



DATE: September 12, 2011
TO: City Council Transportation Committee
FROM: Peter Hahn, Director, Seattle Department of Transportation
RE: Paid Parking Rates–Response to SLI 118-5-A-1

This memorandum and attachments comprise the Seattle Department of Transportation (SDOT) report to the City Council on the Performance-Based Parking Pricing Study in response to Statement of Legislative Intent (SLI) 118-5-A-1. The Final Report, Executive Summary, and data results are also available on SDOT's website.

Background

In 2011, the Seattle Department of Transportation set neighborhood parking rates to achieve the policy objective of providing approximately one to two open spaces per blockface throughout the day. Specific rates intended to achieve this target occupancy were implemented in February and March. In adopting the 2011 budget, the City Council included policy direction to SDOT to build on this data-driven approach by developing a business case for variable day-part parking rates for use in 2012. Variable day-part parking rates, also referred to as time-of-day pricing, recognizes that parking occupancies and optimum parking rates may vary at different times of the day.

SLI 118-5-A-1 requests that SDOT prepare business case options and recommendations for 2012 implementation of variable rates by day-part-period. This memo summarizes the business case options and recommendations for implementing day-part pricing and other performance-based parking pricing strategies. The analysis informs the parking rate and policy changes that will be submitted with the 2012 Proposed Budget.

SDOT proceeded with consultant assistance to complete what is now called the *Performance-Based Parking Pricing Study*. The report acknowledges that, in addition to variable day-part pricing, there are other performance-based pricing strategies that may have greater potential to achieve the policy objective of dependable parking availability for customers. In addition, SDOT repeated the November 2010 data collection in June 2011. Consultant input, review of SDOT's pay station technology capabilities, on-street parking utilization data collected in 2010 and 2011, and stakeholder outreach through the Parking Sounding Board form the basis of the study recommendations.

The SLI response covers the following:

- Findings from June 2011 parking data collection
- Performance-Based Pricing Program development
- Feasibility of current Seattle pay stations to address time-of-day pricing
- Findings for time-of-day pricing
- Proposed Performance-Based Parking Program recommendations
- Public engagement activities



Findings from June 2011 Parking Data Collection

In June, data were collected on an hourly basis during typical weekdays for approximately 60% of the city's 13,500 on-street paid parking spaces. All 23 paid parking districts were either sampled or fully counted (Ballard Locks was added as a separate area). Other new data collected this year are Saturday and Sunday occupancy in several areas and game days in Pioneer Square and Chinatown/International District. Disabled parking permit occupancy was collected in six areas, including the Commercial Core on weekends. General findings are presented below and in the attached Executive Summary tables:

- In the four neighborhoods where rates increased in early 2011 (Commercial Core, First Hill, Capitol Hill, and Pioneer Square), the June 2011 data showed parking occupancies came down within the target occupancy range, though occupancy varies within subareas of each neighborhood. Data generally showed improved availability of on-street parking, although use of disabled parking permits continues to be high in the Commercial Core and First Hill (as well as Cherry Hill.)
- For the eleven neighborhoods where rates were lowered, results were mixed. Parking occupancy actually dropped in six of the eleven neighborhoods compared to last November. The data showed that decreasing rates by \$0.50 per hour did not consistently generate increased parking demand, and where occupancy increased, the amounts were relatively modest.
- The seven neighborhoods where rates stayed the same also had mixed results, illustrating that parking pricing is likely not the prime driver for parking demand compared with other factors such as the quality of neighborhood attractions, hours of operation, and willingness to use alternative modes.

The mixed outcomes illustrate that the June 2011 and November 2010 data alone do not complete a picture of the cause and effect of parking behavior in the paid parking areas of Seattle. The data was collected from two different seasons under two different sets of rates at a time of complicated business and household consumer economic conditions. They add to our understanding but should not be assumed to provide perfect rate and policy guidance.

Further analysis and comparison of the June 2011 and November 2010 data revealed unique neighborhood parking characteristics. The most prominent example is that many neighborhoods have specific geographic subareas of high parking demand. In the University District, for example, the area in and around University Way NE and Brooklyn Avenue NE had a peak occupancy of 93%, while the entire neighborhood area had a peak occupancy of 63%. The November 2010 data results reported an average occupancy of 64% for the entire neighborhood, including low and high areas. Based on that, SDOT lowered the hourly rate from \$2.00 to \$1.50 across the neighborhood. The June 2011 data indicate the new rate did not result in an occupancy increase in the edge or low demand areas of the neighborhood or reduce parking demand in the core high demand area around University Way NE and Brooklyn Avenue NE.

