
PARKING STAFF REPORT TO TRANSIT AND PARKING COMMISSION

AGENDA ITEM: F.1.

MEETING DATE: December 11, 2007

ITEM: Multi-space meter review and recommendation

STAFF DISCUSSION OF ITEM:

Background:

There are various operating systems for metered on-street parking stalls. The backbone of the Parking Utilities (PU) current system is the POM Company coin-operated single-space meter. In the current parking system, we generally have one meter per stall (sometimes dual-mounted) that indicates the amount of parking time purchased. The POM meters take nickels through dollar coins, operate on 9 Volt battery power and cost about \$500 each to purchase and install. Most of PU's POM meters are ten years old. When parking rates were \$ 0.25/hr, single-space meters like these worked well since most customers had sufficient in-pocket change to pay for an hour or more of parking. The current on-street parking rate is now \$1.25/hr. and it is expected to increase in 2009 and 2012 as the Utility prepares to secure funds to replace aging parking garages.

As on-street parking rates increase, it becomes increasingly difficult for customers to carry sufficient numbers of coins to "feed" parking meters. It is a frequent comment of customers that they don't carry sufficient change for two hours of parking (\$2.50), and as a result, they risk a citation. While parking citations are a necessary component of any municipal parking system, it can result in a poor parking experience for downtown visitors – visitors that we hope will visit the downtown again.

Given that most of PU's street meters are 10 years old, and with increasing parking rates that require people to carry excessive numbers of coins, an opportunity exists to upgrade to more advanced parking meters.

You may be aware that there are several types of parking meters available in the industry. Besides the ubiquitous single-space coin-operated meters, parking operators can choose between the multi-space meter, in-car meter, and single-space coin/credit card meters.

In-car meters may be the parking meter of the future, but the state of current technology isn't visitor-friendly, and requires a substantial investment in infrastructure (selling and charging meters) and education. Single-space meters that accept credit/debit cards are new to the parking industry but have not yet been widely field-tested. A distributor of this type of meter has demonstrated his product to PU personnel but hasn't presented a general price proposal as of this date. Staff expect that the pricing for this product would be high, to pay for the wireless communications/technology that is necessary to pay by credit card from each of PU's 1,600 meters.

Finally, PU staff implemented two types of multi-space parking meters in the field tests. These tests were undertaken for 90 days in mid-2007. The two types of multi-space meters were: the Pay-by-Space meter, and the Pay & Display meter.

Increased revenues were anticipated with the machines capable of accepting credit and debit cards.

Pay-by-Space (PBS) systems rely on a single payment kiosk per block face that replaces all of the single-space meters. The Duncan Company provided two PBS machines and the space numbering system used in the North Henry Street and West Main Street trial locations. Space numbering is necessary as the customer identifies the space they park in to the machine. Both of these PBS machines replaced 14 single space parking meters. These machines were battery-operated with no solar charging (though this is an option) and no receipt printer (since receipts aren't necessary). These machines accepted credit cards and coins. They did not accept bills or provide change.

Parking enforcement was done by Madison PEOs looking at the payment kiosk to determine payment information. The machines have the capability of interfacing with the X3 Reino (Duncan) citation writing equipment that the Madison Police Dept currently uses. Customers can use coins and credit/debit cards. The machines provided wireless alarms to alert Utility personnel of low batteries, jammed coin chutes, etc.

Pay & Display (P&D) systems rely on a single payment kiosk per block face that replaces all of the single-space meters. Cale Parking Systems USA, Inc. provided two P&D machines used in the East Main Street and South Pinckney Street trial areas. Both of these machines replaced 14 single space parking meters. These machines were battery operated with a solar charging unit and a receipt printer. Receipts are necessary in this configuration, as the customer must place the receipt on the vehicle dashboard for the PEO to review compliance. These machines did not accept bills nor dispense change. The parking enforcement officers look at the receipt that is placed on the vehicles windshield by the parker. The receipt shows the parking expiration time. Customers could use coins and credit/debit cards. The machines provided wireless alarms to alert Utility personnel of low batteries, jammed coin chutes, etc.

There are a number of multi-space meter manufacturers. The features and performance of the two machines tested in Madison should not be considered to be typical of all machines, however staff considers these two manufacturers among the industry leaders.

