WALKER
PARKING CONSULTANTS

PARKING METER SYSTEM DEFINITION

CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII

PREPARED FOR:
THE CITY AND COUNTY OF HONOLULU

AUGUST 11, 2010

WALKER
PARKING CONSULTANTS

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August 11, 2010

Mr. Wayne Y. Yoshioka, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, Third Floor
Honolulu, Hawaii 96813

Re: *Parking Meter System Definition*
Walker Project #: 37-8151.00
City and County of Honolulu, Hawaii

Dear Wayne:

Walker is pleased to present this parking meter system definition report.

We sincerely appreciate the opportunity to assist you and the City of Honolulu with this project and look forward to discussing this report at your convenience.

Sincerely,

WALKER PARKING CONSULTANTS

John W. Dorsett, AICP, CPP
Senior Vice President

Jon Martens, AICP, CPP
Parking Consultant

Enclosure

"This report was funded in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation. The views and opinions of the agency expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation."

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AUGUST 11, 2010 PROJECT # 37-8151.00

EXECUTIVE SUMMARY

The City and County of Honolulu ("City") is pursing the replacement and or upgrade their current 3,723 on- and off-street, single-head parking meters with new smart meters capable of accepting a variety of payments including credit cards. The primary reason for upgrading the meters is to improve customer service by providing an alternative to paying with coins and to replace an aging meter system. Walker Parking Consultants ("Walker") has been engaged to assist with this project by providing technical expertise with the meter project.

One of the major goals of the meter project is that the City experience no out of pocket costs. To this end, Walker has prepared this executive summary to assist the City in determining the potential options and costs of the new meters and the impact on meter revenues.

POTENTIAL REVENUE INCREASE

Several studies have shown that the introduction of credit cards as a method of making a parking meter payment, increases parking revenue by anywhere from 17 to 93 percent, with a typical increase being 32 percent. Reasons for this increase are that people are more likely to pay the maximum time when using their credit card, and patrons are more likely to have the means of paying the meter when given more options. Our analysis of the Honolulu meters assumes a 25 percent increase in revenues after the introduction of credit card acceptance.

The projected meter revenue for the FY 2010 is approximately $4.3 million[1]. Assuming a 25 percent increase to this figure results in a first year increase of $1.08 million, with subsequent years increasing an average of 2.5 percent based on the historical trend.[2] This projected increase in revenue is assumed to be used to cover the expense of upgrading or replacing the existing meters.

METER OPTIONS AND COSTS

Two meter systems are considered in our analysis. Option 1 assumes all meters are replaced with multi-space meters ("MSM") that cover an average of nine spaces per meter. Option 2 assumes single space smart meters[3] ("SSSM") for all on-street spaces and MSM's for off-street

[1] Excludes meter revenues from Honolulu Zoo and Kapiolani Park.
[2] Meter rates have increased an average of 2.5% over the previous four years based on the revenue data provided by the HPD.
[3] Single Space Smart Meters accept credit card payments and use existing meter poles and base housing units.

Questions for Consideration:

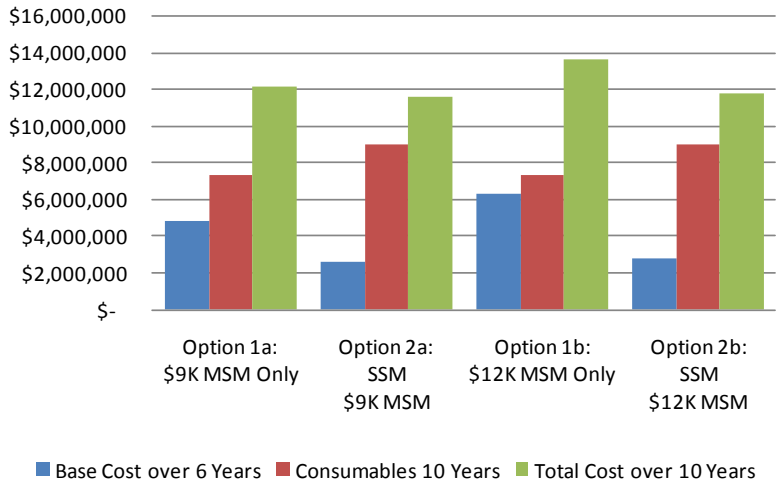
- Is there a preference for accepting banknotes at the meters?
- Is there a preference for pay and display, pay-by-space, or pay-by-license plate?
- Are smart cards a required form of payment?
- Are there any applications that are required to interface with the new meters at this time?
- Are solar powered meters preferred for on-street meters?
- Which job positions does the City require training on the new meters and how many personnel will this entail by position?
- Can a map of existing on-street meters be provided?
- Are as-built drawings available for the off-street parking facilities?
- Are there any meters that the City does not want to upgrade or replace?

parking facilities.[4] Prices for MSMs vary significantly based on the options and quantity ordered. For this reason, we include two price points for the MSMs in each option. The first assumes coin and credit card payment only and the second assumes adding banknotes as a payment option.

Our opinion of the installed cost for each option ranges from $2.0 to $4.8 million. This includes meter equipment, installation, spare parts, and meter signage. The lowest initial cost is Option 2, on-street SSSM with off-street MSMs.[5] On-going consumable costs include a monthly connectivity charge per meter, receipts, batteries, and credit card processing fees. Our opinion of the annual consumable expense ranges from $640,000 for Option 1 (all MSMs) to $790,000 for Option 2 (SSSM with MSMs).

