0%	2 PM - 3 PM
3 PM - 6 PM	90.5%	5 PM - 6 PM
6 PM - 8 PM	107.6%	7 PM - 8 PM

The peak data indicates that overall parking utilization remained relatively unchanged in the Denny Triangle North area and increased in the Denny Triangle South area between November 2010 and June 2011.

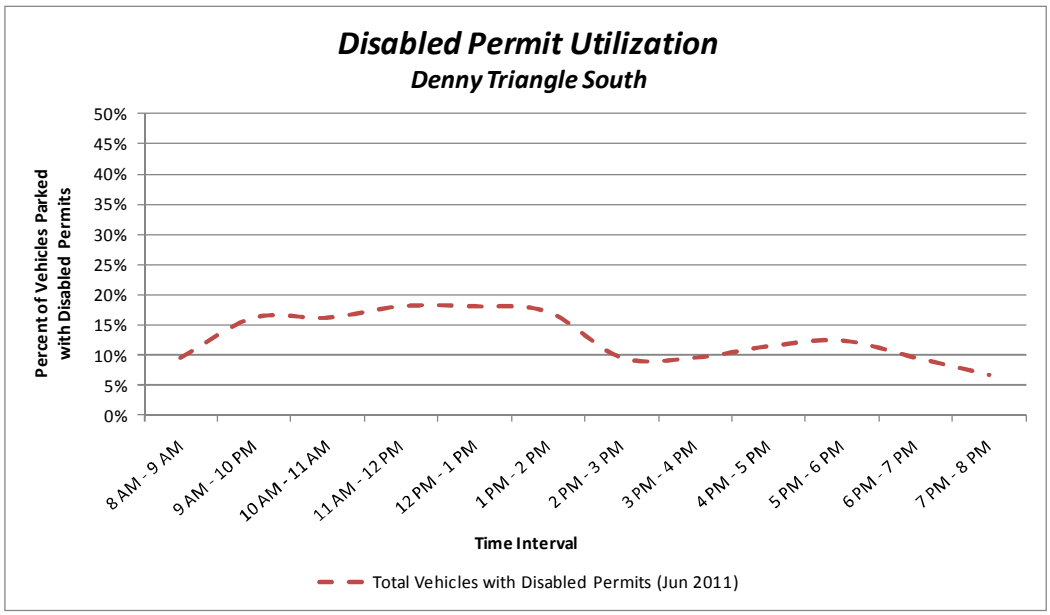
Disabled Permit Usage

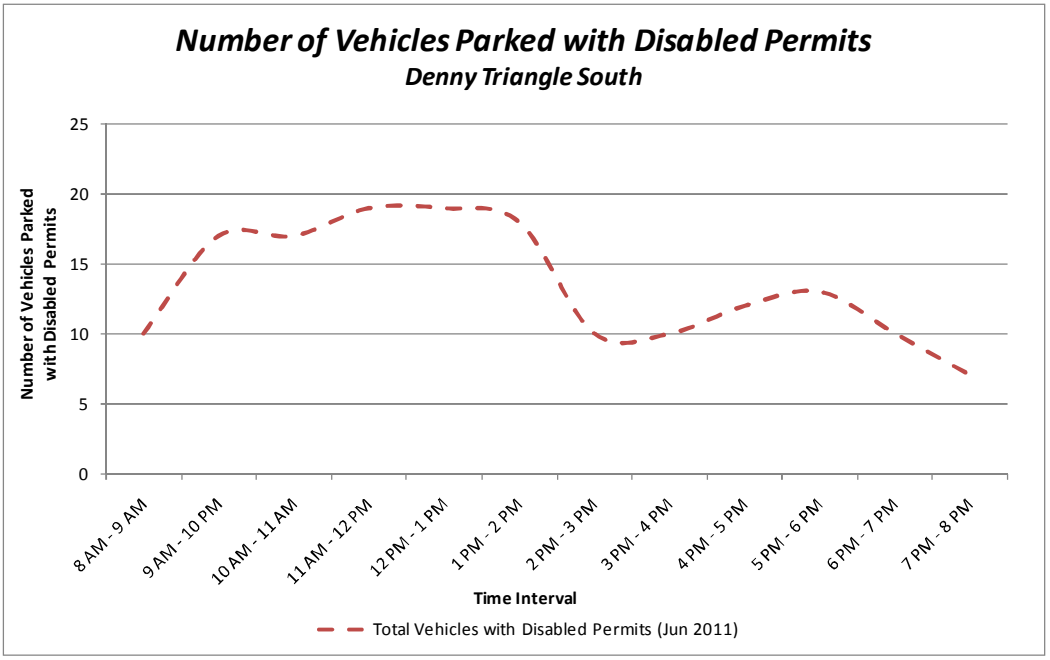
Disabled permits were not collected for the Denny Triangle neighborhood during the November 2010 data collection period. However, the June 2011 data collection process included collecting disabled permits in both the Denny Triangle North and South areas. The 2011 disabled permit usage in Denny Triangle North ranged from 1% to 6% of the available on-street parking spaces. The following charts provide a closer indication of the June 2011 disabled permit utilization data for the northern area.





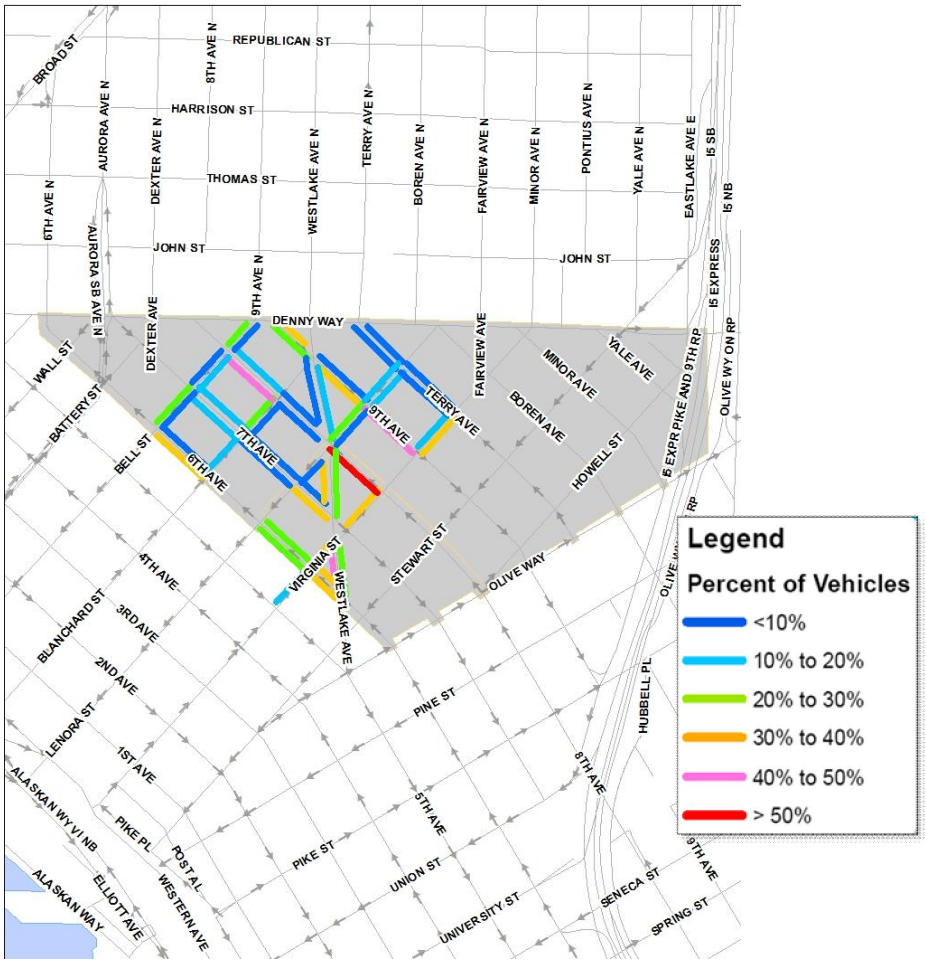
The 2011 disabled permit usage in Denny Triangle South ranged from 10% to 18% of the available on-street parking spaces. The following charts provide a closer indication of the June 2011 disabled permit utilization data for the southern area.





The following graphic illustrates the peak disabled permit usage within Denny Triangle.

June 2011 Peak Disabled Permit Usage – Denny Triangle North and South

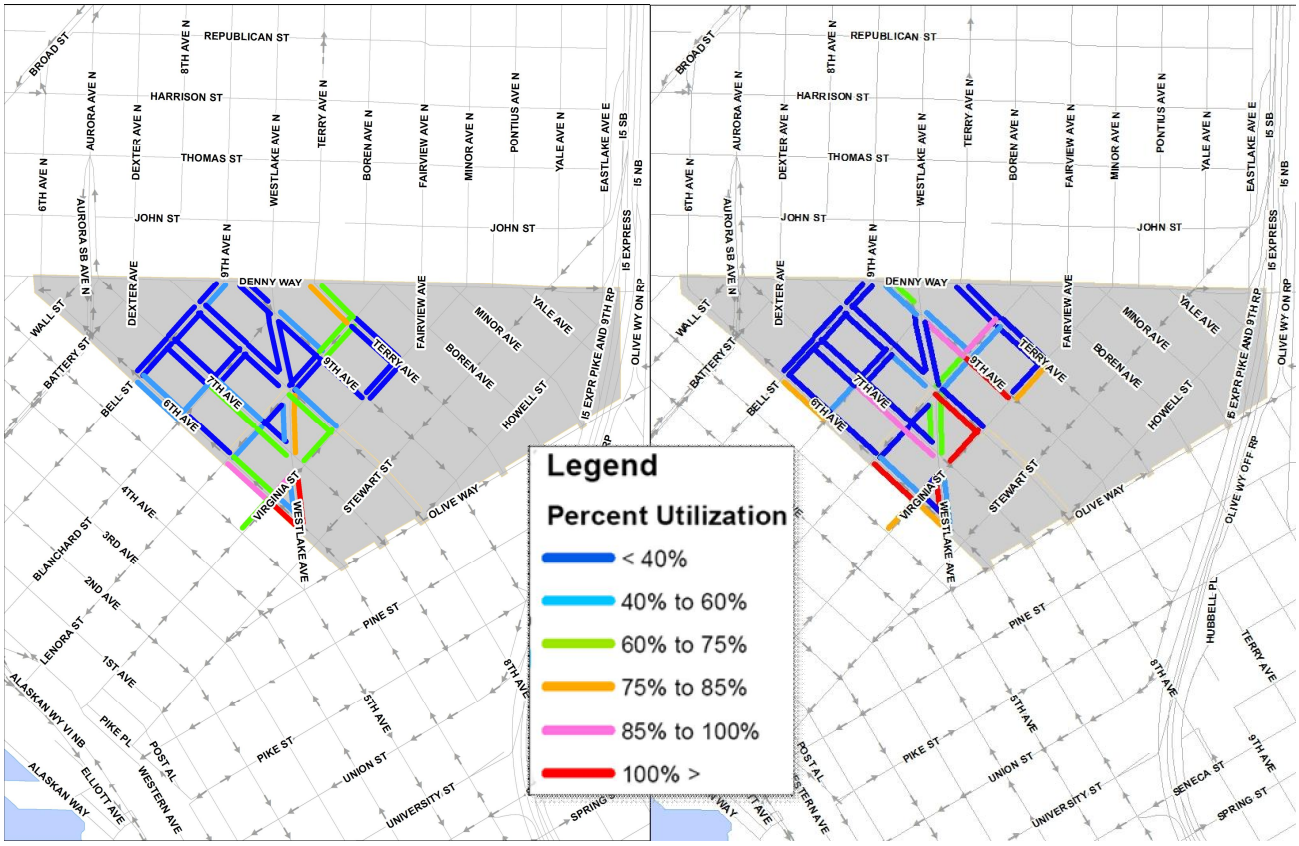


June 2011

High Demand Areas

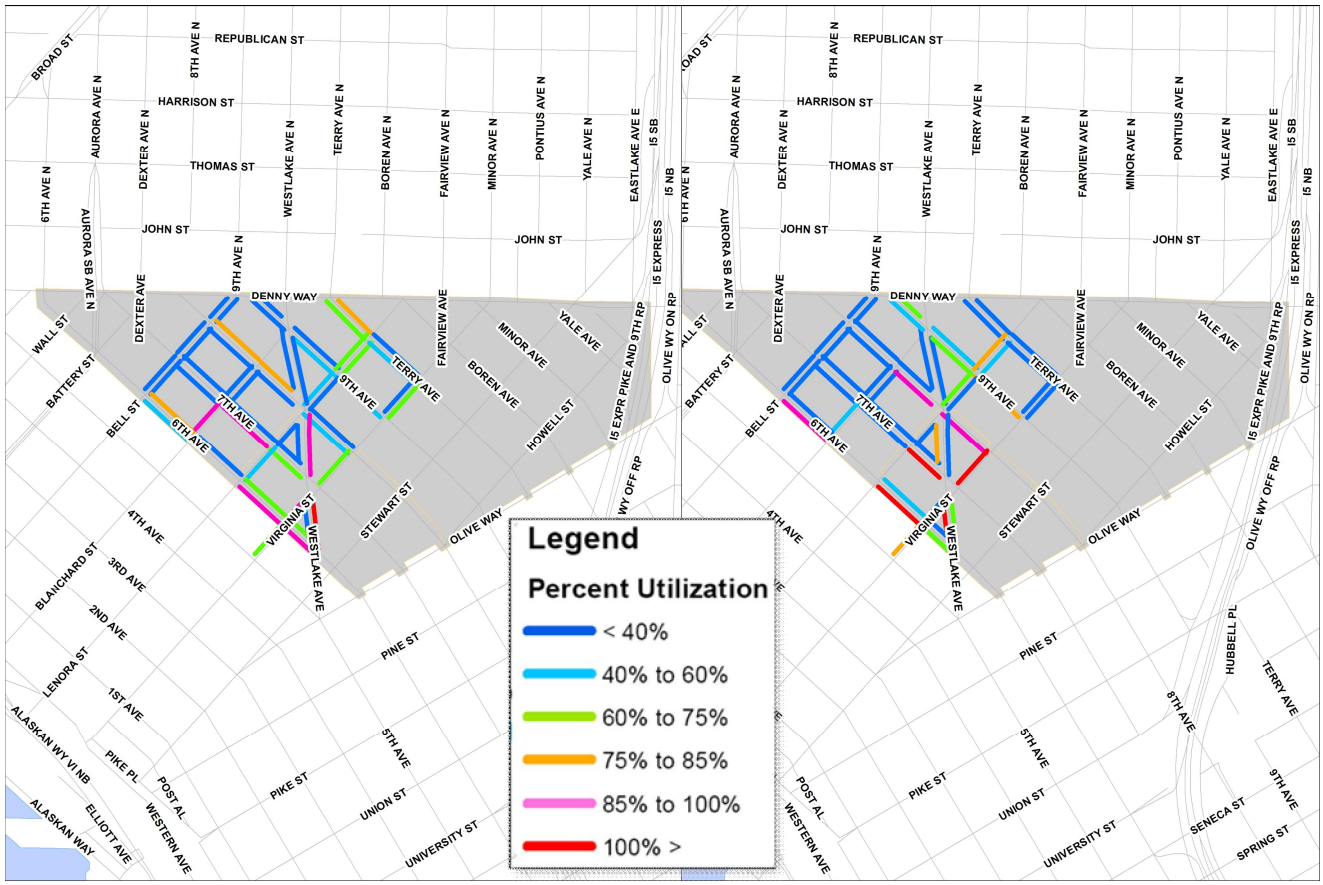
Using both data sets to analyze the area, it is possible to see which areas have the highest demand in the neighborhood. As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the appendix of this document.

November 2010 vs June 2011 Average Occupancy – Denny Triangle North and South



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Denny Triangle North and South



November 2010 **June 2011**

**Peak occupancy for the Denny Triangle North and South (2010) was 2 pm to 3 pm and (2011) was 11 pm to 12 pm. The maps above show the block face occupancies at that time period.*

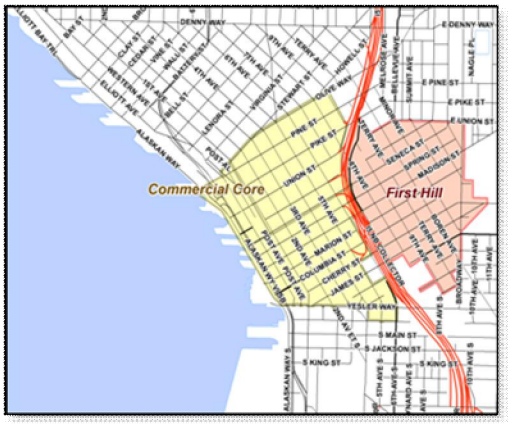
The two previous maps show that average occupancy is clustered in the southern portion of the neighborhood in the area bounded by Lenora Street, 8th Avenue, Virginia Street, Westlake Avenue, and 6th Avenue. Based on peak utilization patterns, blocks near the Lenora Street/9th Avenue and Blanchard Street/6th Avenue intersections also experience higher than average demands. However, these areas are not contiguous and therefore, it would not make sense to include them in the high occupancy area.

A summary of the contiguous high demand areas are shown on the following page.

DENNY TRIANGLE - HIGH DEMAND AREA

FIRST HILL NEIGHBORHOOD

The First Hill neighborhood is directly adjacent to Seattle's commercial core, separated by Interstate 5 (I-5). The neighborhood is generally bounded by I-5 to the west, Union Street to the north, Broadway to the east and Yesler Way to the south. The map to the right shows the general location of the neighborhood in relation to the overall commercial core. The observed area included a sample of the total paid parking area in the neighborhood. The area of paid parking observed was generally along the streets north of Cherry Street. Within the First Hill neighborhood there are a mixture of hospital, retail, restaurant, residential, and office uses. By far, the highest parking demand generators within the area are the Virginia Mason Medical Center and the Swedish Medical Center – First Hill Campus.



2011 Rate Setting Decisions

As part of the 2011 rate setting process, the First Hill neighborhood on-street parking rates were raised from $2.00 per hour to $4.00 per hour. Based on data collected in November 2010, the parking occupancy during peak times in the area was 100%, indicating demands exceeding the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, raising rates by $2.00 was projected to lower peak occupancy to 86% (14% drop in occupancy), which would theoretically create available capacity along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, a sample of First Hill occupancy was measured on a typical weekday, between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces, vehicles utilizing disabled parking permit in paid parking spaces, and vehicles utilizing residential parking permits or stickers in appropriate residential permit parking zones.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, allowing for an understanding of the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 107 total block faces, with 757 on-street parking spaces
- 32 block faces allowing Residential Permit Parking use
- 9 block faces with peak hour restrictions

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization, disabled permit utilization, residential permit utilization, and overall areas of high demand within the First Hill neighborhood.

FIRST HILL PARKING DATA - June 15, 2011[11]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	Total Vehicles with RPZ Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking	% RPZ Parking
8 AM - 9 AM	735	514	113	180	69.9%	16.0%	15.4%	24.49%
9 AM - 10 PM	732	591	154	161	80.7%	24.0%	21.0%	21.99%
10 AM - 11 AM	743	604	148	154	81.3%	32.0%	19.9%	20.73%
11 AM - 12 PM	743	612	163	149	82.4%	32.0%	21.9%	20.05%
12 PM - 1 PM	743	554	142	156	74.6%	30.0%	19.1%	21.00%
1 PM - 2 PM	743	562	145	146	75.6%	30.0%	19.5%	19.65%
2 PM - 3 PM	743	554	131	147	74.6%	29.0%	17.6%	19.78%
3 PM - 4 PM	739	531	123	152	71.9%	25.0%	16.6%	20.57%
4 PM - 5 PM	698	493	104	152	70.6%	26.0%	14.9%	21.78%
5 PM - 6 PM	698	424	63	163	60.7%	22.0%	9.0%	23.35%
6 PM - 7 PM	739	489	43	161	66.2%	NA	5.8%	21.79%
7 PM - 8 PM	751	531	26	162	70.7%	NA	3.5%	21.57%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the First Hill neighborhood, including total occupancy, disabled permit usage, residential permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy, disabled permits, and residential permits provide the hourly distribution for the observed parking. The First Hill area had an overall utilization ranging from 61% to 82% during the paid parking hours (8 am to 6 pm) and then steady usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[11] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

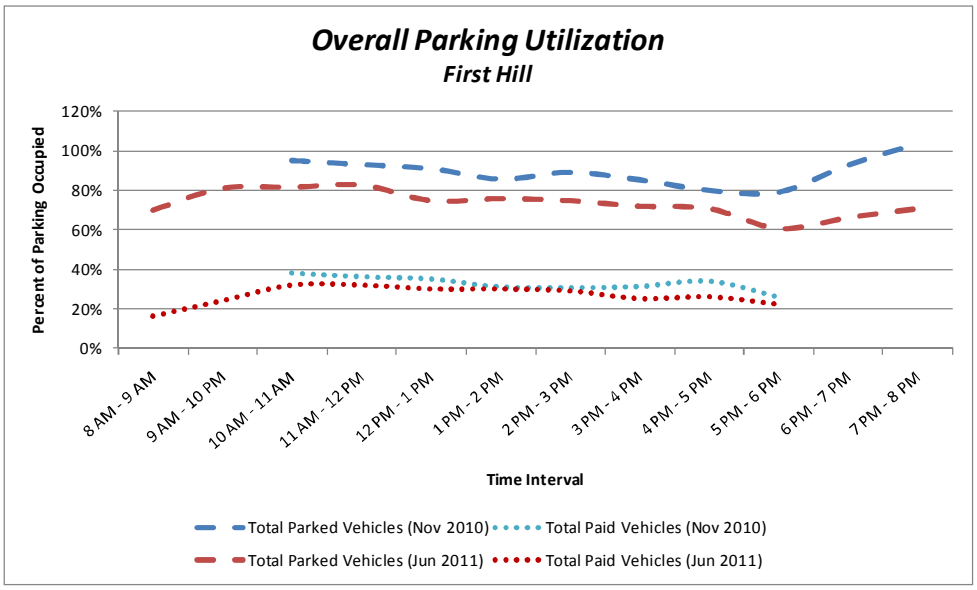
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization went down between November 2010 and June 2011. On the surface, this result indicates that raising parking rates was effective in creating additional capacity along the curb face. In fact, the peak measured occupancy (between 11 am and 12 pm) was roughly 82%, consistent with the projected peak occupancy identified during the 2010 rate setting process.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	95.0%	10 AM - 11 AM
4 PM - 6 PM	80.1%	4 PM - 5 PM
6PM - 8 PM	103.3%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

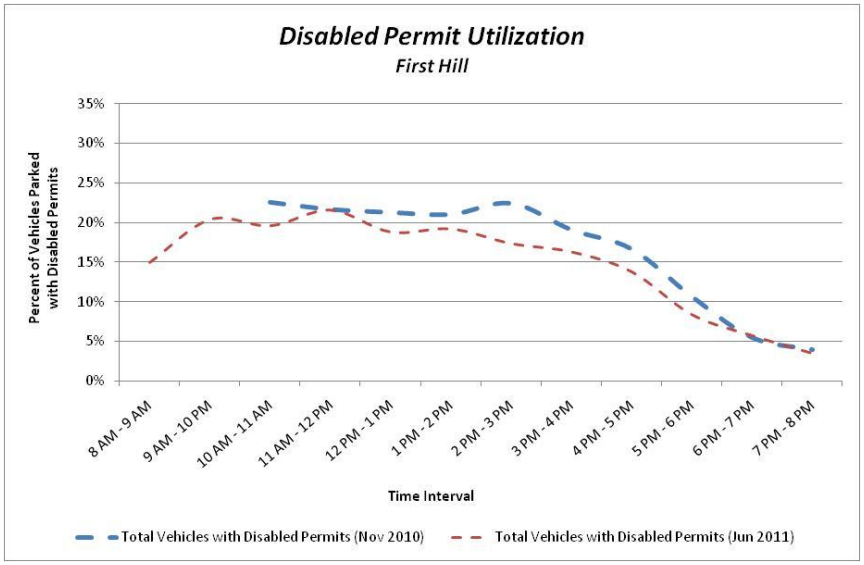
June 2011 Peak Parking Summary

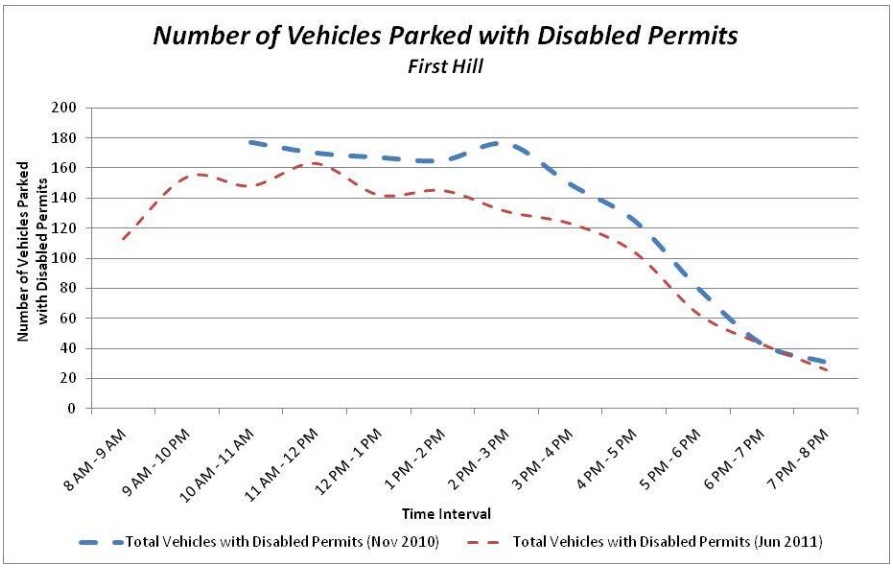
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	82.4%	11 AM - 12 PM
12 PM - 3 PM	75.6%	1 PM - 2 PM
3 PM - 6 PM	71.9%	3 PM - 4 PM
6 PM - 8 PM	70.7%	7 PM - 8 PM

The peak data clearly indicates lower overall parking utilization in the First Hill area, in line with the projections and theoretical approach of the 2010 rate setting process. For a further discussion of the effectiveness of the rate setting process and the elasticity of parking in the Seattle commercial core and neighborhoods, please see Chapter 3.

Disabled Permit Usage

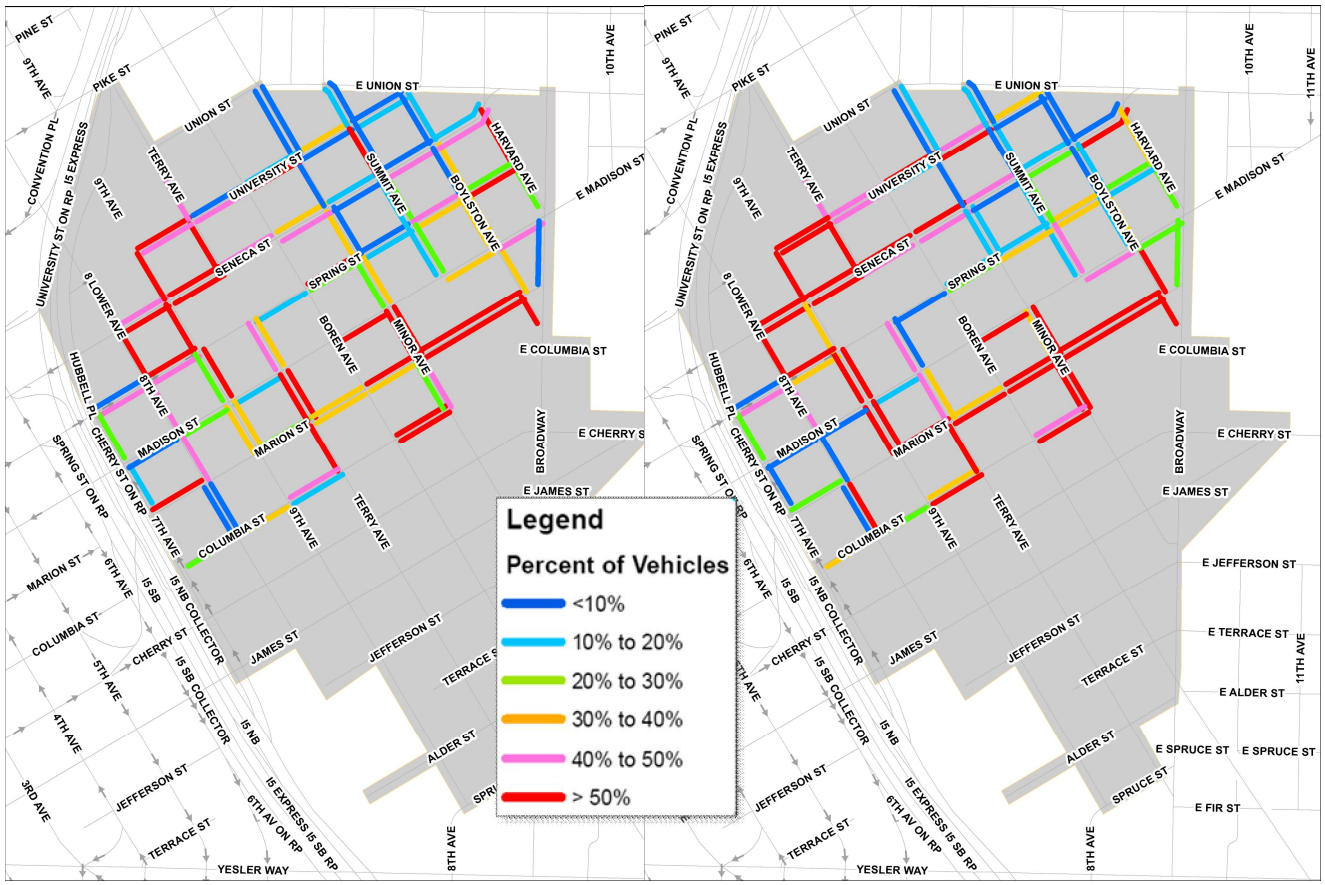
During the November 2010 data collection period, disabled permit usage ranged from 19% to 23% of all available paid on-street parking spaces. Using the same methodology for the June 2011 data collection process, the disabled permit usage ranged from 15% to 22% of the available on-street parking spaces. The consistency with this data indicates that additional capacity is not being consumed by free parked vehicles with disabled parking permits and that permit usage in the First Hill area is basically unchanged. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphic shows a comparison of peak disabled permit usage in the First Hill area.

