

TECHNICAL REPORT

**UPTOWN TRIANGLE
ON-STREET PARKING STUDY**

Prepared by:

heffron
transportation, inc.

6544 NE 61st Street, Seattle, WA 98115
ph: (206) 523-3939 ♦ fax: (206) 523-4949

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Table of Contents

1. Introduction.....	1
2. Study Methodology	1
3. Parking Space Inventory and Occupancy	3
4. Parking Utilization by Time of Day.....	6
5. Parking Duration.....	8
6. Findings	11
7. Parking Management Strategies.....	12

Tables

Table 1. Uptown Triangle Daytime Parking Inventory, Average Utilization and Occupancy.....	5
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Figures

Figure 1. Study Area	2
Figure 2. Parking Inventory.....	4
Figure 3. Parking Utilization for Two-hour Meter Spaces.....	6
Figure 4. Parking Utilization for Unrestricted Spaces.....	7
Figure 5. Parking Duration for Two-hour Meter Spaces.....	8
Figure 6. Parking Duration for Unrestricted Parking Spaces	9
Figure 7. Parking Duration for Unrestricted Spaces by Block Face	10

1. Introduction

This technical report presents the findings of the May 15, 2008 parking survey for the Uptown Triangle area. The purpose of this study is to document how often and for how long parking spaces are used in the area on a typical day. The data and analysis will help the Seattle Department of Transportation (SDOT) determine if changes in parking management techniques are needed. The study determined:

- the quantity, location, and utilization of unregulated spaces,
- the location and occupancy of parking spaces with time limits,
- parking utilization by time of day, and
- parking duration for two-hour and unrestricted spaces.

The study area inventory was provided by the Seattle Department of Transportation (SDOT) on maps prepared by the department's Geographic Information System (GIS) workteam.

The study area and the block faces included in the data collection for the Uptown Triangle are shown in Figure 1. The area is relatively small and contained by three principal arterials: Aurora Avenue, Denny Way, and Broad Street. Land use activity in the area is primarily office, with four hotels and a few cafes. There are almost no residential or retail uses, though some will be added to the neighborhood in current and planned development projects. The area is separated from the Seattle Center by Broad Street. There are 20 block faces included in the study. These blockfaces were chosen as being representative of on-street parking conditions in the neighborhood. Additionally, none of them had parking spaces impacted by adjacent construction activity.

