

# 2013 ITE Western District Annual Meeting July 2013, Phoenix, Arizona

## Analyzing the Redevelopment of Underutilized On-Street Parking for HCT in Seattle

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### **Abstract**

The City of Seattle and King County Metro Transit have invested heavily into the future in high capacity transit (HCT) including Rapid Ride enhanced bus service. In November 2006 the Transit Now initiative was passed and RapidRide was launched. As a part of the planning and development of these corridors parking utilization studies were performed to determine the significance of impacts if parking along the corridor were to be replaced with business access transit (BAT) lanes.

The parking studies were performed along corridors where BAT lanes had been selected as the preferred method of providing effective transit operations for the new RapidRide transit. The purpose of the studies was to determine the overall impact of removing parking and if there was enough supply on adjacent side streets to absorb the additional cars that might otherwise park in the BAT Lane. To accomplish this, multiday field review of the parking supply and demand along the corridors was performed. The data collected was then analyzed and summarized to show the overall impacts that removing parking would have.

The results helped identify the hours of operation and routing of the BAT lane corridors. These findings were a key tool during the public outreach development stage. Public agencies were able to reassure stakeholders that the BAT lanes will have minimal impacts on local businesses.

### **Introduction**

The focus of this paper is based on two specific routes, one in development (E-Line RapidRide) and one in service (C-Line RapidRide). The paper will begin with a brief description of the currently in service C-Line route and the development of BAT lanes along multiple portions of the route that have been installed and conclude with the more recent analysis that is still under review for the E-Line service. Both lines run through the city of Seattle and are and will be operated by King County Metro. The E-Line runs along Aurora Ave N (SR99) from the city of Shoreline through North Seattle into the downtown core while the C-Line runs from West Seattle into downtown.

## Analysis

### C-Line: West Seattle RapidRide

Before implementation of BAT Lanes in West Seattle DKS performed a parking utilization study in areas where parking was to be restricted by the operation of the BAT lane. Figure 1 below show the areas scheduled for potential BAT lanes.

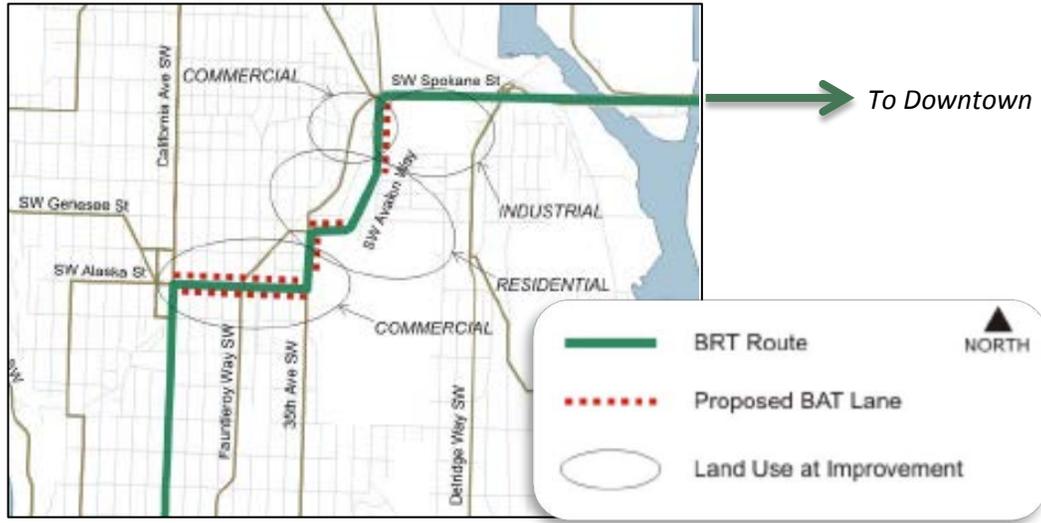


Figure 1 Proposed BAT Lane

### Methodology

DKS performed an on-street parking study along the corridor taking data in half-hour intervals. Each parked vehicle was counted along the corridor and on the side streets one block east and west of the corridor. Off-street private business-owned parking lots and driveways were inventoried but not counted or included in the parking supply. The data was collected by counting the number of vehicles parked in the curb lane on each block between side streets. In addition, vehicles parked on the side streets were also counted. Table 1 below is a sample of the data collected.

