



City of Seattle
Office of City Auditor
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City of Seattle
Response to the Statement of Legislative Intent:
Parking Enforcement Effectiveness

Prepared by the Office of City Auditor with assistance from the Department of Finance (DOF), the Seattle Police Department (SPD), and the Seattle Department of Transportation (SDOT)

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EXECUTIVE SUMMARY	3
INTRODUCTION	4
PARKING ENFORCEMENT UNIT OVERVIEW	5
ISSUE 1: TICKETING TECHNOLOGY	7
City of Seattle Current Practices/Issues	7
Lessons Learned from Other Jurisdictions	8
Recommendations	10
ISSUE 2: PAY STATION IMPLICATIONS	12
City of Seattle Current Practices/Issues	12
Lessons Learned from Other Jurisdictions	15
Recommendations	16
ISSUE 3: PARKING ENFORCEMENT PERFORMANCE MEASURES	18
Lessons Learned from Other Jurisdictions	18
City of Seattle Current Practices/Issues	20
Recommendations	21
APPENDIX A – SLI TEXT	23
APPENDIX B – PARKING ENFORCEMENT SURVEY SUMMARY CHARTS	25
APPENDIX C – HAND HELD TICKETING OPTIONS ANALYSIS	27

Executive Summary

Seattle has about 9,100 parking spaces that are controlled by meters or pay stations, and are in operation 10 hours per day, 6 days per week for about 300 days per year. The City collected approximately \$16.5 million in parking citation revenue in 2004. Aging ticketing technology and new procedures required as a result of the City's current conversion from meters to pay stations (705 pay stations installed to date), could affect the efficiency and effectiveness of the City's parking enforcement.

In January 2005, the City Council asked us to survey other jurisdictions and review the Seattle Police Department's (SPD) parking enforcement practices in three areas: 1) ticketing technology, 2) pay station enforcement, and 3) performance measures. We conducted field observations with SPD and interviewed officials from 13 cities. We developed eight recommendations in cooperation with SPD and the Seattle Department of Transportation (SDOT) for improving the City's parking enforcement process.

Use of Technology: The breakdown rate of the SPD's 10-year-old ticketing technology and the end of its vendor maintenance in 2008 will compromise ticketing system reliability. New ticketing technology can offer potential incremental improvements in geographical analysis, communication with tow vendors, reports, and data exchange. Also, four cities (Boston, Chicago, Sacramento, and Toronto) reported good results from an emerging technology for license plate recognition to assist in scofflaw and stolen vehicle recovery.

Recommendations: *We recommended replacing the hand held ticketing devices before 2008. Also, we support SPD's plans for a pilot project involving license plate recognition technology.*

Mitigation of Pay Station Effects: SPD found that it takes an average of three times as long to enforce a block face of pay station spaces compared to metered spaces.¹ None of the 13 cities we surveyed reported a similar experience. However, four of the cities (Miami, Portland, Sacramento, and Toronto) successfully use bicycle squads for some pay station enforcement. Also, SPD's Employee Involvement Committee (EIC) has implemented changes that have resulted in better enforcement of pay station areas.

Recommendations: *We recommended continuing the EIC and piloting the use of bicycles in 2006. Also, we support SDOT's current work to make improvements in graphic design for pay stations.*

Performance Measures: We found that Seattle measures its progress toward most standard parking enforcement goals. Seattle's performance on these measurements was within the range of the other cities surveyed. We identified two additional measures that are common to other jurisdictions and could benefit Seattle.

Recommendations: *We recommended using a new ticketing system to capture additional information (vehicle turnover rate, abandoned vehicle cycle time, etc.). We recommend that SPD consider methods for reporting on tickets by area. And we recommended that SPD and SDOT consider collecting data on violation capture rates.*

¹ The average enforcement time for a block face of meters was 2.6 minutes compared to an average of 7.6 minutes for a block face of pay stations.

Introduction

During the 2005-06 budget process, the City Council passed a Statement of Legislative Intent (SLI) concerning parking enforcement (See SLI attached Appendix A). A section of the SLI directed the Office of City Auditor to review parking enforcement effectiveness. Specifically, the SLI asked for the following:

1. **Ticketing Technology.** A survey of new ticket-writing technology (utilizing/complementing pay and display station functionality) and its implementation in similar jurisdictions using pay and display stations. This might also include supporting work by SPD and DOIT on a high-level analysis. Also an analysis of how new technologies compare with the technology now used by Seattle Parking Enforcement Officers (PEOs) and the advantages and disadvantages they offer with an assessment of the efficiencies from adoption of new technology (e.g., average reduction in time to locate a violation, to ticket a violator, to travel to and from duty areas, to enter violations into a data base, etc.).
2. **Pay Station Implications on PEO Deployment and Procedures.** A survey of other jurisdictions that have implemented pay stations to identify potential changes to PEO deployment and procedural changes necessitated by the introduction of pay stations.
3. **Parking Enforcement Performance Measures.** A survey of how other cities assess the adequacy of parking enforcement activities (e.g., what performance measures are used, how data on performance is collected, and how the information is used), including but not limited to whether they estimate or collect data on how many hours each day controlled parking spaces are in use by customers who should pay, the number of hours during which controlled parking spaces are not available for pay parking and the reasons therefore, and an estimate of the total annual number of violations of parking regulations by the regulation violated.

Our office collected information from thirteen cities in the United States and Canada (Appendix B contains survey summary tables). We also collected information from SPD on its current parking enforcement practices in written form and from field observations of parking enforcement activities. Our results and recommendations were reviewed with SPD and SDOT, and they reflect their concurrence.

Issue for future consideration: While the SLI did not specifically ask us to examine the adequacy of parking enforcement staffing, SPD and SDOT have both indicated that this issue warrants further study.

Parking Enforcement Unit Overview

History and Overview

The City of Seattle established its parking enforcement function in 1957 with the creation of Parking Meter Checkers who were assigned to the City Treasurer's Office. In 1972, an Ordinance (101629) authorized the move of the Parking Meter Checkers from the Treasurer's Office to the Police Department. The ordinance also changed the working title of the employees to Parking Enforcement Officer (PEO).