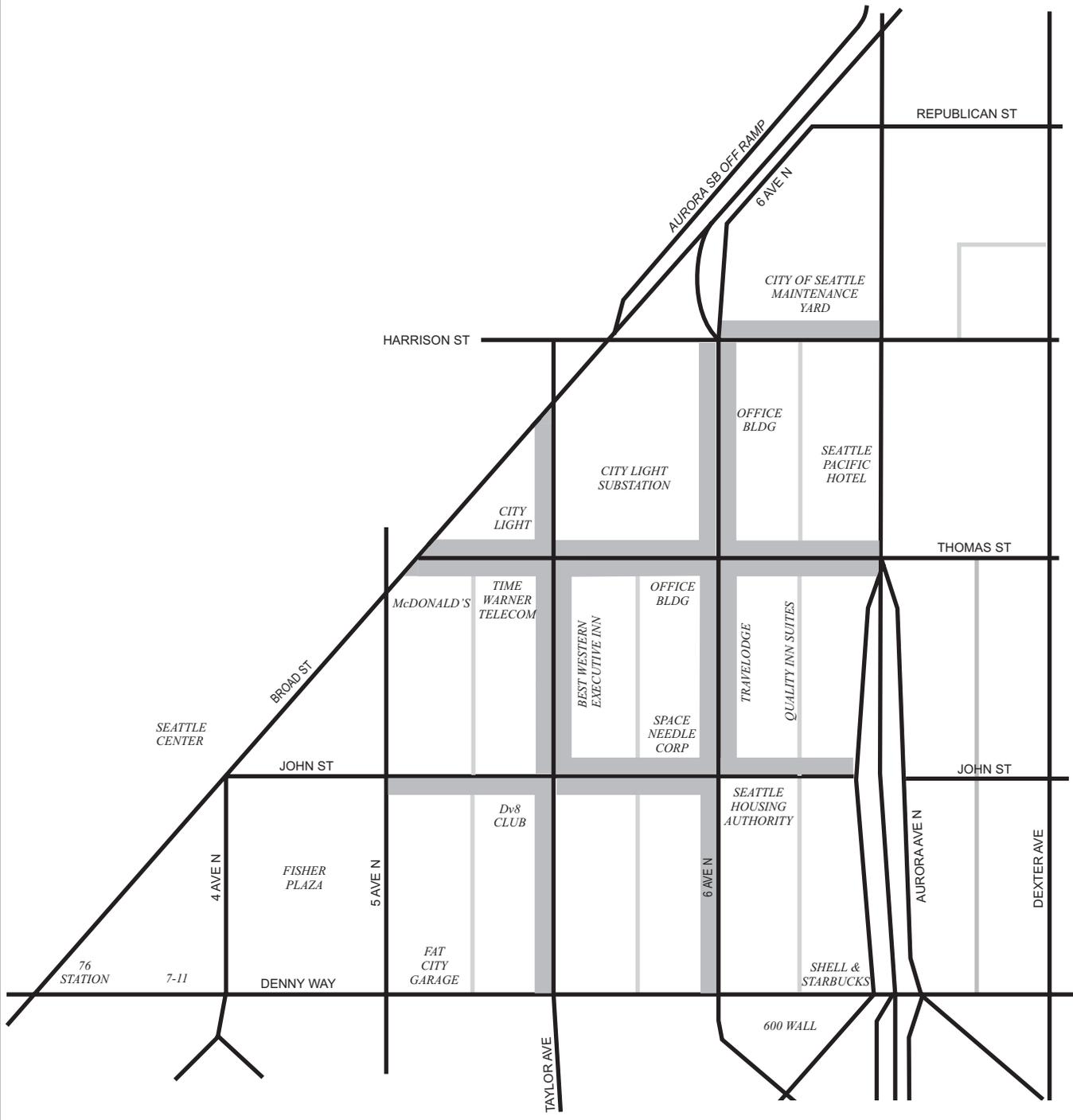
2. Study Methodology

Data Collection

The parking inventory was provided by SDOT. On Thursday, May 15, 2008, Operations Management Group (OMG), Inc. collected parking data for the Uptown Triangle. Data were collected each per hour from 8:00 A.M. to 5:00 P.M..

OMG collected parking space occupancy data using their hand-held electronic data collection tool. A sequence number was assigned to every parking space within each map segment to ensure consistency in the data collection. The inventory and sequence numbers included all parking spaces by type, and all "gaps" such as bus zones, hydrants, and other locations where parking is not allowed. In addition to recording vehicles parked in legally-designated spaces, the data collected included "squeeze-in vehicles" on each street segment, which represent motorists who created their own space between other vehicles, at the end of the block, or in no parking zones. The presence of these vehicles reflects the demand for on-street parking.

Parking utilization by time of day was determined for two-hour and unrestricted spaces. Two-hour regulated spaces include those with meters or regulated with a sign. Parking utilization equals the number of cars parked divided by the number of parking spaces.



Study Block Faces

Not to Scale

**UPTOWN TRIANGLE
PARKING STUDY**

Figure 1
Study Area



Parking duration was calculated by counting the one-hour time periods occupied by the same vehicle. The first three letters or numbers of the vehicle license plate were recorded into the hand-held electronic device during each interval. This technique provided block-specific and area-wide utilization data in one-hour increments. Vacant spaces were noted in the manual count.

Parking compliance was evaluated for two-hour spaces. For two-hour spaces, all vehicles parked for less than two hours or less are compliant and all vehicles parked for three hours or more are noncompliant.

Parking Capacity

The practical capacity for parking is defined at 85% utilization. When occupancy exceeds the practical capacity, drivers will experience delays and frustration while searching for a parking space, as well as contribute to area traffic congestion while circling the block looking for parking. Circling the block in search of a parking space also contributes to area traffic congestion and increased vehicle emissions.

Practical capacity is used to determine the adequacy of a parking system. SDOT considers utilization rates above about 75% to be the threshold where additional parking management techniques should be explored through a comprehensive study of parking management measures. That way measures can be put in place before parking reaches capacity. SDOT also uses parking management measures to support the goal of reducing automobile trips, particularly for commuting. Short-term parking limits that favor retail and restaurant use are preferred to long-term parking that could be used by commuters.

3. Parking Space Inventory and Occupancy

The parking space inventory reflects parking regulations mid-day. For the most part, changes in restriction type occur at 6:00 P.M. when the signed time restrictions and metered spaces become unrestricted spaces. The parking inventory is presented in Figure 2.