In 2004, the Parking Utility reviewed multi-spaced meters and decided at that time to not move forward due to the increased costs. At that time, a \$110,000 early retirement cost was included. Early retirement costs of the present meter system are no longer a factor since they are fully depreciated.

The two operating systems were analyzed from the following perspectives:

- Customer acceptance
- Customer ease of use including walking distance
- Operating costs and impact on parking rates
- Purchase cost
- Installation ease and cost
- Maintenance ease and cost including continuing fees
- Employee training and customer education costs
- Collection ease and cost
- Enforcement ease and cost, including snow and ice issues
- Adjudication assistance and capabilities
- Pricing capabilities and flexibility
- Credit/debit/smart card costs and capabilities
- Ability to be financially self sufficient and support needed reserve requirements
- Wireless capabilities and costs
- Out-of-service parking space capabilities and costs
- Bike parking issues
- Receipt forgery and other receipt issues
- Time limit capabilities
- Coin counting issues
- Back office computer capabilities (reports) and ease of use
- Streetscape and area aesthetics
- Parking supply issues
- Excess time issues
- Potential advertising revenue
- Use by people with disabilities
- Instructions in different languages
- Ability to run on AC power (like in lots/garages)
- Machines that network
- User resistance to change
- Prepaid parking time capabilities
- Revenue generation

Trial and investigation results:

Customer surveys of multi-space meter users were conducted in the field and online during the trial. A sample survey and letter to adjacent businesses are attached. The validity of these surveys is suspect since 25,000 transactions took place and only 131 surveys were returned (.524%). In general, parking customers indicated the following:

- Do you use the meters weekly? About 50% responded yes.
- Was the walking distance from the vehicle to the kiosk acceptable? 78% responded yes.
- Usually used coin instead of credit cards. About 55% responded yes; P&D customers used cards more often (a function of trial location perhaps?).
- Was payment easier? About 65% responded yes; more P&D customers reported easier than PBS customers.
- Would you use this type of pay station again? About 60% responded yes.
- Parking equipment preference: About 60% had no preference, or a multi-space preference; 42% of P&D customers preferred single-space meters.

<p style="text-align: center;">PAY BY SPACE (Includes comments on both meters and examples)</p>	<p style="text-align: center;">PAY & DISPLAY (Includes comments and examples)</p>
<p>Activity Trial ran May thru June 2007 15,177 transactions Cash transactions = 67% of total of revenue Credit card transactions = 33% of revenue Avg cash revenue/transaction = \$.89 Avg credit card revenue/transaction = \$1.88</p>	<p>Trial ran June thru Sept 2007 10,362 transactions Cash transactions = 47% of revenue Credit card transactions = 53% or revenue Avg cash revenue/transaction = \$1.11 Avg credit card revenue/transaction = \$1.91</p>
<p>Customer acceptance 15,000 transactions were completed during the trial with few complaints</p>	<p>10,000 transactions were completed during the trial with few complaints</p>
<p>Customer ease of use Some thought single space meters were easier to use. Customers preferred PBS because they didn't need to walk back to their vehicle with their receipt and place it on their dashboard after purchase. This is especially cumbersome for senior citizens and customers with small children. Customers had to memorize their space number before they used the payment kiosk and risk paying for another customers meter.</p>	<p>Customers liked having a receipt for credit card records, remembering their parking location and expiration time. The receipts used in the trial had a tear-off duplicate receipt that the parker could take with them.</p>
<p>Operating costs and rate impact Both systems require rate increases to maintain the current cash flow. Higher costs are due to: machine costs, wireless fee and credit card processing fees.</p>	<p>Costs are generally higher on P&D machines that are equipped with solar charging devices and receipt printers.</p>
<p>Purchase costs Anticipated costs are approximately \$7,000. An RFP will determine the exact costs. The space numbering system adds approximately \$25/space.</p>	<p>Anticipated costs are approximately \$10,000.</p>
<p>Installation ease and costs Both systems require the removal of the current meters. PBS retains most of the current poles, using them as part of the numbering system.</p>	<p>P&D removes most of meter posts but retains some for payment information purposes. Both systems could be installed using our own mechanics.</p>
<p>Maintenance costs including fees All machine distributors want to charge a per meter/month fee for the life of the machines. This can be a significant portion of the costs. Both PBS machines operated well during the trial. The batteries were not rechargeable and would need to be replaced about every 6 months. Battery disposal problems are minimal since they are green cell.</p>	<p>Maintenance costs on both types of machines would be similar except the P&D machines tested had solar panels and printers/paper that require more maintenance. One of the P&D machines tested had significant maintenance costs including the replacement of a main circuit board and two batteries by PU employees due to a power problem. The other P&D machine operated well during the trial. Rechargeable batteries may last up to 4-5 years, but require special disposal procedures.</p>
<p>Employee training and customer education Both systems require employee training and customer education. These costs should not vary much by operating system.</p>	<p>Employee training costs will be included in the RFP. The Parking Utility will provide customer education.</p>