PEOs are responsible for patrolling within the city limits and enforcing all parking violations on city property. The City of Seattle has approximately 9,100 meters and spaces controlled by pay stations. The City also maintains time restricted areas, residential parking zones, and special zones such as bus, commercial load, and disabled parking zones.² Each month the parking enforcement unit issues approximately 44,000 citations, handles approximately 4,800 abandoned car investigations and responds to 1,240 radio calls.

The parking enforcement unit is regularly asked by patrol officers and SDOT to provide special event support and traffic control services, and to report on signs or signal malfunctions. During special events or incidents, such as Seafair parades, Husky, Seahawks and Mariners games, accident scenes, emergencies and malfunctioning traffic signals, PEOs provide essential traffic control to ensure movement of vehicle traffic. They also support police officers with stolen vehicle recoveries, locating approximately 70 stolen cars a month (in 2004) while on routine patrol. The parking enforcement unit spends about 24 hours a month in court responding to subpoenas.

The unit operates under the command of the traffic captain and a civilian manager. There are five field supervisors for seven squads and one training supervisor. Currently, there are a total of 67 funded PEOs.³ Administrative support is provided by the unit's supervisors, management staff, and the Traffic Captain's administrative assistant.

² SDOT is currently documenting recent increases in on-street parking controls. Examples from SDOT include:

- Residential parking zones (RPZs). There are about 22 RPZs now, with several new RPZs in the petition-gathering and implementation stage. Twelve RPZs were added between 1996 and the end of 2004, and other zones added in previous decades were expanded. SDOT reports that the number of permits issued has increased substantially.
- Time-limit signs. There has been a steady and regular increase of 1-hour and 2-hour time-limit signs and a smaller increase of 3-hour and 4-hour signs although there are many of these in neighborhoods. There are over 10,000 signs installed each covering from two to ten spaces.
- Peak-Period Restrictions. There has been an increase, particularly in the last decade of peak-period restrictions. Peak hours are generally 6-9 a.m., 7-9 a.m., 4-6 p.m., 3-7 p.m. or some combination of these depending on traffic volumes and other corridor-specific issues. Due to upcoming Metro construction it is anticipated that the evening peak hours will be extended one hour.

³ In 2000, eight PEOs and one supervisor were added to the then 59-person unit to respond to the increase in enforcement needs in residential areas. There is also an additional unfunded position for the University

The PEOs' work week is Monday through Friday from 6:30 a.m. to 10:00 p.m. Weekend enforcement is provided on voluntary overtime covering the hours of 8:00 a.m. to 11:00 p.m. on Saturdays and 9:30 a.m. to 3:30 p.m. on Sundays. The PEOs are part of the American Federation of State, County and Municipal Employees (AFSCME) Union, Local 21P. SPD and the union have developed several memoranda of understanding for weekend enforcement and overtime selection. The unit supervisors are presently not represented but are investigating unionizing.

Parking Enforcement Major Activities

Below is a partial list of work activities performed by the parking enforcement staff, supervisors and management on a daily or routine basis.

Daily Parking Enforcement - PEOs

- Meters/ Pay stations
- Restricted Parking Zones (RPZs)
- Commercial Load Zones (CLZs)
- Disabled Placards
- 72-hour parking restrictions
- Abandoned vehicles
- Radio calls

Special Events - PEOs

- Mariner/Seahawk games
- Folk Life/Bite of Seattle, etc.
- Torchlight Race
- Parades
- Huskies games, other events

Special Initiatives - Manager, PEO Supervisors

- Pay Station analysis with an Employee Involvement Committee (EIC)
- Hand held ticketing replacement review
- Service territory review
- Weekend Enforcement - EIC
- Traffic Section Strategic Plan



Photo: Wayne McCann, Seattle Police Department

Parking Enforcement Officer patrolling residential parking zone.

of Washington. The contract with the school requires the unit to patrol specific parameters during school sessions. To date this unfunded position has not been filled although the unit has provided the service required in the contract.

Issue 1: Ticketing Technology

City of Seattle Current Practices/Issues



Photo: Aarprn Paston, Seattle Police Department

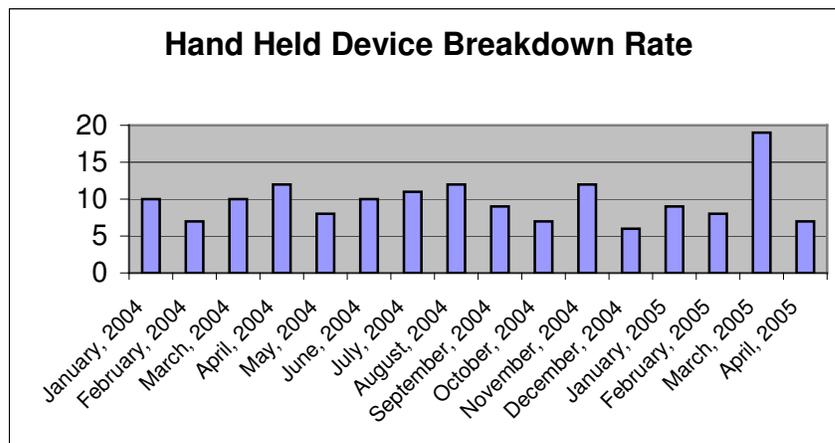
Seattle's current hand held ticketing device

Ticketing Technology

SPD currently uses 67 hand held ticketing devices that were purchased by the City in 1995. The existing system replaced a paper system, and it offers a number of important features including:

- Text prompts for quick data entry by the PEO (some PEOs can issue a citation in about 20 seconds),
- Daily “hot lists” of stolen and scofflaw vehicles that notify the PEO upon entry of the license plate number,
- Nightly uploads of all ticket information into the Municipal Court Information System (MCIS).

However, due to their age and heavy usage, these devices have broken down at an average rate of 10 per month since January 2004 (see chart below). According to SPD data, it takes an average of 14 days for the vendor to repair each device and return it to service. The current system vendor no longer manufactures the model that SPD uses, and the vendor cannot guarantee its ability to support the devices after 2008.