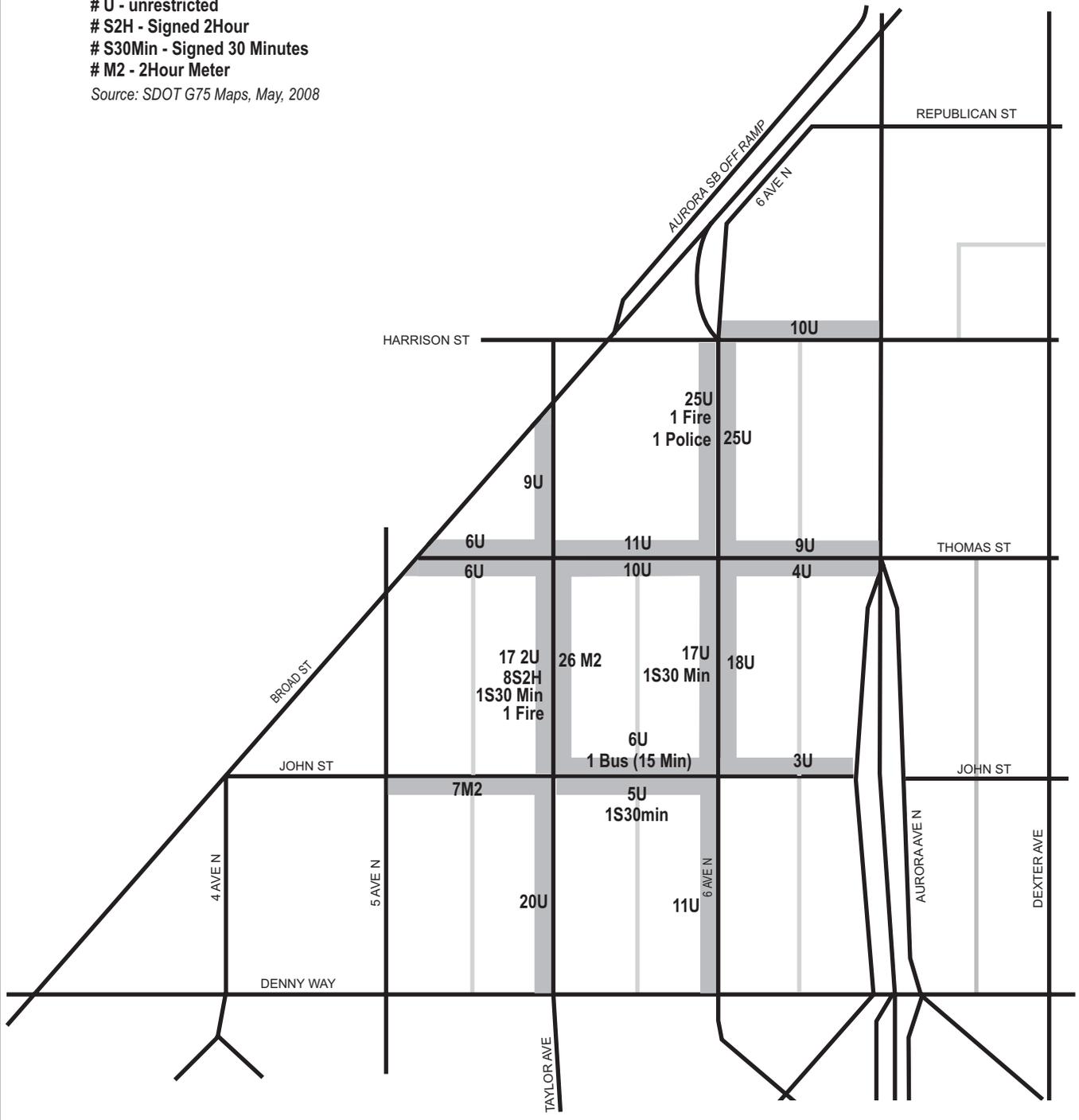
The parking space inventory and the study area's average utilization and occupancy are summarized in Table 1. There are 256 parking spaces in the study area available for public use, plus four spaces reserved for special vehicles. Of the 256 spaces, 212 are unrestricted. Relatively few spaces are two-hour signed spaces or two-hour meter spaces. The relatively large supply of unrestricted spaces means that few choose to park in time restricted or meter spaces. There are currently no pay stations within the study area, but two-hour pay stations do regulate two blocks within the Uptown Triangle on 4th Avenue N, adjacent to the Fisher Plaza. These blocks were not included in the study area.