Considering the initial capital cost and ongoing consumable costs, over the ten-year anticipated life-cycle of the equipment, the costs between the two options are within three to six percent when comparing the basic coin and credit card MSMs and SSSMs and roughly 15 percent when considering MSMs that accept banknotes with the SSSMs. The following figure illustrates the projected life-cycle costs over ten years, assuming the initial investment is amortized for six years at 8.5 percent.

Comparison of Projected Costs over 10 Years (six year amortization)



Source: Walker Parking Consultants

[4] MSMs for off-street facilities is recommended as fewer MSMs are needed for off-street locations and the MSMs can be hard wired more easily in off-street facilities.

[5] Our opinion of cost for the SSSMs is $500 each; for the MSMs - $9,000 and $12,000 depending on the payment options.

BOTTOM LINE

Without a rate increase, the first (and most likely second) year that the new meters are in operation, the increase in revenue will fall below the required payment to the meter vendor. However, over the ten-year life expectancy of the equipment, an overall increase of $3.2 to $5.7 million is projected, depending on the type of MSM selected and the actual amortization terms. Our model assumes no increases in the current meter rate and no changes to the hours/days the meters are enforced.

SUCCESSFUL IMPLEMENTATION

Walker recommends the City engage a professional public relations firm to assist in implementing a creative and successful launch of the new meter program. It would also be beneficial to the City to discuss strategies of successful implementation with vendors during the interview process.

Based on other cities' experience and successful installations of new meter systems, the following list provides examples of communications activities prior, during, and after installation:

- Three to six months prior to installing the new equipment, issue press release announcing plans for new system, with a focus on the positives of added customer convenience.
- Conduct community outreach meetings with the stakeholders in advance of the meter change.
- Deploy a website with project updates, meter directions, and an electronic survey form.
- Display a "sample" meter in a public area for people to see, touch, and feel prior to beginning the installation.
- Develop and provide instruction cards throughout the CBD and on the website, illustrating how to use the new meters.
- Develop a directional video for municipal television and or YouTube.
- Train "ambassadors" to assist patrons with the proper use of the meters.
- Issue a progress press release a few weeks prior to the initial installation.

- Install meters and signage with covers with "Coming Soon" signage so that patrons can see where the new equipment is installed.
- Conduct a ribbon cutting and first use ceremony to officially welcome the new meters.
- Post parking ambassadors around the new meters to assist patrons with their use.
- Start the deployment of meters slowly so that any issues can be identified early and quickly as opposed to a mass-installation where the maximum number of meters are replaced at one time. Conduct a press release to showcase the new meters and utilize ambassadors to educate patrons. Installation can proceed on a quicker pace once any initial issues are corrected.
- Issue a press release of the deployment of the new meters and areas scheduled for deployment.
- Rotate ambassadors to new areas as meters are deployed.
- Provide citation warning for short period of time following meter deployment.

The full report provides details of the various meter options and considerations, along with a detailed discussion of the financial analysis and tentative schedule.

INTRODUCTION

The City and County of Honolulu ("City") have engaged Walker Parking Consultant ("Walker") to assist in obtaining qualified submittals to replace and or upgrade their current single space parking meters with new smart meters capable of accepting a variety of payments including credit cards. This report provides an overview of the current system, tentative schedule for the project, opinion of cost, and descriptions of various technology and systems available for consideration. The complete scope of services for this engagement is provided in Appendix A of this report.

PROJECT OBJECTIVES

The objective of replacing or upgrading the existing meters is to increase efficiency, convenience, and revenue of the current meter system while requiring no upfront costs by the City. The key objectives of the project are to:

- Increase parking meter revenue and provide a return on the City's investment;
- Represent no up-front, out-of-pocket expense to the City for Work performed (including equipment) under the resulting Contract;
- Minimize the disruption of the current operation as little as possible;
- Offer credit card acceptance capability;
- Secure a long-term commitment to provide meter reporting, functionality, and connectivity at a predetermined cost; and
- Provide a system capable of integrating parking meter hardware/software with a variety of payment and enforcement options.

PURPOSE OF THIS DOCUMENT

This Parking Meter Systems Definition report is intended to provide an objective, non-biased description of available meters and options to better prepare the City and County in defining the type of system best suited for Honolulu. In addition, the report provides a conceptual financial analysis based on projected improvements to meter revenue and a tentative timeline for the scheduled implementation, both considerations prior to implementing the new system.

SYSTEM DESCRIPTION

The single space meters included in this project consists of 3,723 on- and off-street, single-head parking spaces. The breakdown of on-street and off-street meters are as follows:

On-Street: The Honolulu Police Department ("HPD") reports the existence of 2,936 on-street metered parking spaces for replacement/upgrade. The meters only accept quarters, dimes, and nickels. Time limits and rates vary by location but range from one to three hours and rates are either $0.75 or $1.50 per hour. A detailed inventory by street is provided in Appendix B.

Off-Street: HPD reports that there are 787 off-street metered parking spaces located on the island of Oahu that are included in the meter replacement/upgrade. (Excluded from this inventory are 271 metered spaces that serve Kapiolani Park and 215 metered spaces that serve the Honolulu Zoo.) Time limits and rates vary by location but range from half an hour to 12 hours and from $0.10 to $1.50 per hour. Three of these facilities, the River Lot, Lani Huli Elderly Lots, and the Civic Center are parking structures containing a cumulative 283 metered parking spaces. The following table summarizes these off-street parking facilities.