Data Source: SPD, Parking Enforcement Unit

Abandoned Vehicles

The abandoned vehicle reporting system currently relies on hand-written documents. Citizens call the City's abandoned vehicle hot line and leave a recording of the location and type of vehicle. This information is retrieved by a PEO the following day and hand written on cards that are given to another PEO to follow-up. SPD parking enforcement management estimates that at least three days elapse before the citizen call can be addressed. SPD has begun to automate the process by creating a webpage for customers to report abandoned vehicles. SPD is currently developing a database to track abandoned vehicle reports and list when the vehicles were tagged by PEOs.

Lessons Learned from Other Jurisdictions

Ticketing Technology

Of the 13 cities we surveyed, 11 have hand held ticketing devices and 2 (Kansas City and Toronto) are still writing paper tickets. Boston, Portland, and Vancouver, British Columbia are jurisdictions that have recently implemented newer hand held ticketing systems.

The newer model hand held ticketing devices offer functionality that includes wireless capability, barcode scanning⁴, and digital photography. Vancouver, B.C. uses wireless transmission to allow its enforcement officers to contact their tow vendor directly from the field. This saves time, eliminates the involvement of City dispatchers, and results in quicker tows of violating vehicles.

Portland, Oregon uses scanning technology for more efficient data entry in the field. Enforcement officers use their hand held ticketing devices to scan bar code labels on signs on each block face; this automatically loads street location information into the device. This results in less data entry for the officers and fewer errors. To analyze vehicle turnover in critical areas, Portland also uses the electronic "chalking" feature of the hand held system in conjunction with system-generated reports.

None of the jurisdictions that we spoke with are scanning parking receipts. In fact, the City's pay station vendor, Parkeon, indicated that its system cannot currently produce a bar code that can be scanned, and this was not an enhancement that they are presently planning.

While there are some incremental efficiencies that cities have gained from the new technology (more efficient contact of tow vendors, better management

⁴ Some hand held ticketing vendors that we spoke with indicated that scanning might be affected by factors such as tint and curvature of windows as well as water condensation, reflection, and sunlight issues.

reports, etc.), the biggest efficiency from a hand held ticketing system is the elimination of data entry for court processing. This is an efficiency that Seattle captured when its hand held ticketing system was implemented in 1995.

License Plate Recognition Technology

Four of the cities that we contacted (Boston, Chicago, Sacramento, and Toronto) use license plate recognition technology to identify stolen vehicles, scofflaw vehicles, and residential parking abuse/fraud and to measure vehicle turnover. This technology consists of a unit mounted on the hood of a car⁵ that permits the moving vehicle to read license plates⁶ of parked vehicles (parked parallel, or at 45 degrees, or at 90 degrees) from the moving vehicle. Each time the unit reads the license plate, that license plate is matched against a database of stolen and/or scofflaw vehicles, and an alarm alerts the driver to each match.

In their 2002 report on a license plate recognition technology pilot project, the City of Boston indicated that they experienced productivity gains of 400 percent in identifying scofflaw vehicles. Boston now uses license plate recognition technology routinely to identify scofflaw vehicles for booting. They also use the system to check resident parking against a resident parking database, and have also used it on a test basis for vehicle turnover studies.

Toronto is using license plate recognition software in a joint venture of the Toronto Police Service's Parking Enforcement Unit and the Insurance Bureau of Canada. Using mobile license plate scanning equipment installed on two Toronto Police vehicles, four trained parking enforcement officers have been able to locate approximately 50 additional stolen vehicles per month.

Officials from Sacramento, California reported that they purchased three license plate recognition units 10 months ago, and in that time they have fully recouped their costs based on collections from scofflaw vehicles. Sacramento also uses its license plate recognition systems for monitoring time zone restrictions, and the new technology has enabled them to triple their coverage of time-restricted parking zones.

⁵ There are multiple vendors for this technology, and it may consist of a device mounted on a car or a fixed object, or it may be a handheld device.

⁶ A License Plate Recognition vendor (Auto Vu) indicated that its system can read up to 1000 vehicles per hour at speeds of up to 15 MPH. Boston's actual experience during its 2002 pilot program was 2641 plates per day.

Recommendations

1. Ticketing Technology

We recommend that before 2008 SPD replace its hand held ticketing devices when the vendor's guaranteed maintenance expires. Although we do not expect that a new system will produce significant quantifiable benefits, the existing devices must be replaced to ensure system reliability. Based on the information gathered from other jurisdictions, we believe that the City will have the potential to realize some incremental benefits from new ticketing technology including:

- improved capability for geographical analysis
- improved communication with tow vendors
- improved reporting and analysis capabilities
- real-time data exchange between systems (e.g., ticketing system and court system, ticketing system and SPD records management system, etc.)

We analyzed the costs of replacing the devices in 2006 or in 2007 (See Appendix C), and, due to City costs associated with break down, repair, and manual work-arounds, there is a slight cost advantage for replacing the system in 2006.

A new hand held ticketing system could cost approximately \$1.7 million initially and over \$70,000 annually to operate (See Appendix C). This assumes a Request for Proposal process, selection of new vendor, project management, interface development, system customization, etc.

Three additional specific elements of our recommendation are:

- a. **Consider Alternative Replacement Methods.** To help determine the best solution, we recommend that SPD review the costs and benefits of a new system versus the purchase of new devices (with vendor maintenance) from the existing vendor, and also consider the costs and benefits of an equipment lease.
- b. **Plan for Next Upgrade.** To ensure ongoing system reliability, we recommend that the City identify a reasonable life expectancy for the new devices/system and develop a plan to finance the appropriate future system upgrades and replacement.
- c. **Devices for SDOT Commercial Vehicle Enforcement Officers (CVEOs).** SDOT employs three CVEOs who issue parking citations as well as commercial vehicle citations. The CVEOs currently write about 1,000 paper parking citations annually. We recommend that SPD and SDOT consider purchasing hand held ticketing devices for SDOT's CVEOs.

Estimated Incremental Cost: \$1.7 million for system replacement and over \$70,000 in annual costs.