LEGEND

- # U - unrestricted
- # S2H - Signed 2Hour
- # S30Min - Signed 30 Minutes
- # M2 - 2Hour Meter

Source: SDOT G75 Maps, May, 2008



Not to Scale

**UPTOWN TRIANGLE
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Figure 2
Parking Inventory



Table 1. Uptown Triangle Daytime Parking Inventory, Average Utilization and Occupancy

Parking Type	Inventory ¹	Average Utilization ²	Average Occupancy ²
Meter Parking			
2-hour Meter	33	17%	6 spaces
Signed Parking Time-Limits			
30-minute Signed Time-Limit	3	53%	1- 2 spaces
2-hour Signed Time-Limit	8	89%	6 – 8 spaces
Unrestricted	212	93% ³	197 ³
Total Available for Public Use	256		
Other Spaces			
Fire	2	n/a	1 during 6 of 10 checks
Police	1	n/a	0
Charter Bus (signed 15 minute)	1	n/a	1 at 1:00 P.M.

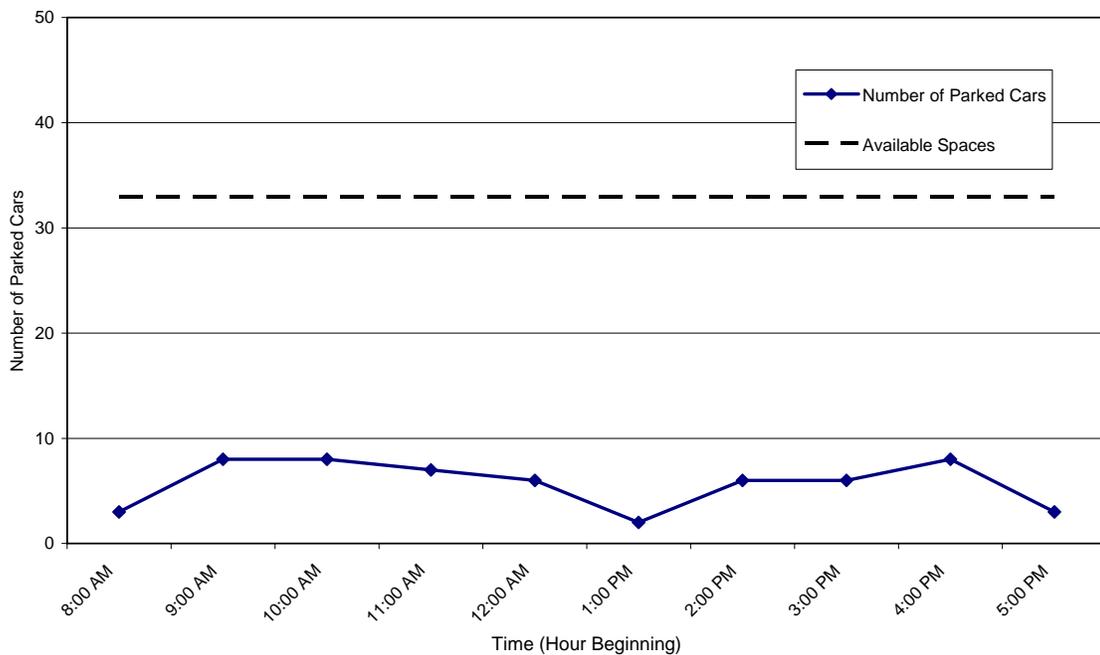
1. Source: SDOT GIS maps. Parking Inventory at mid-day reflecting daytime hours. Parking restriction type may change after 1:00 P.M., but most restrictions end after 6:00 P.M.
2. Operations Management Group, data collection on May 15, 2008. Compiled by Heffron Transportation, Inc. Occupancy counts occurred once per hour from 8:00 A.M. to 5:00 P.M (ten checks).
3. Average utilization is 93% including cars parked in No Parking spaces and cars parked in small remainder curb space, reflecting the actual demand for parking.

4. Parking Utilization by Time of Day

Parking Utilization for Two-Hour Meter Spaces

Parking utilization by time of day was calculated for the study area. Data were collected in one-hour intervals from 8:00 A.M. to 5:00 P.M. The results are presented in Figure 3. Parking utilization in two-hour meter spaces is relatively low throughout the day with fewer than 10 of the 33 available spaces occupied. Figure 2 shows that 26 of the meter spaces are on the east block face of Taylor Avenue, between John Street and Thomas Street. These meter spaces are directly across from 17 unrestricted spaces and eight signed two-hour limit spaces, and in addition there is a relatively large supply of unrestricted spaces on nearby streets.