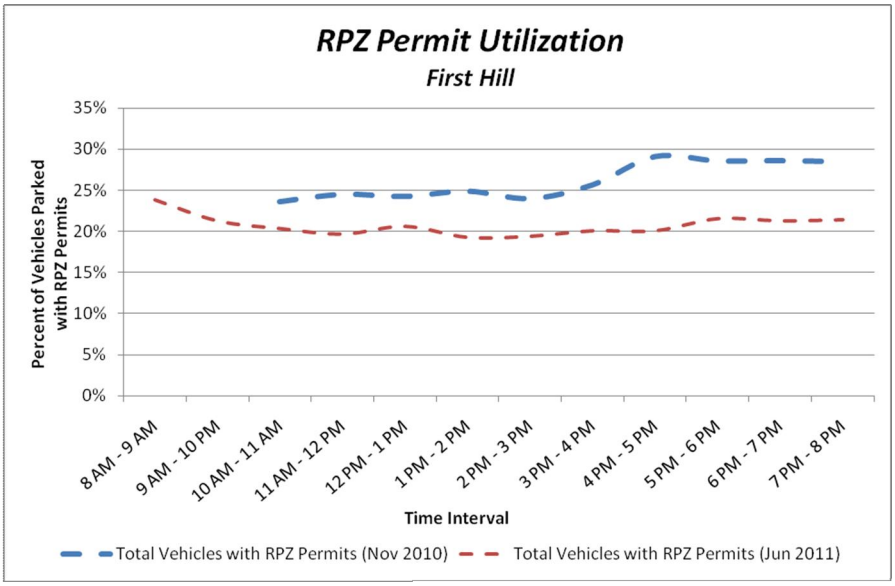
November 2010 vs June 2011 Peak Disabled Permit Usage – First Hill

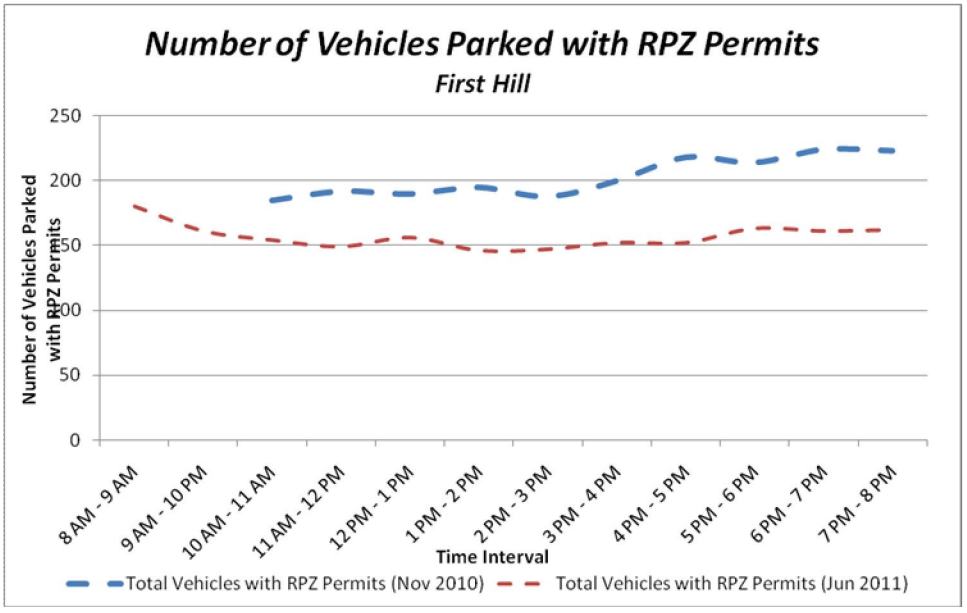


November 2010 **June 2011**

Residential Permit Usage

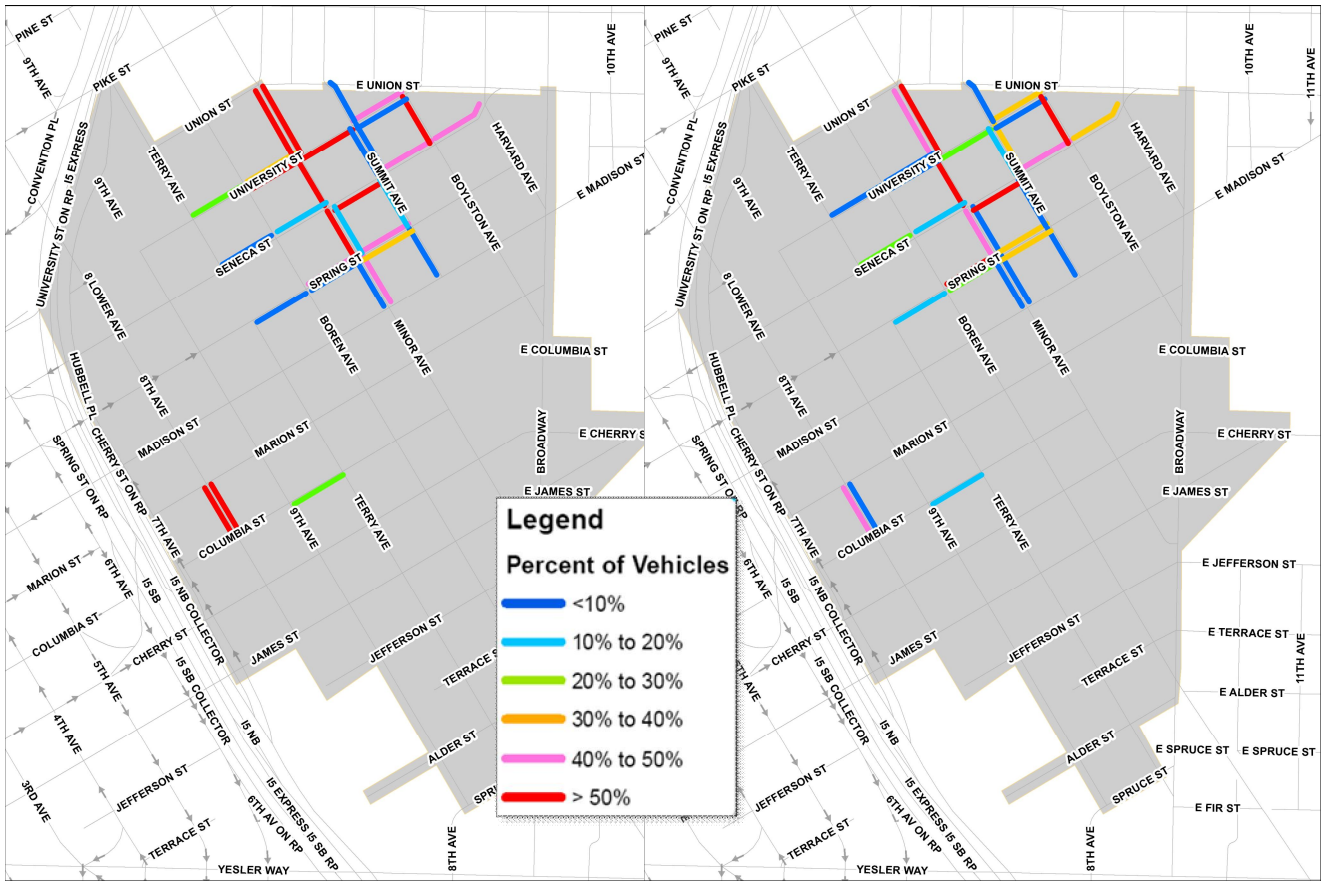
Residential Permit Parking areas in First Hill represent 32 of 107 total block faces within the neighborhood (approximately 30% of all block faces). During the November 2010 data collection period, residential permit usage ranged from 23% to 29% of all available paid, on-street parking spaces. Using the same methodology for the June 2011 data collection process, the residential permit usage ranged from 20% to 25% of the available on-street parking spaces. Although there is a slight decrease in utilization of residential parking permits, seasonality issues or small variations in parking behavior could have impacted the data. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphic shows a comparison of average residential permit usage in the First Hill area.

November 2010 vs June 2011 Average Residential Permit Usage – First Hill

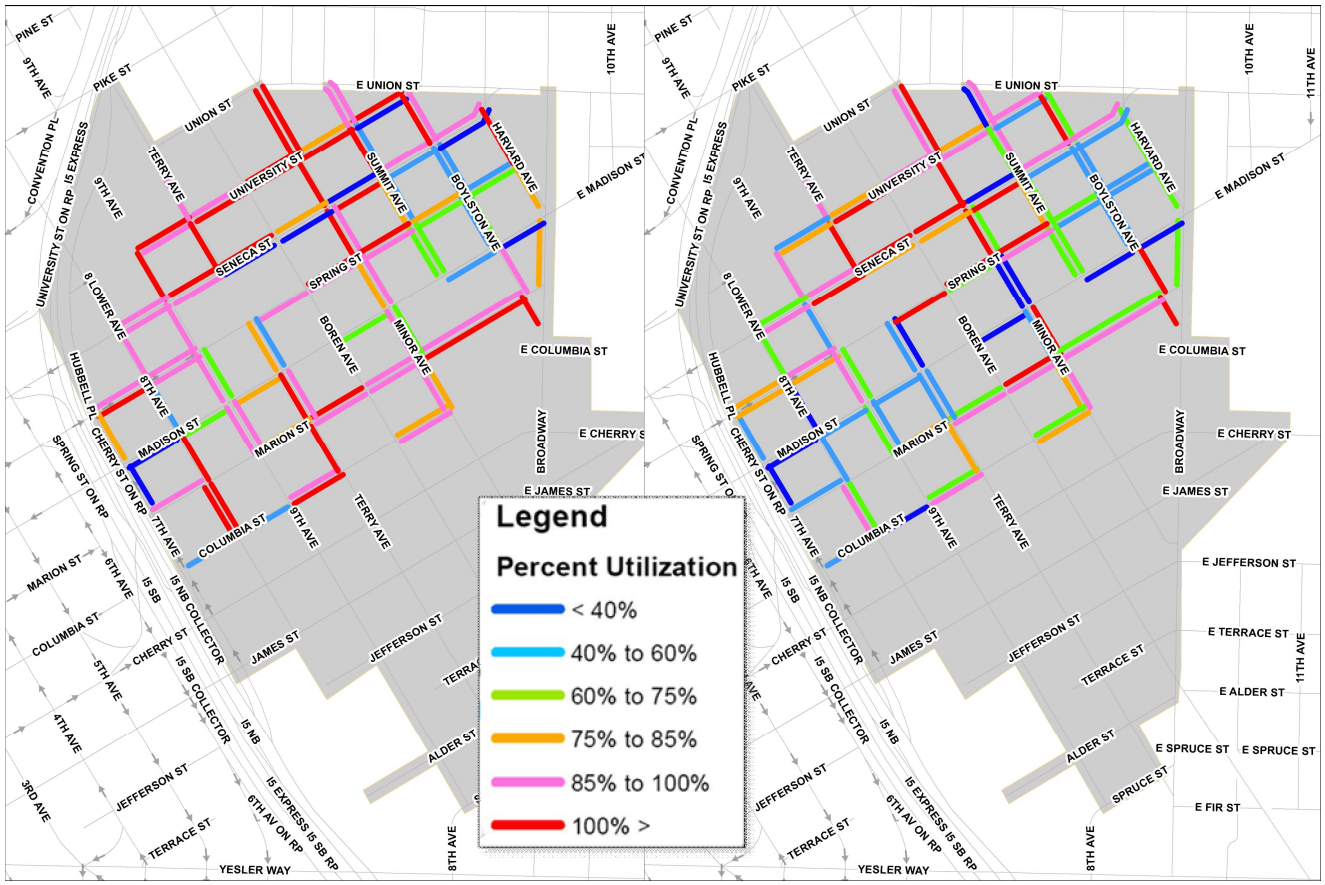


November 2010 **June 2011**

High Demand Areas

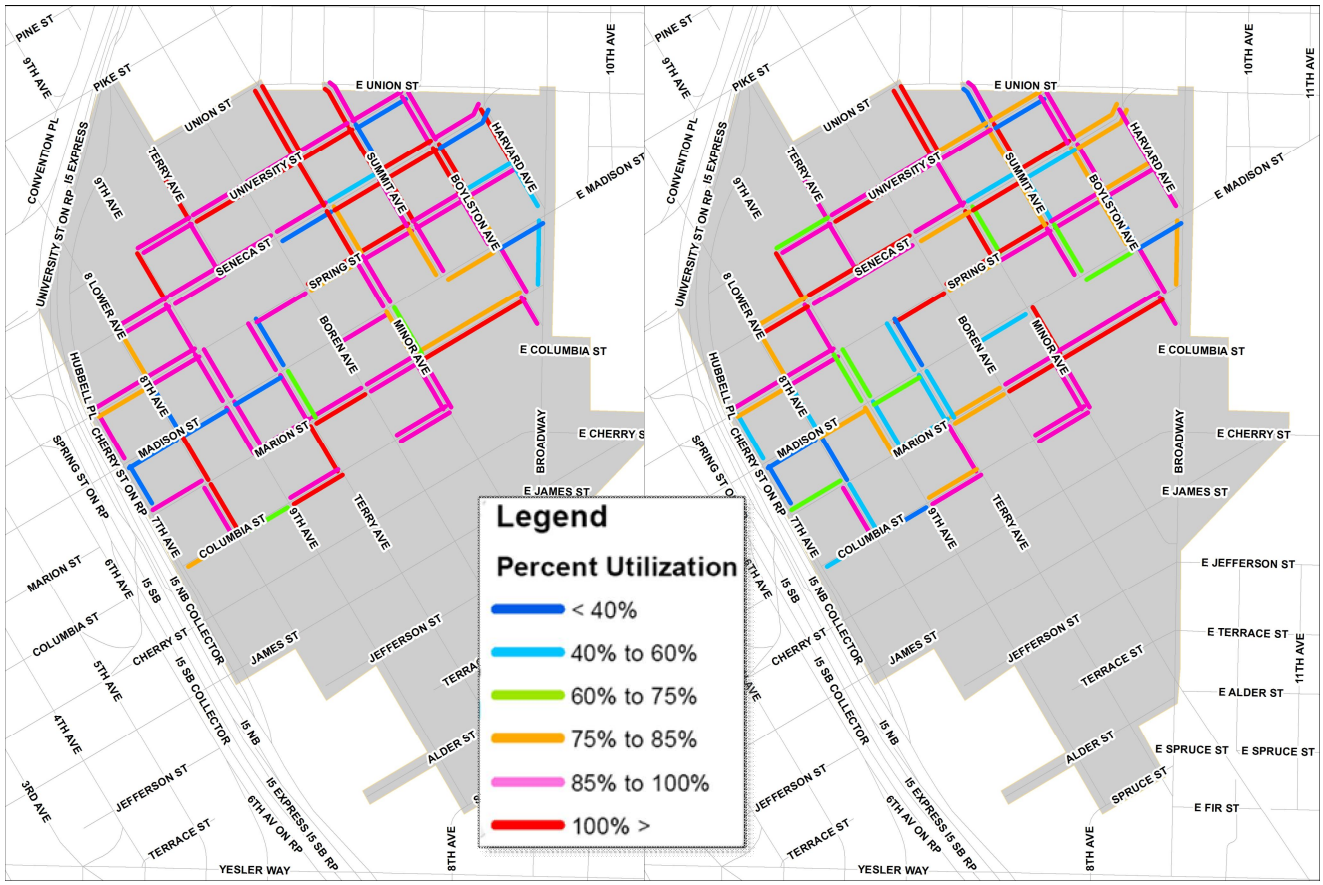
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – First Hill



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy* – First Hill



November 2010 **June 2011**

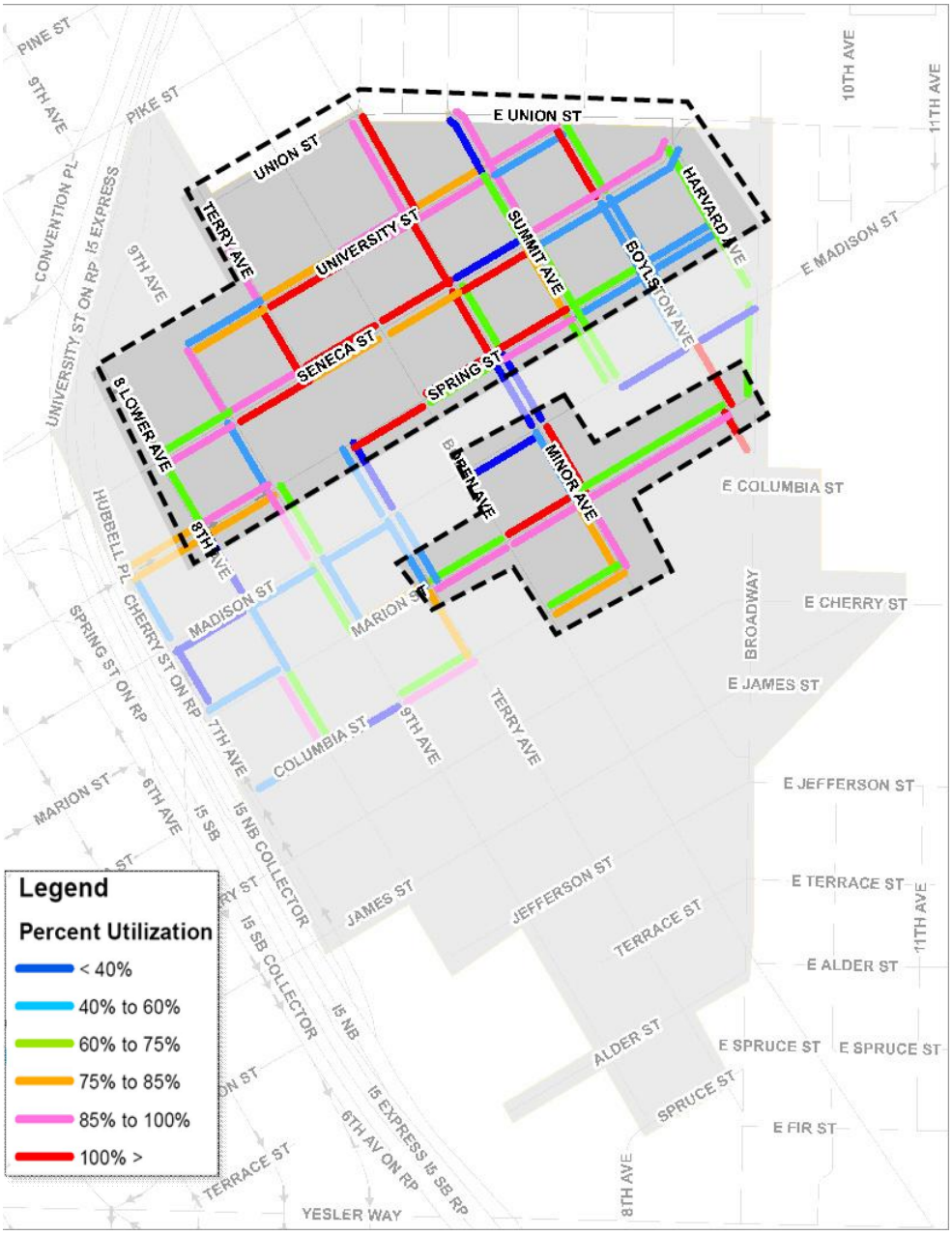
Peak occupancy for the First Hill (2010) was 10 am to 11 am and (2011) was 11 am to 12 pm. The maps above show the block face occupancies at that time period

The two previous maps show that average occupancy is clustered in the northeast corner of the neighborhood, in the area bounded by Minor Avenue, Union Street, Harvard Avenue, and Spring Street. Additionally, most of University Street and Seneca Street have above average utilization. Based on peak utilization patterns, the areas bounded by Lower Avenue, Terry Avenue, Spring Street, and University Street also could be lumped into the high occupancy areas.

In other sections of the study area, Marion Street between Terry Avenue and Boylston Avenue has higher than average demands. Additionally, Minor Avenue, Columbia Street, and Columbia Street in the vicinity of the intersection of Minor Avenue and Marion Street have higher than average demands.

A summary of the contiguous high demand areas are shown on the following page.

FIRST HILL - HIGH DEMAND AREAS



FREMONT NEIGHBORHOOD

The paid parking components of the Fremont neighborhood are along Evanston Avenue, Fremont Avenue between 34th Street and 36th Street, 35th Street between Evanston Avenue and Troll Avenue, 36th Street between Fremont Avenue and Evanston Avenue, and Fremont Place. The observed area included all of the blocks with paid parking. The map to the right shows the general location of the study area. Fremont has a mixture of retail and restaurant uses with residential uses on the periphery of the paid parking district.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Fremont neighborhood on-street parking rates did not change. Based on data collected in November 2010, the peak occupancies in the Fremont neighborhood were 80%. This indicates that the parking demand was within the target occupancy. With no change in rate, a change in occupancy is not expected, except for changes due to broader economic and seasonal factors.

Data Collection Methodology

As part of the June 2011 data collection process, the paid parking occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm. The occupancy collection included only vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, which helps to understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 12 total block faces, with 80 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within the Fremont neighborhood.

FREMONT WEEKDAY PARKING DATA - June 14, 2011[12]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	87	16	18.4%	4.0%
9 AM - 10 PM	93	19	20.4%	12.0%
10 AM - 11 AM	93	26	28.0%	21.0%
11 AM - 12 PM	93	41	44.1%	38.0%
12 PM - 1 PM	93	64	68.8%	61.0%
1 PM - 2 PM	93	66	71.0%	68.0%
2 PM - 3 PM	93	54	58.1%	67.0%
3 PM - 4 PM	93	61	65.6%	60.0%
4 PM - 5 PM	87	42	48.3%	47.0%
5 PM - 6 PM	87	56	64.4%	48.0%
6 PM - 7 PM	93	76	81.7%	NA
7 PM - 8 PM	93	90	96.8%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Fremont neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The Fremont area had overall utilization between 18.4% and 71.0% during the paid parking hours (8 am to 6 pm). Usage after paid parking hours increased and remained high. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[12] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

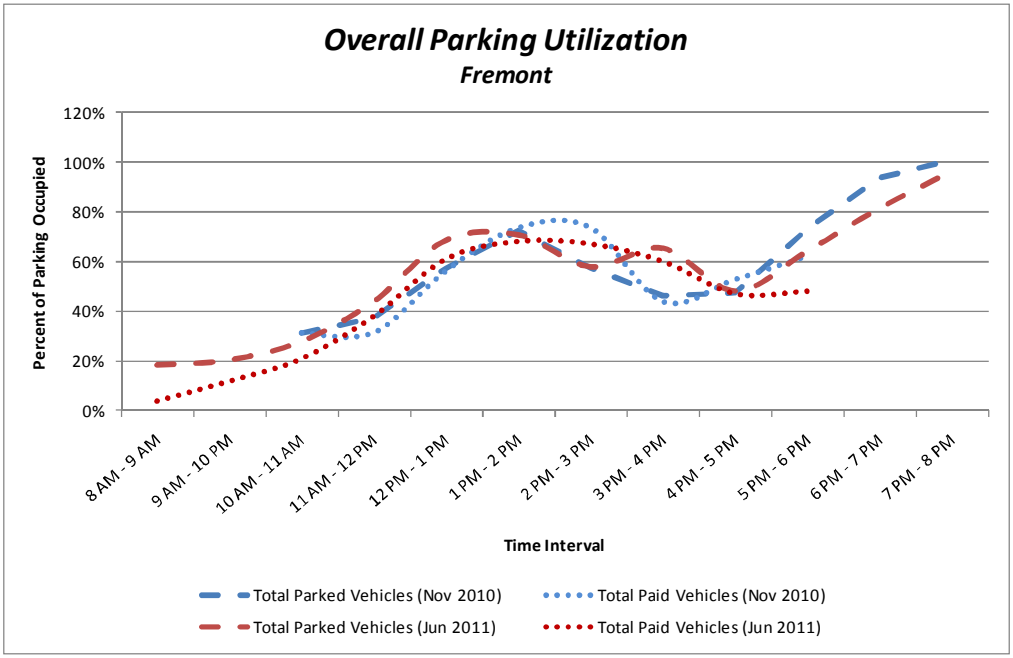
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart indicates that the overall parking utilization in Fremont was relatively similar between 8 am and 8 pm between November 2010 and June 2011, but was significantly higher during the 3 pm hour in June 2011 than in November 2010.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	72.5%	1 PM - 2 PM
4 PM - 6 PM	73.0%	5 PM - 6 PM
6PM - 8 PM	101.3%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	44.1%	11 AM – 12 PM
12 PM - 3 PM	71.0%	1 PM - 2 PM
3 PM - 6 PM	65.6%	3 PM - 4 PM
6 PM - 8 PM	96.8%	7 PM - 8 PM

The peak data clearly indicates that overall parking utilization increased slightly in the Fremont neighborhood.

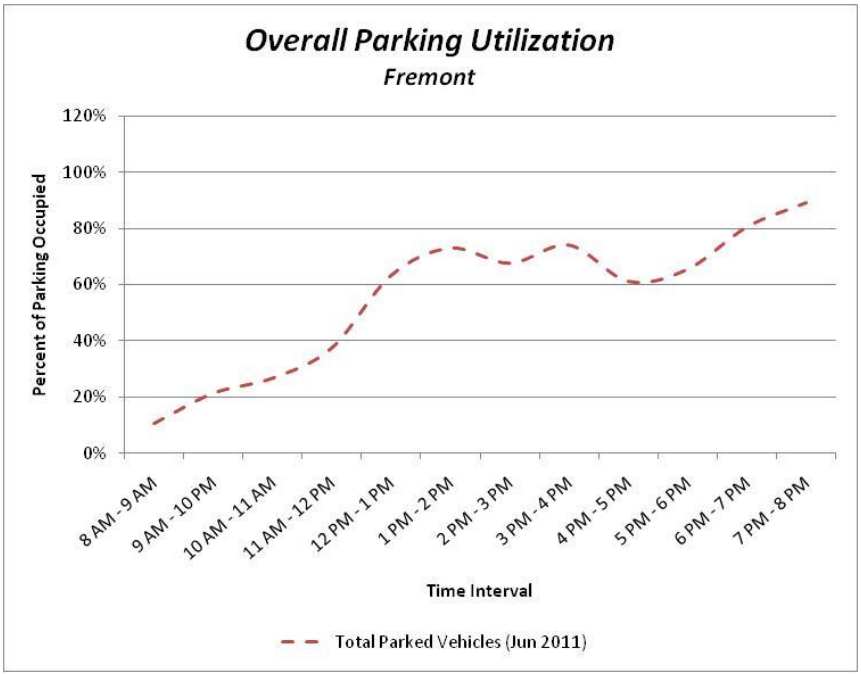
Weekend Parking Observations

Parking occupancy data was collected for the Fremont neighborhood on Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

FREMONT - SATURDAY PARKING DATA - June 11, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	93	10	10.8%
9 AM - 10 PM	93	20	21.5%
10 AM - 11 AM	93	25	26.9%
11 AM - 12 PM	93	35	37.6%
12 PM - 1 PM	93	59	63.4%
1 PM - 2 PM	93	68	73.1%
2 PM - 3 PM	93	63	67.7%
3 PM - 4 PM	93	69	74.2%
4 PM - 5 PM	93	57	61.3%
5 PM - 6 PM	93	61	65.6%
6 PM - 7 PM	93	75	80.6%
7 PM - 8 PM	93	83	89.2%

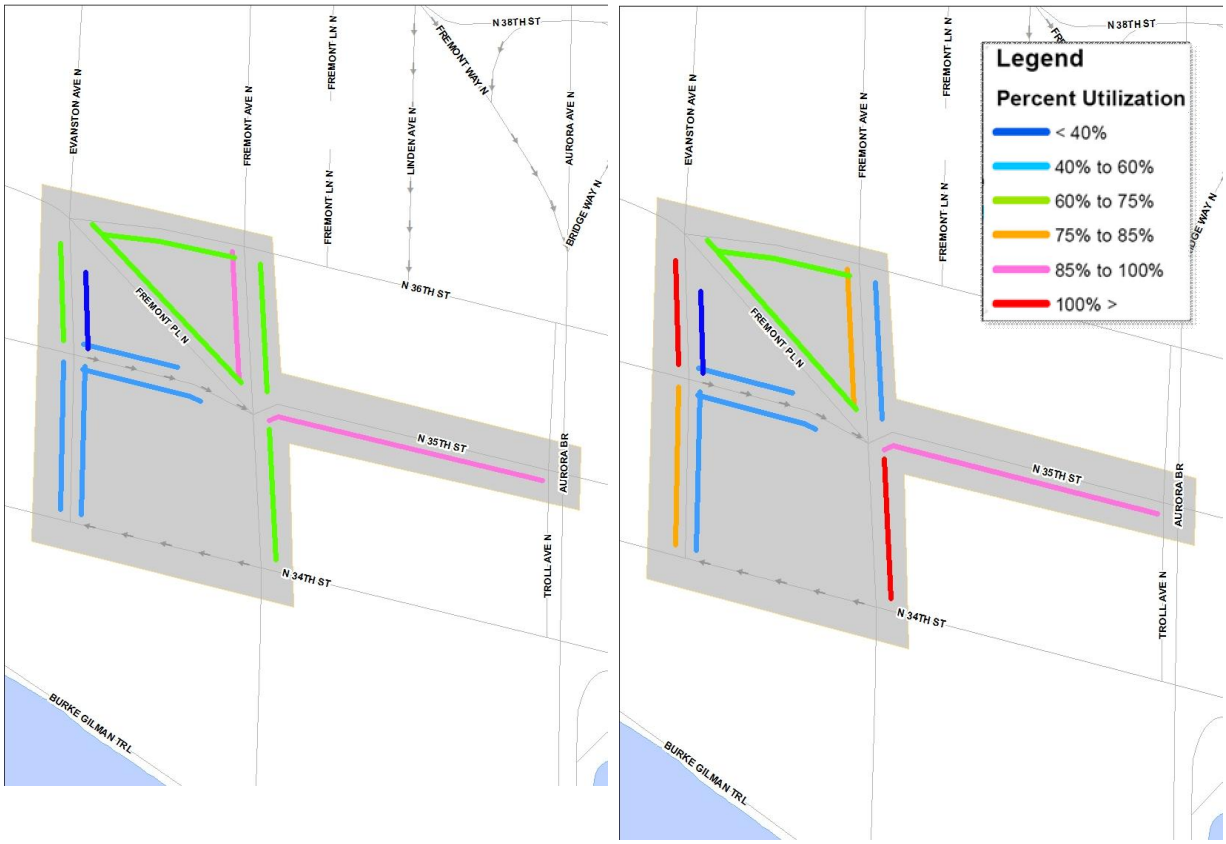
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Fremont neighborhood for a typical Saturday. The Fremont neighborhood had overall utilization between 10.8% and 80.6% during the paid parking hours (8 am to 6 pm). Usage after paid parking hours increased and remained high. The chart below provides a breakdown of this utilization.



High Demand Areas

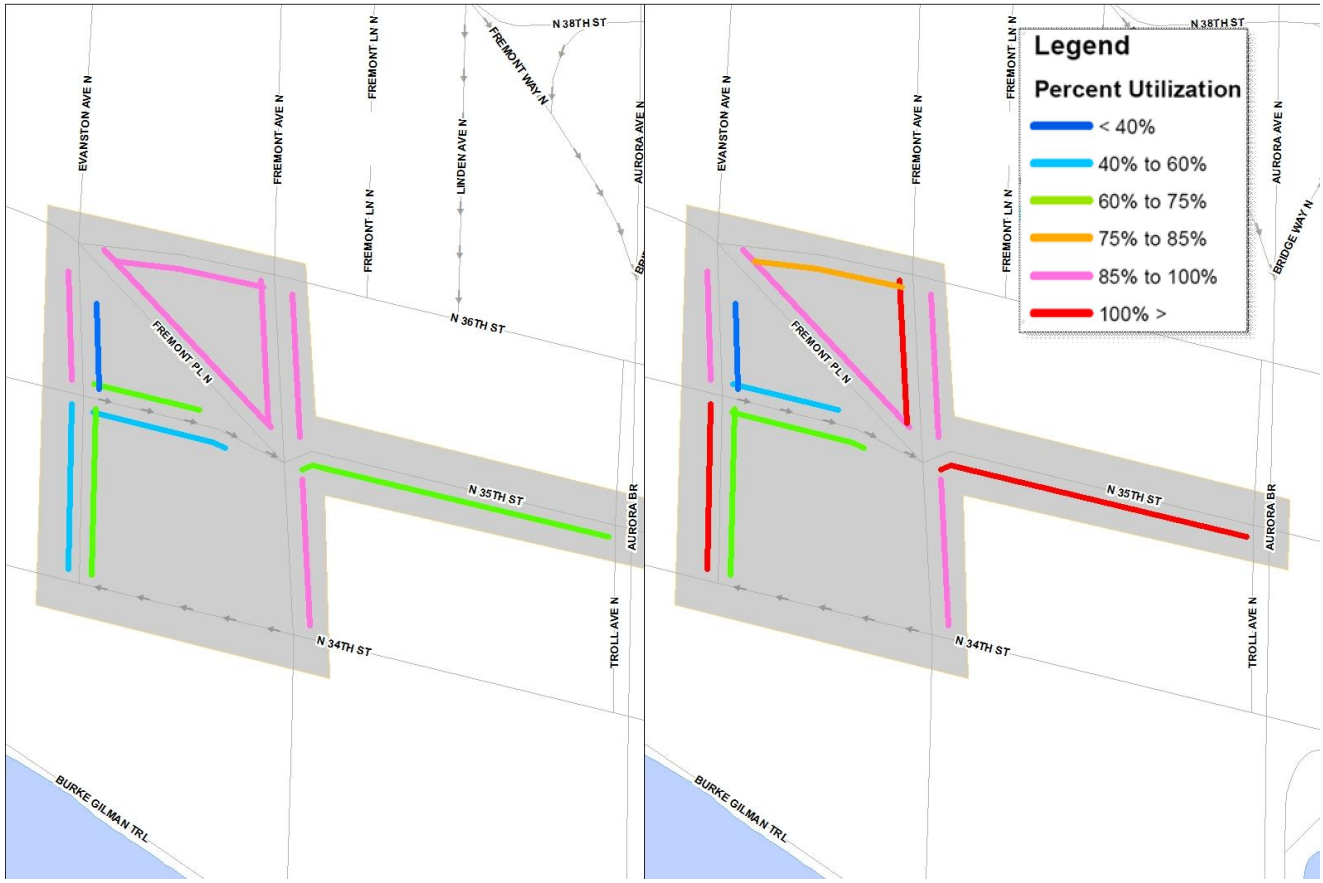
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour by hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour by hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – Fremont



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Fremont



November 2010 **June 2011**

**Peak occupancy for the Fremont (2010) was 1 pm to 2 pm and (2011) was 1 pm to 2 pm. The maps above show the block face occupancies at that time period*

The two previous maps show that the highest average occupancy is along Fremont Avenue between 34th Street and 35th Street, also along Evanston Avenue between 35th Street and 36th Street. Based on peak utilization patterns, Fremont Place could also be considered high demand.

While there are areas of specific high demand within the Fremont area, it does not make sense to consider these areas as specific demand areas to introduce innovative parking management principles, because the entire Fremont area is compact and would not necessarily benefit from a tiered management structure.

Since the area experiences overall high demand during certain time periods throughout the day, a more appropriate management strategy may be to introduce time of day pricing. This strategy allows an area to change the price of on-street parking based on the high demand and low demand times of day.

GREEN LAKE NEIGHBORHOOD

The paid parking components of the Green Lake neighborhood are generally bounded by East Green Lake Drive to the west, a combination of Maple Leaf Place and 72nd Street to the north, 5th Avenue to the east, and a combination of 71st Street and 70th Street to the south. The observed area included all of the blocks with paid parking, except for 5th Avenue between 71st Street and 72nd Street and southeast bound Ravenna Boulevard. The map to the right shows the general location of the neighborhood in relation to the greater Seattle area. Within the Green Lake neighborhood, there is a mix of office, retail, restaurant, and residential uses. A significant draw is the lake itself, with multi-use recreational paths surrounding the lake. There are also popular athletic fields and opportunities for boating, picnics and swimming.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Green Lake neighborhood on-street parking rates were lowered from $1.50 per hour to $1.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the Green Lake neighborhood was 64%. This indicates that demand was under the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% percent (a 7% increase in occupancy) in Green Lake, which would theoretically increase demand along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Green Lake occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 18 total block faces, with 122 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within the Green Lake neighborhood.