2. License Plate Recognition Technology

We support SPD's purchase of license plate recognition technology for a pilot program through a recent Justice Assistance Grant from the United States Department of Justice. As part of the pilot, SPD plans to evaluate several license plate recognition technology vendors.

SPD has expressed a willingness to explore possible uses of this technology, as determined by the City to meet its needs, including:

- Identification of stolen vehicles
- Identification of scofflaw vehicles
- Identification of residential parking violations
- Analysis of vehicle turnover.

Estimated Incremental Cost: (SPD has purchased a system for a pilot program through a Department of Justice grant.)

Issue 2: Pay Station Implications

City of Seattle Current Practices/Issues

Pay Station Issues

In April 2004, the Seattle Department of Transportation (SDOT) began a three-year program to replace the majority of the City's 9,100 single space parking meters with multi-space pay-and-display stations (i.e., pay stations). The City's vendor for the pay stations is Parkeon. As of May 31, 2005, the City has installed 705 pay stations.⁷



Photo: Aaron Paston, Seattle Police Department

Parking enforcement officer patrolling metered area

When considering the move to pay stations, the City was aware that their implementation would affect parking enforcement.⁸ Parking enforcement in heavily metered areas had been conducted from motorized Cushman and Go4 vehicles (scooters).

Previously, the Parking Enforcement Officers (PEOs) routinely drove past blockfaces of parked vehicles and looked for the red meter indicators to determine illegally parked vehicles.

With pay stations, the parking customer pays at a kiosk and receives a receipt that is placed on the vehicle's curbside window. The receipt identifies the date, time, and amount of parking time purchased. The PEOs must monitor compliance by checking the receipt to determine if it is still in effect.

⁷ The pay stations have been installed primarily in downtown Seattle, Broadway, Pike-Pine area, First Hill, and Chandler's Cove.

⁸ The September 2002 Seattle Parking Management Study prepared for the City by Heffron Transportation, Inc., and the June 2003 On Street Parking Pay Station Project Definition Study prepared by SDOT both identified the operational impact on parking enforcement as a result of the implementation of pay stations. Both studies suggested enforcement on bicycles as a potential mitigating strategy.

A June 2003 SDOT study stated, “PEOs who patrol from their scooters will be impacted because patrolling will require more time if the PEO has to walk the length of the blockface as opposed to driving it.” As predicted, the need to see the pay station receipt from a close distance has resulted in a change of practice for the PEOs. Enforcement of pay station areas is now conducted on foot on the sidewalk.

Also, as indicated in the 2003 study, pay station enforcement takes more time compared to metered areas. In December 2004, the Parking Enforcement Unit’s Employee

Involvement Committee (EIC) published the results of a test⁹ that found that it took on average three times as long to enforce a block with pay stations than one with meters. The average enforcement time for a block face of meters was 2.6 minutes compared to an average of 7.6 minutes for a block face of pay stations.



Photo: Arrpn Paston, SPD

Parking Enforcement Officer examines pay station receipt

The EIC attributed the increase in enforcement time to two factors:

- Walking time, and
- aAdditional data entry requirements of the pay stations (this includes four additional lines of notes per ticket to indicate expiration time of receipt, location of vehicle in relation to pay station, and location of vehicle in relation to pay-to-park signs).

SDOT officials indicate that voluntary payment rates are on average 30-40 percent greater for pay station controlled spaces compared to single space parking meters.

⁹ SPD gathered data for time-on-block from 451 blocks, by 18 different PEOs, in ten different areas, over a nine-day period. The Office of City Auditor did not audit this data.

EIC Initiatives

The Parking Enforcement Unit's EIC is comprised of two supervisors and six PEOs. The EIC began meeting in October, 2004 to identify strategies to mitigate the effects of the pay station enforcement. They have proposed and implemented a number of initiatives to mitigate negative pay station effects and to improve the overall efficiency of the unit. These initiatives include:

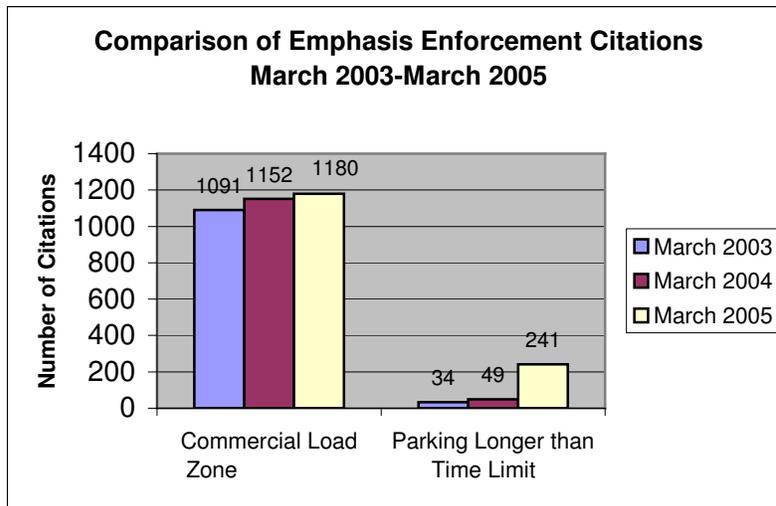
Emphasis PEO – The EIC created a new role, the Emphasis PEO, to strengthen coverage in the City's core areas in light of the impacts of the pay stations. The duties of six officers were reallocated (by changing area boundaries), and these officers have taken on the role of Emphasis PEO. Each Emphasis PEO is assigned to two to three core City areas, for a total coverage of 17 areas. The Emphasis PEO works as a teammate with the two to three Area PEOs. The Area PEOs are able focus on pay station enforcement, while the Emphasis PEOs handle radio calls, enforce special zones (e.g., Commercial Load Zones), address abandoned vehicles and special complaints, peak zone enforcement, and over-time-limit enforcement.



Photo: Wayne McCann, Seattle Police Department

Emphasis Officer patrols in scooter while Area Officer enforces pay station spaces.

As a result of the Emphasis program, the number of certain citations issued (including special zones and over-time-limit) has increased since pay stations were first implemented in April 2004. (See comparison of March data below).