The data and the Performance-Based Parking Pricing Study establish that “people don’t park just to park” – parking is part of the experience to reach a destination. Factors such as people’s willingness to walk a few blocks, store and event hours, the desirability of goods and services offered, perceived personal safety, the social rhythm of the experiences offered in a neighborhood and other

considerations all play into the decision of when and where to travel and park. While rate changes may influence travel behavior (resulting in shifts in time of travel, destinations, lengths of stay or travel modes), lowering rates alone does not necessarily result in increased parking demand. Conversely, an increase in parking rates may not result in decreased parking occupancy if the experiences a neighborhood has to offer are in high demand.

To better address customer needs in lower demand areas, the better strategy than rate changes or time-of-day pricing may be expanding time limits (e.g., from two hours to four hours). In neighborhoods and subareas where demand is especially high, parking turnover may be a better metric for success than occupancy. Giving SDOT the flexibility to consider these additional metrics and tools would require amending the existing policy direction in the SMC focused on rates and occupancy.

Performance-Based Pricing

Performance-based parking pricing strategies set parking rates based on data-driven characteristics to achieve specific outcomes such as the desired parking occupancy. Pricing strategies can include changing rates by time of day, location, time of year, or other options to respond to different demand patterns. For example, the data suggest changing prices in subareas within neighborhoods to shift demand a few blocks from high use core streets (geographic shifting) and changing time limits (e.g., from 2 hours to 4 hours) may in some cases be more effective than using time-of-day pricing to shift demand from peak hours to non-peak hours of the day.

In the course of this study, SDOT and the consulting team researched strategies that are either in use or under consideration in Los Angeles, San Francisco, New York City, and Washington, D.C. The team also examined results of data collection in each of Seattle's 23 paid parking neighborhoods. A number of different strategies began to emerge as suitable pricing options. These were further refined by input from an Expert Panel of national parking professionals, the advisory Parking Sounding Board of local stakeholders, and further analysis of the outcomes of the 2011 rate change.

Feasibility of Current Seattle Pay Stations to Address Time-of-Day Pricing

The study reviewed the capabilities of existing city pay station equipment to implement time-of-day and other pricing strategies. SDOT began conversion from single-space meters to multi-space pay stations in 2004 and now has about 2,200 Parkeon pay stations (approximately 1,500 of the older Stelios; 700 newer Stradas; and 10 of the newest generation, CityPals.) Stelio pay stations are not able to handle programming required to implement performance-based pricing strategies, including time of day pricing. These units were installed in the program's early years and make up almost 70% of the current installed base. Strada pay stations, installed primarily in Fremont, Green Lake, Roosevelt, South Lake Union, Uptown Triangle and Westlake Avenue North, can handle these programming requirements. However their ability to effectively communicate rate information to the customer is limited.

The newer pay stations currently on the market, such as Parkeon's new generation CityPals, can handle more complex pricing structures and the CityPal additionally offers the possibility of much improved communications to parking customers. Otherwise, until more pay stations are upgraded, performance-based parking pricing implementation, including time of day pricing, would be more cost-effective where there are existing or re-located Stradas instead of Stelios (recognizing their communications limitations).

The study’s technology assessment recommended that SDOT look at a large-scale capital replacement program beginning in 2013, as pay stations installed in 2004-05 reach the end of their projected 10-year useful life. Additionally, there may be an opportunity to work with various vendors through low-cost demonstrations in 2012 to test out different pay station equipment.

Findings for Time-of-Day Pricing

Time-of-day pricing is aimed at shifting parking demand from high use times of the day to lower use times of day. Theoretically, time-of-day pricing works where there are distinct parking demand patterns throughout the day and the underlying sources of demand are available and desirable at off-peak times. For example, a neighborhood with only lunch and dinner restaurants may have a difficult time shifting parking demand from lunch to the morning hours, regardless of the parking price differential. Basic elements of this pricing strategy include a recommended 25 percentage points or greater difference in utilization between time bands, a strong peak period during which occupancy is within or exceeds the neighborhood target occupancy, and an existing rate above the minimum or below the maximum to allow necessary price differences in time bands. Three time bands (approximately 4 hours each) over the course of the day would optimize communications and pay station programming and therefore reduce implementation costs and user confusion. The time-of-day pricing strategy would include a fourth evening time band if evening paid parking is in effect in that neighborhood.