<p>Collection ease and costs</p> <p>Collection costs are reduced by a multi-space system since the collection canister is larger and some of the payments are via credit/debit card. During the tests collections were made 1/week and before the tests collections were made 2/week.</p>	<p>Collection ease is about the same on both systems although it may vary by manufacturer.</p>
<p>Enforcement ease and costs</p> <p>Enforcement of on-street meters and some lots is performed by MPD. The Parking Enforcement Supervisor has indicated that enforcement is more efficient with PBS meters, and the added costs of enforcing P&D may be passed on to the Parking Utility and onto the customer.</p>	<p>Snow and ice present added problems for enforcement of P&D systems. It must be wiped away by PEO's before they can read the payment receipts on the dashboard. It's not impossible, it just present challenges.</p>
<p>Adjudication assistance and capabilities</p> <p>Both systems provide records of payment histories that may help the court system adjudicate citations.</p>	<p>In the P&D system, the customer retains a receipt of expiration and payment times that may help in adjudication efforts.</p>
<p>Pricing capabilities and flexibilities</p> <p>Both systems provide time of day pricing (pricing by demand). In PBS systems, individual spaces can be priced according to time limits and hourly rate. Motorcycle stalls can be priced separately.</p>	<p>In P&D systems, all spaces are priced the same and have the same time limit.</p>
<p>Credit/debit card costs and capabilities</p> <p>The Parking Utility incurs additional costs for processing credit/debit transactions. The costs for both systems would be approximately the same.</p>	<p>Both systems accept credit/debit cards and smart cards that have a prepaid descending amount of funds.</p>
<p>Financial self-sufficiency</p> <p>Both systems have additional costs that must be covered to meet future Parking Utility costs. Rates must be increased to meet these additional costs.</p>	<p>Increased costs can be met through increasing the fee in all meters or just those meters that accept credit/debit cards. Credit card rules prohibit rates at the same meter to be different for those using or not using credit cards.</p>
<p>Wireless capabilities and costs</p> <p>Both systems have wireless capabilities and associated costs.</p>	<p>Additional costs must be rolled into the parking fees to maintain proper cash flows.</p>
<p>Out-of-service space capabilities and costs</p> <p>This is likely the largest cost difference in the two systems. The current meter hoods can be used to cover space markers in a PBS system. The PU and others remove metered parking stalls an estimated 40,000 times per year. This is to accommodate construction and building contractors, etc.</p>	<p>Removing individual spaces in a P&D system is labor-intensive and costly. A system must be created to sign individual spaces with NO PARKING or RESTRICTED PARKING signs to accommodate tasks such as construction, dumpsters, utility work, reserved parking etc. Parking Utility employees would likely be needed to place and remove these signs. This would increase the cost of space removal greatly (currently \$13/day) and that additional cost would be passed on to our customers. This would create expense and work to a number of general fund agencies such as Transit, City Engineering, Water, Overture, Water and Streets that bag their own meters. Event sponsor, contractors and local businesses would also face substantial added expense and work.</p>