Table 1: City and County Metered Off-Street Parking Facilities

Type of Parking	Name	Spaces
Garage	Harbor Village (River Lot)	70
Garage	Lani Huli (Kailua) Elderly Lots (2)	140
Garage	Civic Center	73
Surface Lot	HPD Lot	10
Surface Lot	Kailua Lots (2)	140
Surface Lot	Kaimuki Lots (2)	106
Surface Lot	Kuhio-Kaiolu Lot (Waikiki)	58
Surface Lot	Palace Square Lot	38
Surface Lot	Salt Lake Lots (2)	152
	Total Spaces:	787

Source: HPD and Walker Parking Consultants

CURRENT OPERATIONS

Several different departments work together to manage the parking meters in Honolulu. The following is a summary of each department's responsibilities:

- HPD – The Parking Enforcement and Collection Section of the HPD's Traffic Division installs parking meters, carries out meter maintenance, and has a cadre of parking enforcement officers who issue parking citations. HPD also empties all parking meters for all on- and off-street parking owned by the City and County of Honolulu.
- Department of Facility Maintenance (DFM) – This department is responsible for the maintenance of surface parking lots and parking garages. It also manages third-party parking operator contracts, manages the City and County employee parking permit program, installs and maintains parking meter poles, and performs parking space line striping. Meter maintenance, however, is handled by the HPD.
- Department of Transportation Services (DTS) – This department is generally not responsible for parking. However in recent years, it assumed responsibility for the maintenance and care of the Kaimuki Lot which had fallen into disrepair and required restoration to bring it to its current state of condition and operation. DTS manages the third-party parking operator contract associated with this property.
- State of Hawaii – The state receives all parking violation citations income. HPD issues all parking citations and is not reimbursed for any costs that it incurs enforcing parking regulations.

EXPANDABILITY

In addition to replacing and/or upgrading existing parking meters, the City is aware that several opportunities may exist for the installation of new parking meters. These locations may be considered following the replacement/upgrade of the existing meters.

PARKING METER OPTIONS

The major requirement for the replacement or upgrade of meters is that these accept credit cards for the payment of parking fees. There are several meter manufacturers that provide multi-space meters and three that offer (or will offer) single space meters that accept credit cards. The following provides a brief description of the meter options.

SINGLE SPACE SMART METERS

Single-space meters are in use in Honolulu today, with many meter housings reportedly in use for up to 35 years. On the plus side, these are simple to use and almost universally understood by the public. Innovations have brought electronic internal controls, credit card payment, smart card payment, and pay-by-cell phone payment options. On the negative side, the sheer volume of meters means more equipment to maintain and a labor intensive, revenue collection process.

"Smart" Single-Space Meter

Single space meters that accept credit cards are a relatively new product. As of the second quarter of 2010, only IPS Group, Inc. ("IPS") offered and had single space meter installations in the U.S. Two other manufacturers (POM and MacKay) have recently developed and are testing the meters; however, neither have large scale installations of this type of meter at this time.[6]

The IPS solution is a meter upgrade instead of a meter replacement. IPS manufactures a direct replacement mechanism that fits on an existing single space pole and into the existing housing (simply remove the original top and mechanism and replace with the new mechanism). The new meters are solar powered and contain a rechargeable battery pack; no external power is required to operate the meter.

The new smart meter also features wireless cellular communication that links each meter to a centralized Meter Management System and provides real-time credit card authorization, meter occupancy status reporting, revenue tracking, and flexible remote rate change capabilities.

[6] POM and MacKay both have multiple installations of other types of meters, just not the single space meter that accepts credit cards. POM and MacKay "smart" meters are designed to upgrade existing POM and MacKay single space meters and are likely to offer competitive pricing with IPS Meters.

OPINION OF COST

Costs for upgrading a single meter head with an IPS meter varies based on the quantity of units. The basic cost is $450 to $500 per unit, assuming the existing equipment, including the pole and housing, can be re-used. On-going operating costs include a monthly fee of $5.00 to $6.00 per meter for network connectivity and a $0.12 per credit card transaction fee (this does not include the credit card processing fees, which run about 6 to 15 percent of the transaction amount, depending on the amount charged and the volume. Maintenance costs are limited to battery replacement, as the meter does not issue paper receipts.

ADVANTAGES OF SINGLE SPACE SMART METERS

- Most familiar form of metered fee collection. The majority of patrons are familiar with the operations of single-space meters; little to no customer education is needed.
- Meters can be configured to accept coin or tokens, city smart cards, or credit cards for payment.
- Relatively low implementation cost per meter.
- Each machine covers one space, thus an out-of-service meter only impacts one space.
- Retain existing operating procedures for bagging and reserving spaces.
- Meters communicate to a central server. Communications can be configured to notify parking operator when coin vault is full and unit is out-of-service. This further decreases the operational burden while increasing control.
- Rates can be changed from the central server, including adjusting rates for events or specific time periods.
- Additional signage requirement is limited.

DISADVANTAGES OF SMART SINGLE SPACE METERS

- Unused time typically remains when vehicle leaves the space.
- Higher cost for on-going maintenance due to the high number of units.

- Less than aesthetically pleasing to see a "sea" of poles along the sidewalk.
- Besides meter head maintenance, the meter housing and poles require on-going maintenance to straighten and secure.
- No receipts are offered to the patron.

MULTI-SPACE METERS

The development of the multi-space meter (MSM) enhances metered parking as a viable option for larger facilities or parking lots by controlling revenue from multiple spaces with fewer devices. For on-street applications, multi-space meters usually manage eight to twelve spaces. For surface lot or multi-level parking facility applications, a single multi-space meter can manage over one hundred parking spaces depending on the configuration and application.

Aspen, Colorado was one of the first cities in North America to successfully implement pay-and-display parking in 1995.

This method has been successfully employed in areas that cannot normally be marked for parking, such as public beach parking areas on Sanibel Island, Florida.