Neighborhoods where time-of-day pricing could be an effective parking management strategy would display occupancy patterns similar to the following:

	Average Occupancy 8 a.m. – Noon	Average Occupancy Noon – 3 p.m.	Average Occupancy 3 p.m. – 6 p.m.
Neighborhood X	40%	75%	90%
Target Occupancy – 74% - 87%			
Resulting Change	Lower rate by \$0.50	Keep rate as is	Raise rate by \$0.50

As shown in Attachment 1, six neighborhoods showed an occupancy fluctuation of 25 percentage points or more between time bands: Ballard Locks, Chinatown/International District, Fremont, Pike-Pine, Roosevelt, and University District. None of these neighborhoods exceeded the target occupancy range during any of the daytime time bands. Only Chinatown/International District had parking occupancy during the mid-day within the target occupancy range. While Fremont and Roosevelt have the appropriate technology in place (Strada pay stations) to deploy time-of-day pricing, Roosevelt is not a strong candidate to lower off-peak rates because rates are already near the minimum.

SDOT presented the concept of time-of-day pricing at an advisory Parking Sounding Board comprised of downtown and neighborhood stakeholders. Some members thought having to pay more to park over the lunch period would be confusing to parking customers. Even with the CityPals, there would be significant communications challenges to make people aware of the use and benefits of time-of-day pricing in one neighborhood compared with others.

Other Performance-Based Parking Strategies

Based on study data results and input from the advisory Parking Sounding Board, SDOT and the consultant team identified four types of strategies that could enhance SDOT’s performance-based pricing toolbox: neighborhood engagement, data management, enabling technology, and pricing demonstration projects. The program strategies would help SDOT respond to fluctuations in on-street

demand. They also recognize that occupancy and rates are not isolated from a business district's economic development patterns and attractions. The strategies and possible methods to apply them are described below, although not all items are proposed or can be pragmatically implemented in 2012.

1. Neighborhood Engagement and Communications

Communications and neighborhood partnerships are among the critical ingredients to the success of a performance-based parking system. SDOT's advisory Parking Sounding Board and consultant team strongly emphasized conducting comprehensive neighborhood outreach and communication efforts. As the parking system increases in complexity, it is essential that communications also become more sophisticated. Customers are more likely to interact with businesses about travel and parking options than to seek information on the city web site. So, business collaboration is key to effectively reaching customers. Funds would be needed for brochures, pamphlets, posters, advertising in neighborhood blogs and other media, language translations for all materials, and an instructional video for internet posting. These strategies are consistent with education programs in other cities with similar programs. This is in addition to the information available on nearby street signs and the pay stations themselves regarding pricing and hours of operation.

2. Data Collection and Analysis

A data-driven performance-based parking pricing system requires an ongoing investment in data collection and analysis. Real-time sensor data are not financially feasible at this time. The consultants recommended that SDOT continue the annual comprehensive parking occupancy study and supplement it with quarterly studies in specific areas to track length of stay. In addition, SDOT and Finance and Administrative Service (FAS) staff are collaborating on advanced statistical data analysis and development of predictive algorithms using pay station transaction data.

SDOT's intent is to grow data collection capabilities to analyze as much data as available to inform rate-setting and other management decisions. The study suggests implementation of the following schedule:

- Annual data occupancy collection every spring/summer – SDOT
- Length-of-stay duration data collection with occupancy study – SDOT
- Supplemental data collection three times a year – SDOT and SPD Parking Enforcement
- Monthly pay station transactions analysis – SDOT and FAS

3. Data Release for Mobile App Development

The City has significant internal capabilities for parking data collection and analysis. SDOT is completing a GIS-based parking studies database that stores all pay station transactions and manual count studies. Through the data.seattle.gov website, SDOT should be able to distribute large data sets for private developers interested in mobile and desktop applications. This effort would be a critical element of SDOT's communication strategy. While the private sector is better able to innovate and update these types of applications, their willingness and interest to do so is not entirely within the City's control.