<p>Bike Parking</p> <p>The PBS system does not remove the old meter poles. Bikes can be (and were during the trial) locked to the space numbering poles. Bikes locked to space numbering poles do not interfere with meter collections as they may with single pole meters. This is convenient parking for cyclists.</p>	<p>Many of the old meter poles are removed in a P&D system. Bikes cannot be locked to the new Multi-space machines because the coin vault is in the bottom of the machine regardless of the machine operating system.</p>
<p>Receipt forgery and other receipt issues</p> <p>No receipt was issued at the PBS trial machines. They can be configured to issue receipts, but it is unnecessary for their operation and an unnecessary expense for customers.</p>	<p>Some users preferred machines that issued receipts for a credit card record and a time expiration reminder. Receipts can be forged with limited success, however the rather low value makes it unlikely.</p>
<p>Time limit capabilities</p> <p>PBS machines can accommodate different time limits at different spaces within the same block face. A short time limit adjacent to a fast food shop isn't an issue.</p>	<p>All of the parking stalls within a P&D parking area must have the same time limit unless single pole meters are left operating.</p>
<p>Coin counting issues</p> <p>The City Treasurer counts Parking Utility coins. Both systems use large capacity coin vaults that are exchanged and returned by PU personnel to the Treasurer for counting purposes.</p>	<p>If a multi-space system is fully implemented in Madison, the Treasurer's office may need more room to store the empty canisters.</p>
<p>Back office computer capabilities and ease of use</p> <p>Both systems have back office computer capabilities.</p>	<p>Ease of use is a manufacturer linked attribute and not linked to any one operating system type.</p>
<p>Streetscape and area aesthetics</p> <p>PBS operating systems retain most of the meter poles but not the meters. A neutral colored sleeve covers the steel pole and space numbers are added to the top of the pole. Removing the single-space meter heads partially un-clutters the streetscape.</p>	<p>P&D removes most of the old meter poles.</p>
<p>Parking supply issues</p> <p>A PBS system does not impact the number of vehicles parked in a given block face. Stall lines remain.</p>	<p>A P&D system can increase the amount of parking available in parallel parking situations if the stall lines are removed <u>and</u> vehicles park closer together—not always a given. Vehicles parked closer together can cause a traffic hazard as vehicles take longer to maneuver into tighter spaces on busy streets. Motorists with very large vehicles like buses and RV's would benefit from a P&D system.</p>
<p>Excess meter time issues</p> <p>A PBS system typically retains time paid by an earlier user for use by a subsequent user in the same stall. Detectors can be placed in the roadway to zero out the time as vehicles leave the stall. The current single-space meters also operate like this--retaining the unused parking time for the next parker.</p>	<p>Parkers using a P&D system typically drive off with the excess time technically increasing revenue to the utility. Parking rules can be changed to allow parkers to use any unused time in any other P&D area with the same time limit and parking rates, however this is likely to be confusing to customers and enforcement personnel.</p>
<p>Potential advertising revenue</p> <p>Advertisers could buy advertising space on the sides of the PBS machine if the city were to allow such activity.</p>	<p>Advertisers could buy advertising space on the sides of the P&D machine and on the back of parking receipts. Revenue earned in this manner could offset some of the higher costs of multi-space machines.</p>

<p>Receipt disposal PBS machines would not have receipts so there would be no disposal issues/littering.</p>	<p>During the trial period, parking receipts were found on the ground and other areas near the P&D machines causing disposal and litter issues.</p>
<p>Use by people with disabilities Both machine types are in compliance with ADA standards. People with disabilities park free at meters 30 min. and more and wouldn't need to use most machines.</p>	<p>A person with a disability may have a more difficult time using a P&D meter for meters under 30 minutes since receipts must be placed on the auto windshield.</p>
<p>Foreign language capabilities Both machines are capable of displaying instructions in a number of foreign languages.</p>	<p>This is an advantage over the current single-space meters that display rates, enforcement times and instructions are only in English.</p>
<p>Ability to run on AC power This is not important on the street where we would expect them to run on battery.</p>	<p>In parking lots and structures, we would expect meters to be capable of running on AC power.</p>
<p>Meters that network Not important unless payment for one meter at any other meter is allowed. The city doesn't expect to use this feature <u>with the on-street meters.</u></p>	<p>It's an important feature for multi-space meters in lots and garages. Buckeye Lot for instance could replace its current 54 single-space meters with 2 multi-space meters if the machines are networked. This will also make enforcement easier.</p>
<p>Impact on parking rates Both operating systems cost more than the current single-pole meters to buy and operate. These costs would need to be passed on to the customer to maintain our current cash flow and infrastructure.</p>	<p>P&D meters cost more to buy/operate than PBS meters and this higher cost would need to be reflected in higher rates.</p>
<p>User resistance to change Change is a challenge to many people--including PU. There will be a learning curve for our customers and PU.</p>	<p>The benefit of alternative payment methods and convenience as parking rates increase outweighs resistance to change by parking customers and employees.</p>
<p>Prepaid parking time capability Both meter systems are capable of accepting money for prepaid parking minutes.</p>	<p>Example: A parking customer parks at a 2-hour meter at 7AM that is enforced starting at 8 AM. The customer will be able to pay for parking time from 8 AM to 10 AM, and parks free from 7 AM to 8 AM.</p>
<p>Revenue generation The PBS meters did not generate additional revenue during the 90-day trial.</p>	<p>The P&D meters did not generate additional revenue during the 90-day trial.</p>