Figure 3. Parking Utilization for Two-hour Meter Spaces

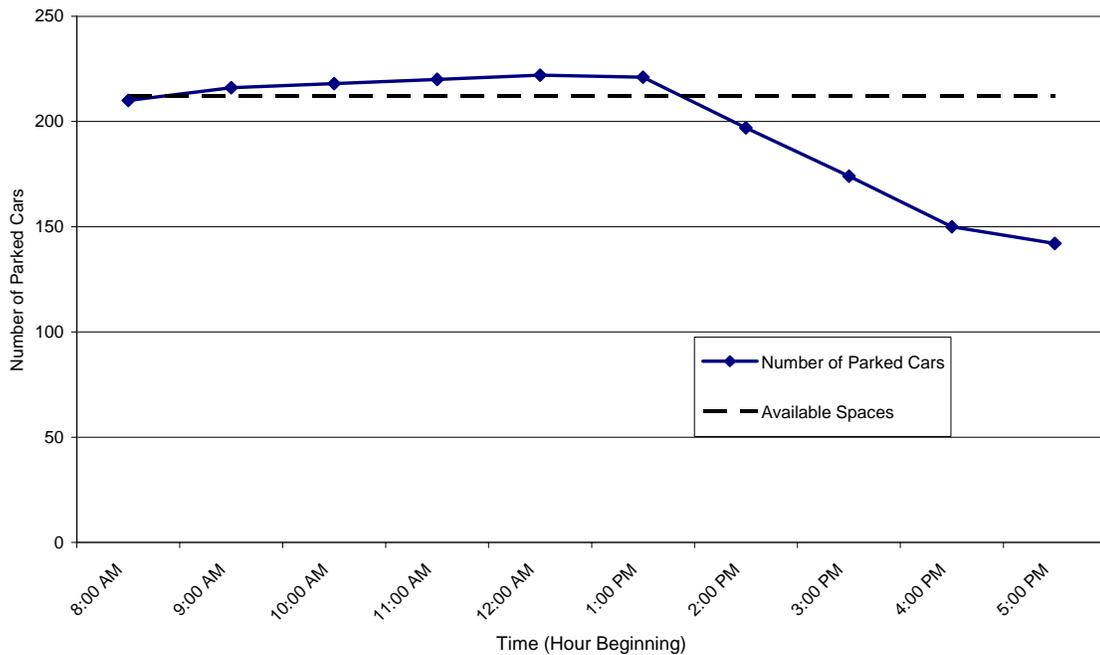


Source: Operations Management Group, data collection on May 15, 2008. Compiled by Heffron Transportation, Inc.

Parking Utilization for Unrestricted Spaces

Figure 4 represents parking utilization by time of day for unrestricted spaces. There are 212 unrestricted spaces in the study area that are fully utilized at 8:00 A.M. The utilization exceeds capacity after 8:00 A.M. because an additional 17 cars are parked in No Parking zones or squeezed into short sections of curb that are not a standard parking space. These additional vehicles reflect actual demand for parking. Between 1:00 P.M. and 2:00 P.M. the utilization falls below the number of spaces and then decreases to approximately 142 spaces at 5:00 P.M.

Figure 4. Parking Utilization for Unrestricted Spaces



Source: Operations Management Group, data collection on May 15, 2008. Compiled by Heffron Transportation, Inc.