GREEN LAKE WEEKDAY PARKING DATA - June 2, 2011[13]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	112	25	22.3%	6.3%
9 AM - 10 PM	112	31	27.7%	17.0%
10 AM - 11 AM	112	54	48.2%	29.5%
11 AM - 12 PM	112	43	38.4%	43.8%
12 PM - 1 PM	112	47	42.0%	36.6%
1 PM - 2 PM	112	58	51.8%	46.4%
2 PM - 3 PM	112	45	40.2%	39.3%
3 PM - 4 PM	112	40	35.7%	32.1%
4 PM - 5 PM	112	69	61.6%	38.4%
5 PM - 6 PM	112	117	104.5%	59.8%
6 PM - 7 PM	112	133	118.8%	NA
7 PM - 8 PM	112	122	108.9%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Green Lake neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The Green Lake area had overall utilization ranging from 22.3% to 104.5% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[13] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

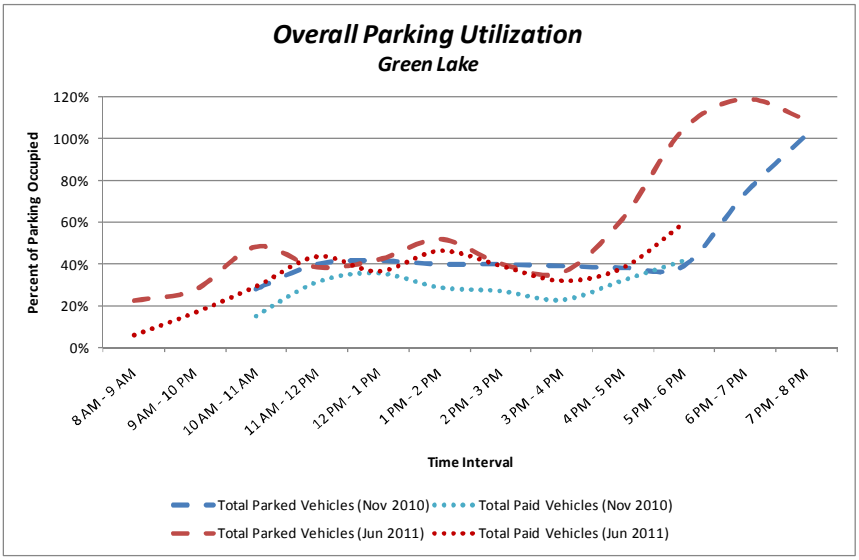
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization in Green Lake was relatively similar between 8 am and 4 pm between November 2010 and June 2011, but was higher after 4 pm between November 2010 and June 2011. On the surface, this result indicates that reducing parking rates did not cause a change in behavior within the area; however, a review of other parking patterns in Green Lake on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	41.5%	12 PM - 1 PM
4 PM - 6 PM	39.0%	5 PM - 6 PM
6PM - 8 PM	101.7%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	48.2%	10 AM – 11 AM
12 PM - 3 PM	51.8%	1 PM - 2 PM
3 PM - 6 PM	104.5%	5 PM - 6 PM
6 PM - 8 PM	118.8%	6 PM - 7 PM

The peak data clearly indicates an increase of overall parking utilization in the Green Lake neighborhood, in line with the projections and theoretical approach of the 2010 rate setting process. It is plausible that the increase in occupancy during the 4 pm to 6 pm time period for June 2011 is due to seasonality. Daylight hours are much later than in November 2010, which allows for greater enjoyment of the lake. For a further discussion of the effectiveness of the rate setting process and the elasticity of parking in the Commercial Core and neighborhoods, please see **Chapter 3**.

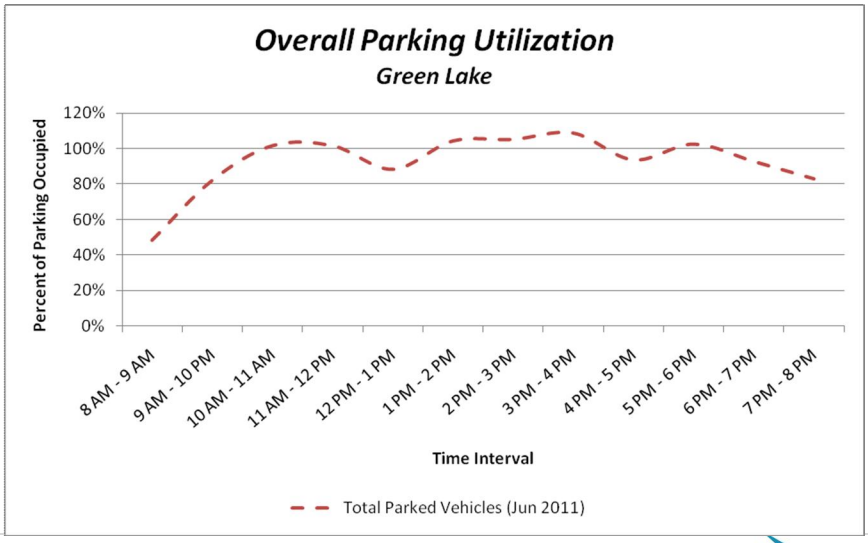
Weekend Parking Observations

Parking occupancy data was collected for the Green Lake neighborhood on Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

GREEN LAKE - SATURDAY PARKING DATA - June 4, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	112	54	48.2%
9 AM - 10 PM	112	92	82.1%
10 AM - 11 AM	112	114	101.8%
11 AM - 12 PM	112	114	101.8%
12 PM - 1 PM	112	99	88.4%
1 PM - 2 PM	112	117	104.5%
2 PM - 3 PM	112	118	105.4%
3 PM - 4 PM	112	122	108.9%
4 PM - 5 PM	112	105	93.8%
5 PM - 6 PM	112	115	102.7%
6 PM - 7 PM	112	104	92.9%
7 PM - 8 PM	112	93	83.0%

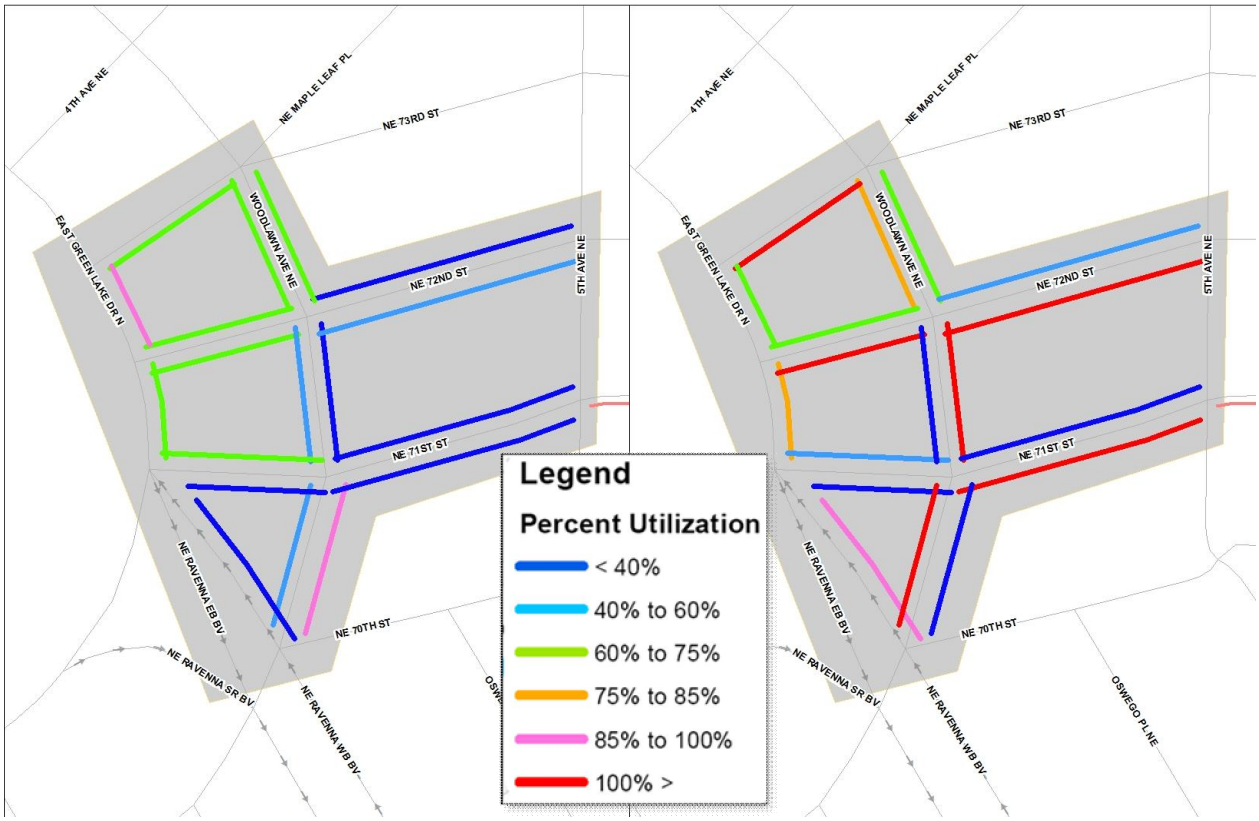
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Green Lake neighborhood for a typical Saturday. The Green Lake neighborhood had overall utilization ranging from 48% to 109% during the paid parking hours (8 am to 6 pm). There was a large jump after 9 am where occupancy ranged from 82% to over 100%. Usage after paid parking hours decreased slightly, but remained relatively high. The chart below provides a breakdown of this utilization.



High Demand Areas

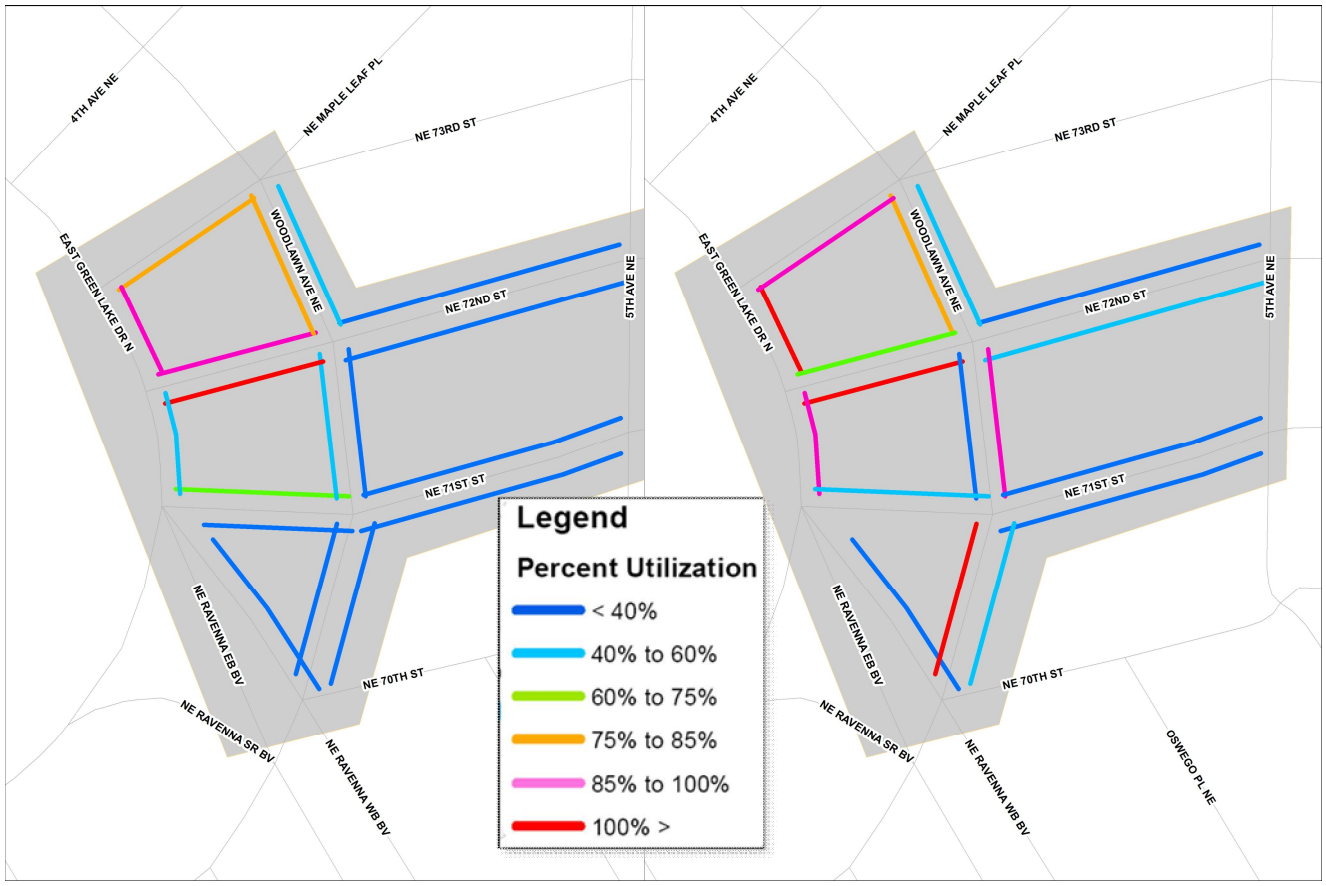
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – Green Lake



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Green Lake



November 2010 **June 2011**

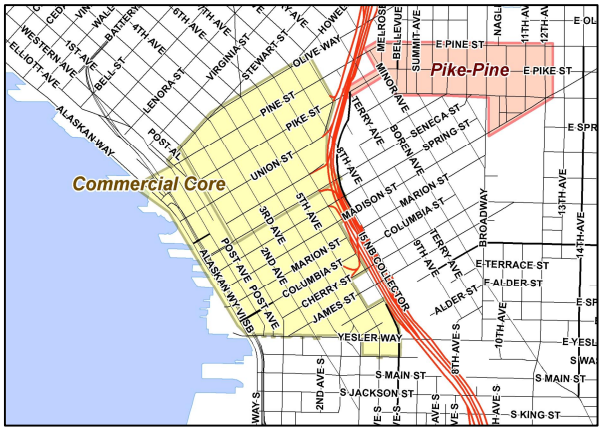
**Peak occupancy for the Green Lake (2010) was 12 pm to 1 pm; in 2011 it was 1 pm to 2 pm. The maps above show the block face occupancies at that time period.*

The two previous maps show that the highest average occupancy is clustered along 71st Street and 72nd Street. Based on peak utilization patterns, East Green Lake Drive and Woodlawn Avenue could also be considered high demand.

While there are areas of specific high demand within the Green Lake area, it does not make sense to consider these areas as specific demand areas to introduce innovative parking management principles, because the entire Green Lake area is fairly compact and would not necessarily benefit from a tiered management structure. This is especially true considering that the high demand areas identified are only a short distance from one another.

As stated previously, a major attraction in the Green Lake neighborhood is the lake. As such, the demand for parking in this area will fluctuate with the summer and winter demands. It is therefore recommended that two rates be set for this area to reflect the seasonal changes in demand. Another option may be to introduce time of day pricing. Since the area experiences overall high demand during certain time periods throughout the day, this may be a more appropriate management strategy.

PIKE-PINE NEIGHBORHOOD



The Pike-Pine neighborhood is located east of the Commercial Core and north of First Hill, and includes a dense mix of retail, residential, office, restaurant, and entertainment uses. The area of paid parking survey was generally between Pine Street to the north, 12th Avenue to the east, Madison Street and Union Street to the south, and Minor Avenue to the west. The map to the right shows the general location of the study area in relation to the Commercial Core. The observed area included a sample of the total paid parking area in the neighborhood. The area of paid parking observation was generally the eastern streets in the neighborhood, with observations on Union Street, Pike Street, Pine Street, and side streets north of Pike Street.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Pike-Pine neighborhood on-street parking rates were kept constant at $2.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the area was 85%, indicating that there was an appropriate mix of demand and available parking, based on the one to two spaces per block face target.

Data Collection Methodology

As part of the June 2011 data collection process, Pike-Pine occupancy was measured on a typical weekday and weekend, between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces and vehicles utilizing residential parking permits or stickers in appropriate residential permit parking zones.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 59 total block faces, with 450 on-street parking spaces
- 5 total block faces with Residential Permit Parking Zones
- Paid parking between 8am and 6pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization, residential permit parking utilization, and overall areas of high demand within the Pike-Pine neighborhood.

PIKE-PINE WEEKDAY PARKING DATA - June 15, 2011[14]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with RPZ Permits	% Parking Occupied	% Paid Occupancy	% RPZ Parking
8 AM - 9 AM	429	150	19	35.0%	6.0%	4.4%
9 AM - 10 PM	448	203	8	45.3%	15.0%	1.8%
10 AM - 11 AM	448	258	16	57.6%	30.0%	3.6%
11 AM - 12 PM	448	280	21	62.5%	34.0%	4.7%
12 PM - 1 PM	448	321	19	71.7%	44.0%	4.2%
1 PM - 2 PM	448	350	21	78.1%	50.0%	4.7%
2 PM - 3 PM	448	300	17	67.0%	45.0%	3.8%
3 PM - 4 PM	448	329	24	73.4%	42.0%	5.4%
4 PM - 5 PM	443	325	21	73.4%	47.0%	4.7%
5 PM - 6 PM	443	398	24	89.8%	58.0%	5.4%
6 PM - 7 PM	448	474	25	105.8%	NA	5.6%
7 PM - 8 PM	448	538	26	120.1%	NA	5.8%

The data shown in the table above provides an hour-by-hour breakdown of the weekday collected parking data from the Pike-Pine neighborhood, including total occupancy, residential permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy and residential permits provide the hourly distribution for the observed parking. The Pike-Pine area had overall utilization ranging from 35% to 90% during the paid parking hours (8 am to 6 pm) and then highly increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[14] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

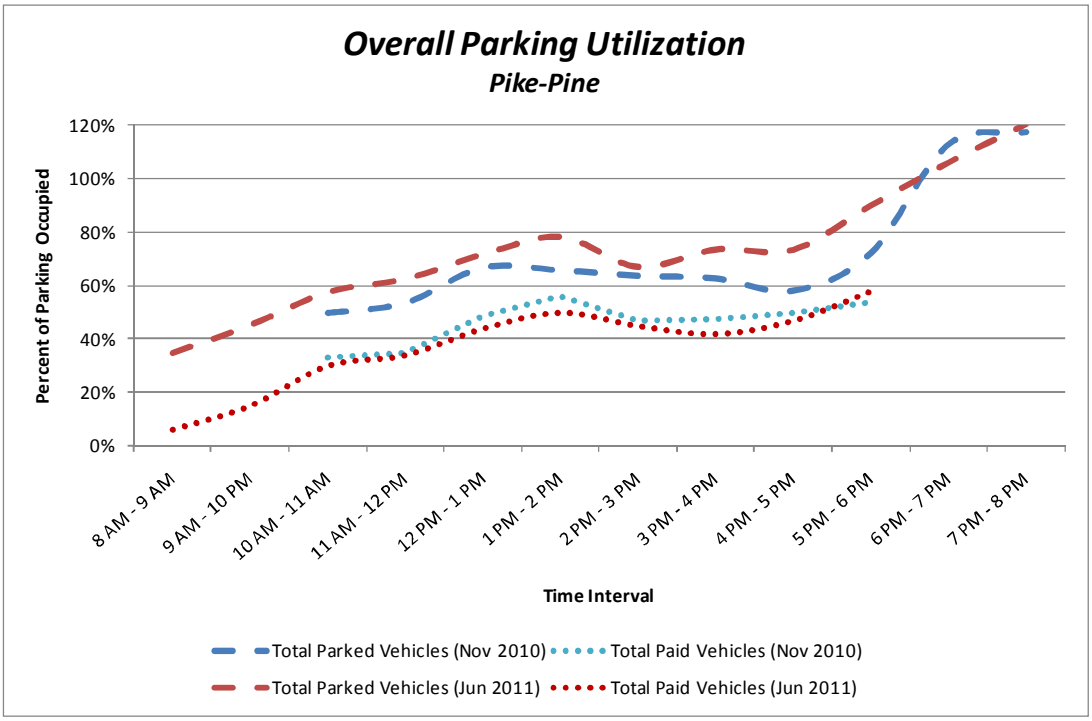
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization was only slightly higher in June 2010 as compared to November 2010. The overall occupancy is slightly higher but follows the same trend. Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	66.8%	12 PM - 1 PM
4 PM - 6 PM	72.3%	5 PM - 6 PM
6PM - 8 PM	117.5%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

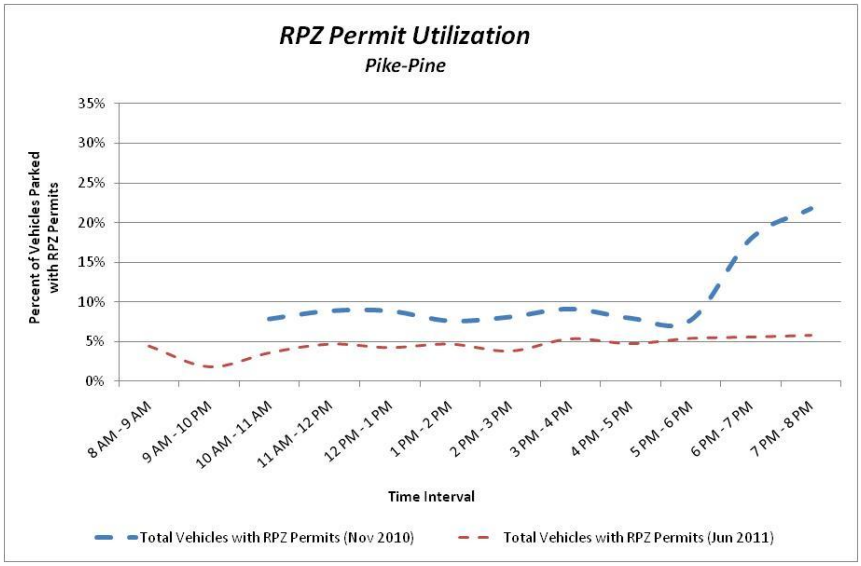
June 2011 Peak Parking Summary

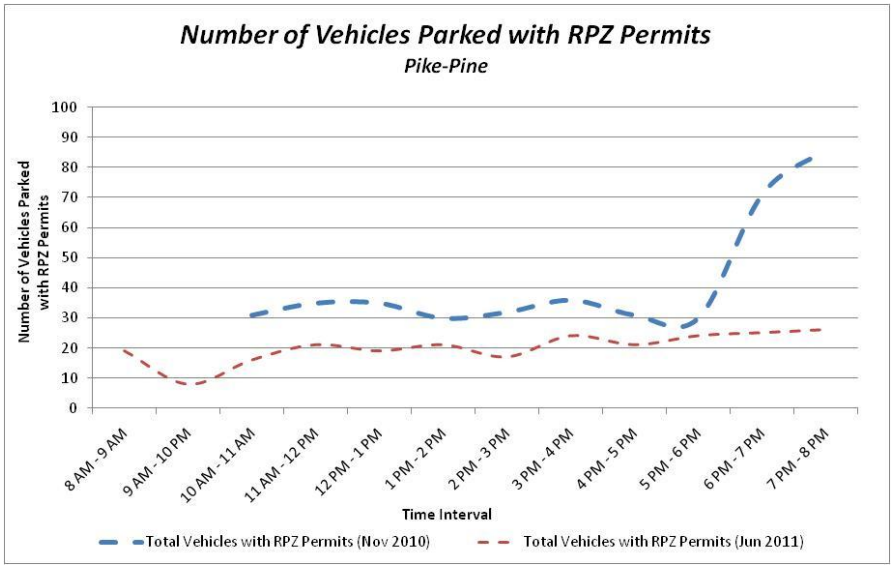
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	62.5%	11 AM - 12 PM
12 PM - 3 PM	78.1%	1 PM - 2 PM
3 PM - 6 PM	89.8%	5 PM - 6 PM
6 PM - 8 PM	120.1%	7 PM - 8 PM

The peak data comparison shows that the peak parking conditions are very similar between the two collection periods, with moderate to above average demands in the afternoon peaks, followed by heavy demands as soon as parking becomes free after 6 pm. This is also an indication of the strong draw of evening restaurant, bar and nightclub activities, along with residential parking demand.

Residential Permit Usage

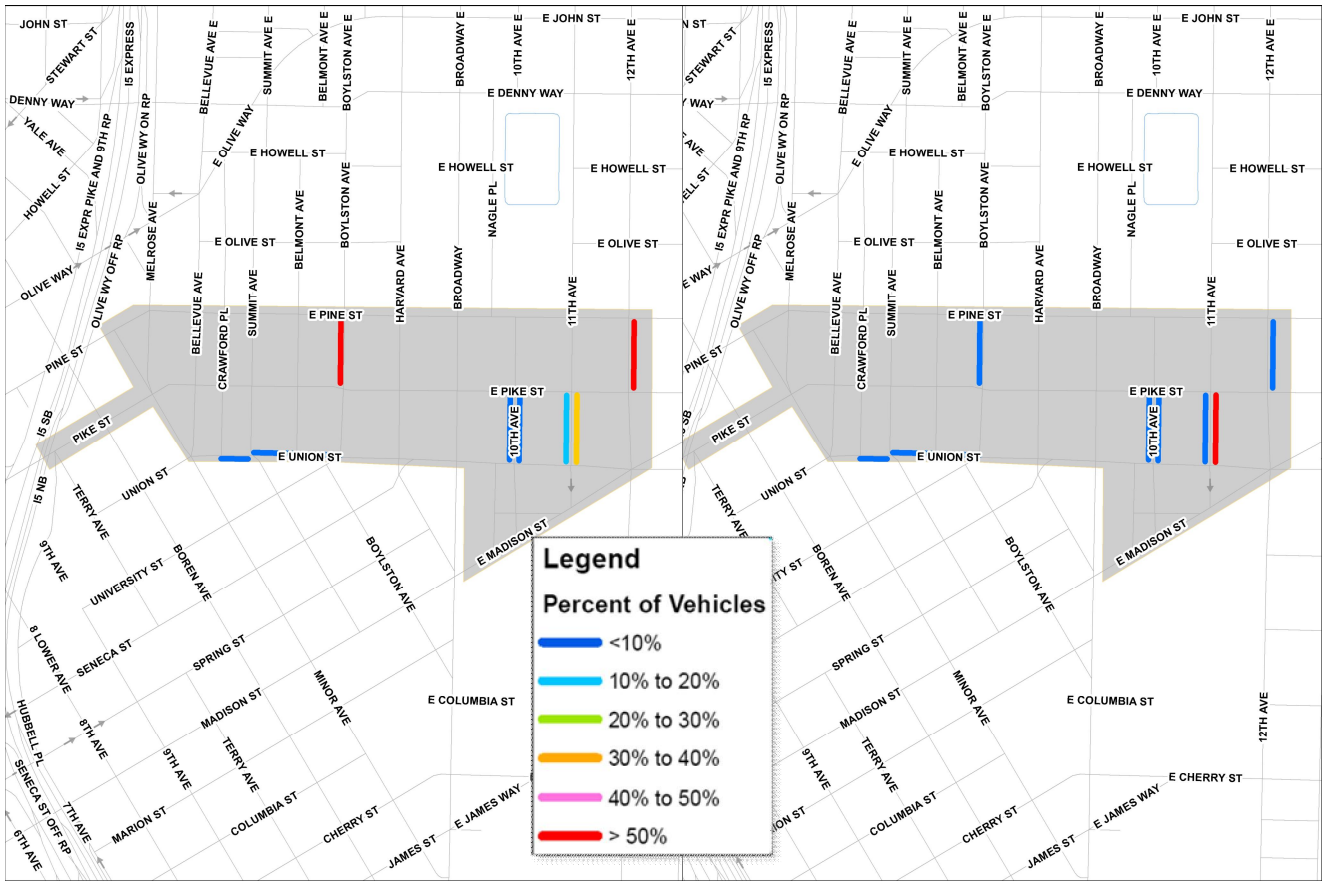
Residential Permit Parking in the Pike-Pine area represents 5 of 59 total block faces within the neighborhood (approximately 8% of all block faces). During the November 2010 data collection period, residential permit usage ranged from 8% to 9% of all available paid on-street parking spaces. Using the same methodology for the June 2011 data collection process, the residential permit usage ranged from 2% to 5% of the available on-street parking spaces. Although there is a slight decrease in utilization of residential parking permits, seasonality issues or small variations in parking behavior could have impacted the data. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphics provide a comparison of average residential permit usage within the Pike-Pine area.

November 2010 vs June 2011 Average Residential Permit Usage – Pike-Pine



November 2010 **June 2011**

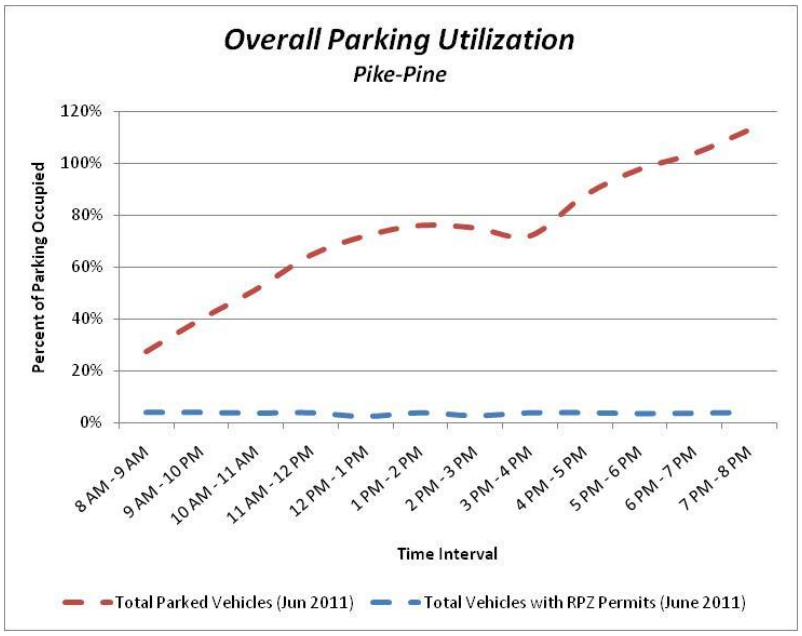
Weekend Parking Observations

Parking occupancy data was collected for the Pike-Pine area on a Saturday to measure the varying peaks and patterns of usage during the non-weekday peaking conditions. The following information provides a summary of both regular vehicular occupancy and disabled permit usage on the observed Saturday.

PIKE-PINE - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with RPZ Permits	% Parking Occupied	% RPZ Parking
8 AM - 9 AM	432	119	17	27.5%	3.9%
9 AM - 10 PM	432	173	17	40.0%	3.9%
10 AM - 11 AM	432	222	16	51.4%	3.7%
11 AM - 12 PM	418	270	16	64.6%	3.8%
12 PM - 1 PM	418	301	11	72.0%	2.6%
1 PM - 2 PM	418	318	16	76.1%	3.8%
2 PM - 3 PM	418	314	12	75.1%	2.9%
3 PM - 4 PM	418	301	16	72.0%	3.8%
4 PM - 5 PM	418	366	16	87.6%	3.8%
5 PM - 6 PM	421	411	15	97.6%	3.6%
6 PM - 7 PM	432	448	16	103.7%	3.7%
7 PM - 8 PM	432	487	17	112.7%	3.9%

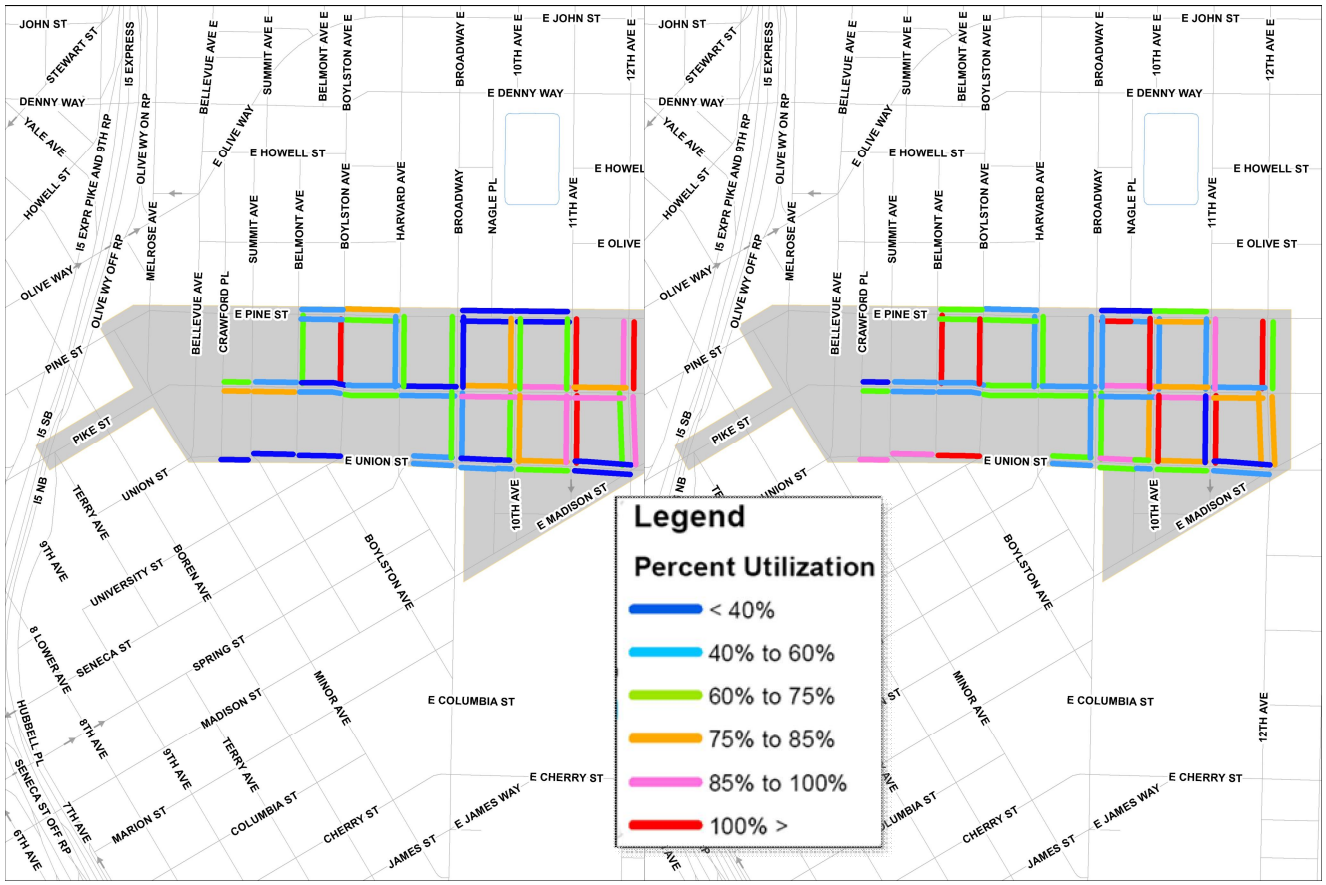
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Pike-Pine area for a typical Saturday, including total occupancy and residential permit usage. The Pike-Pine area had overall utilization ranging from 28% to 98% during the paid parking hours (8 am to 6 pm) and then highly increased usage after paid parking hours. Residential permit usage ranged from 3% to 4%. The chart below provides a breakdown of this utilization and a comparison of residential permit usage in relation to total occupancy.