Table 1 AM West Seattle Data Sample

North-West (Southbound)			Available Spaces 7 - 9	To Fauntleroy Terminal				To Fauntleroy Terminal				
				Number of Parked Cars				Occupancy Rate				
			700-730	730-800	800-830	830-900	700-730	730-800	800-830	830-900		
California Avenue	Edmonds St	Alaska St	25	5	11	15	14	20%	44%	60%	56%	
	Alaska Street	California Ave	42nd Ave	10	7	8	9	8	70%	80%	90%	80%
		42nd Ave	41st Ave	6	0	0	0	0	0%	0%	0%	0%
		41st Ave	40th Ave	6	0	0	0	0	0%	0%	0%	0%
		40th Ave	Fauntleroy Way	0	0	0	0	0				
		Fauntleroy Way	38th Ave	4	4	4	4	4	100%	100%	100%	100%
		38th Ave	37th Ave	7	5	5	5	6	71%	71%	71%	86%
	37th Ave	36th Ave	11	5	5	2	11	45%	45%	18%	100%	
35th Avenue	36th Ave	35th Ave	7	0	0	2	2	0%	0%	29%	29%	
	Alaska St	Snoqualmie St	3	0	0	0	0	0%	0%	0%	0%	
	Snoqualmie St	Avalon Way	15	6	0	7	3	40%	0%	47%	20%	
Avalon Way	35th Ave	Genesee St	25	17	16	16	13	68%	64%	64%	52%	
	Genesee St	Andover St	36	20	18	17	18	56%	50%	47%	50%	
	Andover St	Bridge Ramp	45	4	8	11	9	9%	18%	24%	20%	

The results of this data were then summarized and documented into reports that were presented to the city and county.

### *Summary of Results*

The overall utilization of the parking along the corridor followed patterns based on a few different issues depending on the location. In the commercial core along SW Alaska St parking utilization peaked during the midday peak period. This correlated with the majority of business being open at this time. The residential area was roughly consistent in utilization (50%) across all time frames; however, most parked cars did not actually move spaces. In the industrial area parking peaked during the AM peak. The majority of people parking along Avalon Way were using the location as a convenient hide and ride lot into downtown (see Figure 2 below).