FISCAL IMPLICATIONS:

Multi-space meters will cost between \$7,000 and \$10,000 each. Operating costs will increase. Rates will be increased to match the cost increases. Assuming 1,000 single-pole meters are to be replaced and each multi-space meter replaces 8 single-space meters and cost \$8,000 each, the total cost will be approximately \$1,000,000 spread out over a number of years.

MATERIALS PRESENTED WITH ITEM:

- Multi-space meter photos
- Multi-space survey form
- Multi-space letter to adjacent property owners during the trial period

STAFF RECOMMENDATION/RATIONALE:

Staff recommends a slow phased-in replacement of 1,000 single space meters with 125 **pay-by-space multi-space meters**. These new meters will accept credit/debit and smart cards. They will be battery-powered and will not have solar panels, bill acceptors, change-making capabilities or printers to produce receipts. Parking rates will be increased \$ 0.20/hr on the multi-space machines to cover the additional costs involved. Criteria for multi-space meter placement will be developed so that they are installed in appropriate areas. Machines placed in lots or garages will need to be networked while those placed on the street will not be networked.

Staff believes that the added customer convenience of parking meters that accept credit/debit cards outweighs the additional costs and challenges involved in switching to this new meter type. With parking rates already at \$1.25/hr. and two more projected increases by 2012, customers must have an alternative type of payment. In coming to this decision, staff analyzed multi-space meters by more than 35 criteria. Five of these criteria were paramount in the decision to use PBS meters:

- PBS meters are more convenient for customers because they don't need to return to their car to place a receipt on the dashboard.
- PBS meters are less expensive to buy and maintain than P&D meters and will result in less of a parking rate increase for our customers.
- PBS meters have more flexibility for space-specific rates and time limits.
- P&D meters require an expensive and less customer friendly system for taking individual spaces out of service.
- P&D meters are more expensive to enforce and this cost will be passed on to the Parking Utility and customers.

Criteria for multi-space meter placement will include, at a minimum:

- Will only be considered at full fare meters (currently \$1.25/hr) or motorcycle stalls.
- Will be placed on block faces where at least 7 single space meters can be replaced.
- Will not be placed in areas where vehicles driven by people with disabilities are in the majority.

PREPARED BY: Bill Knobeloch, Parking Operations Manager



PAY & DISPLAY



PAY & BY SPACE



IPS Single Space Parking Meter

Wireless Credit Card, Debit Card, and Coin Meter

Model SSPM-2007



The IPS Single Space Parking Meter (SSPM) provides the perfect upgrade path for cities and towns wanting to accept Credit and Debit Card payments without having to make major changes the current method of doing business, incurring high monthly costs for consumables, and having to deal with printer jams and confused motorists.

The IPS Single Space Parking Meter is engineered to be a direct retrofit and will work with your existing single space poles and lower housings in a few seconds, thereby minimizing installation time, cost and risk. The meter is battery powered and a solar array keeps the battery charged. No external power is run to the meter.

The IPS Single Space Parking Meter communicates with the host system using wireless technologies such as Cellular, Zigbee or WiFi. This enables encrypted Credit and Debit Card transactions as well as remote status reporting and configuration of the meter. Status and fault notifications can now automatically be relayed to maintenance staff via email or text message to improve service and minimize downtime.