Each meter is equipped with a display to instruct patrons; one or a combination of coin, token, banknote, credit card or smart card acceptors; a cashbox and/or bill vault to securely store money; and user interface buttons/keypad. The meters are computerized, which allows complex variable fee structures and promotes strong audit and enforcement trails.

A typical installation is networked, allowing transaction and revenue data to be consolidated to a central server and viewed remotely. This allows the owner to generate reports and other useful data necessary to manage the parking assets, including changing the rates and monitoring revenue.

Depending on the specific application and manufacturer, the multi-space meter can be configured for use in three modes of operation: *Pay and Display, Pay-by-Space, or Pay-by-License Plate.*

PAY AND DISPLAY

In pay and display mode, patrons park the vehicle in a space, approach the parking meter, pay a variable fee for a certain amount of time and receive a voucher. Somewhat less convenient for the patron than individual meters, in pay and display mode, the patron has to return to their vehicle to place the voucher on the dashboard. The voucher indicates the duration, location, machine number and end

Pay-and-Display Voucher Placed on Vehicle Dashboard

time for which the vehicle has paid for parking. The voucher must be visually checked on every vehicle during enforcement procedures, which has been found to take more effort and time as compared to the enforcement of other meter types.[7] Pay and display meters are typically used for on-street applications or areas that do not have defined parking spaces such as dirt, gravel, or sand-covered parking areas. *Pay and display* meters are not typically used in off-street parking applications with defined parking spaces.

PAY-BY-SPACE

In *pay-by-space* mode, the patron is not required to return to the vehicle with a voucher. Instead each parking space in the parking area is numbered. Patrons approach the parking meter, enter the parking space number in which their vehicle is parked, and select the amount of time desired. No parking voucher is needed for this application, but there can be a receipt for proof of transaction. During the enforcement procedure, the unit prints a list of currently-paid spaces for the enforcement officer to use during ticket writing. Alternatively, the meter can communicate which spaces are paid directly to a handheld device carried by enforcement officers. Most pay-by-space applications offer the added convenience of allowing patrons to add parking time to the meter from another meter or through their cell phone for added convenience. *Pay-by-space* meters are typically used in off-street applications where spaces can be easily numbered using signs or surface paint; however, they are also gaining popularity for on-street applications due to their improved enforcement options.

Pay-by-Space Signage in Tulsa, Oklahoma

PAY BY LICENSE PLATE

In pay-by-license plate mode, the patron is not required to remember their parking space or return to their vehicle with a voucher. Instead, they enter their vehicle's license plate information, and select the amount of parking time. No parking voucher is required for this application, but there can be a receipt for proof of transaction. This system allows a patron to move their vehicle to another spot within the same meter zone without having to pay for parking again, provided there was time still remaining on the original purchase, and they were

[7] The Seattle Police Department reported the average enforcement time for a block face of single space meters went from an average of 2.6 minutes to 7.6 minutes when it changed to pay-and-display meters. Other cities have added bicycle enforcement squads to increase the efficiency of enforcement of pay-and-display units.

not in violation of the posted time restrictions. During the enforcement process, the officers can use an electronic ticket writer has the paid license plate data from the MSM. By entering the parked vehicle license plate information (or by using special cameras mounted on patrol vehicle to scan and read the data) into the enforcement handheld device, violators can be identified. Many applications also allow patrons to add parking time to the meter from another meter or by their cell phone for added convenience.

OPINION OF COST

Multi-space meter costs vary greatly depending on the options added to the unit. Some multi-space meters accept coins only while others take full advantage of credit card payment, pay-by-cell phone, bill acceptance, and on-line credit card verification. Our opinion of cost varies from $4,000 for a basic standalone unit that does not accept credit cards to $18,000 for an on-line unit that accepts cash and credit cards.

A typical unit can provide coverage for eight to twelve spaces per block face. A good rule of thumb is to plan on one or two units per block face. In addition to equipment costs, monthly connectivity fees of about $50.00 to $60.00 per unit are required to maintain real-time connectivity and to host the data. Maintenance costs include battery replacement and paper receipts. When credit cards are accepted, there are additional fees to process the credit card. These fees typically include a flat charge per transaction of $0.15 to $0.20 plus 1.2 to 3.0 percent of the transaction amount. This makes credit cards acceptance virtually cost prohibitive for transactions under $1.00.

ADVANTAGES OF MULTI-SPACE METERS

- Variable rate structure available to encourage turnover of spaces and to perhaps discourage long-term parkers. Rates can also be set for event periods.
- Increased revenue (reported as between 10-40%) without increasing parking rates due to improved compliance and offering alternative forms of payment.
- Strong audit trail. Because fewer personnel are handling the cash, there is less potential for theft.
- Flexibility and user convenience. The machines accept various forms of payment including credit/smart cards, coins and

banknotes (banknotes only recommended with hardwired power).

- Increased revenue control. Multi-space systems provide a full range of revenue and statistical reports.
- Less maintenance needed. Fewer machines in the field require less maintenance and fewer spare parts.
- Decreased collections. Fewer machines in the field, in addition to increased electronic transactions (i.e. credit card) will require fewer burdens on collection personnel.
- Meters communicate to a central server. Communications can be configured to notify parking operator when coin vaults are full and units are out-of-service. This further decreases the operational burden while increasing control.

DISADVANTAGES OF MULTI-SPACE METERS

- Pay and Display units may be viewed as negative as the patron must pay for parking at meter and return to their vehicle to place the voucher on the vehicle's dashboard. This issue is compounded for motorcycles, scooters, and convertibles, as the voucher is not secured.
- Pay-by-space or Pay-by-License Plate systems require patron to know and remember or record this information before getting to the meter to avoid frustration.
- Requires additional customer education and appropriate signage.
- Higher initial cost to purchase each pay station.
- On-going monthly costs for on-line access, receipt paper, and processing of credit card payments.
- Initial investment needed to promote, educate, and implement new method of payment collection to encourage acceptance of the new system.

