

# Research Note

## How Can We Maximize Efficiency and Increase Person Occupancy at Overcrowded Park and Rides?

From the WSDOT Research Office  
June 2014

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Park and Ride Lot Survey Site

### The problem

Many of the largest park and ride facilities in the Central Puget Sound Region are overcrowded. This overcrowding is only expected to get worse as the demand for these facilities increases in the future. Expanding these facilities to increase their capacity is not feasible as it is expensive and unpopular in many neighborhoods. The agencies that own and operate these lots are considering parking management strategies to both increase the number of people that can be served by the existing parking spaces and alleviate overcrowding. Information on current uses and

an understanding of how users may react to various parking management strategies is useful for decision making.

The purpose of this study was to obtain empirical data on how people actually use these facilities and their reactions to potential parking management. These strategies will help guide the development of policies and programs to increase the efficiency of park and ride lots in the region.

### What we did

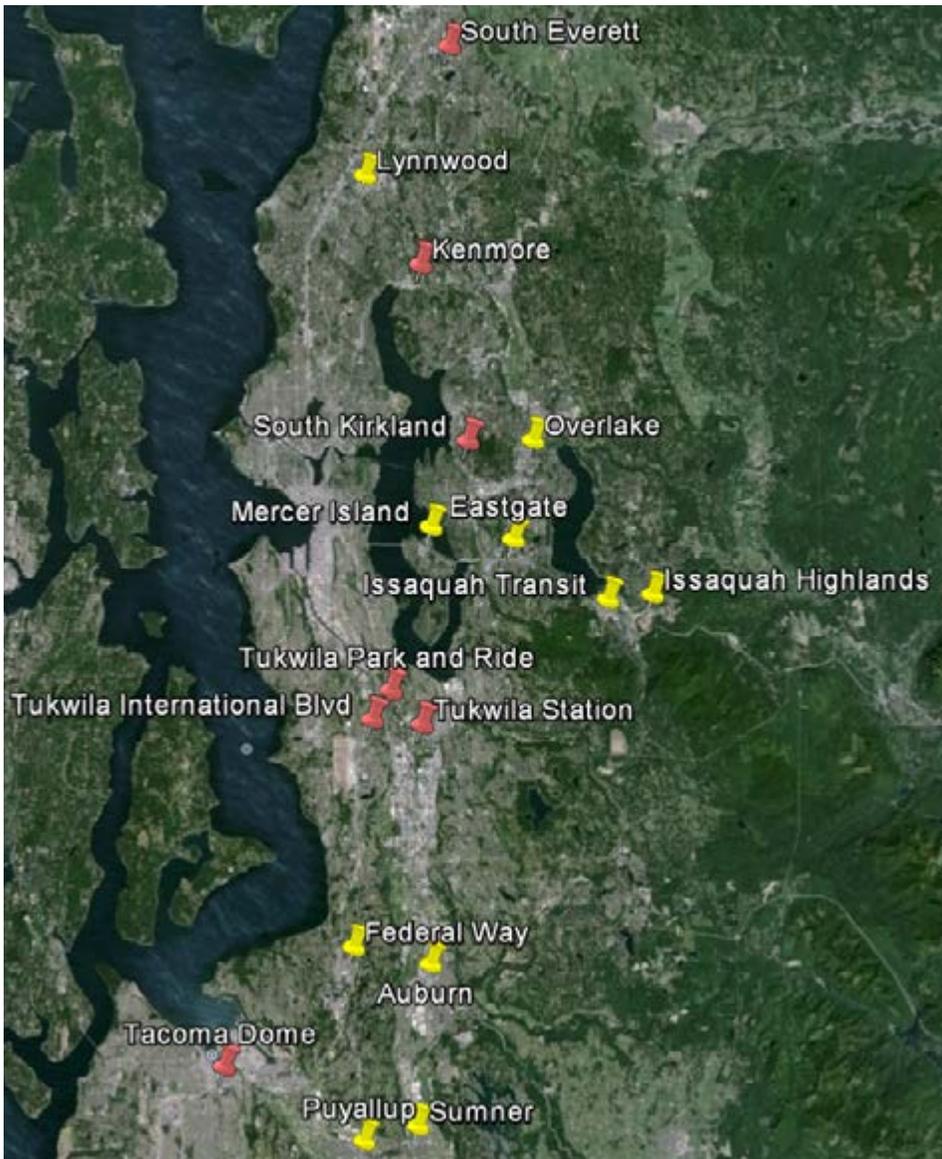
Two data collection efforts were performed to gain more insights on how these facilities are used and user reactions to parking management strategies:

- 1) an on-site audit of the existing use of ten of the largest park and ride lots in the region; and
- 2) an intercept survey administered to users of seventeen Puget Sound park and ride facilities.

The lots included in this study are depicted on the following map where yellow pins represent locations in which both an audit and survey were performed and red pins represent locations in which only the survey was performed.

During the on-site audit, team members tracked both vehicle and passenger arrival to and departure from each facility during the morning peak hour period. This information was then used to estimate:

- Parking lot occupancy (percent of spaces utilized) by time of day;
- Passenger occupancy of parked vehicles;
- Proportion of park and ride users using transit; and



Map of park and ride facilities considered; yellow pins had both audit and survey, red pins had survey only.

- Mode used to depart from the park and ride;
- Origin and destination of the current trip;
- Departure time at origin and anticipated arrival time at destination;
- Purpose of trip;
- Perceived level of traffic congestion along trip;
- Reasons for using park and rides; and
- Alternative travel plans had parking not been available.

In addition, the survey collected information on user responses to several parking management strategies that might be implemented at these facilities in the future. The strategies considered were:

- Parking fees;
- Priority treatments for multiple occupant vehicles (e.g., guaranteed parking spaces or parking fee avoidance);

- Number of kiss-and-ride (passenger drop-off areas) maneuvers within the parking lot.

This information provided a general overview on how the lots were used.

The user intercept survey was performed to collect more specific data about how individuals use the park and ride facilities. This information included the:

- Mode used to access park and ride;



Park and Ride Lot Survey Site

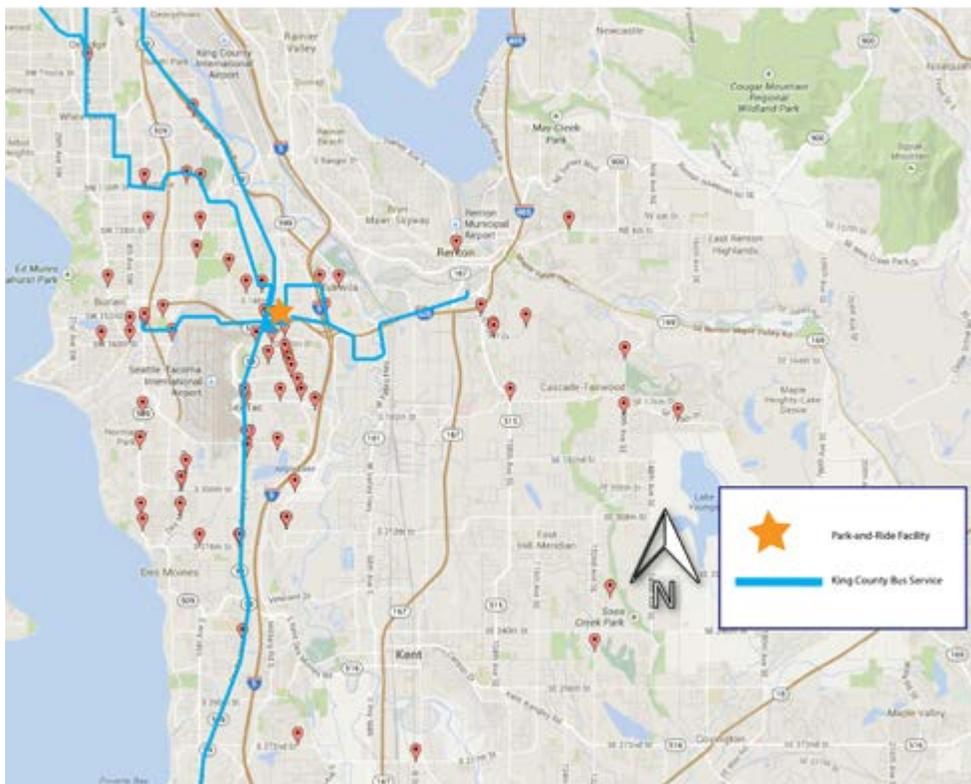
- Improvement of pedestrian and bicycling facilities; and,
- The provision of additional parking spaces at nearby off-site locations.