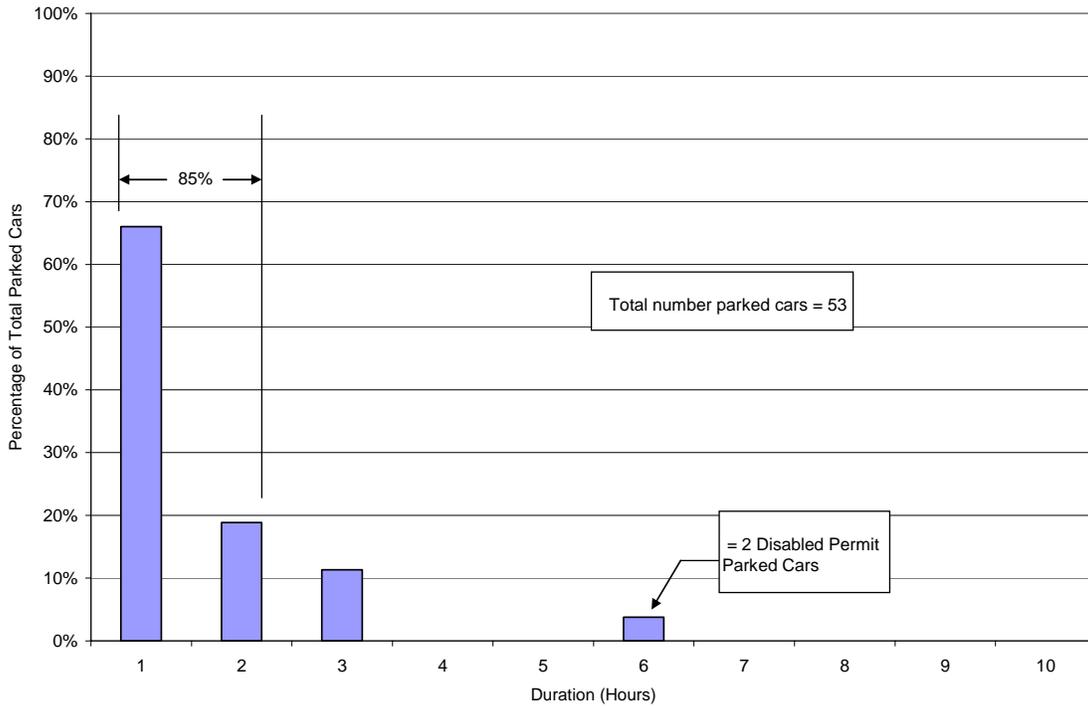
5. Parking Duration

Parking duration and the resulting compliance rates were calculated for two-hour meter spaces and unrestricted spaces.

Two-Hour Meter Parking

There are 33 two-hour meter parking spaces in the study area and 53 cars parked in these spaces from 8:00 A.M. to 6:00 P.M. Parking duration for the two-hour spaces is presented in Figure 5. Data collection occurred in one-hour intervals, which means that if the same parked car was seen twice, it was considered parked for two hours. Of the observed vehicles, only six (11%) were non-compliant and parked for three hours. Two cars were observed parking for six hours, but these cars displayed a Disabled Parking Permit, which exempts them from the posted time-limit.

Figure 5. Parking Duration for Two-hour Meter Spaces

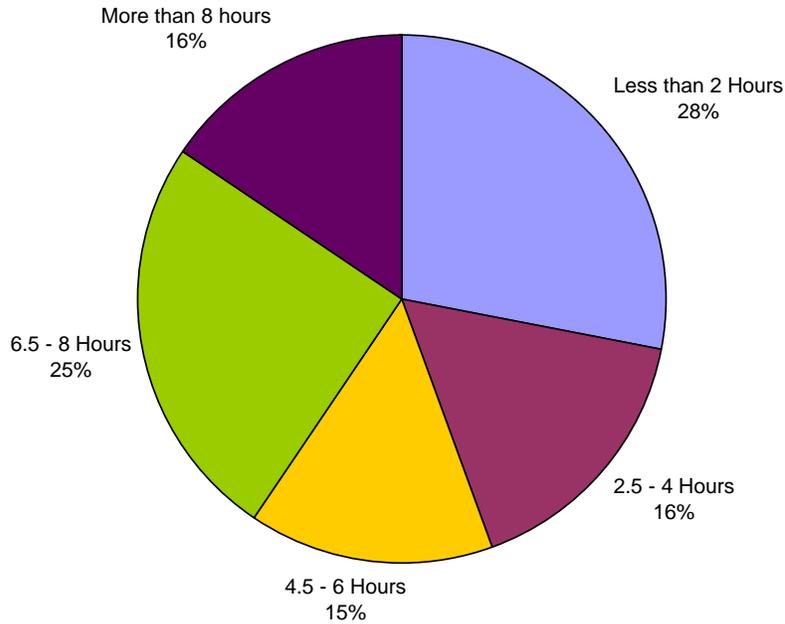


Source: Operations Management Group, data collection on May 15, 2008. Compiled by Heffron Transportation, Inc.

Unrestricted Parking Spaces

There are 212 unrestricted parking spaces in the study area and a total of 377 cars parked in these spaces from 8:00 A.M. to 6:00 P.M. Parking duration for the two-hour spaces is presented in Figure 6. Data collection occurred in one-hour intervals. The parking duration in unrestricted spaces is fairly evenly distributed from one hour to ten hours.