PAYMENT OPTIONS

Several payment options are available for today's parking meters. As parking rates increase, payment with coins becomes impractical and/or inconvenient. Meter manufacturers may include multiple payment options or they may allow the user to pick which forms of

payment are accepted. Typically, the more payment options selected, the higher the cost for the equipment. The following sections provide additional information on the payment options available.

COIN AND TOKEN PAYMENT OPTION

All the meters described accept standard coins for payment. Most meters will accept dollar coins, although some meter manufacturers may charge additional for this option. As an option, a token program may be added to the meters. Tokens can be offered as a validation incentive from merchants to encourage repeat business. For a fee of $1.00, the city of Boulder, Colorado offers downtown merchants parking tokens with a face value of $1.25. Most merchants that purchase the tokens provide them to customers free of charge as an incentive to shop downtown. As an added bonus, the City of Boulder tokens are embossed with a unique logo and labeled "City of Boulder Parking".

BANKNOTE PAYMENT OPTION

Adding banknote payment as an option allows patrons to pay with paper currency in addition to coins. Most multi-space manufacturers offer this as an added option; but not all manufacturers do. This option requires additional equipment be added to the meter and additional directions for the patron. Even with additional payment method, most machines do not offer change. This means a parking patron inserting a $5.00 bill for a $3.00 parking charge will not receive any change. The added slots on the face of the unit also bring one more component to allow vandalism or the elements into the unit, as well as additional components to maintain and stock spare parts. Adding to the operational costs are the fees to update the note acceptor units whenever currency is updated. Our opinion of cost for adding a typical banknote acceptor to a multi-space unit is $1,500 to $3,000 per unit.

CREDIT CARD PAYMENT OPTION

Payment for parking with a credit card has gained in popularity as more cities have increased parking rates and installed multi-space meters. Credit card acceptance is an essential component to most new meter installations where the rate exceeds $1.00 per hour. As a result, most all multi-space meter manufacturers provide the credit card as a standard feature. Multi-space meters that do not accept credit cards have their place and may be upgraded in the future to allow acceptance of credit cards. These multi-space meters are on the low end of about $4,000 each, compared to the low end $9,000 version of multi-space meters that accept credit cards.

Increasing credit card acceptance further benefits the parking system by reducing the amount of coinage in the meter unit. This can reduce man-hours in collecting, counting, and transferring the parking funds to the city's bank account. The operating costs to process the credit cards are a function of the volume, rate, and type of meter. A comparison of three major credit card processing centers found that the cost to process a $1.50 transaction at a multi-space meter ranged from $0.17 to $0.23 per transaction. When the transaction is increased to $3.00, the fee only increases an average of $0.02, or to a range of $0.19 to $0.25 per transaction. The fees for processing credit cards at single space IPS meters are the same, with the addition of an additional $0.13 per transaction charged by IPS. This cost can be significant considering the number meters and potential credit card use.

SMART CARD OPTION

Smart cards allow for the payment of parking through a pre-paid electronic card, similar to a credit card. When inserted into the parking meter, value is deducted from the card to pay for the parking. Most cards today can be replenished by the user as needed, including over the internet as well as through an auto-load program which automatically adds a set value to the card on a regular basis. In many cities, the smart cards work for multiple purchases, most commonly for parking and transit.

According to the *Smart Card Alliance*, Implementation of a smart card program can be challenging. Many cities record percent usage rates in single-digits. Keys to a successful implementation are effective card distribution, a strong marketing campaign, reloadable cards, and multiple uses. When implemented properly, smart card payment options can increase revenues dramatically.

Advantages of successful smart card implementations include:

- Improved customer service;
- Increased revenues;
- Increased operational efficiency;
- Avoidance of credit card fees;
- Stronger internal controls and security, and
- Expanded strategic marketing opportunities.

PAY BY CELL PHONE OPTION

Technology improvements in the cell phone industry extend to the parking industry. By utilizing one of several vendors providing this service, a patron can use their cell phone as a payment method. The patron first initiates an account with the vendor in which a cell phone number is linked to a credit card or bank account. Once the account is established the patron uses the cell phone to pay for the parking using a meter number, space number, or vehicle license plate to identify the space being paid.

The typical procedure is as follows:

1. Call the posted phone number on the meter from your cell phone.
2. Enter your location identification.
3. Enter the desired parking time.

Many systems are capable of adding time before your parking expires, which eliminates the risk of receiving a ticket. Some systems will send a text message to the cell phone with time expiration notification. Cities utilizing payment by cell phone include Miami, Vancouver, and Coral Gables. This system works best with pay-by-space or pay-by-license plate systems. It adds another level of checking for enforcement when used for basic single space and pay and display meters, as the enforcement officer must first check to see if the payment was made with a cell phone before writing the violation.

SYSTEM ENHANCEMENT TECHNOLOGY

Additional services and technology can be added to the system to enhance both productivity and the overall customer experience. Some examples of add-on technology are provided in the following section.

REAL TIME ENFORCEMENT HANDHELDS

Enforcement handheld devices that have two-way communications, allow the officer to receive data directly from the multi-space meter ("MSM"), space sensors, and other software peripherals such as back-end citation management and motor vehicle checks. All citation information can be sent in real time from the handheld to the courts and is available immediately as opposed to a batch mode process[8]. This is both a customer service and enforcement enhancement feature. Customers wishing to immediately dispute citations at the court will find their records already there. PEOs are able to work more efficiently because all violation data on handhelds is in real time.