High Demand Areas

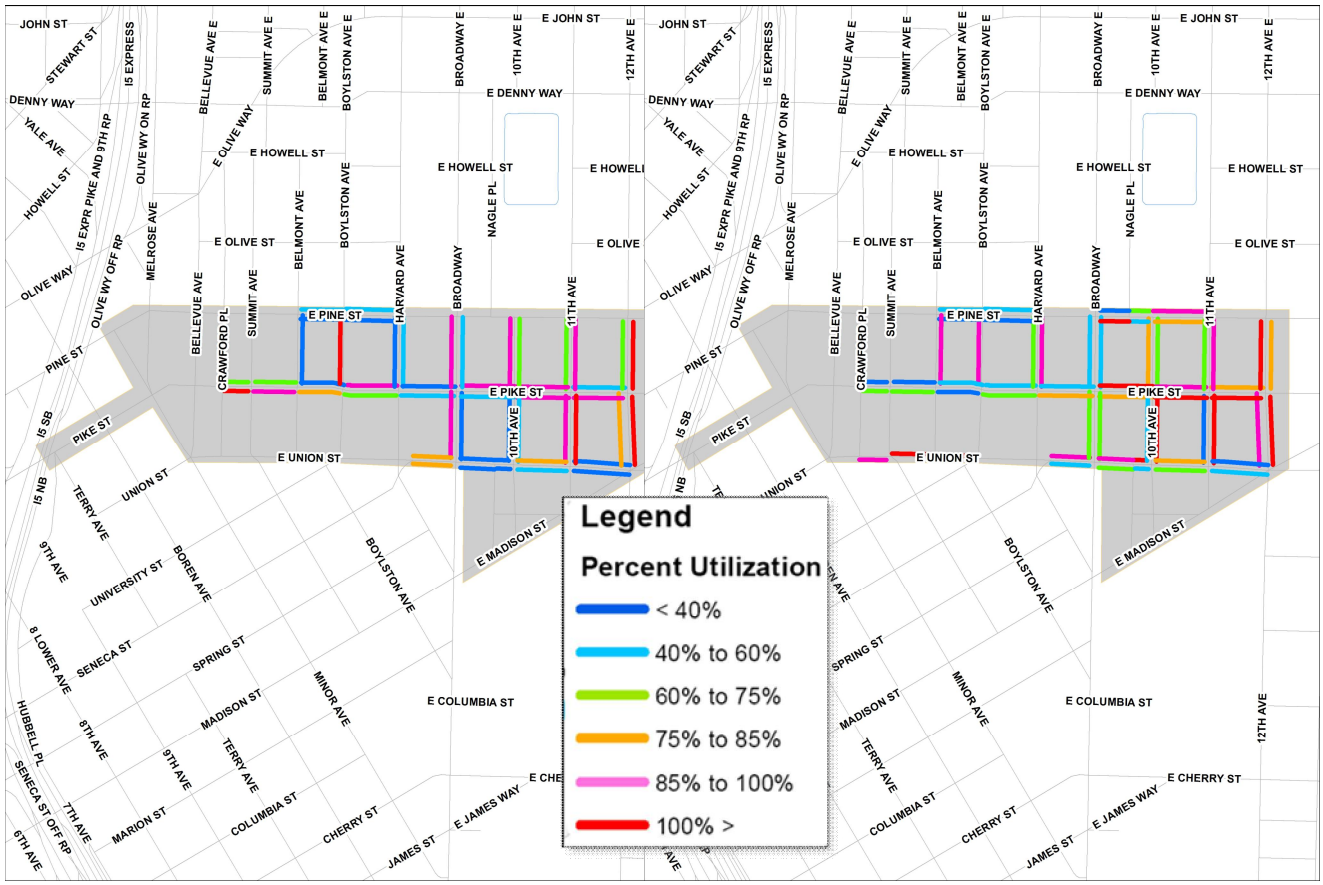
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour by hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – Pike-Pine



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Pike-Pine



November 2010 **June 2011**

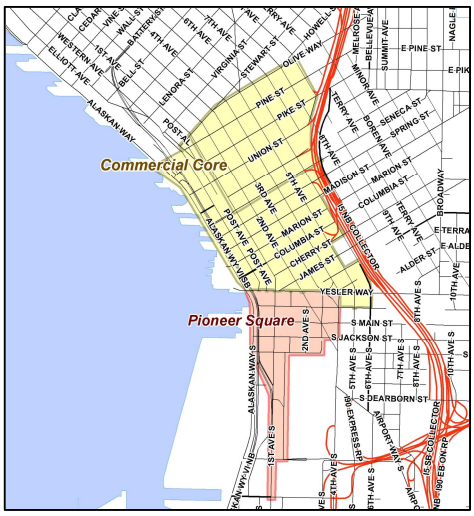
**Peak occupancy for the Pike-Pine (2010) was 12 pm to 1 pm and (2011) was 1 pm to 2 pm. The maps above show the block face occupancies at that time period*

The first set of maps shows that highest average occupancy is clustered in the eastern section of the neighborhood, in the area bounded by Broadway, Union Street, 12th Avenue, and Pine Street. When looking at the peak occupancy maps, the entire area exhibits high demand patterns, but this is occurring under non-paid conditions, when demand throughout the area spikes. With that in mind, the entire area could be considered high demand when evaluating parking management strategies and time-of-day pricing policies. However, when looking at average demands, only the eastern section exhibits the high demand characteristics.

A summary of the contiguous high demand area is shown on the following page.

PIKE-PINE - HIGH DEMAND AREA

PIONEER SQUARE



The Pioneer Square neighborhood is just south of the commercial core and contains a dense clustering of office, retail, entertainment, and residential uses. Pioneer Square is just north of the sports stadiums, and experiences high demands during baseball, football and soccer stadium events. Pioneer Square has an active nightlife scene and a clustering of unique shops, restaurants, and destinations along First Avenue and the surrounding area. The map to the right shows the general location of Pioneer Square in relation to the commercial core. The observed area included a sample of the total paid parking area in the area. The area of paid parking observation was generally along the core streets, north of Jackson Street.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Pioneer Square on-street parking rates increased from $2.50 per hour to $3.50 per hour. Based on data collected in November 2010, the peak occupancies in the area were 91%, indicating demands exceeding the target occupancy.

Based on national and international research of parking demand elasticity, the raising of rates by $1.00 was projected to lower peak occupancy to 86% (5% drop in occupancy), which would theoretically create available capacity along the areas block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Pioneer Square occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as a Saturday between 8 am and 8 pm, and a Sunday between 10 am and 6 pm. Additionally, data was collected on a game day at Safeco Field, to measure the effects of increased demand from a Seattle Mariners baseball game. The occupancy collection included vehicles in paid parking spaces, vehicles utilizing disabled parking permits in paid parking spaces, and presence of either government exempt vehicles or vehicles displaying service hoods.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 38 total block faces, with 258 on-street parking spaces
- 23 block faces with peak hour restrictions
- Paid parking between 8am and 6pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011 for the typical weekday data. The previous study did not collect weekend or game day data; however, that data is provided in this report for reference and review. The results are compared for overall parking utilization, disabled permit utilization, government vehicle utilization, and overall areas of high demand within Pioneer Square.

PIONEER SQUARE WEEKDAY PARKING DATA - June 9, 2011[15]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Paid Occupancy	% Disabled Permit Parking
8 AM - 9 AM	203	65	23	32.0%	9.0%	11.3%
9 AM - 10 PM	235	80	26	34.0%	15.0%	11.1%
10 AM - 11 AM	235	121	31	51.5%	28.0%	13.2%
11 AM - 12 PM	235	132	32	56.2%	34.0%	13.6%
12 PM - 1 PM	235	143	31	60.9%	41.0%	13.2%
1 PM - 2 PM	235	164	34	69.8%	44.0%	14.5%
2 PM - 3 PM	235	138	32	58.7%	52.0%	13.6%
3 PM - 4 PM	235	136	23	57.9%	41.0%	9.8%
4 PM - 5 PM	212	108	21	50.9%	26.0%	9.9%
5 PM - 6 PM	212	88	15	41.5%	30.0%	7.1%
6 PM - 7 PM	235	102	10	43.4%	NA	4.3%
7 PM - 8 PM	235	108	10	46.0%	NA	4.3%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Pioneer Square for a typical weekday, including total occupancy, disabled permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). Pioneer Square had overall utilization ranging from 32% to 70% during the paid parking hours (8 am to 6 pm) and then lower usage after those paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[15] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

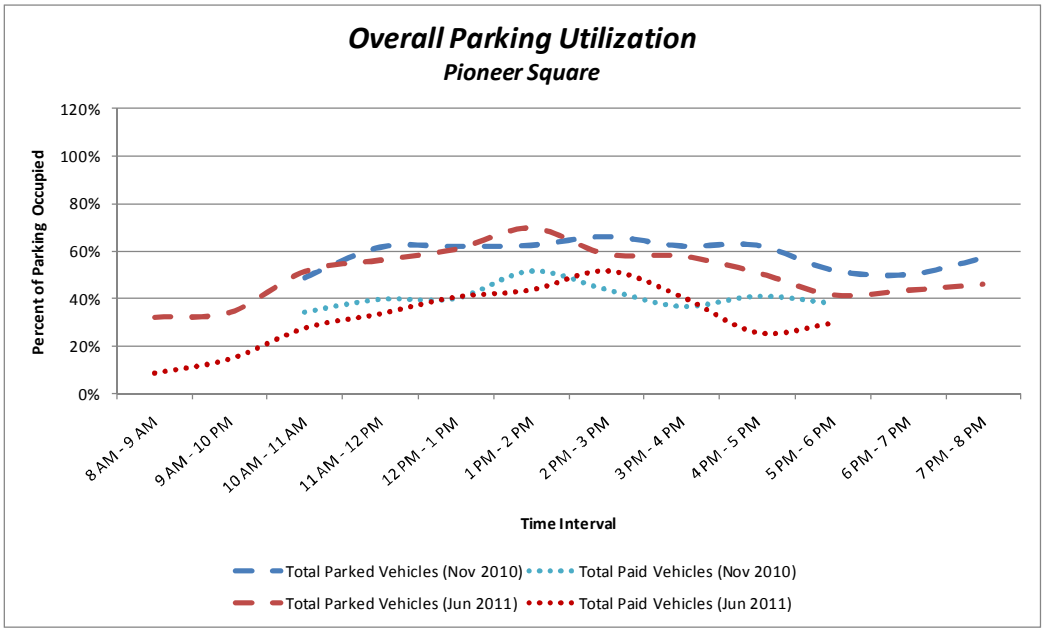
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall weekday parking utilization was mostly unchanged between November 2010 and June 2011. There was a slight lowering of occupancy in the afternoon and evening peaks, which indicates that the increased rate is working to provide additional capacity, especially during peak times of demand.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	66.0%	2 PM - 3 PM
4 PM - 6 PM	62.4%	4 PM - 5 PM
6PM - 8 PM	57.1%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

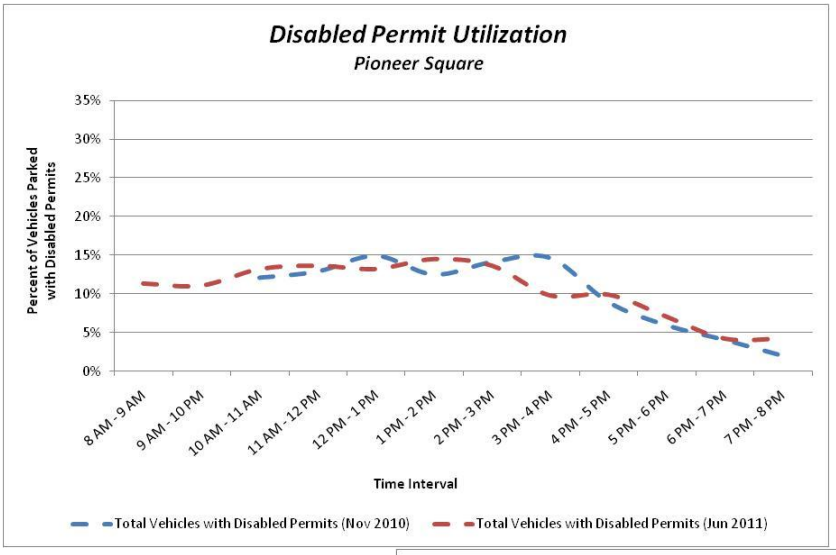
June 2011 Peak Parking Summary

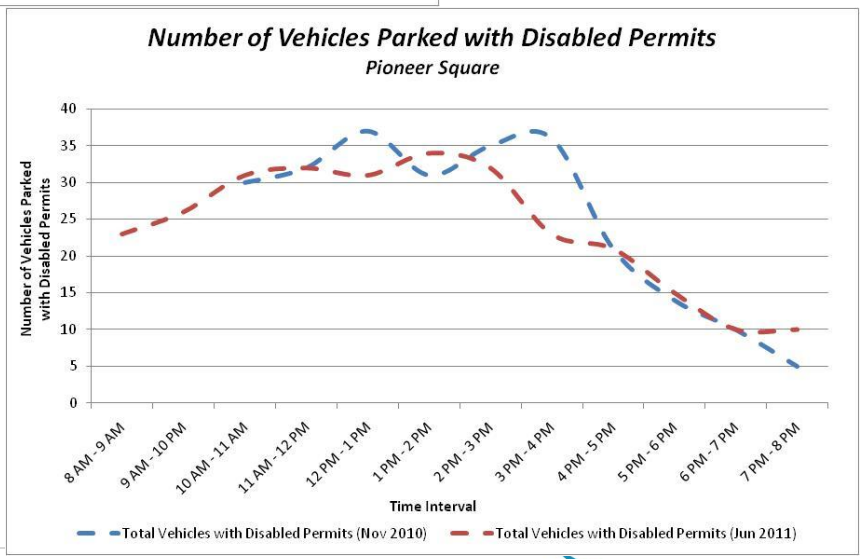
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	56.2%	11 AM - 12 PM
12 PM - 3 PM	69.8%	1 PM - 2 PM
3 PM - 6 PM	57.9%	3 PM - 4 PM
6 PM - 8 PM	46.0%	7 PM - 8 PM

The peak data indicates that overall parking utilization in Pioneer Square was relatively unchanged between November 2010 and June 2011. There was a slight reduction in overall utilization in the afternoon peaks, which is consistent with the expectation of the rate increase. The reduction in utilization is not drastic, indicating that the rate increase is at least partially successful in creating additional capacity in the Pioneer Square area. The following section related to disabled permit usage provides a little more insight into the changes in parking behavior and utilization before and after the recent parking rate changes.

Weekday Disabled Permit Usage

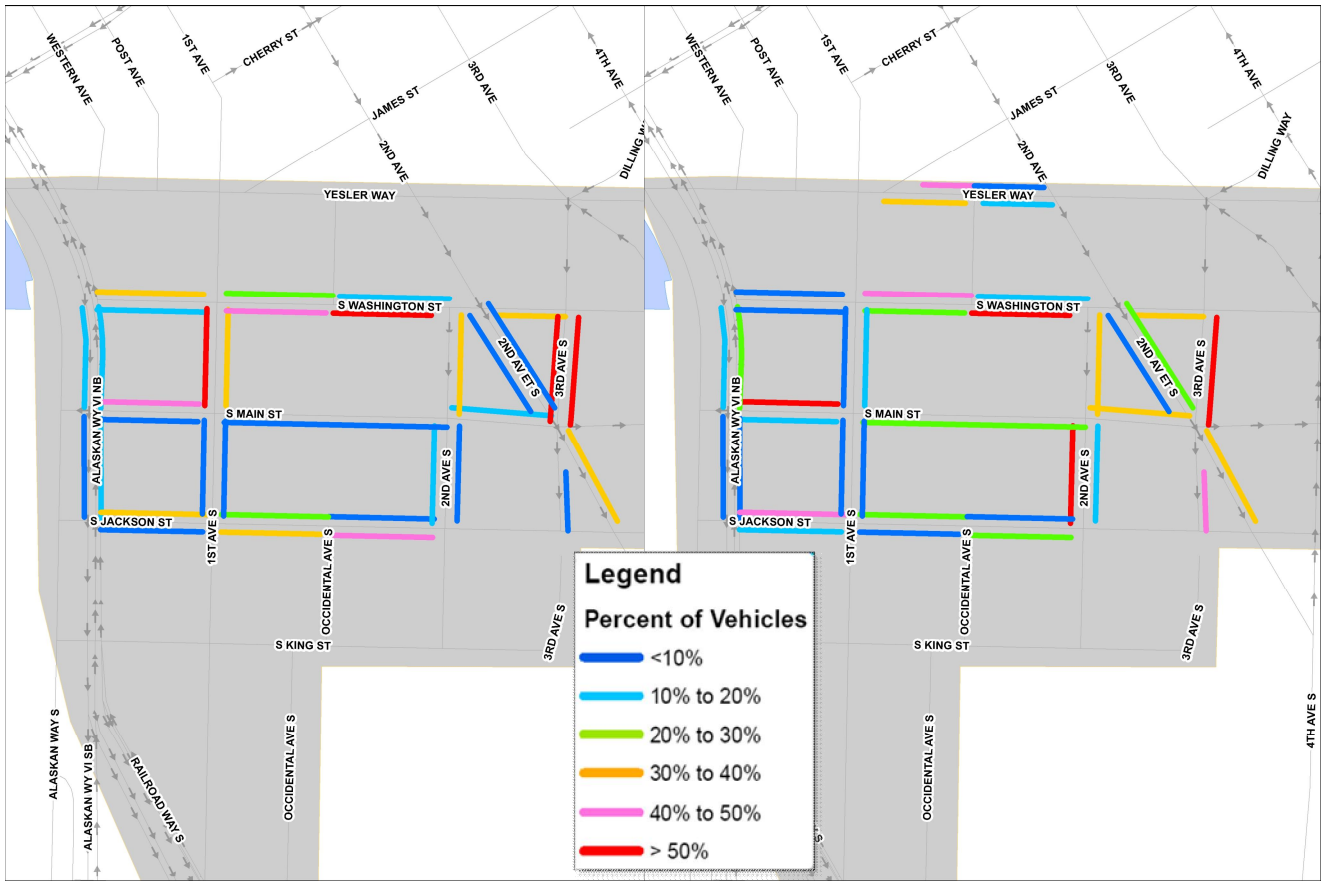
During the November 2010 data collection period, disabled permit usage ranged from 12% to 15% of all available paid on-street parking spaces. Using the same methodology for the June 2011 data collection process, the disabled permit usage ranged from 11% to 15% of the available on-street parking spaces. The consistency with this data indicates that while there may be additional capacity created on-street in Pioneer Square due to the rate changes, it is not being consumed by vehicles parking for free with a disabled parking permit. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphics provide a comparison of peak disabled permit usage within Pioneer Square.

November 2010 vs June 2011 Peak Disabled Permit Usage – Pioneer Square



November 2010 **June 2011**

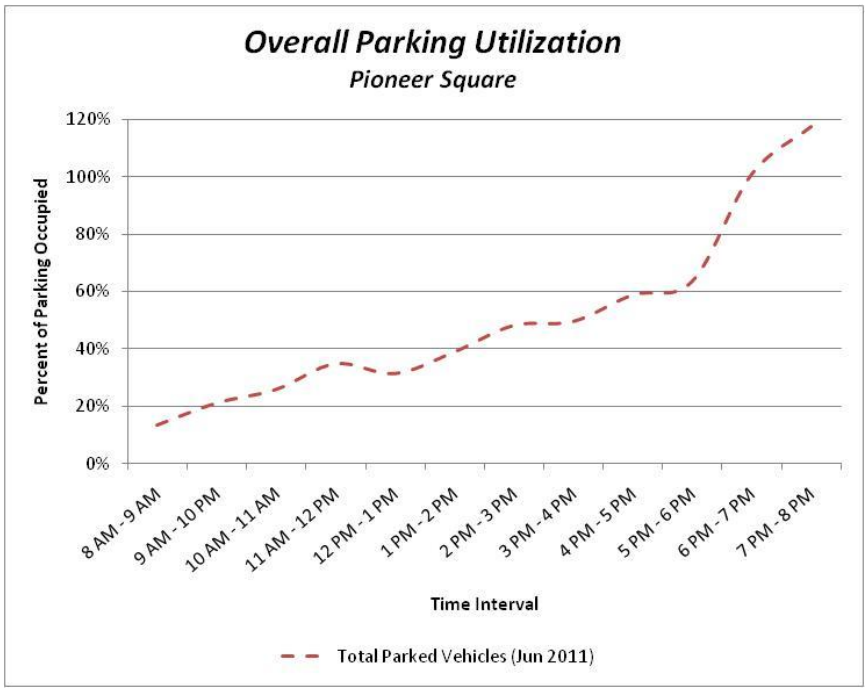
Weekend Parking Observations

Parking occupancy data was collected for Pioneer Square on both Saturday and Sunday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy on both days.

PIONEER SQUARE - SATURDAY PARKING DATA - June 11, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	233	31	13.3%
9 AM - 10 PM	233	49	21.0%
10 AM - 11 AM	233	60	25.8%
11 AM - 12 PM	233	81	34.8%
12 PM - 1 PM	233	73	31.3%
1 PM - 2 PM	216	84	38.9%
2 PM - 3 PM	216	104	48.1%
3 PM - 4 PM	216	107	49.5%
4 PM - 5 PM	216	127	58.8%
5 PM - 6 PM	225	143	63.6%
6 PM - 7 PM	205	207	101.0%
7 PM - 8 PM	216	254	117.6%

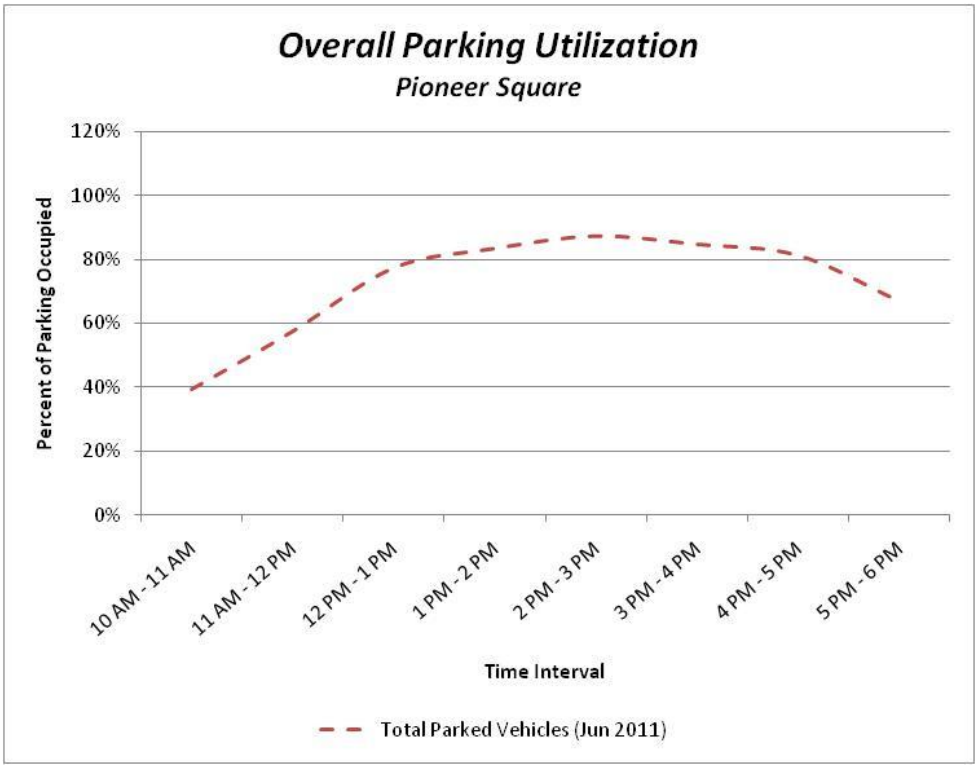
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Pioneer Square for a typical Saturday. Pioneer Square had overall utilization ranging from 13% to 64% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours (which could be attributed to an evening Sounders game). The chart below provides a breakdown of this utilization throughout the day.



PIONEER SQUARE - SUNDAY PARKING DATA - June 12, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
10 AM - 11 AM	233	92	39.5%
11 AM - 12 PM	233	134	57.5%
12 PM - 1 PM	233	180	77.3%
1 PM - 2 PM	233	194	83.3%
2 PM - 3 PM	233	203	87.1%
3 PM - 4 PM	233	197	84.5%
4 PM - 5 PM	233	189	81.1%
5 PM - 6 PM	233	156	67.0%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Pioneer Square for a typical Sunday. Pioneer Square had overall utilization ranging from 40% to 87% during the observation hours. Because parking is free on Sunday, there is a much higher use of the parking spaces, primarily by long-term parkers. While this study did not measure parking turnover and duration, visual observations throughout Pioneer Square showed the same vehicles parked in the same spaces throughout the entire length of the observations. The chart below provides a breakdown of this utilization throughout the day.



Baseball Game Day Parking Observations

Parking occupancy data was collected for Pioneer Square from 8 am to 8 pm on the day of a Seattle Mariners baseball game, to better understand how event parking demands impact the on-street parking system. The following information provides a summary of regular vehicular occupancy during game day collection conditions.

PIONEER SQUARE – GAME DAY PARKING DATA - June 14, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with Disabled Permits	% Parking Occupied	% Disabled Permit Parking
8 AM - 9 AM	212	66	16	31.1%	7.5%
9 AM - 10 PM	244	89	18	36.5%	7.4%
10 AM - 11 AM	244	118	27	48.4%	11.1%
11 AM - 12 PM	244	139	24	57.0%	9.8%
12 PM - 1 PM	244	168	28	68.9%	11.5%
1 PM - 2 PM	244	151	23	61.9%	9.4%
2 PM - 3 PM	235	159	18	67.7%	7.7%
3 PM - 4 PM	250	124	17	49.6%	6.8%
4 PM - 5 PM	227	121	20	53.3%	8.8%
5 PM - 6 PM	233	105	9	45.1%	3.9%
6 PM - 7 PM	256	146	13	57.0%	5.1%
7 PM - 8 PM	256	208	5	81.3%	2.0%

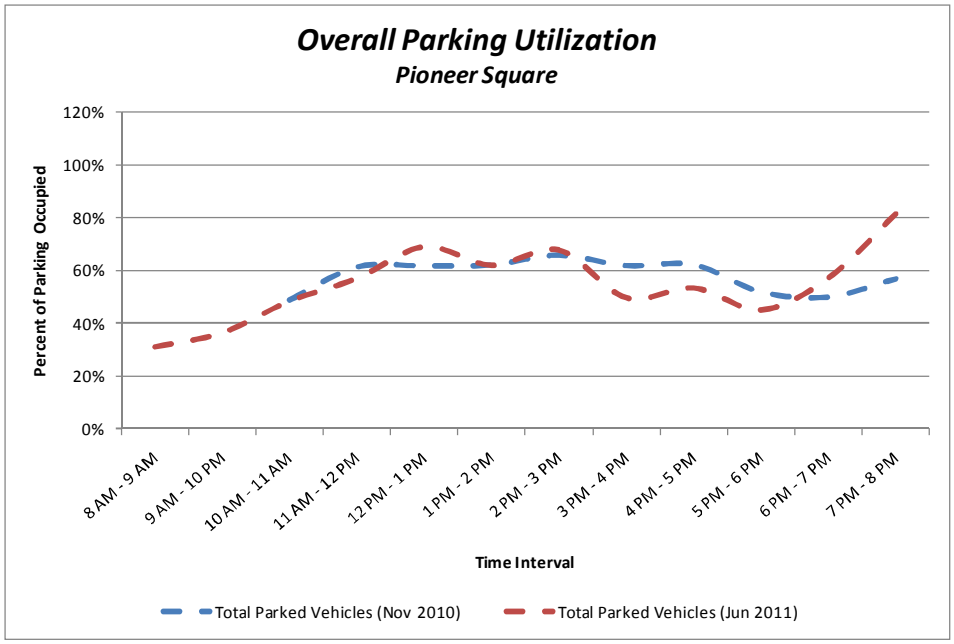
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from Pioneer Square for the game day collection period. The area had overall utilization ranging from 31% to 69% during the paid parking hours (8 am to 6 pm) and then moderately increased usage after paid parking hours. Disabled permit usage ranged from 7% to 12%. The chart below compares peak occupancy for the game day and non-game day collection periods.

June 2011 Peak Parking Summary – Game Day vs Non Game Day

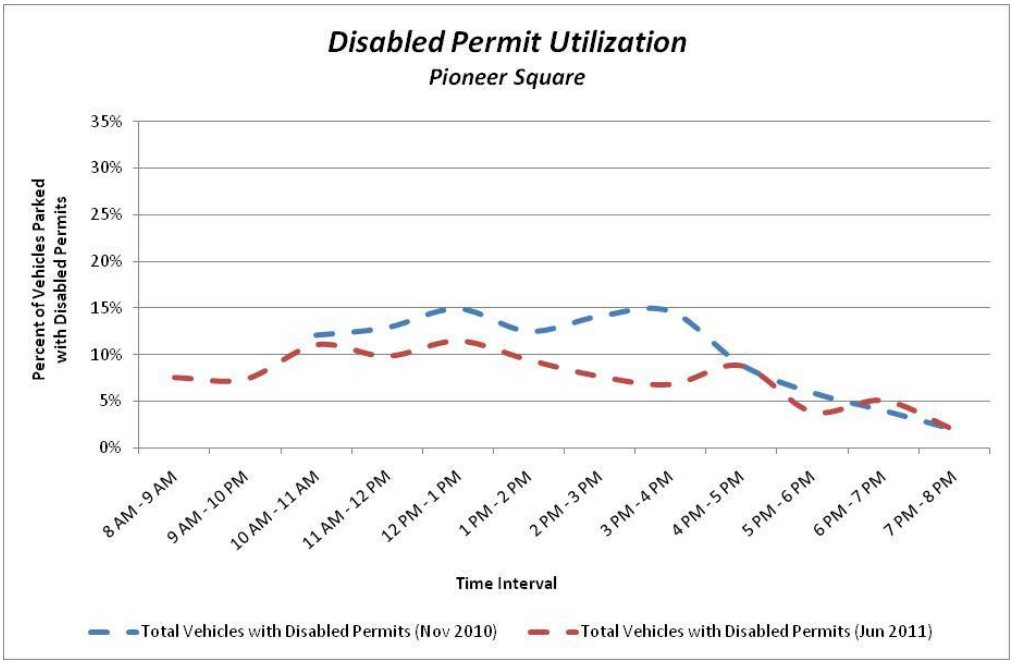
Time Period	Game Day		Non Game Day	
	% Occupied Parking	Peak Hour	% Occupied Parking	Peak Hour
8 AM - 12 PM	56.2%	11 AM - 12 PM	57.0%	11 AM - 12 PM
12 PM - 3 PM	69.8%	1 PM - 2 PM	68.9%	12 PM - 1 PM
3 PM - 6 PM	57.9%	3 PM - 4 PM	53.3%	4 PM - 5 PM
6 PM - 8 PM	46.0%	7 PM - 8 PM	81.3%	7 PM - 8 PM

The data in the chart shows that for a traditional game day, with an event in the evening, parking demand is largely unchanged until just before the event begins. When comparing all three time periods prior to 6 pm, the demand is virtually the same. However, after 6pm the variance in demand is much greater (approximately 35%), which accounts for the additional demand from the game and the presence of free parking on-street after 6pm in the Pioneer Square area.

The chart below provides a comparison of the game day utilization pattern versus the November 2010 data (collected on a non-game day). Again, until 6 pm the trends and utilization levels are largely unchanged from November 2010 to June 2011.



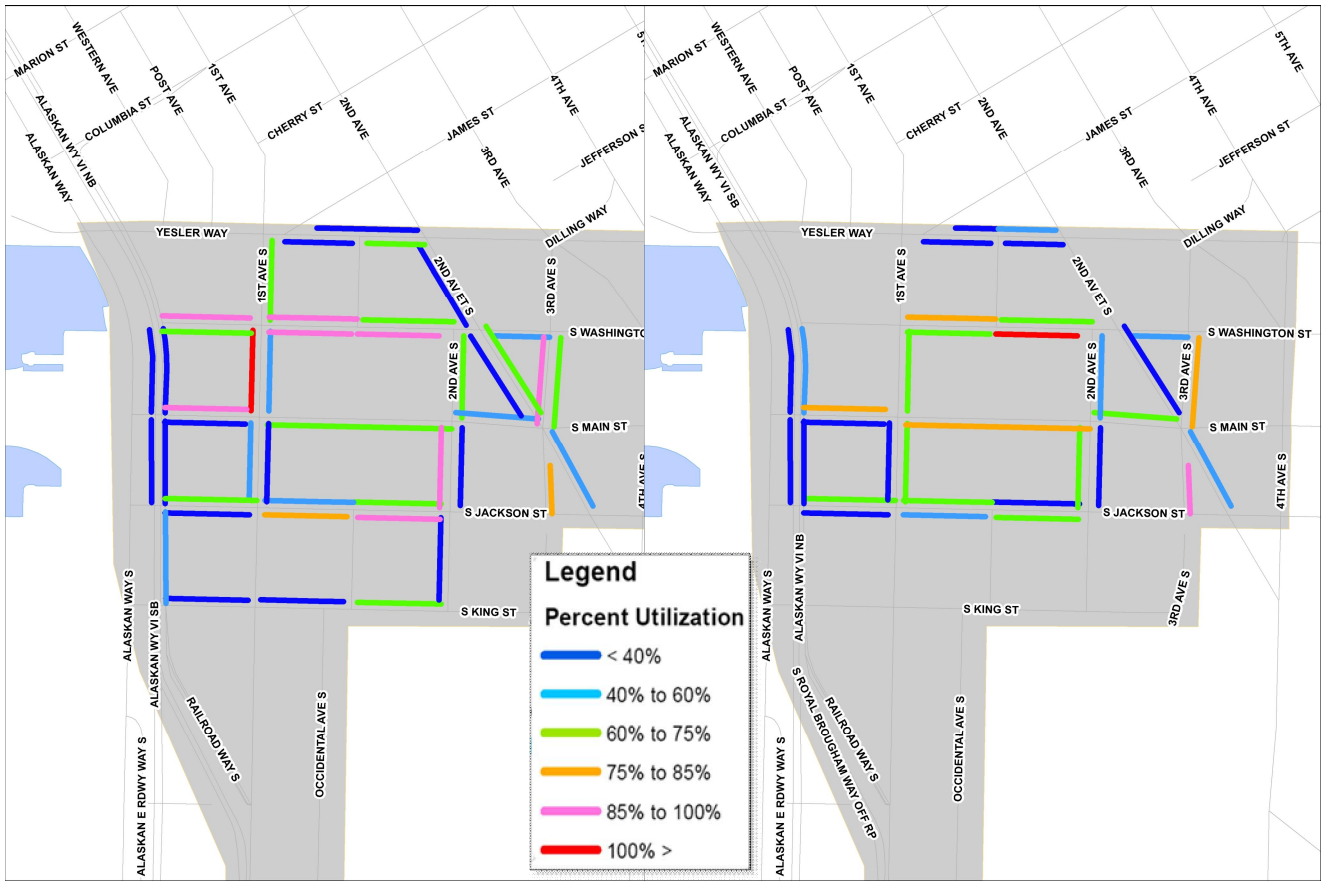
The chart below provides a breakdown of disabled permit usage on game day, compared to the November 2010 data collection period. Much like the non-game day, the data indicates that disabled permit usage is not altered greatly between the two time periods. In some observations, disabled permit utilization is down, but the variation between the two peaks is not drastic.