Figure 6. Parking Duration for Unrestricted Parking Spaces



Source: Operations Management Group, data collection on May 15, 2008. Compiled by Heffron Transportation, Inc. Reflects the percentages of a total of 377 parked vehicles.

Parking duration by block face was evaluated to understand short-term versus long-term parking characteristics for locations within the study area. The results are presented in Figure 7. Depending on the location, vehicles that parked for two hours or less ranged from 0% to 57% of parked cars by block face. The highest rate of short-term parking duration occurred in the approximate center of this study area on:

- 6th Avenue N, east side, between John and Thomas Streets (57% parked for two hours or less),
- John Street, north side, between Taylor Avenue and 6th Avenue N (43% parked for two hours or less),
- John Street, south side, between Taylor Avenue and 6th Avenue N (44% parked for two hours or less).



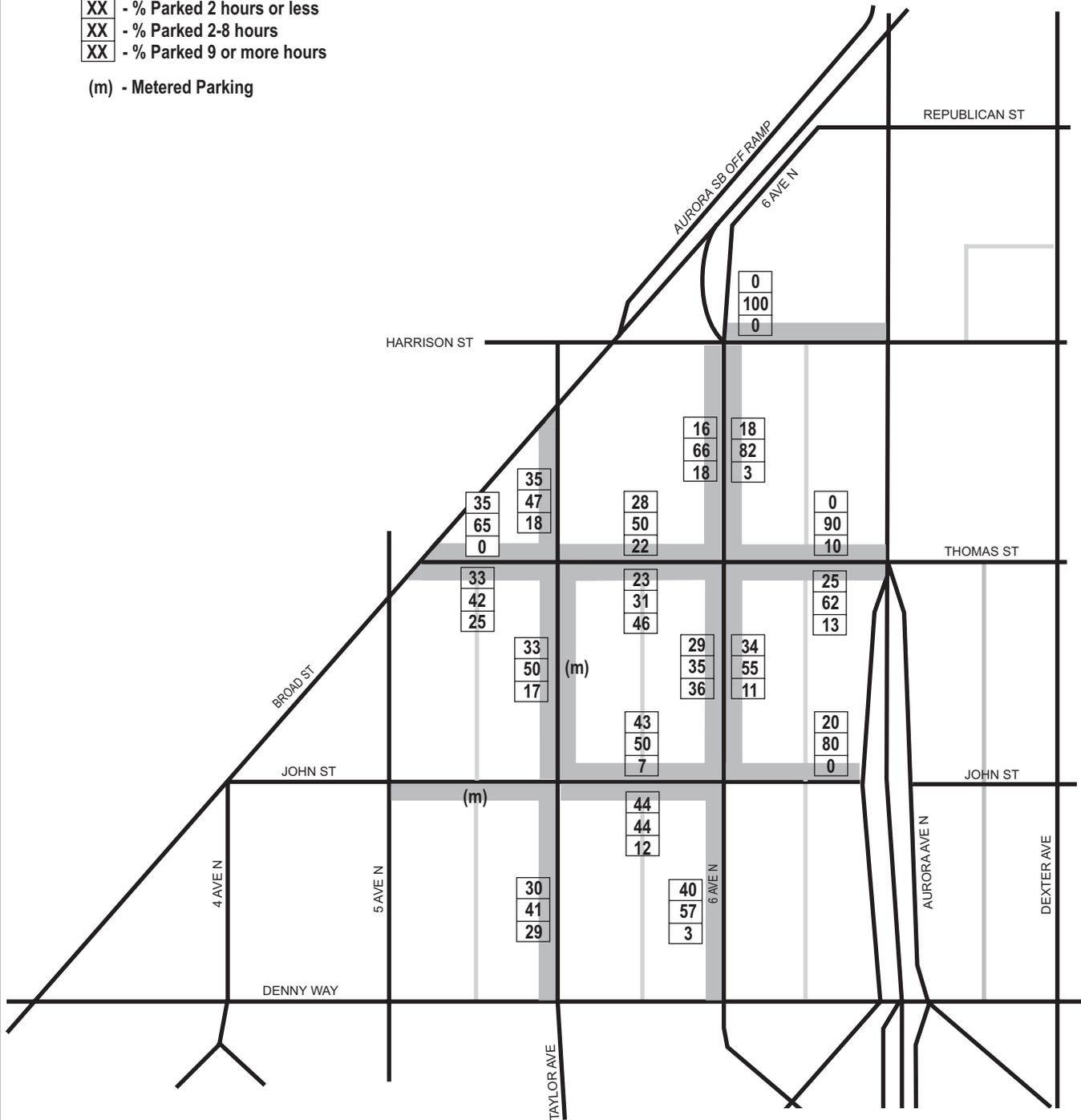
LEGEND

- | |
|----|
| XX |
|----|

 - % Parked 2 hours or less
- | |
|----|
| XX |
|----|

 - % Parked 2-8 hours
- | |
|----|
| XX |
|----|

 - % Parked 9 or more hours
- (m) - Metered Parking



Study Block Faces

Not to Scale

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Figure 7
Parking Duration
For Unrestricted Spaces