Data Source: SPD, Parking Enforcement Unit

Shift Times – The EIC also evaluated the existing shift times, enforcement activity, and ticket volume. As a result, the PEO shifts were modified so that coverage now begins at 6:30 a.m. and ends at 10:00 p.m. with the full complement of PEOs deployed on the street in the mid-afternoon, during the busiest parking time.

Graphic Design

Pay station receipts contain the expiration time, expiration date, amount paid, and machine number. Emphasis Officers and PEO supervisors that we spoke with indicated that several factors contribute to a PEO’s ability to read the receipt quickly and easily. These include: tint of glass of car window, curvature of windows, and curling of the receipt paper. SDOT is currently working with a graphic designer to improve pay and display signage and potentially the readability of pay and display station receipts.

Lessons Learned from Other Jurisdictions

Pay Station Issues

Of the 13 cities that we contacted, five (Chicago, Miami, Portland, Toronto Ontario, Vancouver British Columbia) also have pay stations, and three (Boston, Houston, Sacramento) are currently piloting pay stations. We spoke with these cities about Seattle’s experience of requiring additional time to enforce the pay station block face. However, no one that we spoke with from these jurisdictions

indicated a similar experience.¹⁰ This is possibly due to the fact that, unlike Seattle, four of the five jurisdictions did not previously enforce from scooters. Miami indicated that they had previously enforced some of the pay station areas from scooters and were now using some bicycles, and they have not experienced a measurable increase in enforcement time for pay stations.

Use of Bicycles

Miami, Portland, Sacramento, and Toronto all use bicycles (to some extent) to enforce pay station areas. All of these jurisdictions indicated that the staff who use the bicycles received bike training, and the bikes have adequate space to store gear. In Portland, a special attachment for bicycles was designed to hold the hand held ticketing device for easy access. Toronto requires its bicycle parking enforcement officers to pass a fitness test; they also have a specialized uniform that includes shorts in the summer.

All of the cities indicated that they were satisfied with the performance of their bike officers. Toronto's "F Platoon", comprised of 7 bike officers, issues approximately 100 tickets per officer/per day as opposed to 60 per day for officers on foot, according to the coordinator of their parking enforcement unit.

Recommendations

3. EIC Initiatives

Based on the success of the Emphasis Officer Program to date, we recommend that SPD continue this strategy. Further, we recommend that the EIC continue its deployment analysis through the implementation of the pay stations. The costs attributable to continuing the EIC include facilitation of monthly meetings.

Estimated Incremental Cost: \$3,600 for facilitation of the EIC in 2006.

4. Use of Bicycles

Based on the experience of other jurisdictions (Portland, Miami, Sacramento, Toronto) we recommend a 2006 pilot program to explore the use of bicycles for enforcement in pay station areas. The pilot would include the purchase of mountain police bicycles, specialized uniforms, training, and maintenance. In addition, SPD West Precinct has offered to provide the fitness test and training should the unit acquire a bicycle squad.

Estimated Incremental Cost: \$12,000 for a bicycle pilot program in 2006.

¹⁰ Toronto indicated that their pay stations, which were phased in beginning in 1994, are now starting to break down with greater frequency. Enforcement officers are spending additional time with pay station enforcement because, before they enforce the block, they are now required to check to see if the machine is displaying an error message.

5. Graphic Design

We support SDOT's current work with a graphic designer to improve pay and display signage and potentially the readability of pay and display station receipts.

Estimated Incremental Cost: (Graphic design included in 2005 SDOT budget; set-up costs for reprinting paper stock would have to be identified in 2006.)

Issue 3: Parking Enforcement Performance Measures

Lessons Learned from Other Jurisdictions

Measures Aligned with City Goals

From our conversations with other jurisdictions and parking industry professional organizations, we discovered that there is not a common set of performance measures for parking enforcement. Parking enforcement unit performance is usually measured against the unique goals of the agency. For example, due to a history of complaints from citizens, the City of Miami's parking enforcement unit now emphasizes customer service. They use citizen surveys and a "mystery shopper" customer service evaluation to measure performance against this City goal. Other cities promote citizen education, and, in some cases, enforcement officers reward citizens for good parking practices with coupons from area businesses.

Some jurisdictions discussed the need to evaluate a wide array of factors in employee performance. For the past five years, the City of Toronto, Ontario has used compensatory time to reward those officers who continuously exceed a set of work standards that include:

- Rate of processible (legible) tickets (Toronto writes paper tickets, so this would not apply to Seattle)
- Officer conduct and vehicle safety
- Ticket issuance
- Ticket profile (Balance of tickets appropriate for the officers assigned area).

Toronto is currently reviewing these standards, and they hope to include some new measures related to the community service aspects of their officers' work.

Tickets Written Per Duty Hour

The one pervasive performance measurement among the jurisdictions surveyed was tickets issued per officer. This is usually measured in terms of tickets issued per duty hour or tickets issued per shift. The cities that we spoke with indicated that this measurement includes considerations for weather conditions, parking density, terrain, time of day, and seasonality. Among the cities surveyed, the average tickets per duty hour ranged from 4.4 (Vancouver, British Columbia) to 10 (Phoenix, Arizona).

Tickets Written by Area

Ten of the twelve cities from which we collected information have handheld ticketing systems that generate reports that allow parking enforcement management to review tickets written in a geographic area. This geographic

information is used to help make deployment decisions. Also, Vancouver, British Columbia uses this geographic information to identify and evaluate areas that may need better signage, a change in enforcement, or a change in parking rates.

Human Resource Measures

Four of the cities that we contacted (Boston, Cleveland, Denver, and San Francisco) are clients of ACS, a technology-based outsourcing firm that provides parking management services (including ticket processing and collections).¹¹

These cities use a set of measures developed by ACS for its clients to benchmark staff and human resource indicators. These measures include:

Patrol Time (based on an 8.5 hour workday)	6.5 hours
Patrol Frequency	5 to 6 passes per day
Absentee/Vacancy Rate	20 percent
Staff to Supervisor Ratio	8:1.