Sample Enforcement Device

SENSORS

On the cutting edge of parking management, is the option to add parking space sensors to each parking space. The use of parking space sensor technology allows the monitoring of each space 24 hours a day, 365 days a year, and provides the live information necessary to help policy makers make the best decisions on time restrictions and pricing. This technology also offers the added benefit of increasing the overall efficiency of the parking enforcement staff by directing them to a potential violator. Recent study of the sensors in Los Angeles indicated that the average citation volumes increased nearly 2.6 times the previous average.[9]

This technology is still relatively new but is gaining momentum. San Francisco recently announced a $24.75 million project to manage 5,100 spaces with new smart meters and space sensors. The data provided by the sensors will allow the City to adjust rates from $ 0.50 to $6.00 per hour based on actual parking demand.

Streetline Parking Sensor

[8] Enforcement handhelds that do not communicate in real time store all citation information in the device, and download it to the server at the end of the officers' shift.

[9] A recent study in Los Angeles indicates the volume of citations in the study area increased 2.6 times the previous average with the use of sensors when compared to the same area without the use of sensors.

IN-CAR METER OPTION

In car meters allow users to purchase time on a personal meter that counts down paid parking in the user's vehicle. The meter company works with the city and enforcement to allow the use of the meter. Upon parking, the user activates the meter to show that parking is paid. This eliminates the need for the user to stop at the meter for payment. This is an excellent option for frequent on-street parkers, such as delivery vehicles. The idea behind in-car meters is to promote parking in a positive way and to add convenience for frequent users.

Chicago currently has a pilot program with ParkMagic for its downtown parking. Registered vehicles display a ParkMagic sticker on the rear window of the vehicle and the meter on the dashboard of the vehicle. The user must establish an account with a pre-payment for parking. A cell phone is used to activate the meter based on the area parking rate and amount of parking time requested. Time may be added automatically to the meter through a credit card, logging onto an online account, or by calling a toll-free number.

SUMMARY OF OPTIONS

The options presented represent a broad range of options to consider. It is important to identify the required features of the meter to allow an apples-to-apples comparison of the meters. We recommend the City consider the payment options and type of meter system or systems that would be best suited for use in Honolulu. As a minimum, we recommend a meter that accepts coin and credit card for payment. Accepting banknotes may be considered as an option and bid accordingly so that their added cost can be determined per manufacturer. Smart cards and tokens should be something the meters can accept at a later time, as this requires wide acceptance by the public before it will be successful.

CONCEPTUAL FINANCIAL ANALYSIS

This section of the report provides an overview of our opinion of cost for the new meters, an analysis of the operational costs associated with the new meters, and potential revenue increases.

OPINION OF COST

The first step cost analysis is to estimate the number of new meters required based on the system. The current meter system is reported to consist of 2,936 on-street spaces and 787 off-street spaces, for a total of 3,723 spaces. In a typical on-street configuration, a single multi-space meter can typically service 8 to 10 spaces. In an off-street application, a single multi-space meter can easily service double or triple the number of spaces. Based on the current configuration, we assume one multi-space meter will serve 9 on-street spaces and one multi-space meter for 20 off-street spaces. Single space smart-meters are a one-for-one swap, so the number of meters stays the same.

The following table shows the estimated number of meters assuming all meters are configured for multi-space operation (single space smart-meters are a one-for-one swap). A total of 365 multi-space meters are projected; 326 for on-street locations, and 39 for off-street locations. This projection is based on a broad overview of the numbers. Further analysis of the area and each block face may be required to determine the precise number of meters needed.

Table 2: Projection of MSM Need

Area	Metered Spaces		Spaces per Meter		Total MSM's Needed
On-Street	2,936	÷	9	=	326
Off-Street	787	÷	20	=	39
Totals:	3,723				365

Source: HPD Meter Inventory and Walker Parking Consultants

METER COSTS

Costs of the new meters will vary based on the type of meters selected and payment options selected for the system. A major consideration for the multi-space meter is whether or not the meter accepts banknotes, which can add anywhere from $1,500 to $3,000 per meter. The added convenience is somewhat offset by the fact the meters do not provide change for banknotes higher than the parking charge. The City should have a feel for this based on the recent experience of the Honolulu Zoo, which now has multi-space meters that do not accept banknotes.

Another option that we recommend is solar power to charge the battery vs. hard-wiring the meters. Based on the location of Honolulu, high cost to wire the multi-space meters, and energy savings, we strongly recommend the solar power option for all on-street meters and only consider hard wiring the off-street meters where connections are more readily available or required due to the spaces having limited exposure to direct sunlight.

Our review of multi-space meters finds the price can easily range from $4,000 to $18,000 for a multi-space meter depending on the options. For this analysis, we use two ranges; one at $9,000 per meter and one at $12,000 per meter. Single space meters are much easier to price, as there are a limited number of vendors in the market at this time. Based on the available market data, these meters run about $500 per upgraded meter, which is used in our analysis.

CONSUMABLES

On-going operating costs represent a major consideration. Depending on the system, there are monthly fees per meter for connectivity, credit card processing fees, paper receipts, and replacement batteries. This does not include on-going maintenance fees. Our assumptions are based on 3.5 transactions per day per meter, six days per week, with 2.0 of the transactions paid by credit card. Battery life is based on a three-year expected life (most manufacturers list battery life at 3 – 5 years). Signage is also included as a line item, assuming two signs for each multi-space meter and one sign per 50 single space meters to promote the acceptance of credit cards. Using these assumptions, we modeled the costs of two systems. Option 1 assumes all current metered spaces are managed with multi-space meters and Option 2 assumes all on-street spaces are managed with single space smart-meters and all off-street spaces are managed with multi-space meters.