The survey was administered both on-site and through an online version for those users who did not have time or could not fill out the survey in person, as well as registered vanpoolers at several of the lots. A total of 3,341 of surveys were completed—2,020 in person and 1,321 online.

## What we learned

The audit and survey data provided the most detailed and comprehensive depiction to date of how the park and ride facilities were used. The following are some of the most pertinent findings from this data:

- The vast majority of vehicles that park at the park and ride lots contain just a single occupant. While not surprising, this provides justification for implementing parking management strategies to improve the number of people that use each space and to increase the efficiency of these lots.
- Most of the people parking at the lots tend to use the park and rides as a means to access transit services, as opposed to other non-transit uses. Fixed-route transit use is about 25 times more common than flexible transit uses such as car or vanpools; thus, the use of



Map showing Tukwila International Boulevard Station Park and Ride facility, King County Metro transit routes, and origins (bubble dots) of single-occupant vehicle drivers surveyed using the facility.

- the park and rides as car and vanpool meeting locations is not generally a problem, except at a few individual facilities.
- Responses indicate that improving bicycle and pedestrian facilities would not entice users to switch modes and thus would not be an effective method to alleviate parking congestion.
- Park and ride users are generally averse to parking fees—only about 28% are willing to pay a fee to park at the lot. However, the proportion increases to 46% of users willing to pay a fee if it was associated with a guaranteed parking space at the park and ride. Additionally, about 28% of users are also willing to pay for a guaranteed parking space located a 10-15 minute walk away from the park and ride.
- As expected, users are willing to pay more (\$1.80) for a guaranteed parking space at the park and ride than they are willing to pay a general parking fee for guaranteed space located a 10-15 minute walk away from the park and ride (both about \$1.50).
- About 24% of users are willing to consider carpooling if carpool users could avoid the parking fee or if reserved parking spaces were provided for carpools.
- More than 23% of single occupant vehicles had trip origins located near existing transit routes across all facilities. At some facilities, the number was as high as 50%.

## What the researchers recommend

This study identified the following strategies for further consideration for improving person efficiency at overcrowded park and rides:

1. Implement parking fees for single-occupant vehicles only to disincentivize their use. However, to be most effective, this strategy should be combined with the targeted promotion of carpooling as a means to avoid the parking fees.
2. Dedicate a number of parking spaces at each lot for multi-occupant vehicle use only. The number of these spaces should be continually adjusted so that at least one multi-occupant vehicle space is always available to incentivize carpooling to the park and rides.
3. Implement parking permits that allow park and ride users (especially those in multi-occupant vehicles) to reserve individual parking spaces within the lots.
4. Revise local transit service near park and rides to increase the fraction of single occupant vehicle drivers that have feasible transit options to the park and rides. This should be combined with the targeted promotion of transit as an access mode to the park and ride lots.
5. Examine the use of parking at available lots near the park and rides for overflow or single-occupant vehicle parking.

## Implementation

The findings of this study will help transportation planners and policy makers design and implement parking management strategies at overcrowded park and ride lots in the Central Puget Sound Region. The research provides the most comprehensive depiction of how travelers use park and ride facilities and the potential impacts of various pricing and prioritization strategies. This information can be used to identify the most promising strategies (as recommended above) and as a starting point to calibrate these strategies to maximize their effectiveness.

### Contact Information

#### Report Number and Title

How Can We Maximize Efficiency and Increase Person Occupancy at Overcrowded Park and Rides?  
WA-RD 830.1

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### Funding

\$48,000 State (20%) and Federal (80%)  
\$47,000 Sound Transit  
\$ 7,548 King County Metro  
\$44,966 Thomas D. Larson Pennsylvania Transportation Institute, Penn. State Univ. Center