Toronto tracks its absenteeism rate and publishes this information in its parking enforcement annual report. Toronto's rate of "Sick and Injured on Duty" has declined from 6.7 percent, in 1999, to 4.4 percent, in 2004. Their goal for 2005 is to achieve a short-term absenteeism rate of less than 4 percent.

Data on Controlled Space Utilization

Controlled space utilization data, such as rates of turnover, occupancy and duration, can be indicators of how well parking regulations are working. Some jurisdictions conduct parking activity surveys to help them develop parking regulations as well as deployment and patrol strategies.

Of the cities surveyed, we found that Cleveland, Portland, and Vancouver, British Columbia collected controlled space utilization data to help them make deployment decisions. Their data collection methods varied. Cleveland's outsourcing vendor performs parking surveys as part of its contract with the City. Portland requires its PEOs to capture turnover data, from one block face in their beat each week, and Vancouver used its PEOs (on light duty) to collect data on occupancy, violations, and turnover in critical areas.

The International Parking Institute's (IPI) Parking Handbook identifies a set of parking management standards.¹² These are expressed as ranges of acceptable performance indicators. Some examples of ranges for the downtown core include:

- Total Meter Occupancy – not above 93 percent to 95 percent

¹¹ Boston, for example, pays \$3.30 per ticket to ACS for collections services and information management.

¹² From the International Parking Institute, Parking Handbook, June 2002, Chapter 4 Parking Surveys and Studies, p. 24.

- Illegal Meter Occupancy – 5 percent to 7 percent
- Paid Meter Occupancy – 60 percent to 85 percent
- Duration, or Average Length of Stay – 67 percent to 140 percent of the regulated duration
- Percent of Optimum Meter Turnover -- 67 percent to 133 percent
- Meter Violation Capture Rate¹³ – 33 percent to 40 percent
- Safety and Service Violation Capture Rate – 25 percent to 33 percent.¹⁴

City of Seattle Current Practices/Issues

Measures Aligned with City Goals.

The City of Seattle's goals¹⁵ for parking enforcement include:

- Promote parking turnover
- Increase voluntary compliance with parking regulations
- Remove abandoned vehicles

The City currently measures progress toward these goals in some way. Parking turnover in certain geographic areas is measured periodically by SDOT when evaluating new parking management strategies (e.g., SDOT conducted a downtown parking study in September 2004 that captured parking activity at about 340 metered spaces). Voluntary compliance with payment of parking tickets is measured by the Seattle Municipal Courts collections rate of approximately 86 percent in 2004. The disposition of abandoned vehicles is measured by the annual total of investigations of abandoned vehicles (3,887 in 2004) and abandoned vehicle notices written (1,898 in 2004).

In addition, SPD currently measures its community outreach efforts by staff time spent on citizen education, staff attendance at community meetings, and number of hits to the SPD website.

Tickets Written Per Duty Hour

The average rate of tickets written per duty hour at the City of Seattle is between 4 and 6. This falls into the range of the other jurisdictions surveyed.

Tickets Written by Area

The City's current hand held ticketing system cannot capture information about tickets written by area. Therefore, the City has not been able to capture this data for the past ten years.

¹³ Capture Rate is calculated by dividing the number of unique citations observed by the number of unique violations observed, during the survey period.

¹⁴ Includes violations for loading zones, bus zones, fire hydrants, etc.

¹⁵ From the Comprehensive Plan and SPD.

Data on Controlled Space Utilization

SDOT's September 2004 downtown parking study gathered information to create base line measures of on-street parking utilization, duration, and turnover in anticipation of the installation of pay stations in downtown Seattle. Occupancy was measured at 88 percent - 90 percent, and average duration was 87.5 percent (1 hour 45 minutes). Both of these measurements were within the IPI standards. The study did not measure violation capture rates.

Recommendations

6. Measures Aligned with City Goals

We recommend that SPD utilize the functions that will be available in a new hand held ticketing system to better track measures that are aligned with City goals. Some potential measures that could be tracked through the use of a new hand held ticketing system might include:

- Vehicle turnover rate in critical areas, and
- Cycle time in the abandoned vehicle process (call received to notice issued, tow contractor contacted to completed tow, etc.).

Estimated Incremental Cost: Included in cost of Recommendation #1 above.

7. Tickets Written by Area

We recommend that SPD consider upgrading the current hand held ticketing system so that it can produce reports of tickets issued by geographic area (beat). The City's current hand held ticketing vendor has offered to upgrade the current system to produce reports of tickets issued by geographic area.¹⁶ SPD has indicated that its concerns about the system's age and its server capacity might affect SPD's decision to pursue this upgrade.

We also recommend that SPD require any new hand held ticketing system to capture and report on tickets written by geographic area.

Estimated Incremental Cost: SPD and DOF will develop more information on costs, benefits, and timing of enhancing their current system to provide the capability to produce reports of tickets issued by geographic area. Recommendation #1 above assumes that the geographic reporting functionality is included in the total cost.

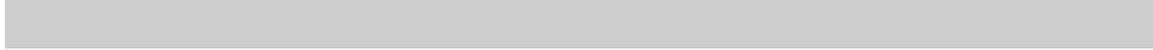
¹⁶ The vendor's estimated cost for this upgrade is \$4,600. This does not include an upgrade to the server.

8. Data on Controlled Space Utilization

Since violation capture rates are useful measures for other jurisdictions, and because they are an indicator of parking enforcement effectiveness, we recommend that SDOT consider collecting data on violation capture rates in its future parking studies.

In addition, we support the current efforts of SDOT and SPD to complete an on-street parking inventory, using Geographic Information System (GIS) data that will generate maps of enforcement areas and that will contain information regarding pay station locations, peak-period restrictions, time limit signs, residential parking zones, and 30-minute load zones.

Estimated Incremental Cost: SDOT, SPD, and DOF will provide more information on costs of collecting additional data on controlled space utilization in their September 2005 response to the City Council's Statement of Legislative Intent.



Statement of Legislative Intent: The Council requests that several City departments including SPD, SDOT, the Municipal Court, DOF, and the Office of the City Auditor cooperate in investigating the effectiveness of the City's parking enforcement and reporting back to the Council. The issues under I. below will be the primary responsibility of SPD with the assistance of SDOT and DOF. The issues under II below will be the primary responsibility of the Office of the City Auditor with the assistance of the Municipal Court. The departments will coordinate the development of a written report to be made available to the Council's Transportation Committee no later than June 1, 2005.