Vehicles parking for two to eight hours ranged from 36% to 100% of parked cars by block face. The highest rate of two-to-eight hour parking occurred on the eastern side of the study area on:

- John Street, north side, between 6th Avenue N and Aurora Avenue N, (80% parked two to eight hours)
- Thomas Street, north side, between 6th Avenue N and Aurora Avenue N (83% parked two to eight hours),
- Harrison Street, north side, between 6th Avenue N and Aurora Avenue N (100% parked two to eight hours).

Vehicles parking for nine hours or more ranged from 0% to 46% by block face. The highest rate of nine or more hours parked occurred in the approximate center and south end of the study area on:

- Taylor Avenue, west side, between Denny Way and John Street (29% parked for nine or more hours),
- 6th Avenue north, west side, between John Street and Thomas Street (36% parked for nine or more hours),
- Thomas Street, south side, between Taylor Avenue and 6th Avenue N (46% parked for nine or more hours).

6. Findings

Most of the parking in the study area is unrestricted. The parking duration in unrestricted spaces is fairly evenly distributed from one hour to ten hours. This demand likely reflects a combination of short to medium-term parking associated with all-day employee parking, or by commuters using the area as a park-and-ride to use transit and avoid downtown parking costs. The survey found that most of the unrestricted parking was filled by 8:00 A.M. The number of metered parking spaces and two-hour signed time-limit spaces is small. The study area has duration characteristics such that parking limits and/or pay stations could be installed that best match the demand in the area, providing for a range of parking duration. Major findings are summarized below.

- Overall parking utilization for unrestricted spaces is 93%. Overall utilization of metered spaces was very low at 17%. Motorists may not be parking at meters due to the availability and turnover of free parking.
- The length of time that vehicles parked in the unrestricted spaces is fairly evenly distributed among hour intervals ranging from one to ten hours.
- Average parking duration in the study area for unrestricted spaces is: 28% for two hours or less, 56% for two to eight hours, and 16% for nine hours or more.
- Employees are parking on street; however, current demand for up to nine hours of parking is not impacting the demand for short-term parking as evidenced by the very low parking utilization at metered spaces.
- The highest rate of short-term parking by block face occurs in approximately the center of the study area. The highest rate of parking for nine or more hours occurs at the east side of the study area. Parking locations for parking from three to eight hours is fairly evenly distributed throughout the study area.

7. Parking Management Strategies

Based on the survey findings, the City of Seattle could benefit from upgrading the meters and providing pay station parking. The high utilization of unrestricted spaces combined with the very low utilization of metered spaces means that the on-street parking is meeting the demand for parking within the study area. This also means that there is flexibility within the study area to install parking meters that allow for all durations of parking.

The study did not include night time or weekend data collection; however, the adjacent land use would generate little demand for those time periods. It has been observed that during large events at the Seattle Center, most parking is occupied in the study area. The City could provide equal access to parking by extending pay station hours to evenings and weekends.

Potential parking management strategies that the City could consider include:

1. Replace all existing meters with pay stations.
2. Convert all existing signed two-hour time-limited parking to pay stations.
3. Manage the remaining unrestricted parking spaces with two options:
 - A. Convert one-third of unrestricted parking spaces to two-hour pay stations in the area south of Thomas Street. This area includes the existing metered parking spaces plus up to 94 unrestricted spaces.
 - B. Convert all unrestricted parking to pay stations with up to a 10-hour parking limit. This would provide for all hours of parking demand while adding some incentive to use transit or carpool. Pay stations make such time limits enforceable. Utilization of the longer-term spaces should be monitored to ensure short-term parking availability where needed.
4. Consider implementing the longer time limits into evening and weekend hours such that on-street event parking is charged approximately market rates.
5. Review the need for load/unload spaces prior to installation of pay stations. Review 30-minute signed parking spaces to ensure an appropriate designation for that block face.