With a well-established history of parking meter manufacture and outsourcing – IPS has designed its range of parking meters with ease of use and reliability in mind. The meter is robust and extremely resistant to vandalism.

Major Features:

- Accepts Credit Cards, Debit Cards, and Coins
- SSL Encrypted Communications
- Compatible with existing meter maintenance equipment and collection carts.
- Low maintenance – easy, modular design and drop-in replacement.

Options:

- Pay By Cell
- Contactless Credit Card
- Reset to Zero
- Advanced Management System

IPS GROUP, Inc.

12526 High Bluff Drive, Suite 165

San Diego, CA 92130

U.S.A.

Phone: (858) 764 4225 Fax: (858) 764 4226

Email: info@ipsgroupinc.com

Web: www.ipsgroupinc.com & www.ipscellular.com

Bike on tree →

Bike on tree →

Bike on space # post →

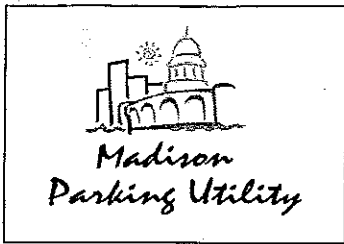
Bike on sign post →

07/17/2007

W. Main



07/17/2007



Survey for Pay by Space Machines

Public input is needed to evaluate the two types of parking pay stations being tested in the City. This survey will help determine the type of parking equipment that best fits the needs of all concerned. We would appreciate your response to assist us in choosing the most acceptable equipment for our City. If it is more convenient, you may complete and submit this survey on-line at @ cityofmadison.com/parking

1. How often do you use parking meters in Madison?

- Several times a day Daily Weekly Less than Monthly Monthly

2. Where did you park today?

- 300 North Henry Street 100 West Main Street

3. When you parked and used the Pay by Space machine how acceptable was the walking distance from your vehicle?

- Very acceptable OK Too far Unacceptable

4. How easy was it to identify and remember the space number where you parked when using Pay by Space?

- Very easy OK Difficult Very difficult

5. What payment option did you use at the parking pay station?

- Coins Credit /Debit Card

6. Overall, how easy was it to use the parking pay station?

- Very easy OK Difficult Very difficult

7. Would you use this type of parking pay station again?

- Yes No

Comments:

8. Which type of parking equipment do you prefer?

- Single space meter Multi space pay station No preference

Reasons:

9. How can we get in touch with you? (Optional.)

Name:
E-mail:
Telephone: (Ex: 608-123-4567)

Thank you for taking the time to help us with this survey! Please deposit your completed survey in the drop box by the pay machine or mail to:

Madison Parking Division
P.O. Box 2986
Madison, WI 53701-2986



Traffic Engineering and Parking Divisions

David C. Dryer, P.E., City Traffic Engineer and Parking Manager

Suite 100
215 Martin Luther King, Jr. Boulevard
P.O. Box 2986
Madison, Wisconsin 53701-2986
PH 608 266 4761
TTY/Textnet 866 704 2315
FAX 608 267 1158

July 26, 2007

Re: Multi-space parking meter trial, 300 N. Henry Street & 100 W. Main Street

Dear N. Henry/W. Main Area Business Owner,

The City of Madison Parking Utility and Duncan Solutions will end their 90-day trial of multi-space meters in your area soon. The single-space meters will return in early August. The pay-by-space meter took the place of 14 single-space meters on 300 N. Henry Street and 100 W. Main Street. The option to use a credit/debit card provided an alternate payment method and hopefully a better parking experience for your customers. We had about 15,000 transactions on the pay-by-space meters.

The 90-day trial period provided the Parking Utility with an opportunity to test the equipment, customer acceptance, financial feasibility and operational method. The final results will be published in a few months after the pay-and-display meter trial is completed.

Since customer acceptance is a very important ingredient in the success of this test project, we have developed a customer survey to measure user satisfaction and solicit input from the parkers. A sample survey is attached. If you have used the new meter and have not filled out a survey, please fill out the enclosed survey and send it back to us or complete one on our web site at <http://www.cityofmadison.com/parking/survey>.

Your cooperation during this test was greatly appreciated. If you have suggestions or comments, please feel free to contact me directly.

Sincerely,

William Knobloch
Parking Operations Manager

WK:abc
Enclosure