I. SPD with the assistance of SDOT and DOF

- A. Issues to be included in a report delivered to the Council Transportation Committee no later than June 1, 2005 include a recommended set of performance measures that can be used by the Council to track how the City's PEOs are being used. At a minimum the performance measures will include:
1. average annual PEOs employed compared to the number of PEO positions authorized and funded;
 2. minimum percent of annual PEO total time on the job that is used for on-duty time with no significant restrictions such as light duty;
 3. minimum annual and monthly (may vary by month) percent of on-duty time spent on routine patrol; and
 4. average number of tickets written per routine duty hour.
- B. A Work Plan to suggest recommended approaches and timing for addressing the issues below should to be delivered to the Council no later than September 1, 2005. (Note it is anticipated that the approach taken in addressing the issues below will depend on what new hand held ticketing device (HHTD) technology is selected, if any, to replace the existing obsolete units. Therefore this work plan is to be developed after a decision on whether to replace the HHTDs and with what. If it is decided not to replace the HHTDs in 2006, then the work plan will suggest what is feasible with the existing devices.)
1. A geographical analysis comparing levels of parking enforcement and overall enforcement effectiveness in different areas of the City with controlled parking spaces and development of enforcement standards that could guide redeployment of PEOs to enhance consistency of enforcement throughout the City.
 2. A review of the efficiency of PEO procedures for locating violations of parking regulations and citing them.
 3. Provided that the Office of the City Auditor pursuant to task II. B recommends that the City enhance its capability to determine a-c below, SPD will provide recommendations for ways to estimate and monitor the data, along with an estimate for the cost and labor requirements of data collection and analysis:
 - a. the average number of hours per day each controlled parking space is in use in various parts of the City by customers who should pay (e.g., Ballard, 4.6 hours per 10 hour day);
 - b. the number of hours during which controlled parking spaces in various parts of the City are not available for pay parking and the reasons therefore; and
 - c. the annual number of violations of parking regulations by regulation violated and section of the City.

The Office of City Auditor with the assistance of the Municipal Court

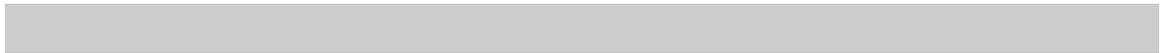
- A. A briefing to the Council Transportation Committee no later than March 15, 2005 on progress and potential problems that could compromise the scope of the report in B. below or delay its completion.

- B. Issues to be included in a report delivered to the Council Transportation Committee no later than June 1, 2005:
 - 1. Ticketing Technology. A survey of new ticket-writing technology (utilizing/complementing pay and display station functionality) and its implementation in other similar jurisdictions using pay and display stations. This might also include supporting work by SPD and DOIT on a high-level analysis. Also an analysis of how new technologies compare with the technology now used by Seattle PEOs and the advantages and disadvantages they offer with an assessment of the efficiencies from adoption of new technology (e.g., average reduction in time to locate a violation, to ticket a violator, to travel to and from duty areas, to enter violations into a data base, etc.).
 - 2. Pay Station Implications on PEO Deployment and Procedures. A survey of other jurisdictions that have implemented pay stations to identify potential changes to PEO deployment and procedural changes necessitated by the introduction of pay stations.
 - 3. Parking Enforcement Performance Measures. A survey of how other City's assess the adequacy of parking enforcement activities (e.g., what performance measures are used, how data on performance is collected, and how the information is used), including but not limited to whether they estimate or collect data on how many hours each day controlled parking spaces are in use by customers who should pay, the number of hours during which controlled parking spaces are not available for pay parking and the reasons therefore, and an estimate of the total annual number of violations of parking regulations by the regulation violated.
 - 4. Fine Collection. An analysis of payment process; fine-setting, fine amounts vs. payment amounts, receivables processing and collections, and record keeping and accountability, along with possible recommendations for improvement.

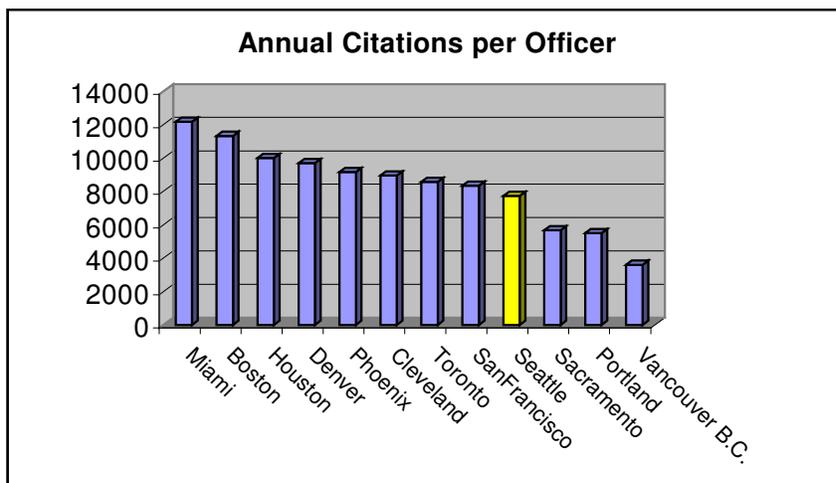
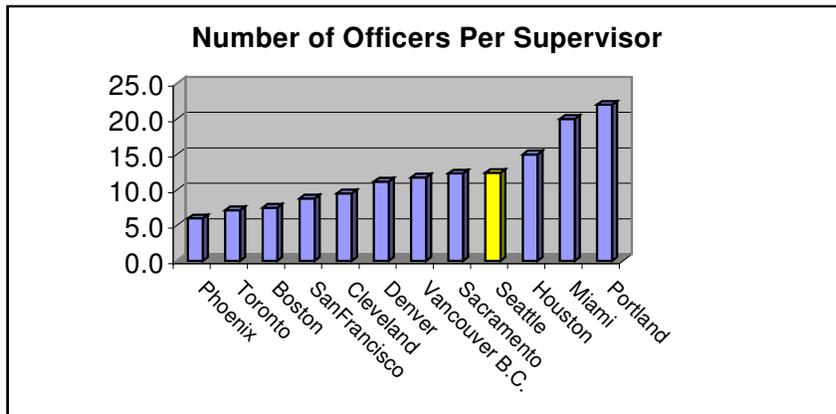
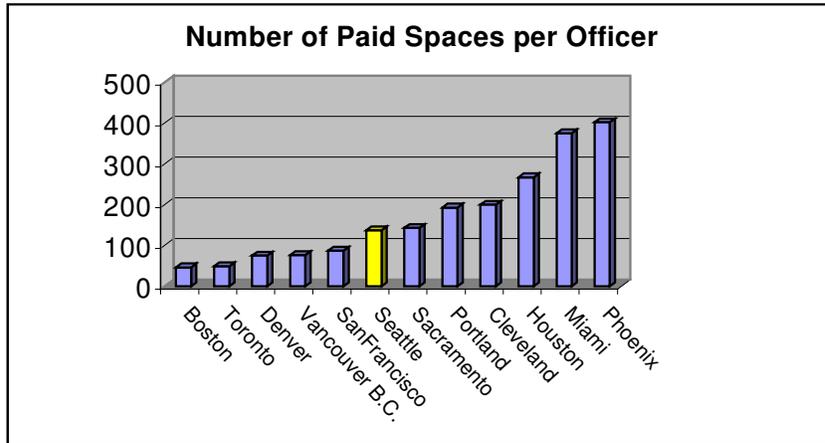
Supporting Information (if needed): See Round 1 issue paper for more information.