High Demand Areas

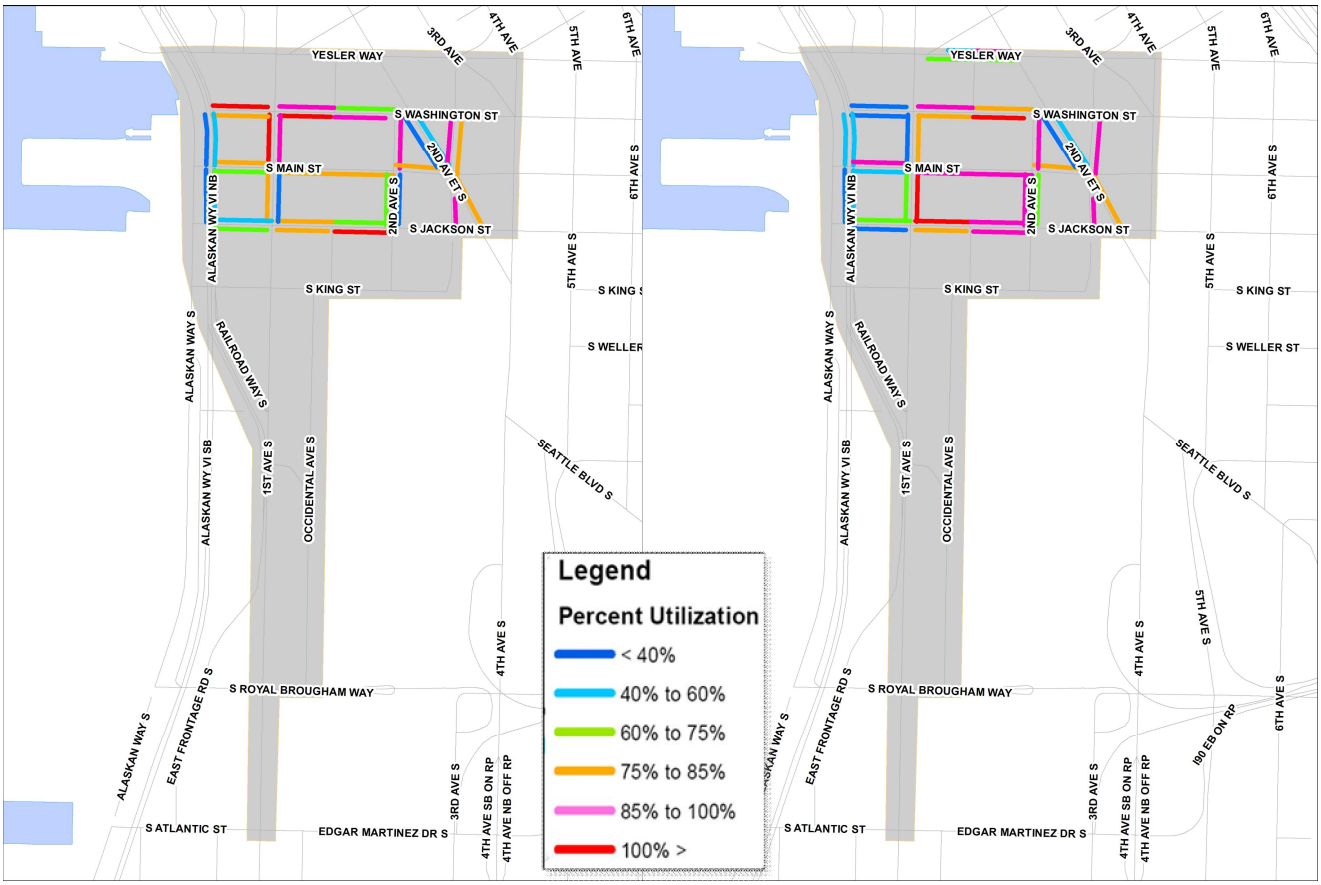
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour by hour heat maps, please refer to the appendix of this document.

November 2010 vs June 2011 Average Weekday Occupancy – Pioneer Square



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Pioneer Square



November 2010 **June 2011**

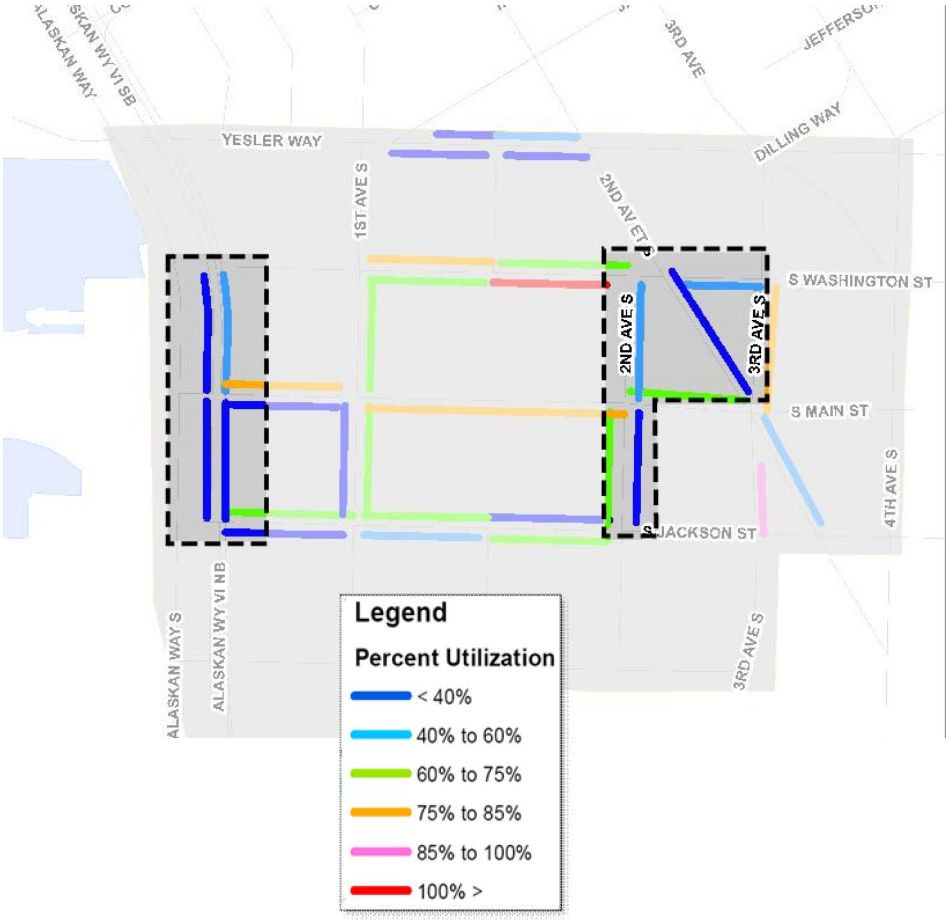
**Peak occupancy for the Pioneer Square (2010) was 2 pm to 3 pm and (2011) was 1 pm to 2 pm. The maps above show the block face occupancies at that time period.*

The first two maps show that the highest average occupancy is centered on the intersections of 1st Avenue and Washington Street, 1st Avenue and Main Street, Main Street and Occidental Avenue, and Washington Street and Occidental Avenue. From a peak occupancy standpoint this area can be extended east and south to include portions of 2nd Avenue and Jackson Street.

In addition to the above mentioned high demand areas, there is a notable low demand area under the Alaskan Viaduct and east of 2nd Avenue South. Therefore, a sub-area with a lower rate should be considered to address the different occupancy levels.

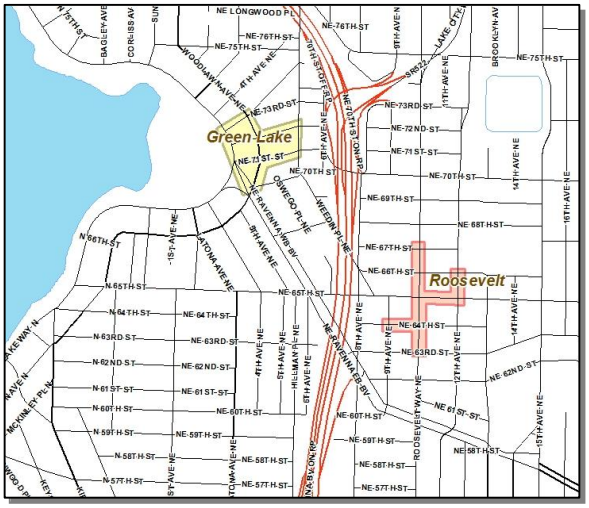
A summary of the low demand areas are shown on the following page.

PIONEER SQUARE – LOW DEMAND AREA



ROOSEVELT NEIGHBORHOOD

The paid parking area of the Roosevelt neighborhood runs along four streets: 12th Avenue NE between NE 66th and 65th Streets, Roosevelt Way NE between NE 63rd and 67th Streets, NE 65th Street between Roosevelt Way NE and 12th Avenue NE, and NE 64th Street between 9th Avenue NE and Roosevelt Way NE. The map to the right gives the general location of the neighborhood in relation to the surrounding neighborhoods and the general Seattle area. Within the Roosevelt neighborhood, there is a mix of retail and restaurant uses, with residential uses on the periphery of the neighborhood. The Roosevelt business district has had paid parking since the 1950s. Roosevelt High School is nearby.



2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Roosevelt on-street parking rates were lowered from $1.50 per hour to $1.00 per hour. Based on data collected in November 2010, the peak occupancies in the Roosevelt neighborhood were 67%. This indicates that the demands were below the target occupancy.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% (a 4% increase in occupancy) in Roosevelt, which would theoretically increase demand along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Roosevelt occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, allowing for an understanding of the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 12 total block faces, with 98 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within Roosevelt.

ROOSEVELT WEEKDAY PARKING DATA - June 2, 2011[16]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	80	6	7.5%	3.0%
9 AM - 10 PM	93	12	12.9%	4.0%
10 AM - 11 AM	93	23	24.7%	10.0%
11 AM - 12 PM	93	38	40.9%	22.0%
12 PM - 1 PM	93	44	47.3%	38.0%
1 PM - 2 PM	93	43	46.2%	44.0%
2 PM - 3 PM	93	46	49.5%	52.0%
3 PM - 4 PM	93	31	33.3%	34.0%
4 PM - 5 PM	65	31	47.7%	37.0%
5 PM - 6 PM	65	49	75.4%	34.0%
6 PM - 7 PM	93	65	69.9%	NA
7 PM - 8 PM	93	73	78.5%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Roosevelt neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The Roosevelt area had overall utilization between 8% and 75% during the paid parking hours (8 am to 6 pm). Usage after paid parking hours remained relatively high. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[16] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

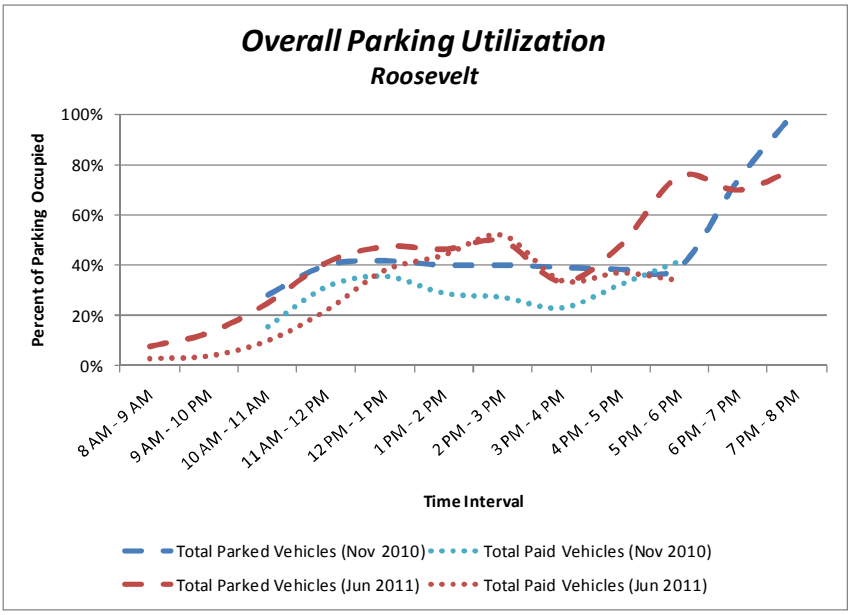
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization in Roosevelt was relatively similar between 8 am and 5 pm between November 2010 and June 2011, but was significantly higher during the 5 pm hour in June 2011 versus November 2010. Overall, the full day results indicate that reducing parking rates did not cause a change in behavior within the area; however, a review of other parking patterns in Roosevelt provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	60.2%	1 PM - 2 PM
4 PM - 6 PM	61.3%	5 PM - 6 PM
6PM - 8 PM	92.5%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	40.9%	11 AM – 12 PM
12 PM - 3 PM	49.5%	2 PM - 3 PM
3 PM - 6 PM	75.4%	5 PM - 6 PM
6 PM - 8 PM	78.5%	7 PM - 8 PM

The peak data clearly indicates a decrease of overall parking utilization in the Roosevelt neighborhood, contrary to the projections and theoretical approach of the 2011 rate setting process. This may be due to changes with the nearby High School, or other factors.

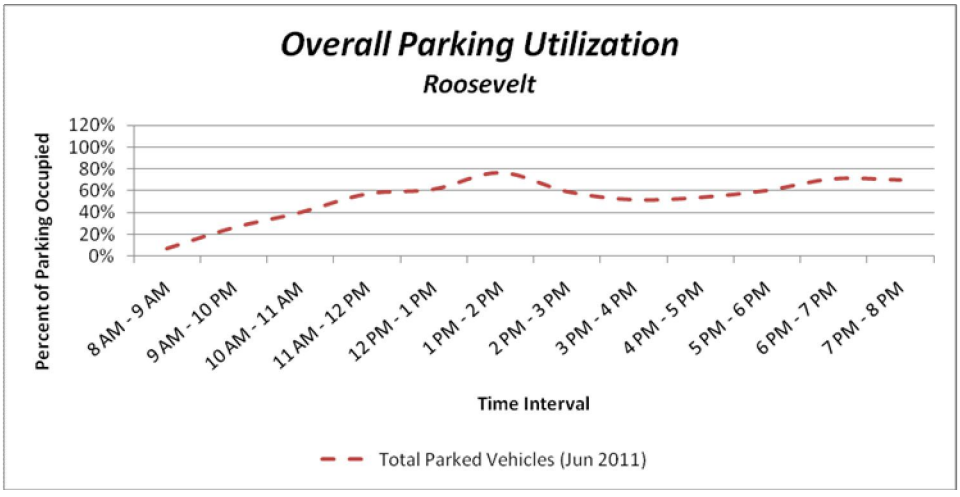
Weekend Parking Observations

Parking occupancy data was collected for the Roosevelt neighborhood on Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

ROOSEVELT - SATURDAY PARKING DATA - June 4, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	93	6	6.5%
9 AM - 10 PM	93	24	25.8%
10 AM - 11 AM	93	37	39.8%
11 AM - 12 PM	93	53	57.0%
12 PM - 1 PM	93	57	61.3%
1 PM - 2 PM	90	69	76.7%
2 PM - 3 PM	93	55	59.1%
3 PM - 4 PM	93	48	51.6%
4 PM - 5 PM	93	50	53.8%
5 PM - 6 PM	93	56	60.2%
6 PM - 7 PM	93	66	71.0%
7 PM - 8 PM	93	65	69.9%

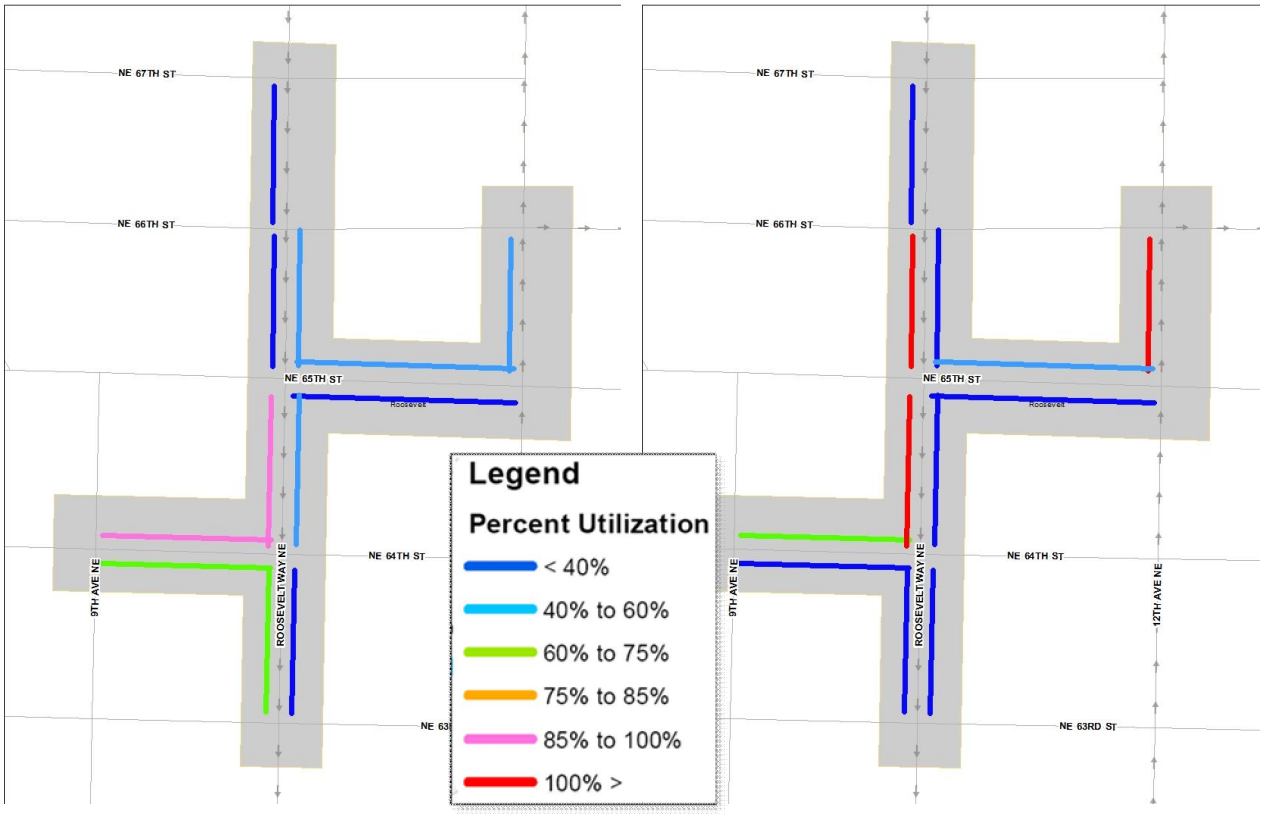
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Roosevelt neighborhood for a typical Saturday. The Roosevelt neighborhood had overall utilization ranging from 6% to 78% during the paid parking hours (8 am to 6 pm). Usage after paid parking hours increased slightly. The chart below provides a breakdown of this utilization.



High Demand Areas

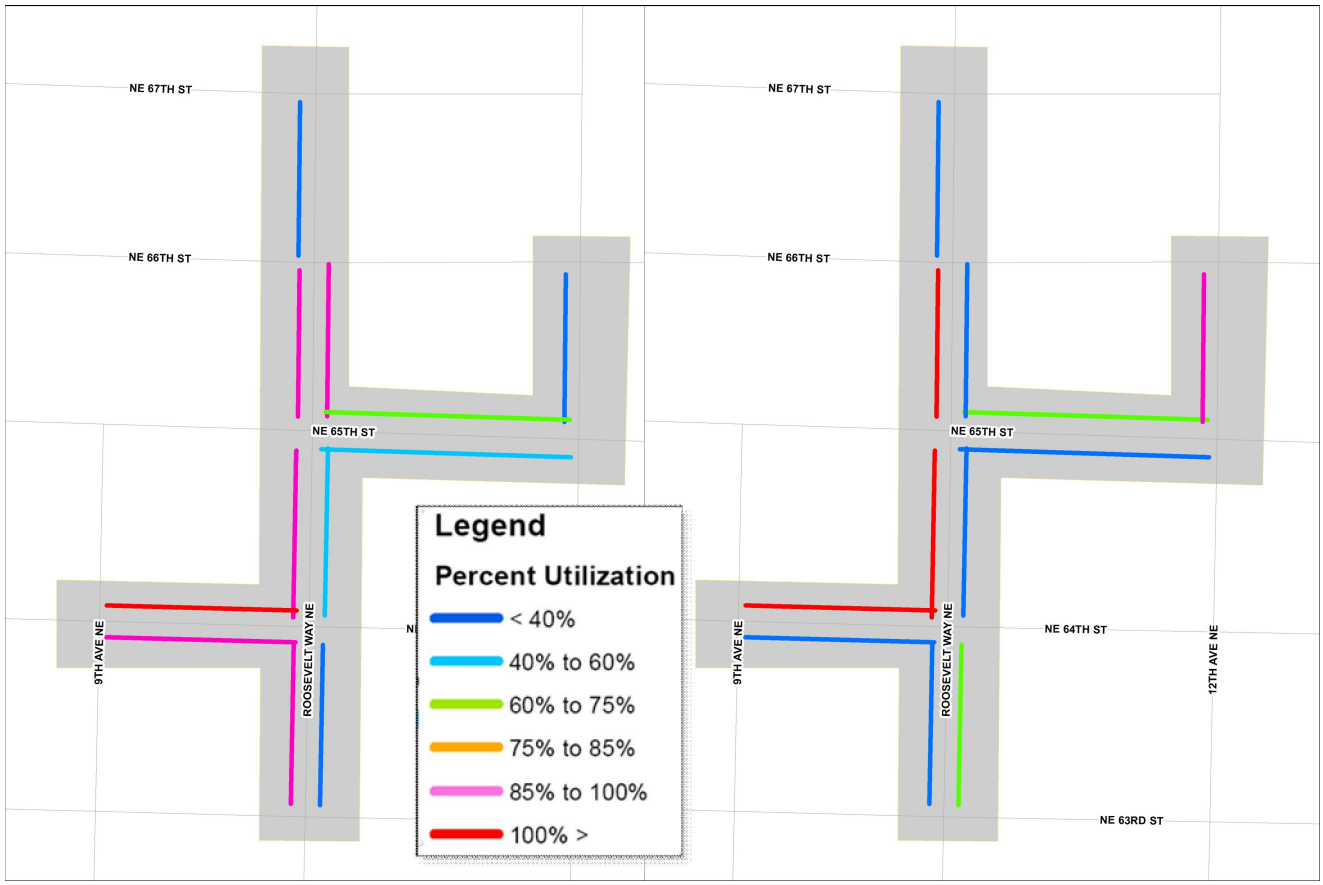
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour by hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour by hour heat maps, please refer to the appendix of this document.

November 2010 vs June 2011 Average Occupancy – Roosevelt



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Roosevelt



November 2010 **June 2011**

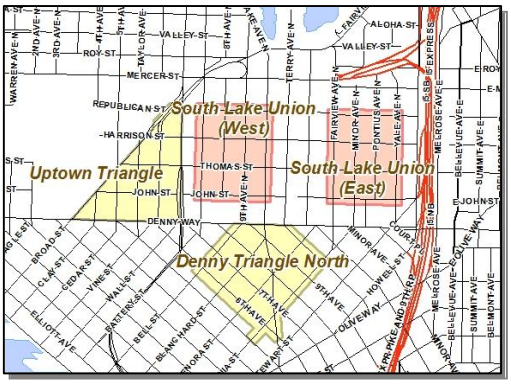
**Peak occupancy for the Roosevelt (2010) was 1 pm to 2 pm and (2011) was 2 pm to 3 pm. The maps above show the block face occupancies at that time period.*

The two previous maps show that the highest average occupancy is along Roosevelt Way NE between 64th Street and 66th Street. Based on peak utilization patterns, 65th Street and 64th Street could also be considered high demand.

While there are areas of specific high demand within the Roosevelt area, it would not lend itself to subdivision as the paid parking area relatively small. With the continued lower occupancies compared to the target occupancy, a change in the maximum time limits allowed for parking may be necessary.

SOUTH LAKE UNION NEIGHBORHOOD

The South Lake Union neighborhood is bounded by Denny Way to the South, Aurora Avenue N to the west, I-5 to the east, and Prospect and Valley Streets to the north. It borders the Uptown Triangle, Denny Triangle North, and Westlake Avenue North paid parking neighborhoods.



Two separate areas within the larger neighborhood were studied, and broken into the following sections, South Lake Union West (SLU-W) and South Lake Union East (SLU-E). The map to the right gives the general location of the neighborhood in relation to the eastern and western sections, as well as to the overall Seattle area. Within the South Lake Union neighborhood, there are a mixture of office, retail, restaurant, and residential uses. It has become a “high-tech bio-tech” magnet as well as a regional destination with the development of the new South Lake Union Park adjacent to the Center for Wooden Boats. Some of the higher demand generators in the neighborhood are the REI flagship store, the national headquarters of Amazon.com, and the Fred Hutchinson Cancer Research Center. SDOT conducted a parking study in 2006 and developed a unique plan at the time for this neighborhood. SDOT installed a mix of parking management controls in 2007, including 2-hour and 10-hour paid parking, as well as a Restricted Parking Zone (RPZ) that shares some of the 2-hour paid parking blocks.

2011 Rate Setting Decisions

South Lake Union has three different parking space types; 2-hour limit parking, 2-hour plus RPZ, and 10-hour limit parking. As part of the 2011 rate setting process, the South Lake Union neighborhood on-street parking rates were reduced from $2.00 per hour to $1.50 per hour in the 2-hour limit parking areas. The rates in the 10-hour limit parking areas remained at $1.25 per hour. Based on data collected in November 2010, the peak occupancy in the 2-hour limit parking areas was 58%, while in the 10-hour limit parking areas the peak occupancy was 73%. This indicated that demands were lower than the proposed capacity cushion of one to two spaces per block face for the 2-hour limit blocks.

Based on national and international research of parking demand elasticity, reducing rates by $0.50 in the 2-hour limit areas was projected to increase peak occupancy to 71% (13% increase in occupancy), which would theoretically create available capacity along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, South Lake Union occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as a Saturday between 8 am and 8 pm. The occupancy collection included vehicles in paid parking spaces, and vehicles utilizing residential permit parking permits in appropriate residential permit parking areas.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, to better understand the

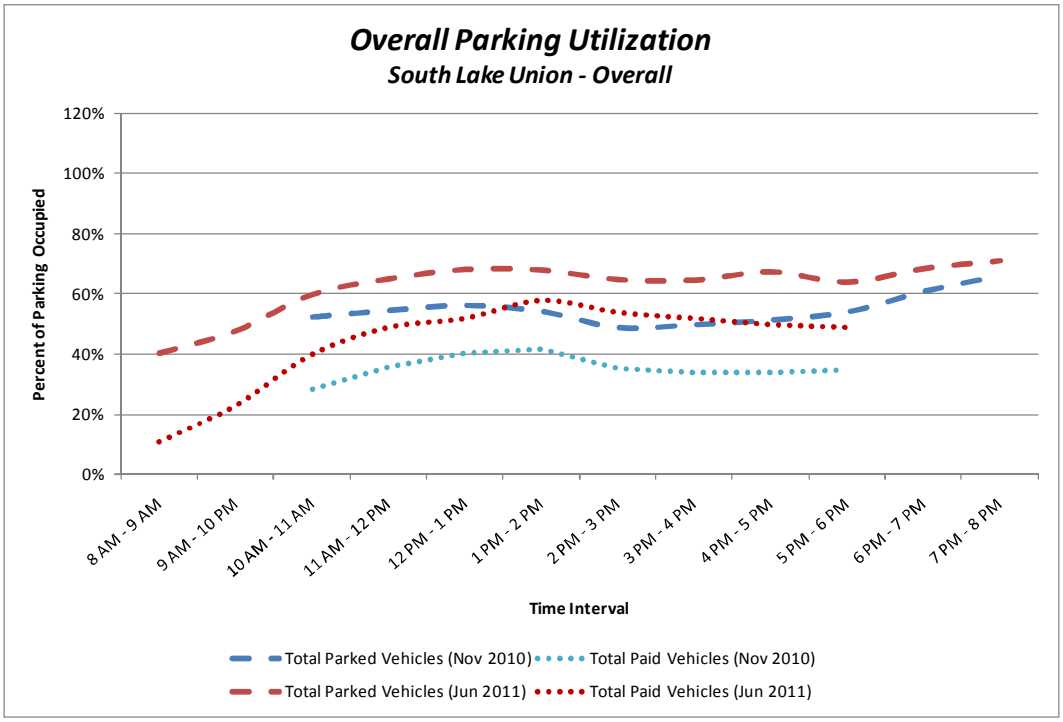
changes in occupancy, demands, and general parking behaviors as a result of the rate changes, and a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 98 total block faces, with 913 on-street parking spaces
- 15 block faces with Residential Permit Parking Zones
- 7 block faces with peak hour restrictions

Data Results

The data, charts, and maps below and on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization, residential permit parking utilization, and overall areas of high demand within the South Lake Union neighborhood.



The chart above indicates that the overall parking utilization increased between November 2010 and June 2011. On the surface, this result indicates that the reduction of 2-hour limit parking rates was effective in creating demand along the curb face. In fact, the peak measured occupancy (between 12 pm and 1 pm) was roughly 69%, which is higher than the projected peak occupancy identified during the 2011 rate setting process.

The data shown in the large table following provides an hour-by-hour breakdown of the collected parking data from the South Lake Union neighborhood, including total occupancy, residential permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). The table shows percentages of utilization for overall occupancy and residential permits by hour for the observed

parking. The South Lake Union area had overall utilization ranging from 41% to 69% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The charts on the following pages provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

SOUTH LAKE UNION PARKING DATA - June 15, 2011[17]

	Hourly Parking Supply	Total Parked Vehicles	Total 2-hour Parking Supply	Total 10-hour Parking Supply	Total 2-hour Limit Parked Vehicles	Total 10-hour Limit Parked Vehicles	Total 2-Hour RPZ Blocks Parked	Total Vehicles with RPZ Permits	% Parking Occupied	% 2-hour Limit Spaces Occupied	% 10-hour Limit Spaces Occupied	% 2-Hour RPZ Spaces Occupied	% Paid Occupancy	% RPZ Parking
8 AM - 9 AM	880	352	463	417	180	172	93	93	40.0%	38.9%	41.2%	20.1%	11.0%	10.6%
9 AM - 10 PM	906	430	489	417	189	241	83	83	47.5%	38.7%	57.8%	17.0%	23.0%	9.2%
10 AM - 11 AM	889	531	481	408	230	301	78	78	59.7%	47.8%	73.8%	16.2%	40.0%	8.8%
11 AM - 12 PM	904	587	487	417	244	343	81	83	64.9%	50.1%	82.3%	16.6%	49.0%	9.2%
12 PM - 1 PM	895	610	478	417	264	346	59	59	68.2%	55.2%	83.0%	12.3%	52.0%	6.6%
1 PM - 2 PM	879	597	462	417	232	365	72	72	67.9%	50.2%	87.5%	15.6%	58.0%	8.2%
2 PM - 3 PM	897	581	480	417	237	344	86	86	64.8%	49.4%	82.5%	17.9%	54.0%	9.6%
3 PM - 4 PM	906	585	489	417	243	342	82	82	64.6%	49.7%	82.0%	16.8%	52.0%	9.1%
4 PM - 5 PM	831	560	414	417	223	327	90	90	67.4%	53.9%	78.4%	21.7%	50.0%	10.8%
5 PM - 6 PM	831	531	414	417	273	258	91	91	63.9%	65.9%	61.9%	22.0%	49.0%	11.0%
6 PM - 7 PM	906	620	489	417	346	274	93	93	68.4%	70.8%	65.7%	19.0%	NA	10.3%
7 PM - 8 PM	906	644	489	417	350	294	78	78	71.1%	71.6%	70.5%	16.0%	NA	8.6%

[17] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

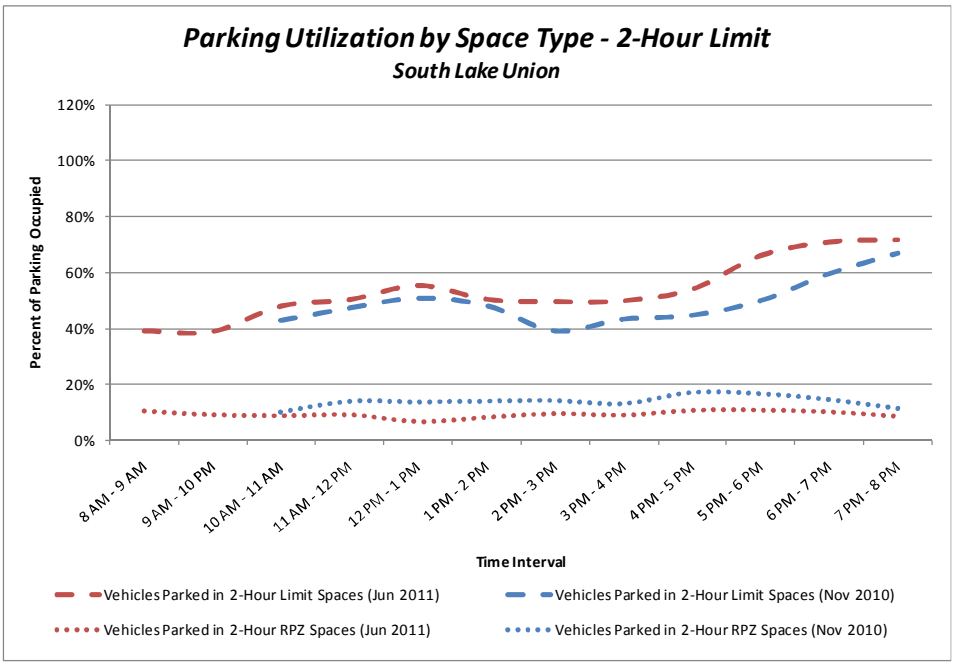
% Parking Occupied denotes the percent of total spaces that were occupied.