4. Pay by Cell Phone

Pay by cell phone is now a well-tested and reliable technology that currently exists in almost 200 North American cities. This payment method provides added customer convenience and other practical benefits that would help make Seattle more visitor-friendly. Pay by cell provides an additional payment option in the event of temporary pay station communication interruptions. With pay by cell, parkers call a number or use a smartphone app to set up an account (tied to their vehicle license plates and credit

cards). The parker logs onto or calls into that account and purchases needed time specific to that blockface. With a smartphone application, the parker can remotely extend their time up to the time limit and receive alerts before paid time expires. Vendors recoup costs through transaction user fees (typically between \$0.25 and \$0.35 per transaction).

To implement the pay by cell phone option citywide, SDOT would expect to issue a request for proposals for potential vendors. Once contract negotiations are complete, citywide implementation has several components. They include back-office integration between SDOT, Seattle Police Department (SPD) Parking Enforcement, and the pay station and pay by cell vendors; instructional signage and pay station graphics; potential enforcement-related legislation to allow payment by cell phone; and communication and public education launch strategies.

5. Neighborhood Sub-Area Rates and Time-Limits

The June 2011 data results highlight that eight of the 23 parking districts have distinct differences in parking occupancy within the districts. Applying a district-wide rate does not help to meet the target occupancy. A finer-grained analysis is warranted to create sub-area neighborhood occupancies and for a neighborhood-based target occupancy. Specific areas within neighborhoods were identified with occupancies that are either greater or less than the target occupancy range. This range is now set using the neighborhood's average number of spaces per blockface instead of a citywide average, as well as the three highest hours of peak parking. The following areas would have rates adjusted higher or lower, or SDOT would use longer time limits to address low parking occupancy: University District, Ballard, Capitol Hill, Pioneer Square, South Lake Union, Belltown South and North, and Uptown.

In addition, the consultants recommended that SDOT change the practice of allowing pay stations to sell parking along blockfaces during morning and afternoon hours when parking is prohibited. The concern is that people buy time expecting to park, despite multiple signs on each blockface and graphics on each pay station indicating when parking is prohibited. Making a change to prevent unnecessary payments would limit a popular benefit of the system where people can purchase time on one block and use it on another. This would also increase system complexity for field crews who would need to maintain a significantly higher number of programming combinations. To make these changes system-wide, SDOT would need resources for software re-programming in the 12 affected neighborhoods.

6. Progressive Rate Pricing

To provide more flexibility for parkers, a progressive rate pricing strategy would charge more for increased hours purchased. Time limits would change from two to four hours, and the third and fourth hours would have higher hourly rates. The five areas of Pike-Pine, Commercial Core, Cherry Hill, Pioneer Square, and Chinatown/International District would be candidates. Rather than simply extending the time period, charging a premium on the extra two hours would ensure turnover, a critical need in these busy business districts. Most parkers would stay under two hours, but this strategy would provide an option to stay longer. This would be most helpful in early evenings when the two-hour time limit makes it difficult to park on-street for dinner and a movie, as an example. The Parking Sounding Board responded positively to the idea of progressive pricing rates.

As with the other pricing strategies, SDOT would have the opportunity to test CityPals with improved customer communications and more effective back-office programming. Pursuing a progressive rate in the Commercial Core would require increasing the maximum rate cap (currently \$4.00 per hour).

7. Event-Based Pricing Overlay

In other cities during events, parking rates are higher and time limits longer on specific days and times. The South Downtown sports stadiums and Seattle Center are two areas with dramatically different parking demands during event times. Pioneer Square data results showed a 35% difference in early evening occupancy between a baseball game- and a non-game day. Rates are currently set for non-event days.

Implementing an event overlay would be a complex project because of different stakeholder perspectives anticipated on whether rates and time limits should be set to accommodate or discourage event parkers. In addition to defining strategy goals, understanding the number and nature of events is critical. It would also offer the opportunity to test CityPals because of the need for extra communication on event days.

As a first step, a demonstration project could gather additional data during various event and non-event times in one of the two areas (Seattle Center or South Downtown) and engage with the various stakeholders about whether and how to charge differently during events. Funding would also be needed for an intercept survey and outreach materials. Any project in South Downtown would be closely related to public engagement efforts to address parking impacts from the Alaskan Way Viaduct project.