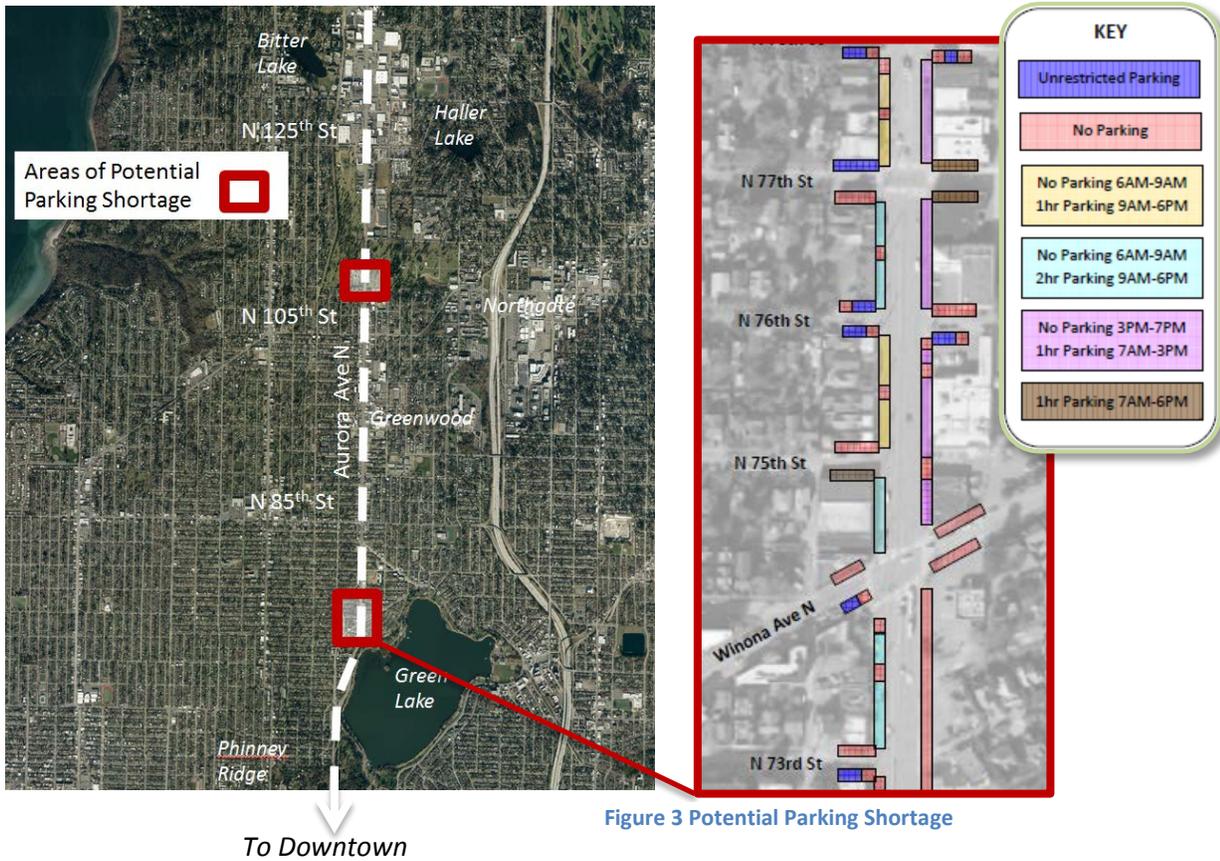
Figure 2 "Hide and Ride" parking on Avalon Way

### *Decision Making and Conclusion*

From the data collected the city set up a public outreach meeting to address the public's concerns with providing a BAT Lane in each of the three distinct areas. The results of this meeting and input ultimately lead to BAT lanes being installed in the proposed areas with time of day operational restrictions. Along Alaska St (commercial core) the BAT lanes operate peak directional, meaning that there is no parking eastbound in the AM peak and no parking westbound in the PM peak. During the off-peak periods parking is permitted generally in the same locations as previously permitted. In the residential area the BAT lane length was shortened but parking was restricted all day in the northbound direction. In the westbound direction a BAT lane was determined to not be needed. Along Avalon Way parking was restricted during the AM peak only (peak direction). This allowed for the local residents along the corridor to utilize the parking. One key note taken away from the public outreach was, as we had discovered, most of the parked vehicles were "hide and riders." With this knowledge the city changed the parking to limit lengths during business hours. The finalized RapidRoute included the development of complete streets including adding BAT lanes, bike lanes, and more efficient parking utilization on side streets and in off street lots.

## E-Line: Aurora Ave RapidRide

Aurora Ave N is a six-lane arterial that provides access to downtown Seattle across the George Washington Memorial Bridge. Along the corridor on-street parking is restricted during certain peak periods. Figure 3 below summarizes the two key locations with current parking restrictions on Aurora Ave N and the adjacent side streets with potential shortages. This area is also a commercial district.