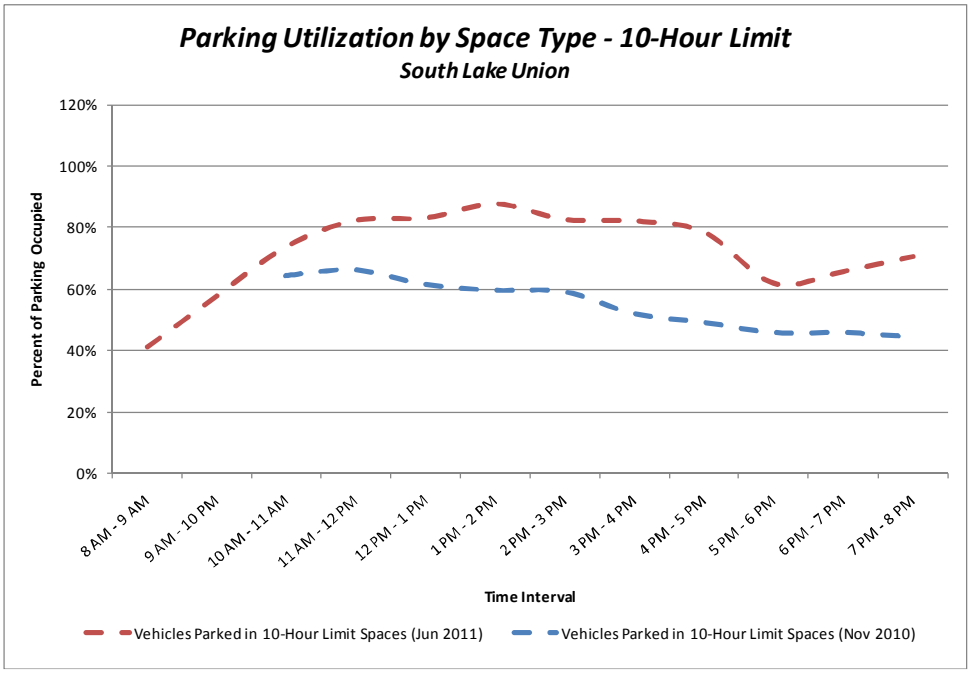
% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.





The second set of charts (above) show parking utilization, but separated into the 2-hour limit parking areas and the 10-hour limit areas. The charts clearly indicate that RPZ usage in the 2-hour limit areas decreased slightly, whereas the overall utilization in the 2-hour limit areas remained relatively unchanged. Utilization in the 10-hour limit areas increased substantially between June 2011 and November 2010, likely due to the opening of the new Amazon.com headquarters. The on-street 10-hour rates are reportedly below the current off-street "market" rate.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	2-Hour % Occupied Parking	2-Hour Peak Hour	10-Hour % Occupied Parking	10-Hour Peak Hour
10 AM - 4 PM	50.9%	12 PM – 1 PM	66.2%	11 AM – 12 PM
4 PM - 6 PM	50.0%	5 PM - 6 PM	49.3%	4 PM – 5 PM
6PM - 8 PM	66.9%	7 PM - 8 PM	46.0%	6 PM - 7PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

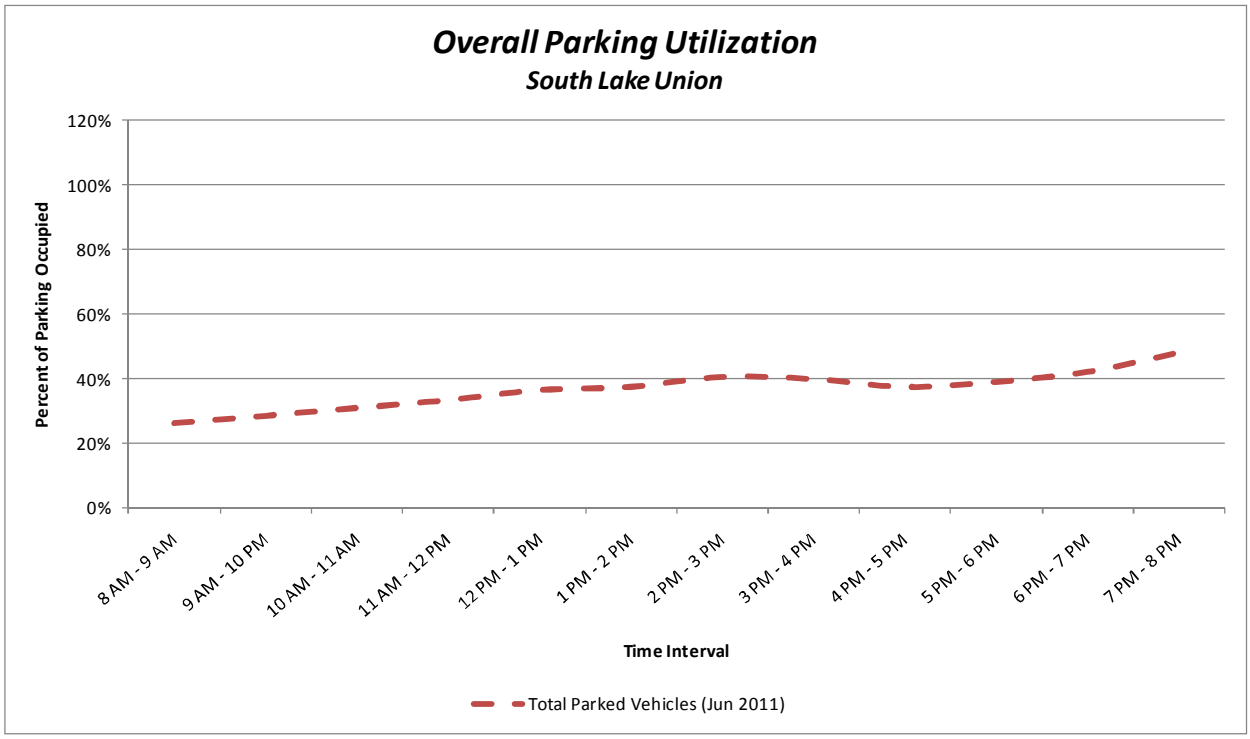
Time Period	2-Hour % Occupied Parking	2-Hour Peak Hour	10-Hour % Occupied Parking	10-Hour Peak Hour
8 AM – 12PM	50.1%	11 AM – 12 PM	82.3%	11 AM – 12 PM
12 PM – 3 PM	55.2%	12 PM – 1 PM	87.5%	1 PM – 2 P M
3 PM – 6 PM	65.9%	5 PM – 6 PM	82.0%	3 PM – 4 PM
6 PM – 8 PM	71.6%	7 PM – 8 PM	70.5%	7 PM – 8 PM

The peak data clearly indicates that parking utilization in 2-hour limit parking increased slightly, and parking utilization in 10-hour limit areas has increased, in line with the projections and theoretical approach of the 2011 rate setting process and changes in the neighborhood. For a further discussion of the effectiveness of the rate setting process and the elasticity of parking in the Seattle commercial core and neighborhoods, please see Chapter 3.

Weekend Parking Observations

Parking occupancy data was collected for the South Lake Union neighborhoods on Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

The data shown in the table on the following page provides an hour-by-hour breakdown of the collected parking data from South Lake Union for a typical Saturday. The South Lake Union neighborhood had overall utilization ranging from 26% to 41% during the paid parking hours (8 am to 6 pm). Usage after paid parking hours increased slightly. The chart below provides a breakdown of this utilization.

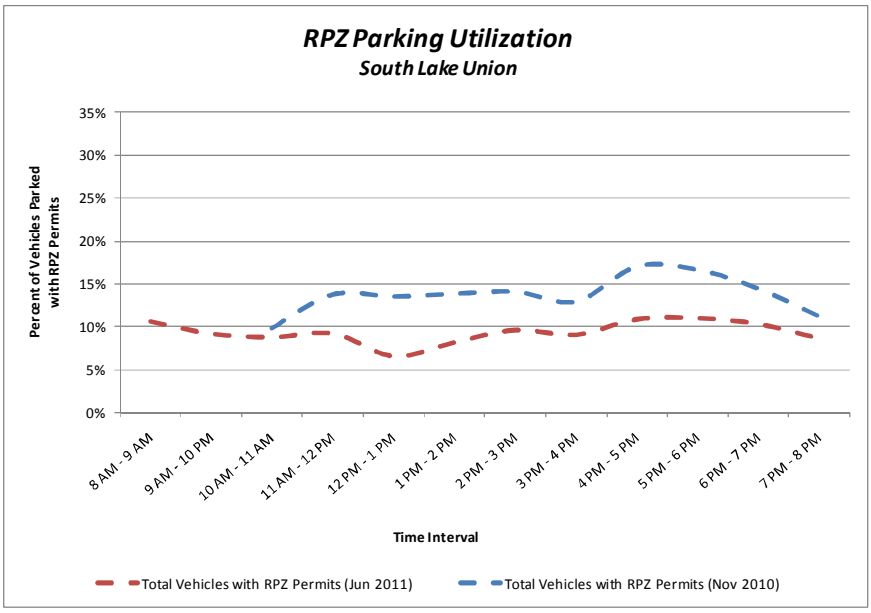


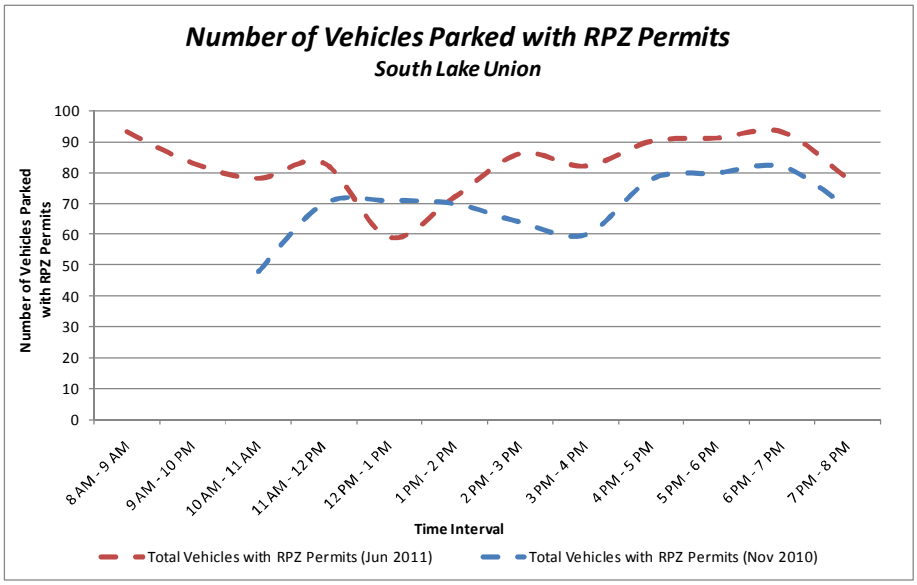
SOUTH LAKE UNION - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total 2-hour Limit Parked Vehicles	Total 10-hour Limit Parked Vehicles	Total 2-Hour RPZ Blocks Parked Vehicles	Total Vehicles with RPZ Permits	% Parking Occupied	% 2-hour Limit Spaces Occupied	% 10-hour Limit Spaces Occupied	% 2-Hour RPZ Spaces Occupied	% RPZ Parking
8 AM - 9 AM	909	240	174	66	80	80	26.4%	19.1%	7.3%	8.8%	8.8%
9 AM - 10 PM	909	261	180	81	81	81	28.7%	19.8%	8.9%	8.9%	8.9%
10 AM - 11 AM	909	283	197	86	83	83	31.1%	21.7%	9.5%	9.1%	9.1%
11 AM - 12 PM	909	305	206	99	88	88	33.6%	22.7%	10.9%	9.7%	9.7%
12 PM - 1 PM	909	333	221	112	81	81	36.6%	24.3%	12.3%	8.9%	8.9%
1 PM - 2 PM	909	342	216	126	95	95	37.6%	23.8%	13.9%	10.5%	10.5%
2 PM - 3 PM	909	370	235	135	102	102	40.7%	25.9%	14.9%	11.2%	11.2%
3 PM - 4 PM	909	364	222	142	87	87	40.0%	24.4%	15.6%	9.6%	9.6%
4 PM - 5 PM	909	342	223	119	69	69	37.6%	24.5%	13.1%	7.6%	7.6%
5 PM - 6 PM	909	356	209	147	76	76	39.2%	23.0%	16.2%	8.4%	8.4%
6 PM - 7 PM	909	384	238	146	69	69	42.2%	26.2%	16.1%	7.6%	7.6%
7 PM - 8 PM	909	438	270	168	80	80	48.2%	29.7%	18.5%	8.8%	8.8%

Residential Permit Usage

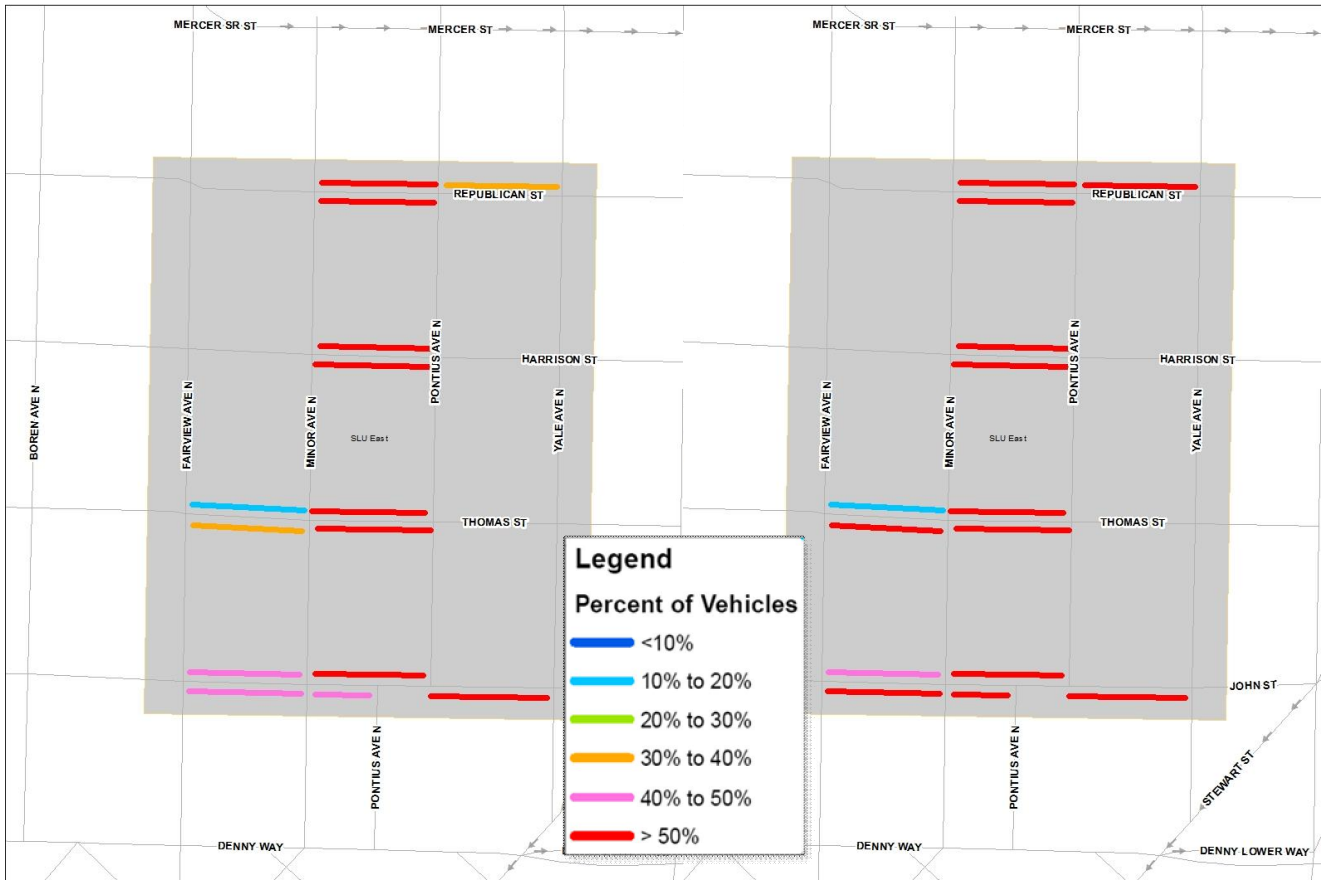
Residential Permit Parking areas in the SLU-E area represent seven of 48 total block faces within the SLU-E neighborhood sub-area (approximately 15% of all block faces). During the November 2010 data collection period, residential permit usage ranged from 75% to 108% of the 2-hour limit spaces and from 10% to 17% of all available paid on-street parking spaces. Using the same methodology for the June 2011 data collection process, the residential permit usage ranged from 12% to 66% of the 2-hour limit spaces and from 7% to 11% of all available on-street parking spaces. Although there was a slight decrease in utilization of residential parking permits, seasonality issues or small variations in parking behavior could have impacted the data. The following charts provide a closer indication of the comparison of June 2011 and November 2010 data.





The following graphics provide a comparison of average residential permit usage within the SLU-E area.

November 2010 vs June 2011 Average Residential Permit Usage – SLU-E

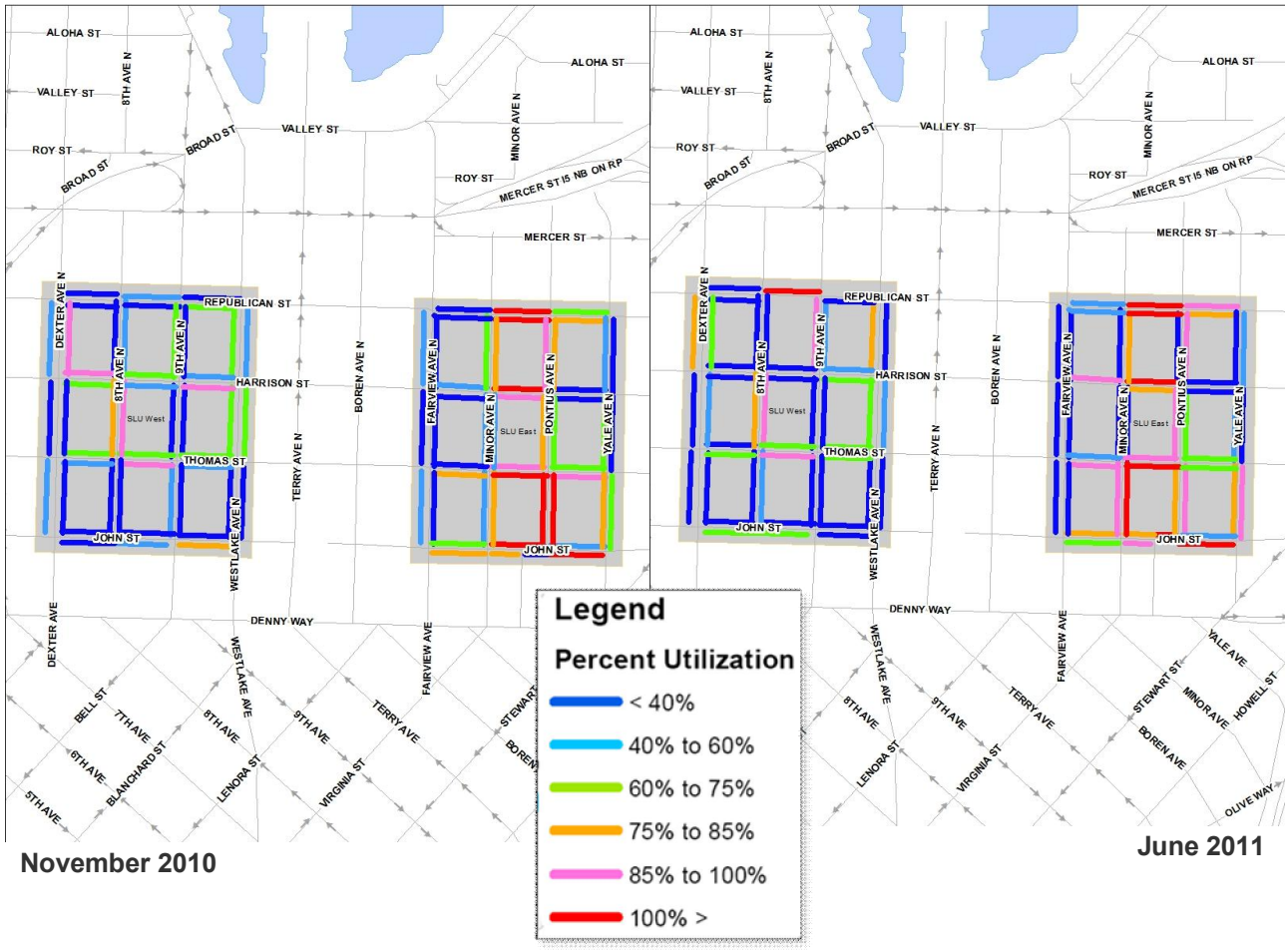


November 2010 **June 2011**

High Demand Areas

As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – South Lake Union



November 2010 vs June 2011 Peak Occupancy – South Lake Union

November 2010 **June 2011**

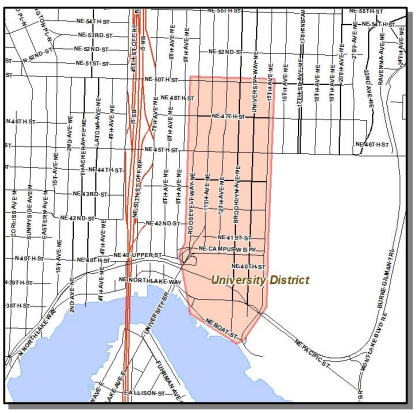
**Peak occupancy for the South Lake Union (2010) was 12 pm to 1 pm and (2011) was 12 pm to1 pm. The maps above show the block face occupancies at that time period.*

The two previous maps show that average occupancy is clustered in the southeastern corner of the SLU-E sub-area, in the area bounded by Minor Avenue, Thomas Street, Yale Avenue, and John Street. Additionally, a small cluster is located in the northern section of the SLU-E sub-area bounded by Harrison Street, Minor Avenue, Republican Street, and Yale Avenue. There are no average occupancy clusters in the SLU-W neighborhood, but one block does experience higher than average demands along Republican Street between 8th Avenue and 9th Avenue. Based on peak utilization patterns, Thomas Street and Republican Street experience higher than average demands in the SLU-E neighborhood. Additionally, Thomas Street and Harrison Street experience higher than average demands in the SLU-W neighborhood.

South Lake Union parking management represents a tiered structure of intermixed 2- and 10-hour areas with an overlaid RPZ. Subsequent changes to the neighborhood must look at the mix of utilization, and employ a periodic re-balancing of the short-term, long-term and residential parking supply,

UNIVERSITY DISTRICT NEIGHBORHOOD

The paid parking components of the University District neighborhood is bounded by 50th Avenue NE to the north, 15th Avenue NE to the east, Boat Street NE to the south, and Roosevelt Way NE to the west. The data collection effort sampled this neighborhood due to the large size. The map to the right shows the general location of the neighborhood in relation to the surrounding Seattle area. Within the University District neighborhood, there is a mixture of office, retail, restaurant, residential, and educational uses. One of the highest demand generators in the neighborhood is the University of Washington (UW).



2011 Rate Setting Decisions

As part of the 2011rate setting process, the University District neighborhood on-street parking rates were lowered from $2.00 per hour to $1.50 per hour. Based on data collected in November 2010, peak occupancy rates in the University District neighborhood were 64%. This indicates that the demands were under the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% (a 7% increase in occupancy) in University District, which would theoretically increase demand along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, University District occupancy was measured on a typical weekday, between 8am and 8pm, as well as on a Saturday between 8 am and 8 pm, while UW was in session. The occupancy collection included vehicles in paid parking spaces.

General characteristics of the collection area include:

- 54 total block faces, with 590 on-street parking spaces
- 12 block faces with peak hour restrictions

Data Results

The data, charts, and maps on the following pages show a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within the University District neighborhood.

UNIVERSITY DISTRICT WEEKDAY PARKING DATA - June 2, 2011[18]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	553	119	21.5%	8.2%
9 AM - 10 PM	553	167	30.2%	15.6%
10 AM - 11 AM	553	241	43.6%	27.4%
11 AM - 12 PM	570	266	46.7%	33.3%
12 PM - 1 PM	570	372	65.3%	41.2%
1 PM - 2 PM	570	354	62.1%	46.3%
2 PM - 3 PM	570	358	62.8%	45.6%
3 PM - 4 PM	570	317	55.6%	42.6%
4 PM - 5 PM	529	322	60.9%	42.7%
5 PM - 6 PM	529	350	66.2%	48.6%
6 PM - 7 PM	570	498	87.4%	NA
7 PM - 8 PM	570	580	101.8%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the University District neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The University District area had overall utilization rates ranging from 22% to 66% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization for June 2011.

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[18] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

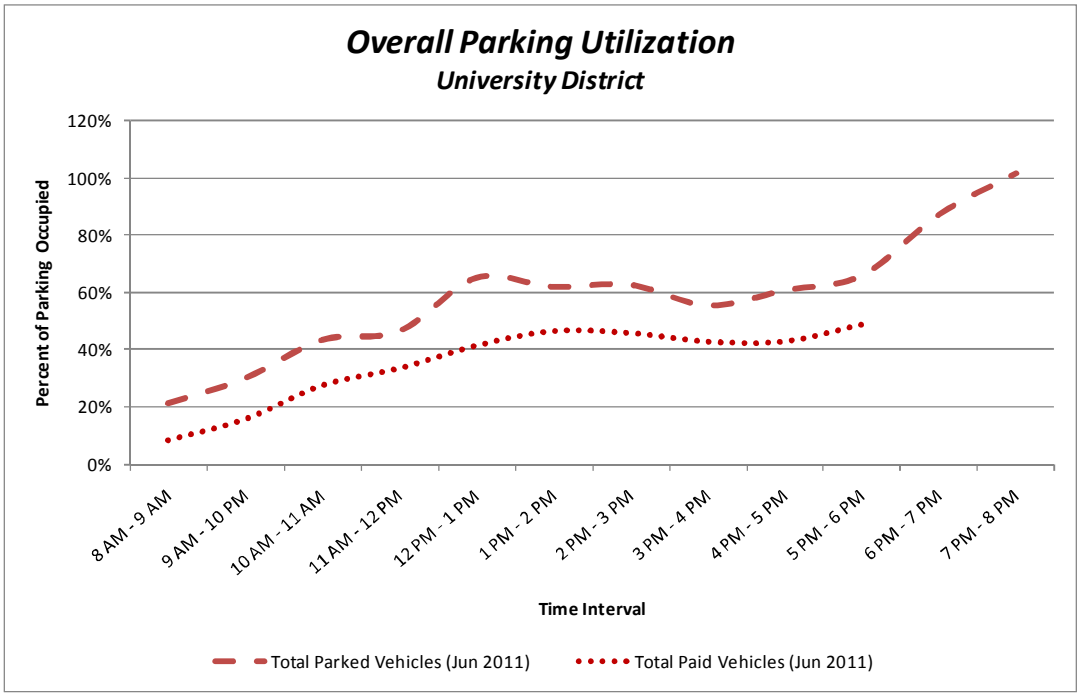
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



Although the University District was included in the November 2010 data analysis, the data set was smaller and different from the area studied in June 2011. Therefore, information is provided only from the much larger data set collected in June 2011. The first chart shown indicates that the overall parking utilization in the University District steadily increases throughout the day and that the peak measured occupancy (between 5 pm and 6 pm) is consistent with the projected peak occupancy identified during the 2011 rate setting process. A review of parking patterns in University District on the following pages provides additional insight into this observation.

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within various time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	46.7%	11 AM – 12 PM
12 PM - 3 PM	65.3%	12 PM - 1 PM
3 PM - 6 PM	66.2%	5 PM - 6 PM
6 PM - 8 PM	101.8%	7 PM - 8 PM

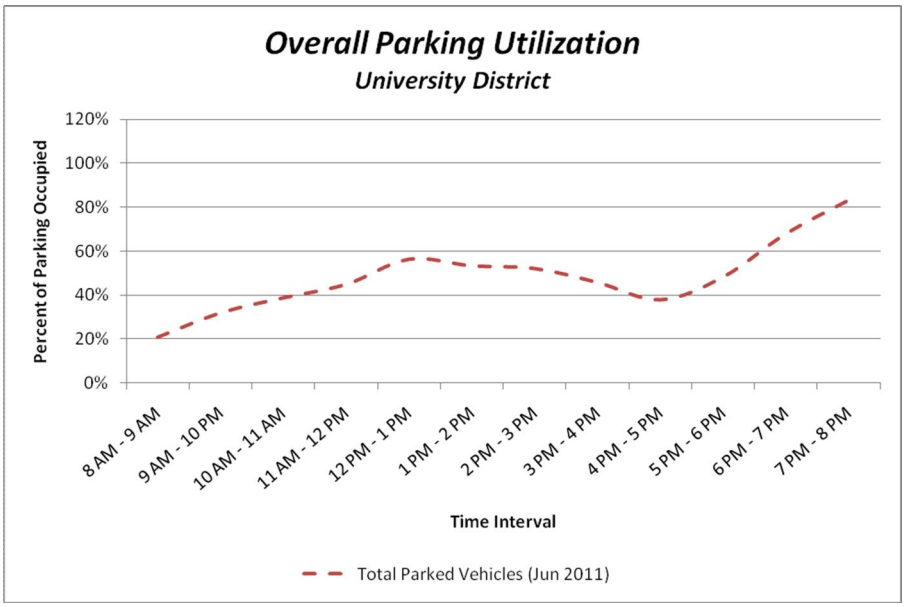
Weekend Parking Observations

Parking occupancy data was collected for the University District neighborhood on Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

UNIVERSITY DISTRICT - SATURDAY PARKING DATA - June 4, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	570	119	20.9%
9 AM - 10 PM	570	182	31.9%
10 AM - 11 AM	570	221	38.8%
11 AM - 12 PM	570	256	44.9%
12 PM - 1 PM	570	321	56.3%
1 PM - 2 PM	570	304	53.3%
2 PM - 3 PM	570	297	52.1%
3 PM - 4 PM	570	261	45.8%
4 PM - 5 PM	570	216	37.9%
5 PM - 6 PM	570	275	48.2%
6 PM - 7 PM	570	387	67.9%
7 PM - 8 PM	570	474	83.2%

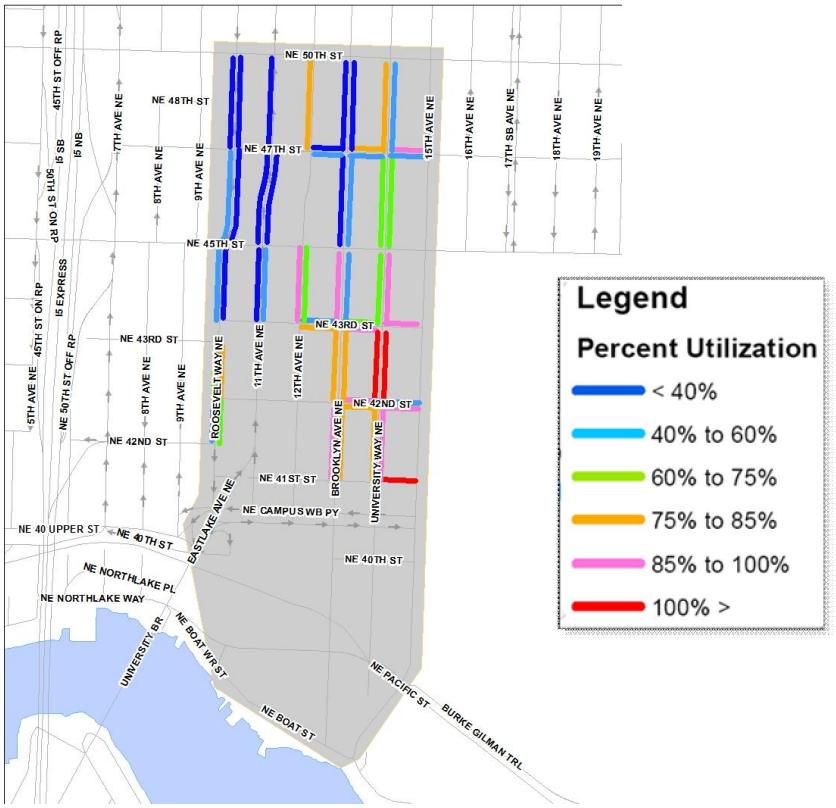
The data in the table above shows an hour-by-hour breakdown of the collected parking data from the University District neighborhood for a typical Saturday. The University District neighborhood had overall utilization between 21% and 56% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The chart below provides a breakdown of this utilization.