8. Seasonal Rate Changes

There is an opportunity to change rates by season where parking occupancy is significantly higher in summer than winter. SDOT's parking at the Ballard Locks offers an opportunity to have a higher summertime rate to better meet the target occupancy.

9. Time-of-Day Pricing

As discussed earlier in the document, and as shown in Attachment 1, six neighborhoods have notable occupancy differences between the morning time band and others, and only one neighborhood (Fremont) shows desired occupancy characteristics and has existing technology to suggest effective near-term implementation of time-of-day pricing. However, though existing pay stations can be programmed for time-of-day pricing, they are limited in their ability to effectively communicate with customers.

10. Disabled Parking

Over the last ten years, SDOT has monitored use of disabled parking permits in Downtown, First Hill and several other neighborhoods. The study noted that on-street parking placard use has the potential to significantly negate gains made to improve parking space availability. The June data found that 20% of the spaces in the commercial core were occupied with disabled parking permits, although studies in recent years, specifically in the Financial District, have shown percentages over 30%, and for several blockfaces well over 50%. The study recommended that SDOT install four-hour time limits in problem areas. SDOT is collecting duration data (length of stay) of vehicles with disabled parking permits in First Hill and Commercial Core in early September to further understand disabled parking usage patterns. Additionally, the city is building a coalition to seek state legislative changes to address permit abuse.

Public Engagement Activities

In June, SDOT formed a Parking Sounding Board to advise SDOT about performance-based parking strategies. SDOT held four Parking Sounding Board meetings over the summer. The Sounding Board will continue to meet monthly for the remainder of the year and quarterly in 2012.

Along with the Sounding Board, an additional outreach component of this study was to solicit public opinions on previous and future parking management decisions. Two surveys were launched in August to identify decision-making factors that determine why and where people park and how parking management can influence parking behaviors and decisions. SDOT will receive a report on the survey in mid-September as an addendum to the final report.

Conclusion

Key conclusions of the Performance-Based Parking Pricing Study are that success is contingent upon four critical ingredients:

- **Broader range of parking management tools**, in addition to rate changes and time-of-day pricing, to better achieve dependable customer parking availability.
- **Effective communication strategies** that match the increased system complexity are essential to ensure customers understand system benefits and are able to navigate it.
- **Partnerships with neighborhood business districts** will inform what strategies may work best for area customers and can assist with system communications.
- **Adequate resources** should be programmed to collect data, purchase appropriate technology and develop a sophisticated communications system.

Using the parking occupancy data analysis and the recommendations contained in the final report, the Proposed 2012 Budget provides an opportunity to consider implementation of rate and time-limit changes with the goal of adjusting neighborhood parking occupancies toward the target occupancy. Additionally, the study identified a number of demonstration projects, data systems management, and enabling technology that could be designed to showcase and test various strategies for a performance-based parking pricing program as resources allow.

While there continues to be national focus on San Francisco and Los Angeles because of their federal parking pricing grants, Seattle's advancements toward a performance-based parking pricing program could break new ground for most cities by developing approaches to data collection and performance-based pricing that are cost-effective and can be implemented over time.

Attachment 1 - Time-of-Day Pricing Neighborhood Criteria

Neighborhood	Occupancy fluctuates > 25 percentage points	2011 rate above \$1/hour ¹	Peak occupancy within or above target range	Existing hardware capable of time-of-day pricing
12th Avenue		●		
Ballard		●		
Ballard Locks	●	●		
Belltown North		●		
Belltown South		●		
Capitol Hill		●		
Cherry Hill		●	●	
Chinatown/ International District	●	●	●	
Commercial Core		●	●	
Denny Triangle North		●		
Denny Triangle South		●	●	
First Hill		●	●	
Fremont	●	●	●	●
Green Lake				●
Pike-Pine	●	●	●	
Pioneer Square		●		
Roosevelt	●			●
SLU - 2 hr		●		●
SLU - 10 hr		●	●	●
University District	●	●		
Uptown		●		
Uptown Triangle				●
Westlake Ave N				●

1 - SDOT currently sets rates in \$0.50 increments, making \$1/hour the operational minimum; SMC minimum is \$0.75/hour.