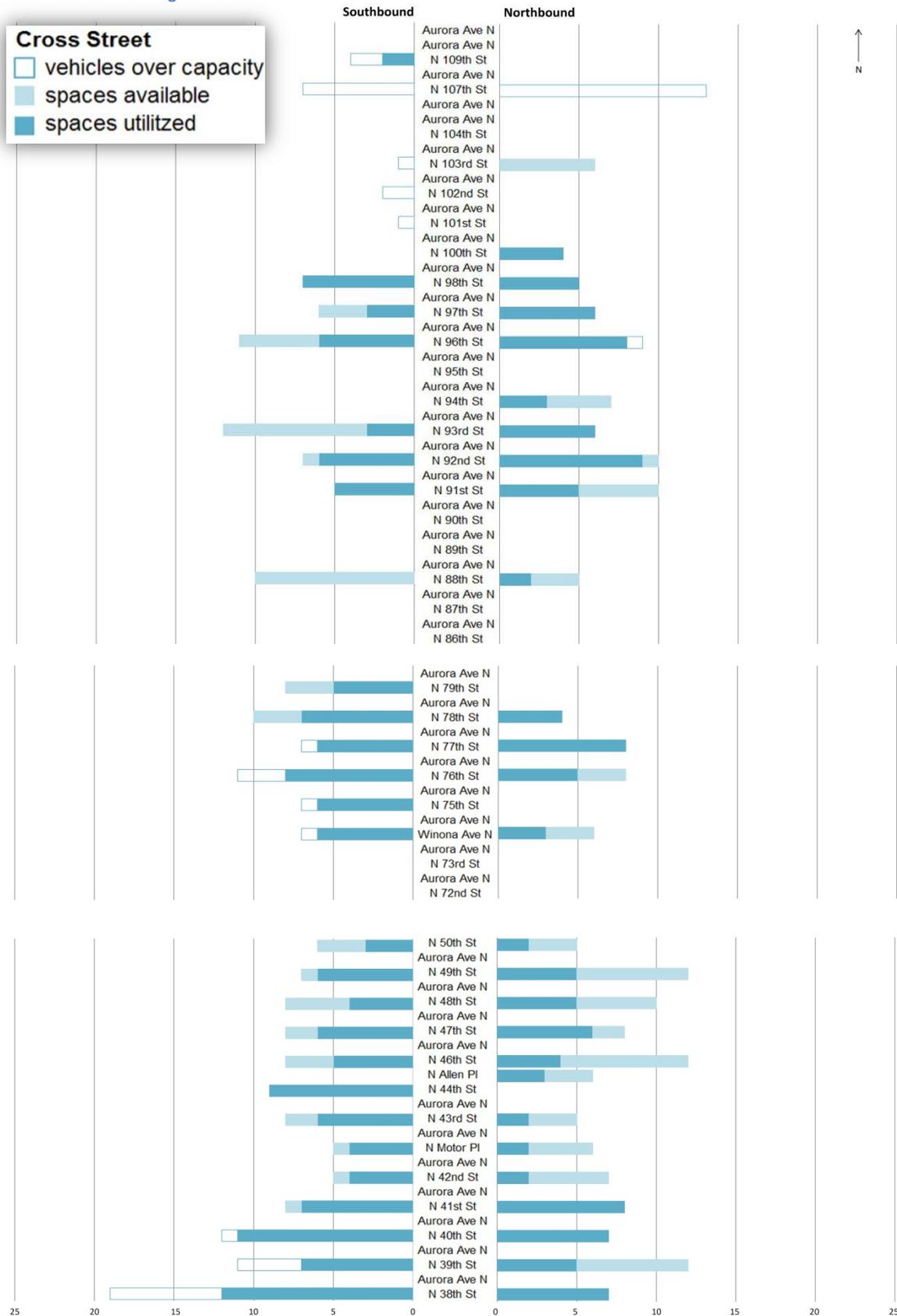
### Methodology

Between October 9 and 11, 2012 a 3-day on-street parking study was done along the corridor taking data in half-hour intervals between 10:00 am and 4:00 pm (parking is prohibited during directional peak periods) following the same basic principles used in West Seattle.

### Parking Displacement

To provide space for the new RapidRide BAT lanes, parking will be restricted along the entire length of the corridor. Operation of the BAT lanes will displace all of the existing on-street parking along the corridor between N 38<sup>th</sup> St and N 109<sup>th</sup> St. Vehicles will be able to park on side streets or in off-street private lots. The Graphic on the following page shows the parking utilization on the corridor with removal of the on-street parking for the proposed BAT lane. The analysis assumes that none of the displaced on-street parking will utilize the off-street private parking lots. The vehicles displaced are assumed to park on the side streets adjacent to Aurora Avenue. The analysis evaluates the impact of displaced side street parking one block on either side of Aurora Avenue. The available side street parking beyond one block was not evaluated.