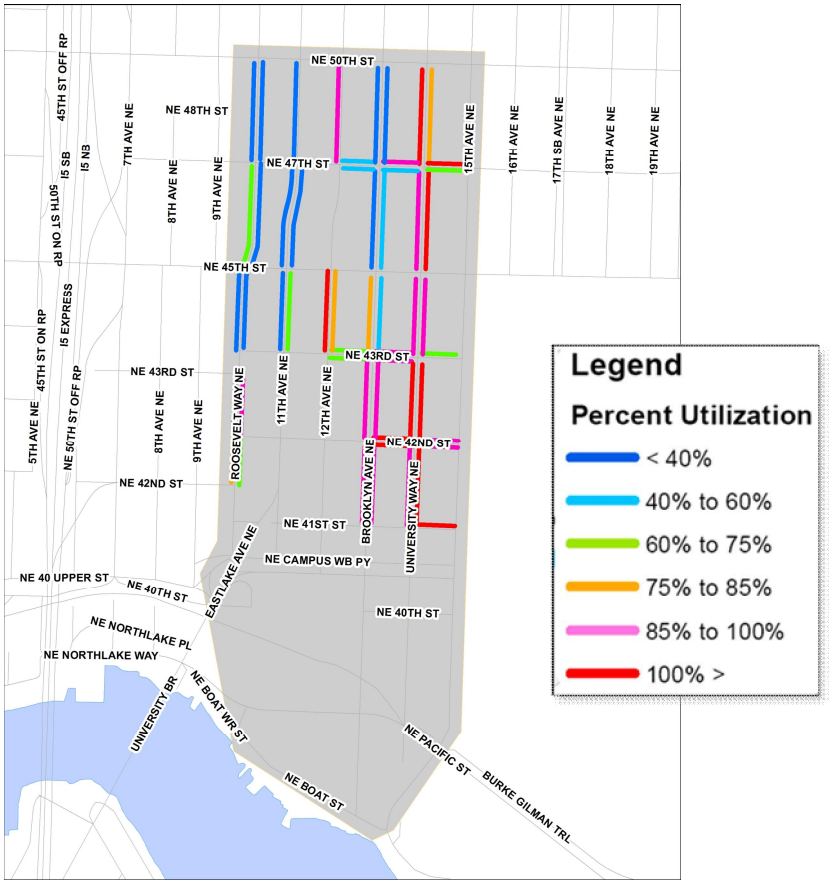
High Demand Areas

Reviewing a block-by-block map of the area, it is easy to see and understand which areas have the highest demand in the neighborhood. As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed so the project team could review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour- by-hour heat maps, please refer to the Appendix of this document.

June 2011 Average Occupancy – University District



June 2011 Peak Occupancy – University District



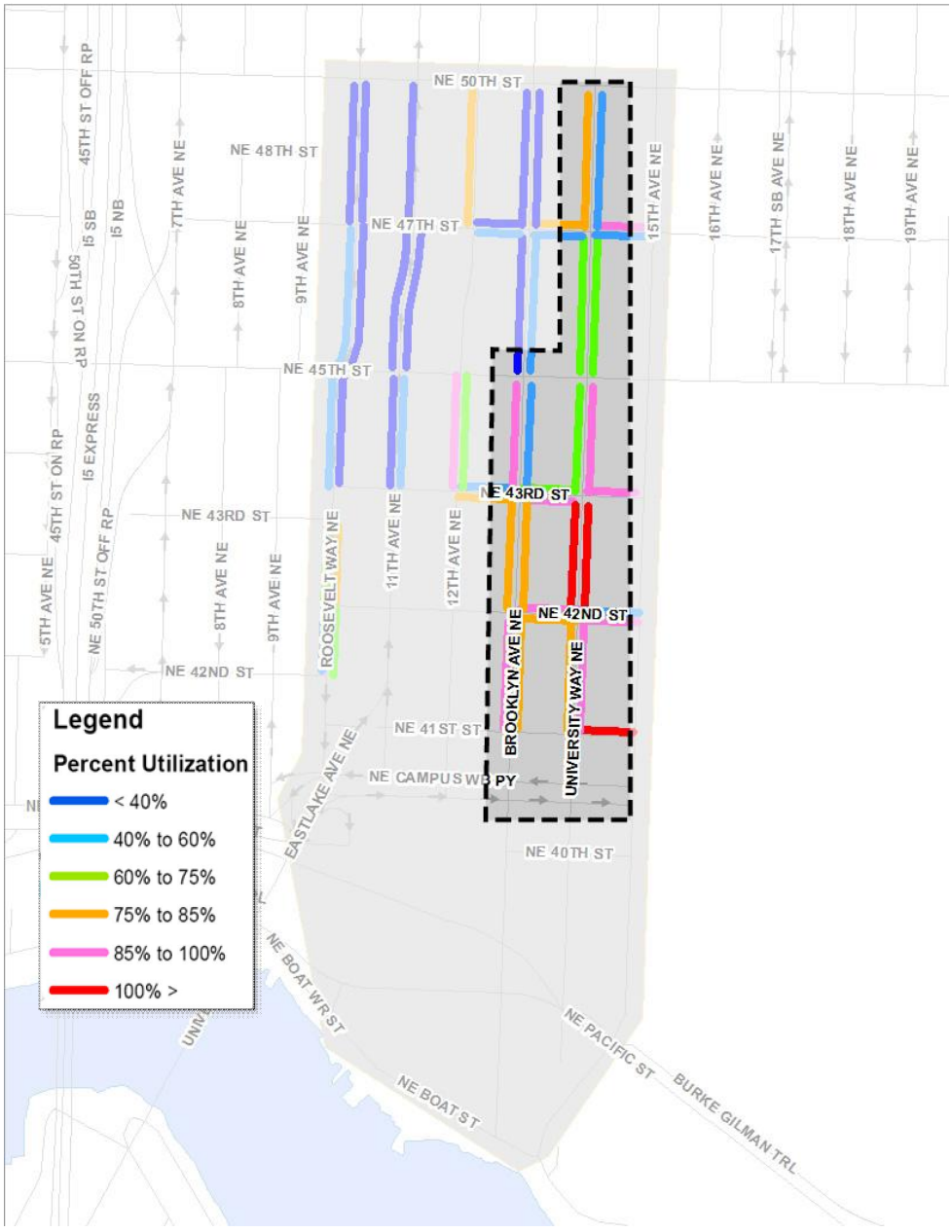
Peak occupancy for the University District was 12 pm to 1 pm. The map above shows block face occupancies at that time period.

The two previous maps show that the highest average occupancy is clustered along University Way between NE Campus Parkway and NE 50th Street and along Brooklyn Avenue between NE Campus Parkway and 45th Street.

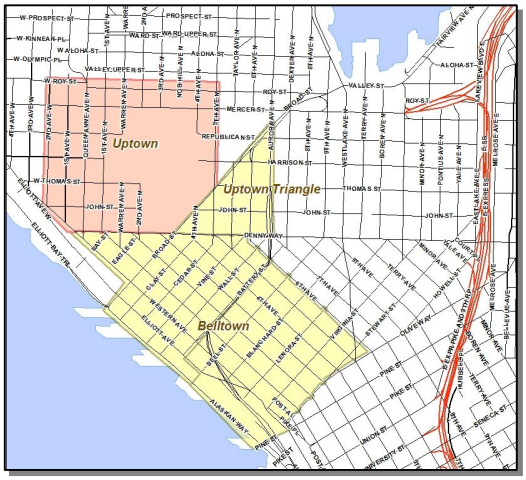
The University District could benefit from the introduction of innovative parking management strategies, such as tiered rates or expanded time limits. Introduction of an alternative management system could increase utilization of the lower occupancy areas and provide relief to the higher demand areas.

A summary of the contiguous high demand areas is shown on the following page.

UNIVERSITY DISTRICT - HIGH DEMAND AREA



UPTOWN NEIGHBORHOOD



The Uptown neighborhood is directly adjacent to Seattle Center and Belltown, separated by Denny Way. The paid parking area of the neighborhood is bounded by Roy Street to the north, a combination of 5th Avenue and Broad Street to the east, Denny Way to the south, and a combination of Elliott Avenue and 2nd Avenue to the west. The map to the right shows the general location of the neighborhood in relation to adjacent Seattle neighborhoods. The observed area included a sample of the total paid parking area in the neighborhood. The area of paid parking observed was generally along core streets west and north of Seattle Center. Within the Uptown neighborhood, there is a mix of office, retail, restaurant, residential, and institutional uses. The highest demand generator within the area is the Seattle Center, which holds attractions such as the Space Needle, Key Arena, and the Pacific Science Center. The area contains blocks of paid parking as well as separate blocks of Restricted Parking Zone (RPZ) spaces for use by area residents.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Uptown neighborhood on-street parking rates were lowered from $2.00 per hour to $1.50 per hour. Based on data collected in November 2010, the peak occupancy rate in the Uptown neighborhood was 52%. This indicates that the demand was under the proposed capacity cushion of one to two spaces per block face.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% (a 19% increase in occupancy) in Uptown, which would theoretically increase demand along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Uptown paid parking occupancy was measured on a typical weekday, between 8 am and 8 pm, as well as on a Saturday between 8 am and 8 pm The occupancy collection only included vehicles in paid parking spaces. It is important to note that no special Seattle Center events were happening on either the weekday or Saturday counting days.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 80 total block faces, with 693 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within the Uptown neighborhood.

UPTOWN WEEKDAY PARKING DATA - June 16, 2011[19]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	667	149	22.3%	5.0%
9 AM - 10 PM	655	174	26.6%	9.0%
10 AM - 11 AM	678	241	35.5%	18.8%
11 AM - 12 PM	674	259	38.4%	25.5%
12 PM - 1 PM	674	324	48.1%	31.3%
1 PM - 2 PM	674	292	43.3%	35.9%
2 PM - 3 PM	674	248	36.8%	28.6%
3 PM - 4 PM	674	229	34.0%	22.8%
4 PM - 5 PM	674	250	37.1%	23.6%
5 PM - 6 PM	674	322	47.8%	37.4%
6 PM - 7 PM	686	539	78.6%	NA
7 PM - 8 PM	686	593	86.4%	NA

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Uptown neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide

[19] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

% Parking Occupied denotes the percent of total spaces that were occupied.

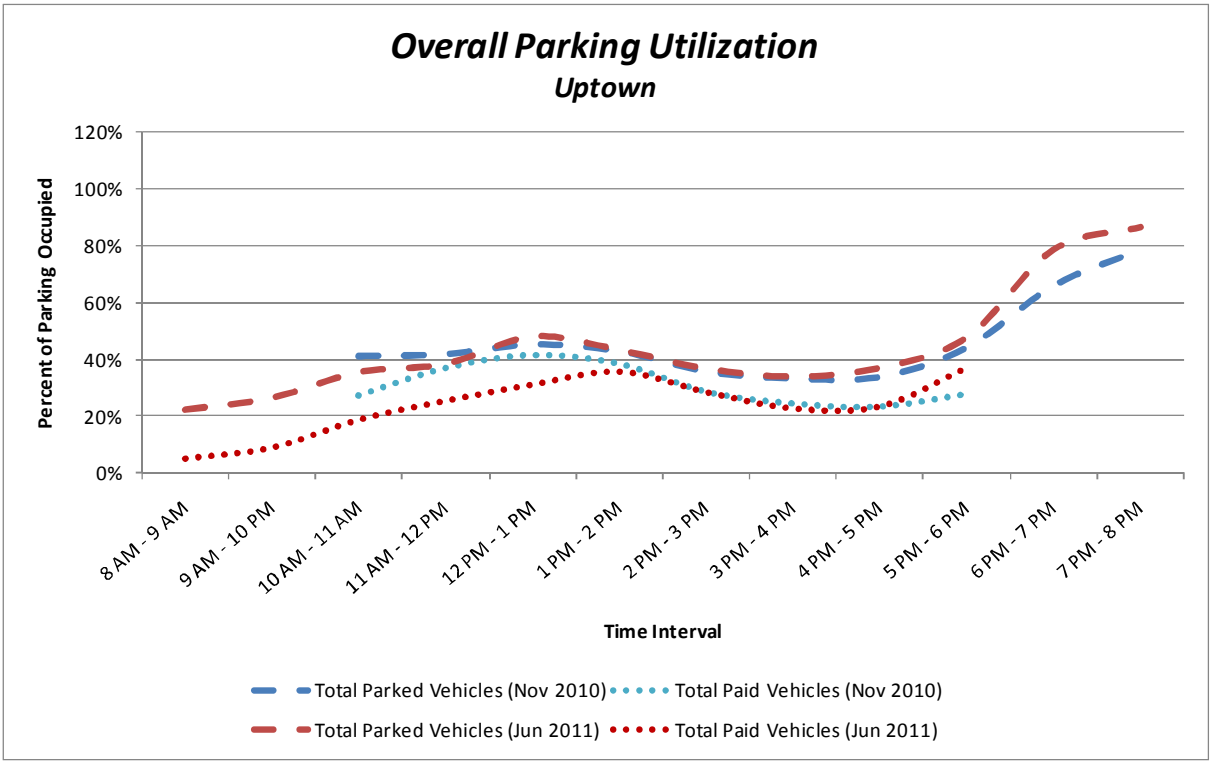
% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.

the hourly distribution for the observed parking. The Uptown area had overall utilization ranging from 22% to 48% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.



The first chart shown indicates that the overall parking utilization in Uptown was relatively unchanged between November 2010 and June 2011. On the surface, this result indicates that reducing parking rates did not cause a change in behavior within the area.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	42.2%	12 PM - 1 PM
4 PM - 6 PM	44.2%	5 PM - 6 PM
6PM - 8 PM	78.5%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	38.4%	11 AM - 12 PM
12 PM - 3 PM	48.1%	12 PM - 1 PM
3 PM - 6 PM	47.8%	5 PM - 6 PM
6 PM - 8 PM	86.4%	7 PM - 8 PM

The peak data indicates that overall parking utilization in the Uptown neighborhood was relatively unchanged between November 2010 and June 2011.

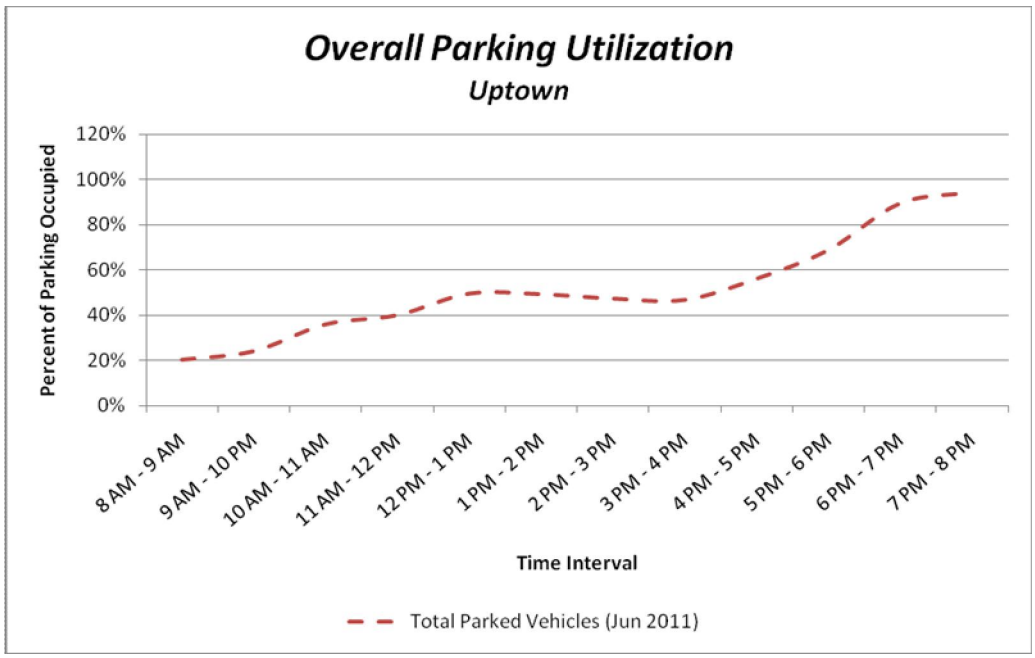
Weekend Parking Observations

Parking occupancy data was collected for the Uptown neighborhood on a Saturday to measure the varying peaks and patterns of usage during the non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

UPTOWN - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	686	141	20.6%
9 AM - 10 PM	686	167	24.3%
10 AM - 11 AM	686	248	36.2%
11 AM - 12 PM	686	276	40.2%
12 PM - 1 PM	686	341	49.7%
1 PM - 2 PM	686	339	49.4%
2 PM - 3 PM	686	326	47.5%
3 PM - 4 PM	686	322	46.9%
4 PM - 5 PM	686	386	56.3%
5 PM - 6 PM	686	473	69.0%
6 PM - 7 PM	686	614	89.5%
7 PM - 8 PM	686	647	94.3%

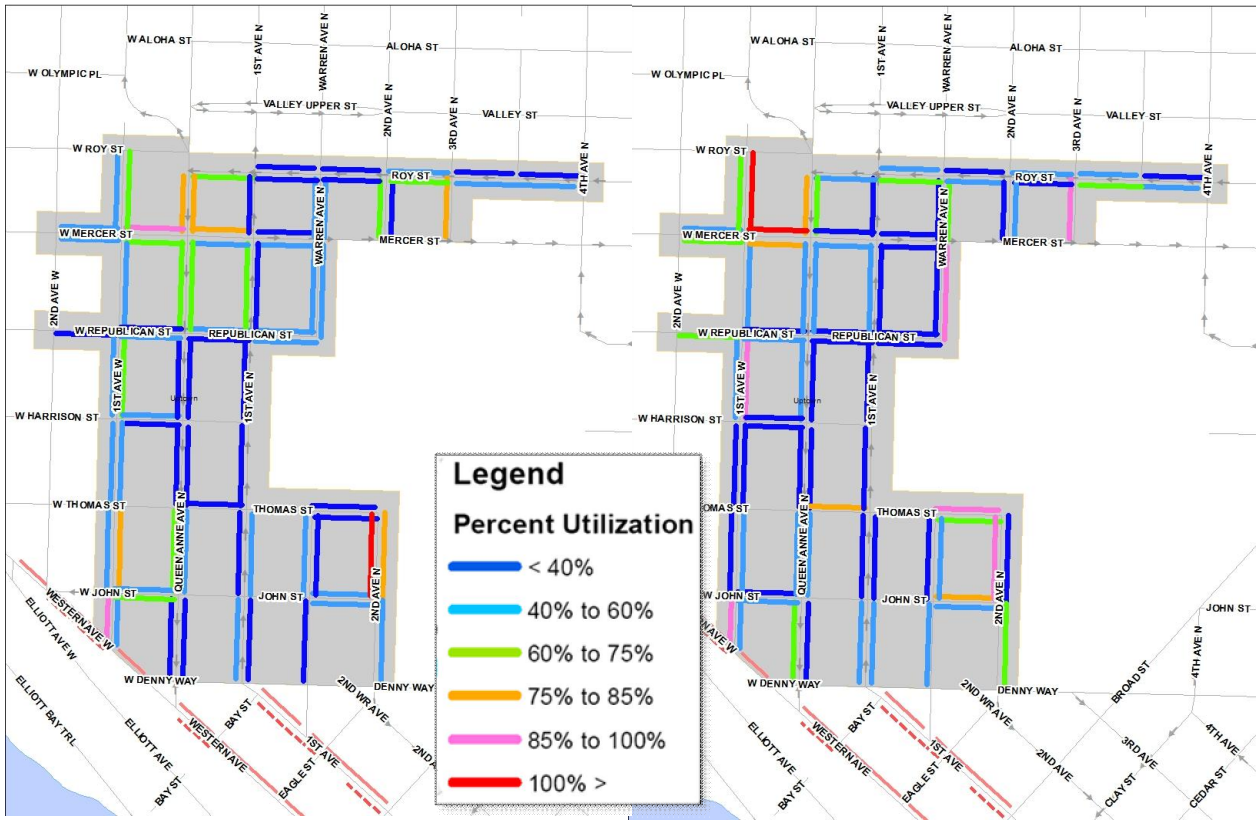
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Uptown neighborhood for a typical Saturday. The Uptown neighborhood had overall utilization ranging from 21% to 69% during the paid parking hours (8 am to 6 pm) and then increased usage after paid parking hours. The chart below provides a breakdown of this utilization.



High Demand Areas

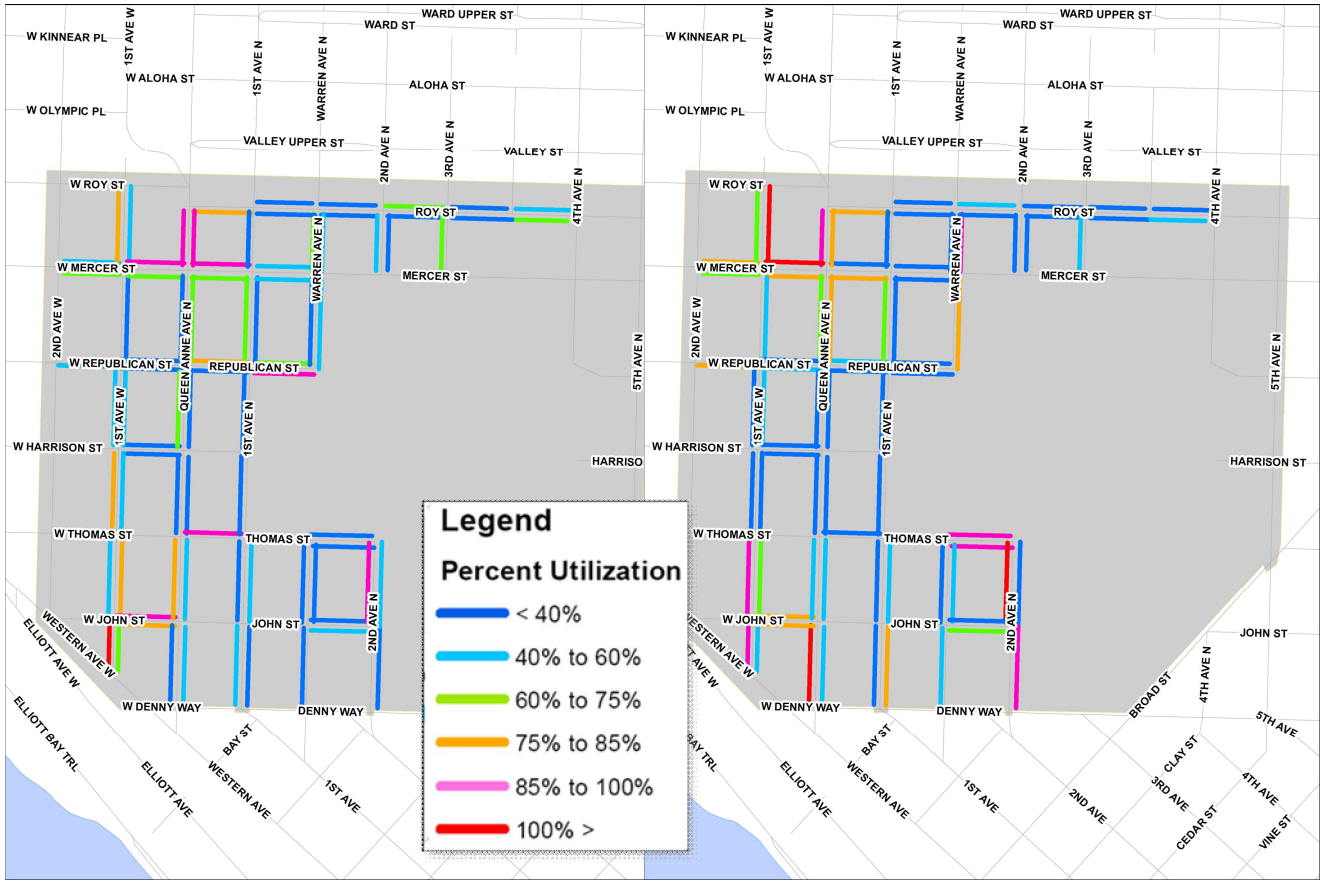
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the appendix of this document.

November 2010 vs June 2011 Average Occupancy – Uptown



November 2010 June 2011

November 2010 vs June 2011 Peak Occupancy – Uptown



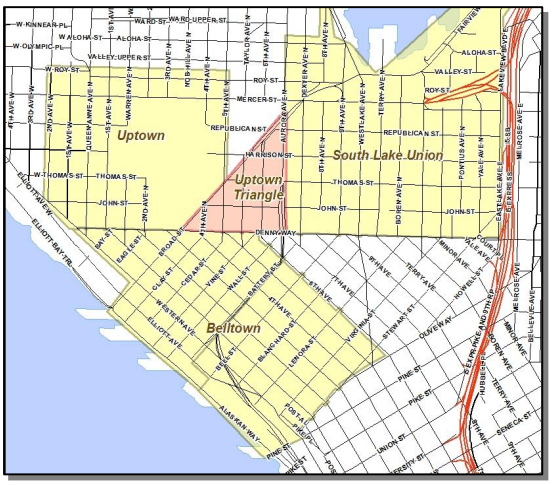
November 2010 **June 2011**

**Peak occupancy for the Uptown (2010) was 12 pm to 1 pm and (2011) was 12 pm to 1 pm. The maps above show the block face occupancies at that time period.*

.The two previous maps show that average occupancy is randomly clustered throughout the neighborhood. Notably, Mercer Street and 1st Avenue experience higher than average demands near the intersection of Mercer Street and 1st Avenue. From a peak occupancy perspective, high demand peak clusters are evident in the northern and southwestern areas of the neighborhood. The northern cluster is bound by Roy Street, 4th Avenue, Republican Street, and 1st Avenue and is driven by the commercial business district. The second cluster, located in the southwestern area, is bound by Thomas Street, 2nd Avenue, John Street and Warren Avenue, adjacent to the Seattle Center, specifically the Pacific Science Center and the Seattle Children's Theatre.

Occupancies, however, are within or below the target range. It might be useful to introduce alternative parking management strategies such as expanded time limits which could increase utilization of the lower occupancy areas.

UPTOWN TRIANGLE NEIGHBORHOOD



The Uptown Triangle neighborhood shares a border with Uptown, South Lake Union, and Belltown. The neighborhood is within a triangle area whose boundary sits on Denny Way, Broad Street, and Aurora Avenue North. The observed area included all of the blocks with paid parking. The map to the right shows the general location of the neighborhood in relation to the surrounding neighborhoods. Within Uptown Triangle, there is a mix of retail and restaurant uses. It is a neighborhood in transition, with areas of occasional high demand due to the proximity of the Seattle Center, and at times very low demand. SDOT conducted a neighborhood parking assessment in 2009 that resulted in the installation of both 2- and 10-hour paid parking to provide a mix of parking options. Paid parking exists to sure proper parking management near large employment and entertainment areas.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Uptown Triangle neighborhood on-street parking rates were lowered from $2.00 per hour to $1.00 per hour. Based on data collected in November 2010, the peak occupancies in the Uptown Triangle neighborhood were 29%. This indicates that the demands were under the target occupancy.

Based on national and international research of parking demand elasticity, reducing rates was projected to increase peak occupancy to 71% (a 42% increase in occupancy) in Uptown Triangle, which would theoretically increase demand along the neighborhood's block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Uptown Triangle occupancy was measured on a typical weekday, between 8 am and 6 pm, as well as on a Saturday between 8 am and 6 pm. The occupancy collection only included vehicles in paid parking spaces.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 33 total block faces, with 325 on-street parking spaces

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization and overall areas of high demand within the Uptown Triangle neighborhood.

UPTOWN TRIANGLE WEEKDAY PARKING DATA - June 16, 2011[20]

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied	% Paid Occupancy
8 AM - 9 AM	325	47	14.5%	5.0%
9 AM - 10 PM	325	80	24.6%	7.0%
10 AM - 11 AM	325	92	28.3%	15.0%
11 AM - 12 PM	325	87	26.8%	23.0%
12 PM - 1 PM	325	104	32.0%	27.0%
1 PM - 2 PM	325	91	28.0%	27.0%
2 PM - 3 PM	325	106	32.6%	31.0%
3 PM - 4 PM	325	97	29.8%	37.0%
4 PM - 5 PM	325	129	39.7%	45.0%
5 PM - 6 PM	325	142	43.7%	48.0%

The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Uptown Triangle neighborhood, including total occupancy and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages of utilization for overall occupancy provide the hourly distribution for the observed parking. The Uptown Triangle area had overall utilization ranging from 15% to 44% during the paid parking hours (8 am to 6 pm). The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.

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[20] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

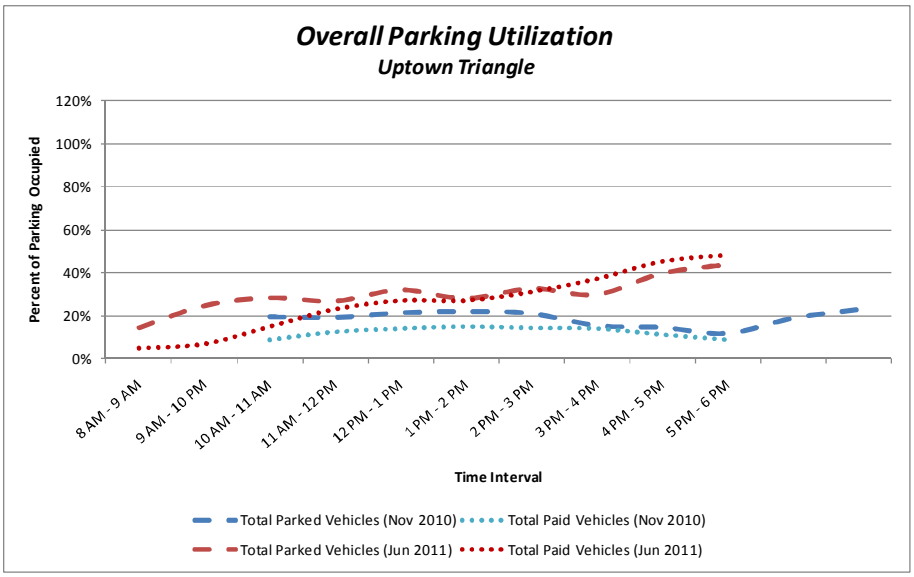
% Parking Occupied denotes the percent of total spaces that were occupied.

% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.



The first chart shown indicates that the overall parking utilization in Uptown Triangle was relatively similar between 10 am and 3 pm between November 2010 and June 2011, but is significantly higher between 4 pm and 6 pm in June 2011 than November 2010. On the surface, this result indicates that reducing parking rates did not cause a change in behavior within the area; a review of other parking patterns in Uptown Triangle on the following pages provides additional insight into this observation.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	21.8%	1 PM - 2 PM
4 PM - 6 PM	14.5%	4 PM - 5 PM
6PM - 8 PM	22.8%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

June 2011 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	28.3%	10 AM - 11 AM
12 PM - 3 PM	32.6%	2 PM - 3 PM
3 PM - 6 PM	43.7%	5 PM - 6 PM

The peak data clearly indicates an increase of overall parking utilization in the Uptown Triangle neighborhood; this could be considered to be in line with the projections and theoretical approach of the

2011 rate setting process. However, effects of winter versus summer have not been calculated and will require collection of successive data sets to determine whether change in occupancy is due to price elasticity, seasonality, changes in land use, or other reasons. For a further discussion of the effectiveness of the rate setting process and the elasticity of parking in the Seattle commercial core and neighborhoods, please see Chapter 3.

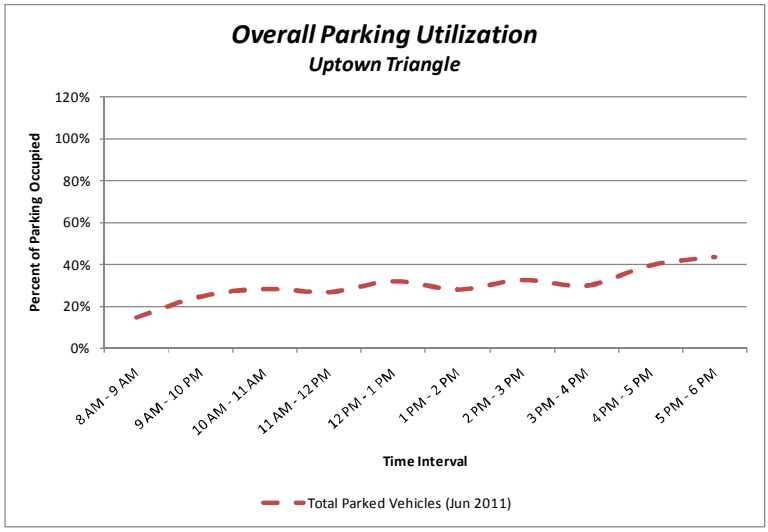
Weekend Parking Observations

Parking occupancy data was collected for the Uptown Triangle neighborhood on a Saturday to measure the varying peaks and patterns of usage during non-office peaking conditions. The following information provides a summary of regular vehicular occupancy.

UPTOWN TRIANGLE - SATURDAY PARKING DATA - June 18, 2011

	Hourly Parking Supply	Total Parked Vehicles	% Parking Occupied
8 AM - 9 AM	325	47	14.5%
9 AM - 10 PM	325	80	24.6%
10 AM - 11 AM	325	92	28.3%
11 AM - 12 PM	325	87	26.8%
12 PM - 1 PM	325	104	32.0%
1 PM - 2 PM	325	91	28.0%
2 PM - 3 PM	325	106	32.6%
3 PM - 4 PM	325	97	29.8%
4 PM - 5 PM	325	129	39.7%
5 PM - 6 PM	325	142	43.7%

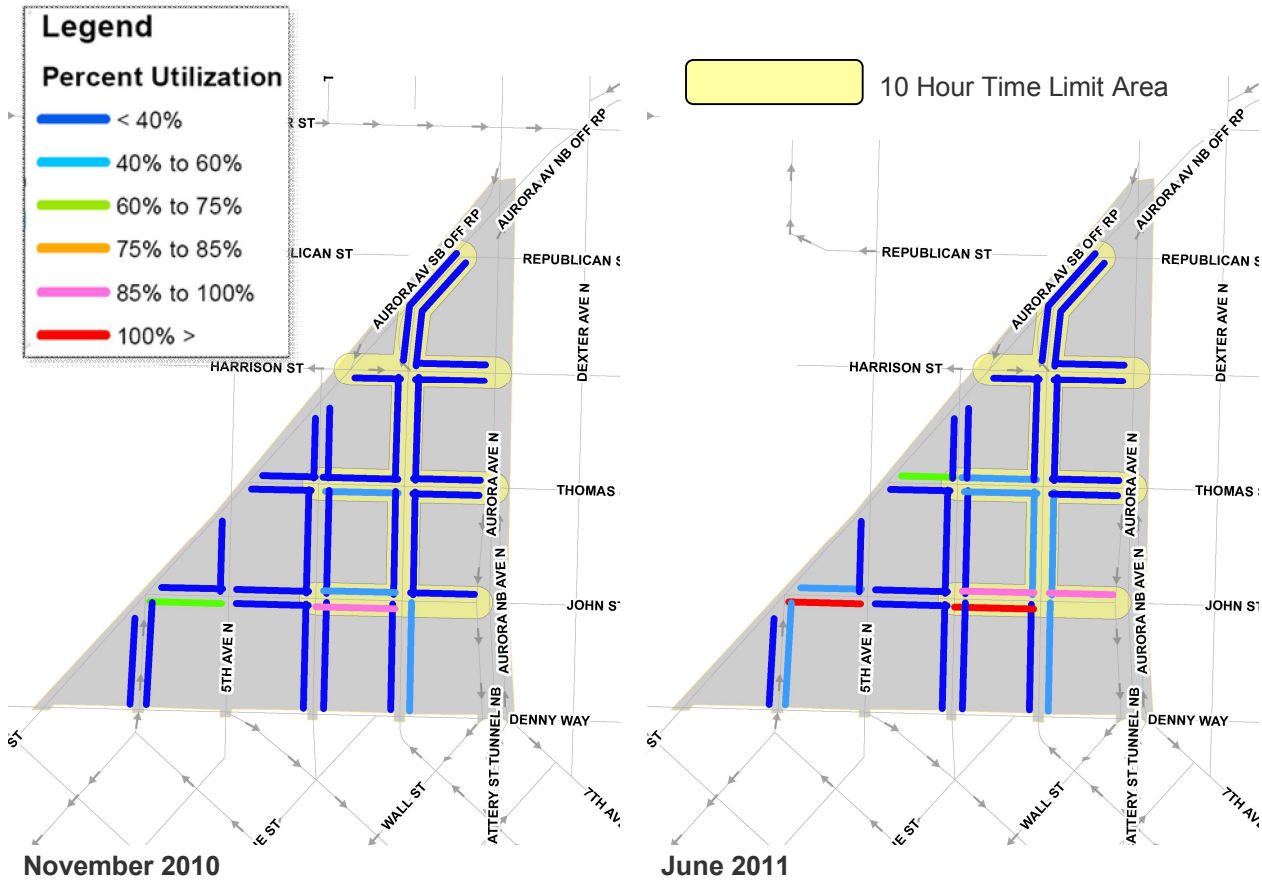
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Uptown Triangle neighborhood for a typical Saturday. The Uptown Triangle neighborhood had overall utilization ranging from 15% to 44% during the paid parking hours (8 am to 6 pm). The chart below provides a breakdown of this utilization.