The following tables provide the breakdown of expenses using these assumptions, with the first table assuming a MSM cost of $12,000 per meter and the second table assuming a MSM cost of $9,000 per meter.

Table 3: Meter Cost Analysis based on $9,000 per MSM

Option 1a: All $9k MSM			**Option 2a: SSM and $9k MSM**		
On-Street Spaces		2,936	On-Street Spaces		2,936
Off-Street Spaces		787	Off-Street Spaces		787
Total Spaces:		3,723	Total Spaces:		3,723
Spaces per On-Street MSM[1]		9	Spaces per On-Street SSM		1
Spaces per Off-Street MSM[1]		20	Spaces per Off-Street MSM[1]		20
Number of SSM:		0	Number of SSM:		2,936
Number of MSM:		365	Number of MSM:		39
Total New Meters:		365	Total New Meters:		2,975
Total New Signs:		730	Total New Signs:		137
Cost per MSM	$	9,000	Cost per MSM	$	9,000
Cost per SSM	$	500	Cost per SSM	$	500
Base Cost for Meters	$	3,290,000	Base Cost for Meters	$	1,820,000
Spare Parts[2]	$	160,000	Spare Parts[2]	$	90,000
Installation[3]	$	180,000	Installation[3]	$	80,000
Cost for Signage[4]	$	40,000	Cost for Signage[4]	$	10,000
Total Installed Cost:[5]	$	3,670,000	Total Installed Cost:[5]	$	2,000,000
Consumables			*Consumables*		
Annual Service Fee[6]	$	260,000	Annual Service Fee[6]	$	240,000
Receipt Paper[7]	$	40,000	Receipt Paper[7]	$	10,000
Battery Replacement[8]	$	10,000	Battery Replacement[8]	$	40,000
Vendor CC Fee[9]	$	-	Vendor CC Fee[9]	$	170,000
CC Processing Fee	$	330,000	CC Processing Fee	$	330,000
Total Consumables	$	640,000	Total Consumables	$	790,000

Assumptions:

[1] Each MSM will cover 9 on-street spaces and 20 off-street spaces.

[2] Spare parts equates to 5% of base cost.

[3] Installation per MSM is $500; per SSM is $20.

[4] Signage based on 2 signs per MSM; 1 sign per 50 SSM; cost of $60 each.

[5] Figures rounded to the nearest $10,000.

[6] Monthly connection fee per MSM is $60; per SSM is $6.

[7] Receipt paper based on 3.5 transactions/space per day ÷ 3,500 receipts per roll x $35/roll; SSM have no receipts.

[8] Battery based on 3 year life at $120 per MSM; $40 per SSM.

[9] Credit card vendor fee only charged for SSM at $0.13 per SSM, assuming 1.5 cc trans/day/meter.

[10] Credit card processing fee based on $0.20 per cc transaction; assume 1.5 cc trans/day/meter.

Source: Walker Parking Consultants

Table 4: Meter Cost Analysis based on $12,000 per MSM

Option 1a: All $12k MSM			**Option 2a: SSM and $12k MSM**		
On-Street Spaces		2,936	On-Street Spaces		2,936
Off-Street Spaces		787	Off-Street Spaces		787
Total Spaces:		3,723	Total Spaces:		3,723
Spaces per On-Street MSM[1]		9	Spaces per On-Street SSM		1
Spaces per Off-Street MSM[1]		20	Spaces per Off-Street MSM[1]		20
Number of MSM:		365	Number of MSM:		39
Number of SSM:		0	Number of SSM:		2,936
Total New Meters:		365	Total New Meters:		2,975
Total New Signs:		730	Total New Signs:		137
Cost per MSM	$	12,000	Cost per MSM	$	12,000
Cost per SSM	$	500	Cost per SSM	$	500
Base Cost for Meters	$	4,380,000	Base Cost for Meters	$	1,940,000
Spare Parts[2]	$	220,000	Spare Parts[2]	$	100,000
Installation[3]	$	180,000	Installation[3]	$	80,000
Cost for Signage[4]	$	40,000	Cost for Signage[4]	$	10,000
Total Installed Cost:[5]	$	4,820,000	Total Installed Cost:[5]	$	2,130,000
Consumables			*Consumables*		
Annual Service Fee[6]	$	260,000	Annual Service Fee[6]	$	240,000
Receipt Paper[7]	$	40,000	Receipt Paper[7]	$	10,000
Battery Replacement[8]	$	10,000	Battery Replacement[8]	$	40,000
Vendor CC Fee[9]	$	-	Vendor CC Fee[9]	$	170,000
CC Processing Fee	$	330,000	CC Processing Fee	$	330,000
Total Consumables	$	640,000	Total Consumables	$	790,000

Assumptions:

[1] Each MSM will cover 9 on-street spaces and 20 off-street spaces.

[2] Spare parts equates to 5% of base cost.

[3] Installation per MSM is $500; per SSM is $20.

[4] Signage based on 2 signs per MSM; 1 sign per 50 SSM; cost of $60 each.

[5] Figures rounded to the nearest $10,000.

[6] Monthly connection fee per MSM is $60; per SSM is $6.

[7] Receipt paper based on 3.5 transactions/space per day ÷ 3,500 receipts per roll x $35/roll; SSM have no receipts.

[8] Battery based on 3 year life at $120 per MSM; $40 per SSM.

[9] Credit card vendor fee only charged for SSM at $0.13 per credit card transaction; assume 1.5 cc trans/day/meter.

[10] Credit card processing fee based on $0.20 per cc transaction; assume 1.5 cc trans/day/meter.