Responsible Council Committee(s): Transportation

Date Due to Council: Varies. See above.



APPENDIX B – Parking Enforcement Survey Summary Charts



Parking Enforcement Survey Summary Data

City	Number of Officers	Number of Supervisors	Number of Paid Spaces (Meters and Spaces Controlled by Pay Station)	Annual Number of Citations	Annual Citations/Officer	Ratio of PEOs to Paid Spaces
Seattle	62	5	8500	479,269	7,730	1: 137
Boston	150	20	7000	1,700,000	11,333	1: 46
Cleveland	19	2	3800	170,000	8,947	1: 200
Denver	67	6	5000	650,000	9,701	1: 75
Houston	30	2	8000	300,000	10,000	1: 267
Miami	20	1	7500	243,349	12,167	1: 375
Phoenix	6	1	2414	55,000	9,167	1: 402
Portland	44	2	8500	242,000	5,500	1: 193
Sacramento	37	3	5300	210,000	5,676	1: 143
San Francisco	264	30	23000	2,200,000	8,333	1: 87
Toronto	357	50	17500	3,057,508	8,564	1: 49
Vancouver B.C.	100	8.5	7585	361,000	3,610	1: 76

City	Paystations	Hand Held Ticketing Devices	Other Technology
Seattle	Parkeon	Autocite	
Boston	Pilot program	Politess	Auto Vu for booting; GEO Span for video images for capturing signs and other features on City streets, used in adjudication.
Chicago	Parkeon	Autocite	Auto Vu for booting
Cleveland	none	Symbol (ACS)	
Denver	none	Duncan	
Houston	Pilot program for pay stations; currently have 400/2000 pay by space	Rhino/palm	
Kansas City	none	none	
Miami	Parkeon	Autocite	
Phoenix	none	Ticket Track	
Portland	Parkeon, plus piloting Calais	Politess	
Sacramento	Pilot program	T2	Auto Vu for booting and chalking.
Toronto	Parkeon	none	Auto Vu for stolen vehicle recovery
Vancouver B.C.	Parkeon	Epic using wireless	Ticket system generates wireless notification to tow vendor; Access Database generates addtl reports

APPENDIX C – Hand Held Ticketing Options Analysis

Hand Held Ticketing Replacement Options Analysis (This is not a budget; SPD will prepare a budget for HHT replacement)

Prepared for Discussion Purposes Only
Updated May 31, 2005

All Scenarios assume a replacement project timeframe of approximately 12 months.

	2006	2007	2008
Scenario 1: Continue to use 66 older HHT units; replace system in 2007 prior to end of maintenance. (Assumes 2005 rate of failure of devices)			
Shipping/insurance on broken older units	5,220		
Estimated cost of additional data entry	100,893		
Additional Paper Costs	10,608		
Purchase New System		1,662,085	48,240
Wireless Charges (based on 67 units) (Less Maintenance on old system)			(30,155)
Maintenance on New System			51,250
Scenario 1: Total Incremental Annual Costs	116,721	1,662,085	69,335

1,848,141

Scenario 2: Lease 20 (newer model) additional "spare" HHT units from current vendor; replace system in 2007 prior to end of maintenance. (Assumes 2005 rate of failure of devices)			
Lease Costs	39,120		
GPS Modem	10,000		
Training (75 staff @ 100)	7,500		
Addtl. Thermal Paper	8,000		
Wireless charges	14,400		
Technical Support for new devices (40 hrs)	8,000		
Shipping/insurance on broken older units	3,828		
Purchase New System		1,662,085	48,240
Cell Charges (based on 67 units) (Less Maintenance on old system)			(30,155)
Maintenance on New System			51,250
Scenario 2: Total Incremental Annual Costs	90,848	1,662,085	69,335

1,822,268

Scenario 3: Purchase 75 new units and new HHT System in 2006 75 Devices and Device Software Development Software Integration (Interfaces with Muni Ct, RMS, etc) Software Application/customizations/reports Servers Project Management Tech Support Quality Assurance Train the Trainer Wireless Charges (based on 67 units) (Less Maintenance on old system) Maintenance on New System			
	576,000		
	100,000		
	300,000		
	20,000		
	400,000		
	200,000		
	40,000		
	8,000		
	48,240	48,240	48,240
	(30,155)	(30,155)	(30,155)
		51,250	51,250
Scenario 3: Total Incremental Annual Costs	1,662,085	69,335	69,335

1,800,755