High Demand Areas

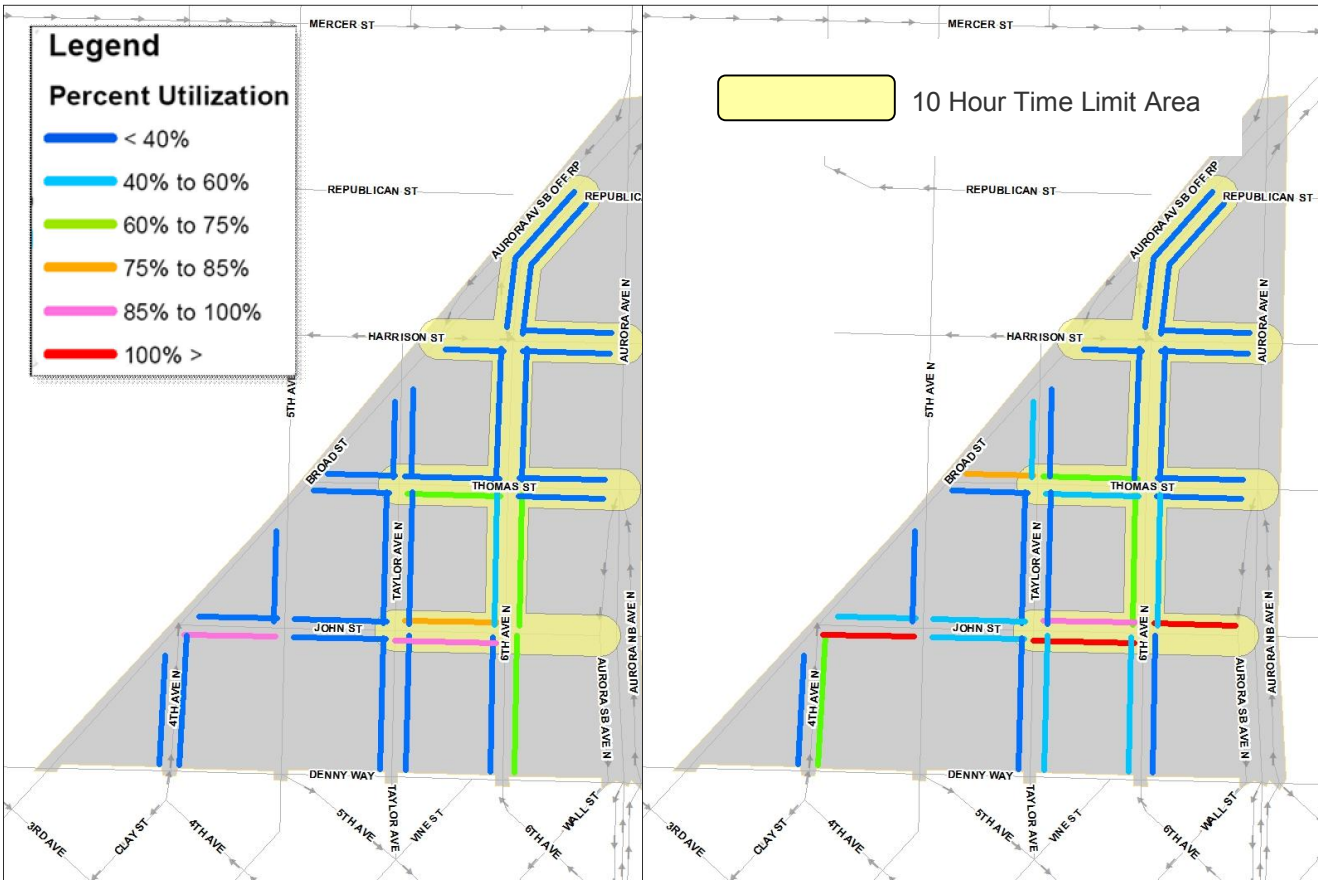
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the appendix of this document.

November 2010 vs June 2011 Average Occupancy – Uptown Triangle



November 2010 June 2011

November 2010 vs June 2011 Peak Occupancy – Uptown Triangle



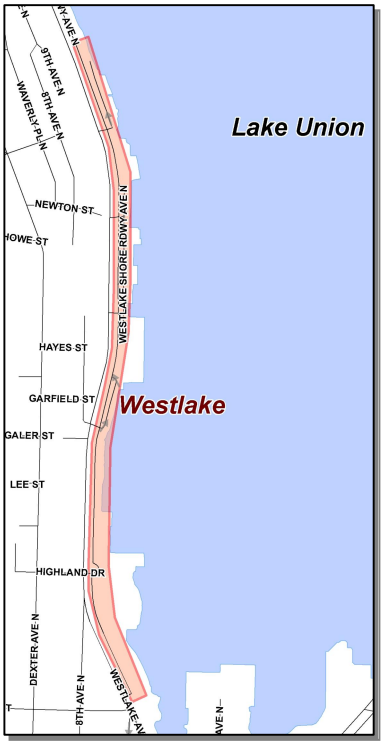
November 2010 **June 2011**

**Peak occupancy for the Uptown Triangle (2010) was 1 pm to 2 pm (2011) was 2 pm to 3 pm. . The maps above show the block face occupancies at that time period.*

The two previous maps show that the highest average occupancy is along John Street between Broad Street and 5th Avenue, and between Taylor Avenue and 6th Avenue. Based on peak utilization patterns, Thomas Street between Broad Street and Taylor Avenue, and John Street between 6th Avenue and Aurora Avenue could also be considered high demand.

While there are areas of specific high demand within the Uptown Triangle area, it does not make sense to consider these areas as specific demand areas for introduction of innovative parking management principles, because the entire Uptown Triangle area is fairly compact and would not necessarily benefit from the introduction of a tiered management structure. This is especially true considering that the high demand areas identified are only a short distance from one another. Analysis of the differing use of the 2 and 10-hour spaces warrants further review, SDOT may want to change all times to 10-hour to test whether the current time limits restrict demand unnecessarily.

WESTLAKE NEIGHBORHOOD



The Westlake neighborhood is located on the western side of Lake Union, and includes a variety of marina activity, restaurants, and general waterfront amenities. The area of observation was generally to the east of Westlake Road, and included the areas of paid parking that serve the marina uses. The map to the right shows the general location of the study area in relation to Lake Union. The area, although in the public right-of-way, looks and functions like an off-street parking lot, with a preponderance of perpendicular parking spaces. SDOT conducted a parking assessment in 2007 that showed extremely high utilization and general unavailability of parking in the central core. The result was a plan to install some paid parking in the neighborhood. The spaces to the east are paid parking with a mix of 2- and 3-hour limits, and are in effect from 9 am to 4 pm Monday through Friday only; spaces to the west remain free and unregulated by time limits. Restricted Parking Zone (RPZ) permit holders, residents of the many area houseboats, may park in any area. The paid area utilizes a pay-by-space technology.

2011 Rate Setting Decisions

As part of the 2011 rate setting process, the Westlake neighborhood on-street parking rates were lowered from $1.50 per hour to $1.00 per hour. Based on data collected in November 2010, the peak occupancy rate in the area was 61%, indicating that there was excess parking capacity in relation to the desired one to two spaces per block face threshold.

Based on national and international research of parking demand elasticity, the lowering of rates by $0.50 was projected to raise peak occupancy to 71% (10% increase in occupancy), which would theoretically reduce available capacity along the neighborhoods block faces.

Data Collection Methodology

As part of the June 2011 data collection process, Westlake Avenue North occupancy was measured on a typical weekday and weekend, between 8 am and 6 pm. The occupancy collection included vehicles in paid parking spaces and vehicles utilizing residential parking permit in appropriate residential permit parking zones.

The block faces monitored included the same streets used in the November 2010 study. This approach allows for a direct comparison and correlation of results from each of the studies, in order to better understand the changes in occupancy, demands, and general parking behaviors as a result of the rate changes, as well as a calculation of localized elasticity of parking demand due to the changes (covered in Chapter 3).

General characteristics of the collection area include:

- 15 total block faces, with approximately 400 parking spaces
- Residential Permit Parking Zones throughout the area
- Paid parking between 9 am and 4 pm

Data Results

The data, charts, and maps on the following pages provide a comparison of parking data collected between November 2010 and June 2011. The results are compared for overall parking utilization, residential permit parking utilization, and overall areas of high demand within the Westlake neighborhood.

WESTLAKE WEEKDAY PARKING DATA - June 14, 2011[21]

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with RPZ Permit	% Parking Occupied	% Paid Occupancy	% RPZ Parking
8 AM - 9 AM	397	62	27	15.6%	NA	6.8%
9 AM - 10 PM	397	122	35	30.7%	9.0%	8.8%
10 AM - 11 AM	397	186	28	46.9%	24.0%	7.1%
11 AM - 12 PM	397	206	33	51.9%	32.0%	8.3%
12 PM - 1 PM	397	211	28	53.1%	34.0%	7.1%
1 PM - 2 PM	397	205	22	51.6%	35.0%	5.5%
2 PM - 3 PM	397	197	32	49.6%	26.0%	8.1%
3 PM - 4 PM	397	190	34	47.9%	23.0%	8.6%
4 PM - 5 PM	397	203	31	51.1%	NA	7.8%
5 PM - 6 PM	397	206	34	51.9%	NA	8.6%

The data shown in the table above provides an hour-by-hour breakdown of the weekday collected parking data from the Westlake neighborhood, including total occupancy, residential permit usage, and percentage of paid occupancy (taken from data provided by the local parking pay stations). Percentages

[21] **Peak Parking Summary** provides the highest percent occupancy within the data collection area for the specified time period.

Hourly Parking Supply denotes the approximate number of available spaces in the data collection area accounting for peak hour restrictions during each hour. On-street paid parking spaces are not striped; therefore, the actual number of spaces varies depending on vehicle sizes.

Total Parked Vehicles denotes the total number of vehicles parked in the data collection area during the one-hour time interval.

Total Vehicles with Disabled Permits denotes all vehicles parked in the data collection area with a disabled parking permit or license plate.

Total Parking Transactions denotes the number of vehicles parked in the data collection area based on SDOT's paid parking transaction data.

% Parking Occupied denotes the percent of total spaces that were occupied.

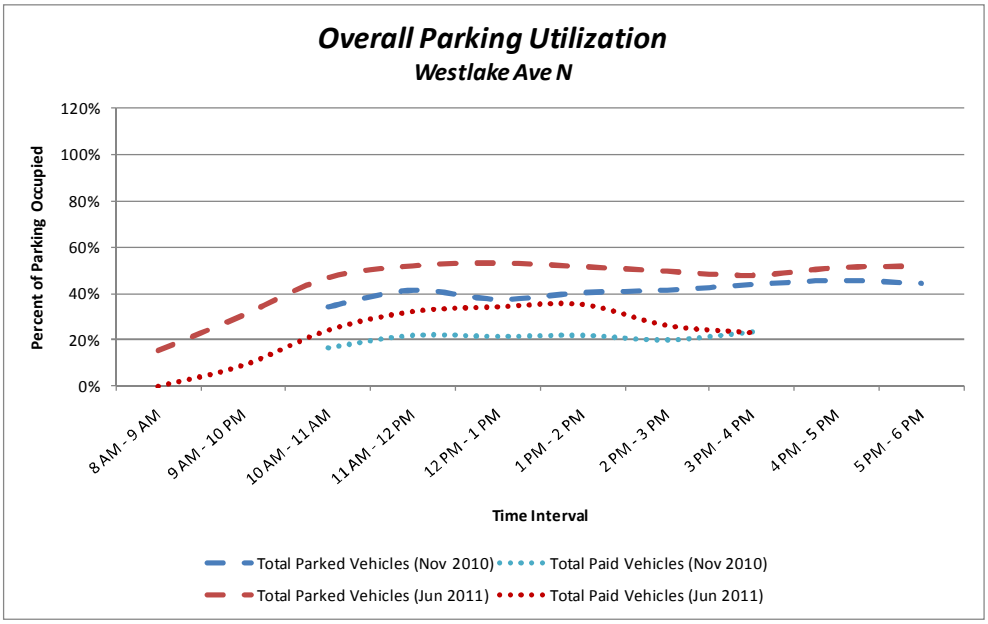
% Paid Occupancy denotes the percent of total spaces that were occupied based on the paid parking transaction data.

% Disabled Permit Parking denotes the percent of vehicles that had disabled parking permits or license plates.

NA = Not applicable, parking meters do not operate during this time or data not available.

All data collected was for legal paid parking spaces only.

of utilization for overall occupancy and residential permits provide the hourly distribution for the observed parking. The Westlake area had overall utilization ranging from 31% to 53% during the paid parking hours (9 am to 4 pm) and then moderate usage after paid parking hours. The charts on the following page provide the breakdown of this utilization and a comparison of June 2011 and November 2010.



The first chart shown indicates that the overall parking utilization was slightly raised between November 2010 and June 2011. On the surface, this result indicates that lowering parking rates was effective in creating additional demand along the curb face. While this represents a positive sign that lowering the parking rates increased demand, it should be pointed out that parking data collected in November 2010 likely does not capture seasonal demands for the marina and lake activities that might be expected in June.

Under the previous data collection process, the following peak times were identified during differing time bands throughout the day:

November 2010 Peak Parking Summary

Time Period	% Occupied Parking	Peak Hour
10 AM - 4 PM	43.7%	3 PM – 4 PM
4 PM - 6 PM	45.5%	4 PM - 5 PM
6PM - 8 PM	38.6%	7 PM - 8 PM

Based on the hours that the data was collected during the June 2011 period, the peak hour is shown within differing time bands, as follows:

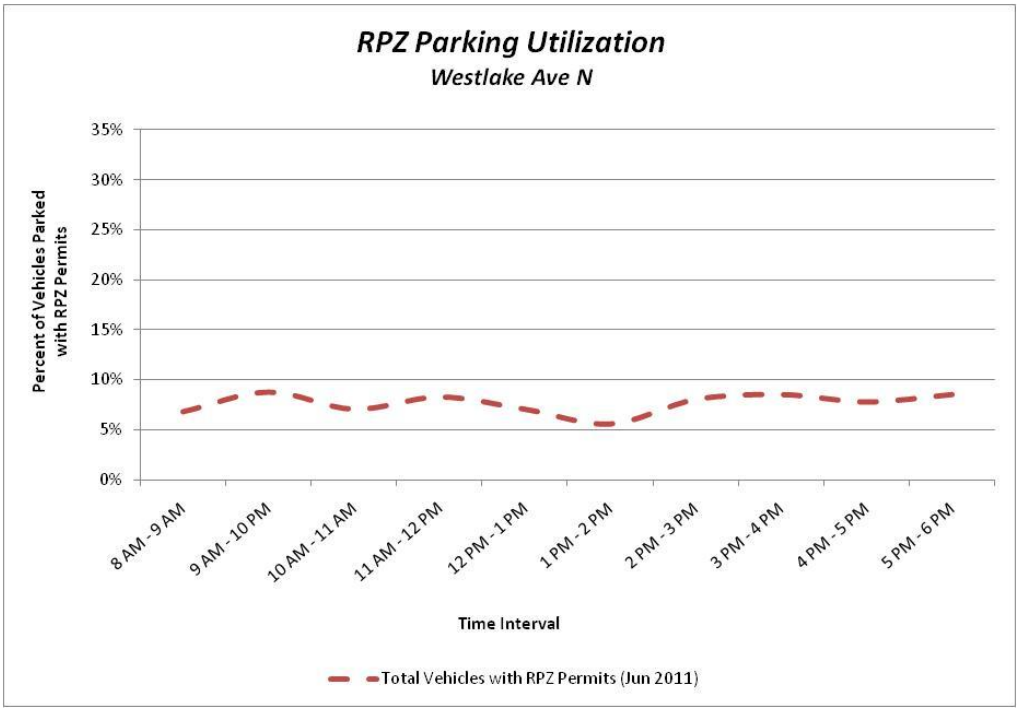
June 2011 Peak Parking Summary

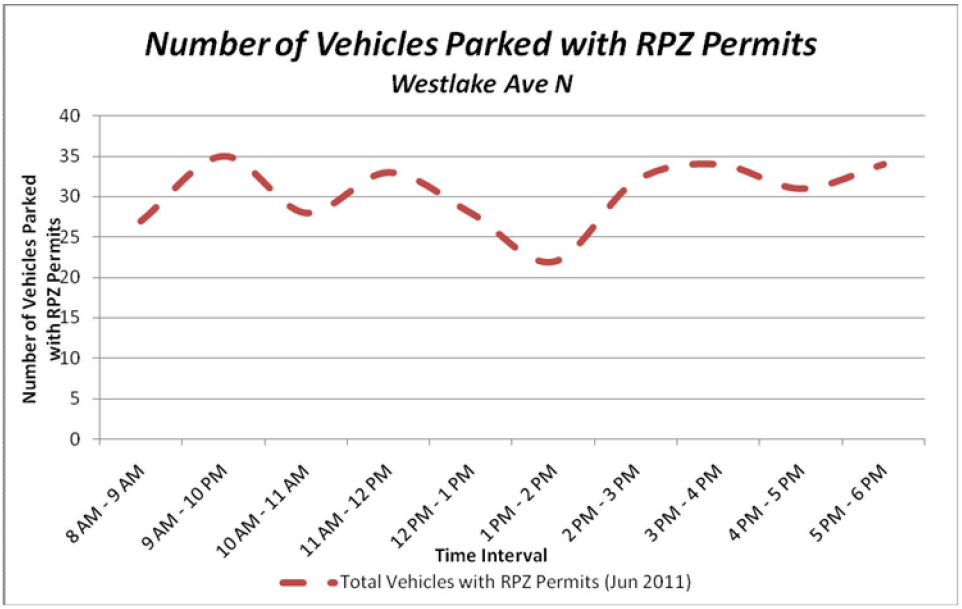
Time Period	% Occupied Parking	Peak Hour
8 AM - 12 PM	51.9%	11 AM - 12 PM
12 PM - 3 PM	53.1%	12 PM - 1 PM
3 PM - 6 PM	51.9%	5 PM - 6 PM

The peak data clearly indicates an increase of overall parking utilization in the Westlake area, in excess of a 10% difference during two of the peak periods. Again, it should be noted that the seasonal affects of lake and marina activities in June could be drastically different than those of November, the month in which 2010 data was collected.

Residential Permit Usage

Residential permit parking in Westlake during the June 2011 observation period represented between 5% and 9% of the parking utilization throughout the weekday data collection period. There was no November 2010 data to compare against for this analysis. The level of residential permit parking usage present on a weekday represents a very small portion of the actual parking activity within the area





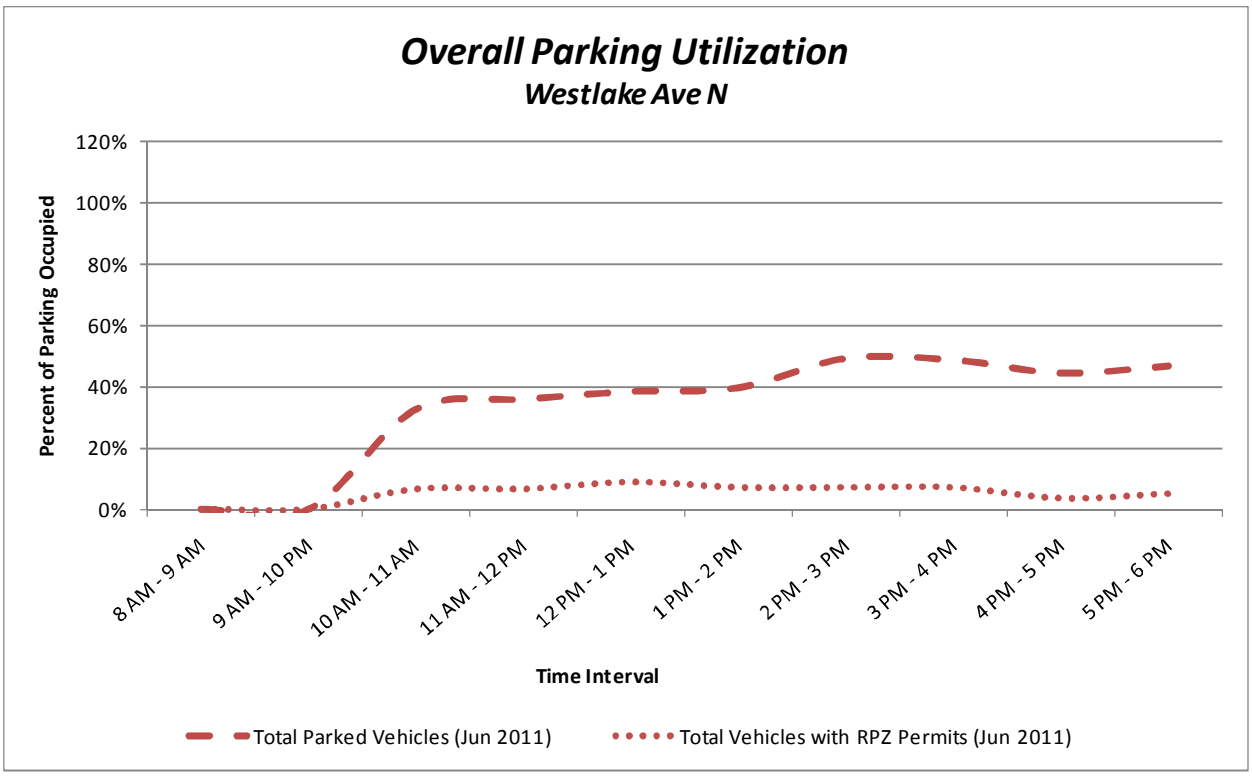
Weekend Parking Observations

Parking occupancy data was collected for the Westlake area on a Saturday to measure the varying peaks and patterns of usage during the non-weekday peaking conditions. The following information provides a summary of both regular vehicular occupancy and residential permit parking usage on the observed Saturday.

WESTLAKE - SATURDAY PARKING DATA - June 11, 2011

	Hourly Parking Supply	Total Parked Vehicles	Total Vehicles with RPZ Permit	% Parking Occupied	% RPZ Parking
8 AM - 9 AM	397	NA	NA	NA	NA
9 AM - 10 PM	397	NA	NA	NA	NA
10 AM - 11 AM	397	130	26	32.7%	6.5%
11 AM - 12 PM	397	143	26	36.0%	6.5%
12 PM - 1 PM	397	153	35	38.5%	8.8%
1 PM - 2 PM	397	158	28	39.8%	7.1%
2 PM - 3 PM	397	196	28	49.4%	7.1%
3 PM - 4 PM	397	194	28	48.9%	7.1%
4 PM - 5 PM	397	177	14	44.6%	3.5%
5 PM - 6 PM	397	186	20	46.9%	5.0%

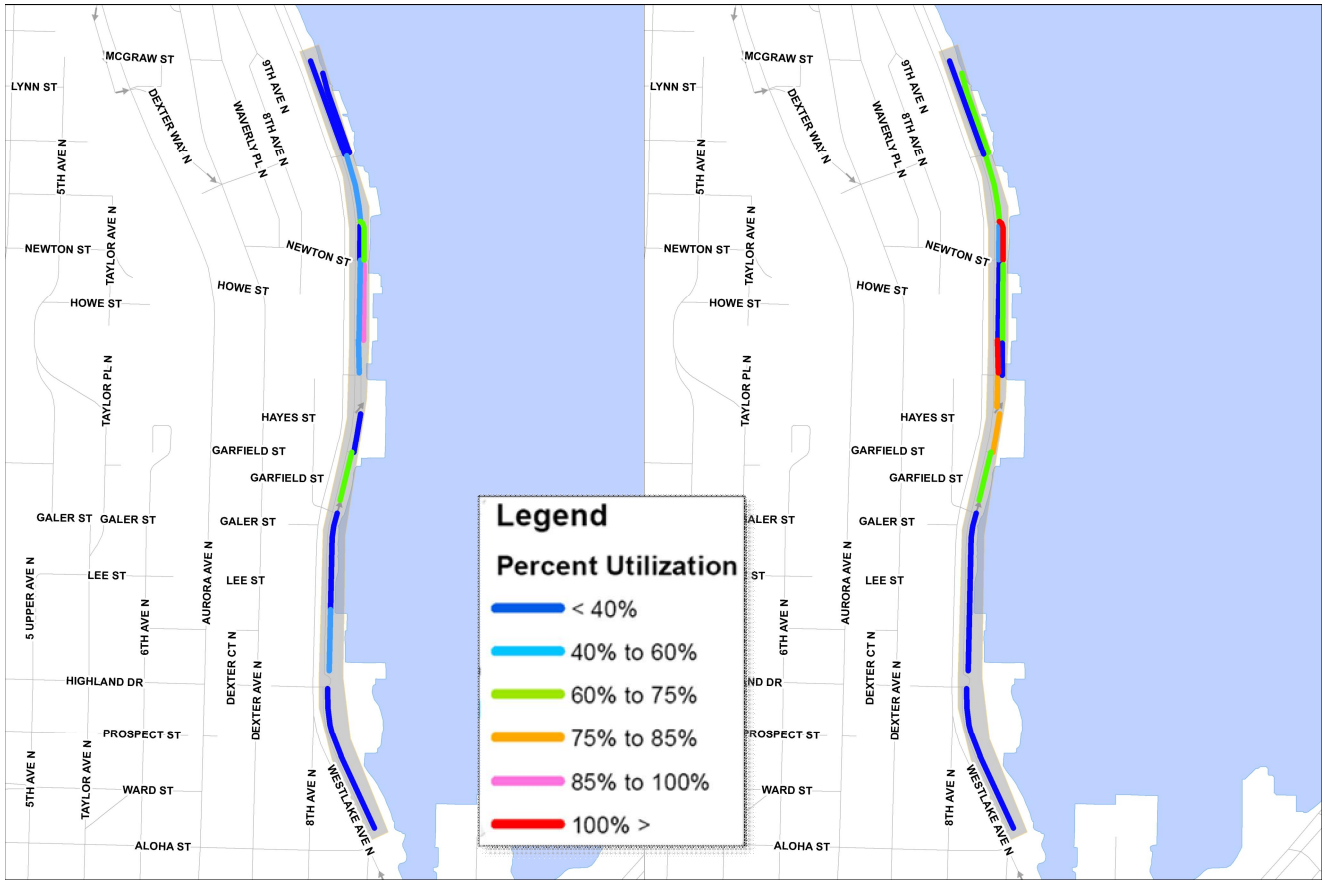
The data shown in the table above provides an hour-by-hour breakdown of the collected parking data from the Westlake area for a typical Saturday, including total occupancy and residential permit usage. The Westlake area had overall utilization ranging from 33% to 49% during the hours of observation (10am to 6pm). There is no paid parking on Saturdays in the Westlake N area. Residential permit usage ranged from 4% to 9%. The chart below provides a breakdown of this utilization and a comparison of residential permit usage in relation to total occupancy.


Overall Parking Utilization
Westlake Ave N
120%
100%
80%
60%
40%
20%
0%
Percent of Parking Occupied
8 AM - 9 AM
9 AM - 10 PM
10 AM - 11 AM
11 AM - 12 PM
12 PM - 1 PM
1 PM - 2 PM
2 PM - 3 PM
3 PM - 4 PM
4 PM - 5 PM
5 PM - 6 PM
Time Interval
Total Parked Vehicles (Jun 2011)
Total Vehicles with RPZ Permits (Jun 2011)

High Demand Areas

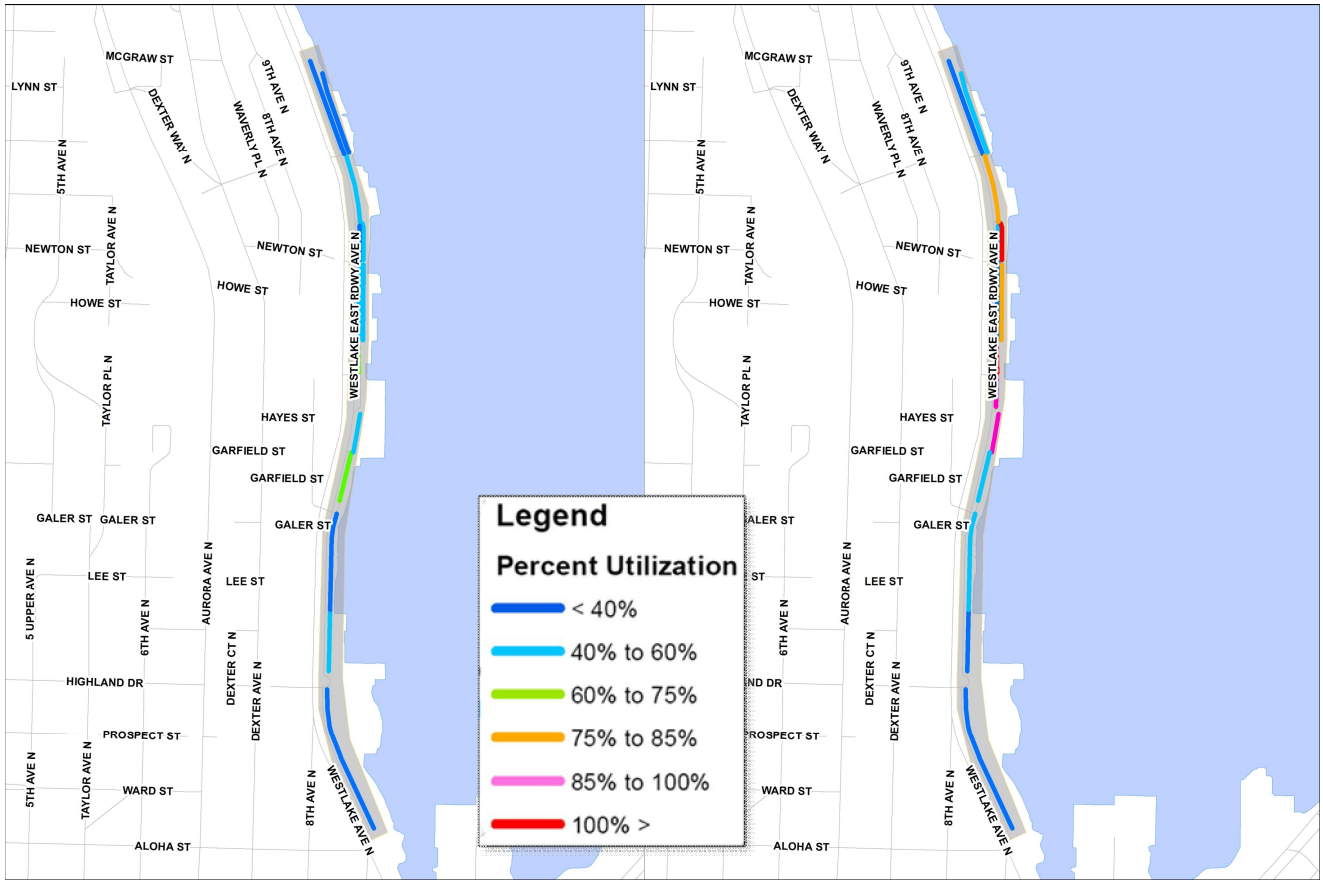
As part of the analysis process for each collection period, average occupancies, peak occupancies, and hour-by-hour heat maps were developed that allow the project team to review and analyze peak parking patterns within each area. The following graphics provide average occupancy and peak occupancy for each area. For a review of the hour-by-hour heat maps, please refer to the Appendix of this document.

November 2010 vs June 2011 Average Occupancy – Westlake



November 2010 **June 2011**

November 2010 vs June 2011 Peak Occupancy – Westlake



November 2010 **June 2011**

**Peak occupancy for the Westlake (2010) was 11 pm to 12 pm and (2011) was 12 pm to 1 pm. The maps above show the block face occupancies at that time period*

The two previous sets of maps show that while overall average occupancy levels are low within the Westlake study area, the areas of highest demand are definitely in the northern portions of the corridor. In this area, peak demands are above 85% and average demands are generally above 60% for most of the northern area. While this area is clearly in higher demand, because the study area is so small and compact, it is difficult to identify one specific area as a high demand area. In this case, the Westlake area should be viewed as one singular area, rather than distinct areas of high demand.

The neighborhood has higher demand in summer and might benefit from multi-day parking to service the boat-owners who leave their vehicles for extended periods of time.