Table 2 Potential Parking Utilization with BAT Lane



\*Northbound on Aurora Ave N north of Winona Ave N parking is not permitted after 3:00 pm. Data for this section represents 10:00 am - 3:00 pm only.

## Results

Table 2 on the previous page shows the estimated parking utilization if all parking is restricted on Aurora Ave N and cars have to use side streets. The light blue bars represent available parking spaces within one block of Aurora Avenue on the side streets, dark blue bars represent utilization of those spaces, and white bars represent areas where the displaced on-street parking demand exceeds available capacity. In locations where there are just enough spaces to meet demand only the blue bars are shown.

There are three locations where the side street parking supply does not accommodate the parking demand within one block of the displaced parking on Aurora Avenue. Two of those locations are southbound at the southern end of the corridor and southbound near the Aurora Business District between N 72<sup>nd</sup> St and N 76<sup>th</sup> St. Between N 38<sup>th</sup> St and N 40<sup>th</sup> St at the southern end, the demand is approximately 12 vehicles over the available on-street parking supply on side streets within one block of Aurora Ave. The vehicles parked in this section seem to utilize this location as a “hide and ride” area due to the fact that the vehicles parked here tended to stay for periods in excess of 6 hours without moving.

Within the Aurora Business District, the demand is approximately 13 vehicles over the available on-street parking supply on side streets within one block of Aurora Ave. This parking is utilized primarily by people going to the local business which is seen by the increase as the day goes on. The study area is limited to the side streets within one block on each side of Aurora Ave N. Even though there is insufficient capacity for parking within one block of Aurora Ave at this location, the nearby residential area provides sufficient parking to that may accommodate the excess vehicles.

The other location where the loss of on-street parking on Aurora Ave exceeds the side street parking supply within one block of Aurora is both northbound and southbound at the north end of the study area, between N 107<sup>th</sup> St and N 109<sup>th</sup> St. In this area there are no curbs on the side streets, rather perpendicular parking for trucks is used by local business (see Figure 4). Because of this, there is almost no available on-street parking supply on any side streets north of N 103<sup>rd</sup> St. Although the parking spaces on Aurora Ave N are currently being utilized in this area, these vehicles are most likely customers of the surrounding businesses and would be able to find ample parking spaces in the private lots if parking on Aurora Ave N is restricted. On-street side street parking is also provided beyond the one block study area and this could also be utilized.



Figure 4 Perpendicular Parking (not counted as potential off street parking)

### ***Decision Making and Conclusion***

This data was presented to the city and county along with other information on travel time, signal priority, and communication to determine the level of BAT lane service to be provided. The city has been involved with local business and citizens through similar public outreach meetings, workshops and open houses to finalize the level of BAT lane service, whether it will be operational all day or only during peak periods.

## **Conclusion and Recommendation**

Parking analysis is a vital tool to help determine the extent of and implementation of BAT lanes. Along with using other tools, it provides a quantifiable way to show the impacts of parking removal to concerned citizens and business owners. This interaction is vital to the success of projects and the overall buy-in needed to finalize a decision. After careful consideration, the finalized decision will be built as has happened in West Seattle. Benefits have already been seen with reduced travel times and more reliable transit trips. Parking in front of business during off peak hours has had little impact on them and hide and riding is now limited providing even more opportunities to park near local businesses.

Whenever there is a change of utility of a road, whether it be for transit, bicycles, or pedestrians, a parking utilization analysis should be done as a part of the public involvement process to insure that the change minimizes the amount of adverse effect on the people affected by the change.

## **Acknowledgments**

The authors acknowledge the support of City of Seattle and King County Metro Transit in the completion of this project.

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