Source: Walker Parking Consultants

AMORTIZED COST OF METERS

Using the opinion of installed cost we can develop potential annual payments assuming the term and financing rate. The expected life of the equipment before replacement is roughly ten years. At this time the equipment should still function; however, technology will have evolved and maintenance costs will increase as components are more likely to fail. We believe most manufacturers will want as short a term a possible to recover their investment. To show various options, the following table shows terms from four to eight years for each option, assuming an interest rate of 8.5 percent. The data clearly shows a much lower upfront cost if single space smart meters are installed for on-street meters.

Table 5: Amortized Cost Table

Option 1a: $9,000 MSM Only

Cost	Years	Rate	Payment
$ 3,670,000	4	8.50%	$1,120,000
$ 3,670,000	5	8.50%	$930,000
$ 3,670,000	6	8.50%	$810,000
$ 3,670,000	7	8.50%	$720,000
$ 3,670,000	8	8.50%	$650,000

Option 2a: SSM and $9,000 MSM

Cost	Years	Rate	Payment
$ 2,000,000	4	8.50%	$610,000
$ 2,000,000	5	8.50%	$510,000
$ 2,000,000	6	8.50%	$440,000
$ 2,000,000	7	8.50%	$390,000
$ 2,000,000	8	8.50%	$350,000

Option 1b: $12,000 MSM Only

Cost	Years	Rate	Payment
$ 4,820,000	4	8.50%	$1,470,000
$ 4,820,000	5	8.50%	$1,220,000
$ 4,820,000	6	8.50%	$1,060,000
$ 4,820,000	7	8.50%	$940,000
$ 4,820,000	8	8.50%	$850,000

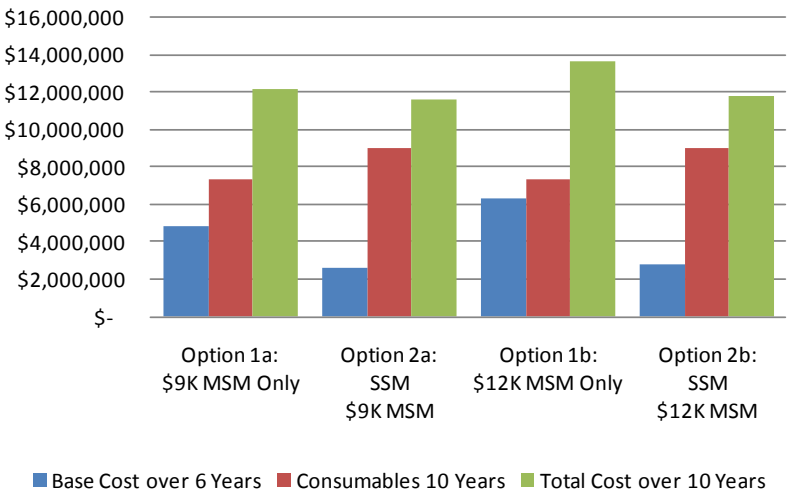
Option 2b: SSM and $12,000 MSM

Cost	Years	Rate	Payment
$ 2,130,000	4	8.50%	$650,000
$ 2,130,000	5	8.50%	$540,000
$ 2,130,000	6	8.50%	$470,000
$ 2,130,000	7	8.50%	$420,000
$ 2,130,000	8	8.50%	$380,000

Source: Walker Parking Consultants

The following figure illustrates the 10-year cost of each option assuming a six year amortization schedule and ten years of consumable expenses. This indicates a slightly lower cost to multi-space meters given the higher projected cost of consumables for the single space meters. This cost is impacted most by the additional credit card charge.

Figure 1: Comparison of Projected Costs over 10 Years



Source: Walker Parking Consultants

REVENUE INCREASE POTENTIAL

A primary driver for increased revenue is increased compliance with the parking regulations by making it easier for patrons to pay for the parking. A big reason for this is the added convenience of credit card payments and the option to pay the maximum rather than risk receiving a citation. Other impacts include the type of system, such as pay and display, which leaves no time on the meter for the next parker.

According to the "Analysis of the Lease of the City's Parking Meters" issued June 2, 2009 by the Office of the Inspector General, City of Chicago, the city's experience with Pay and Display meters demonstrates the revenue generating potential of multi-space meters. When Chicago implemented Pay and Display meters (2004), the city experienced an immediate uptick in revenue (17% in the Loop) without any rate increase. Subsequently, Chicago completed the installation of 100 new multi-space meters (December 2004) and revenue grew dramatically. In 2007 revenue from the Loop meters nearly doubled compared to 2004, while over the same period, the revenue generated from other City of Chicago low-tech single space meters increased only slightly. Other cities experience with multi-space meter

installation show their ability to increase revenue without rate increases, are shown in the following examples:

- Baltimore, Maryland – To improve on-street metered parking, Baltimore introduced a pilot program called EZ Park that was developed by Cale, a multi-space meter vendor. Seventy electronic multi-space meters were installed in the CBD and within weeks, the meters were so popular that the Falls Point Business Association requested that meters be installed in Falls Point, a mixed residential and commercial area. This success led the Baltimore Parking Authority to submit proposals to the City Council to replace all the city's parking meters with the EZ Park multi-space system. The Baltimore Parking Authority reports revenue increase of 54 percent.[10] The new parking system allows users the option to pay with a smartcard or credit card.
- Boston, Massachusetts – After Boston installed pay and display meters, revenue per space increased by 34 percent.[11]
- A pilot project involving pay and display meters in San Diego resulted in a revenue increase of 24 percent.[6]
- A final example of how implementing the ability to pay by credit cards has increased usage is found in Portland, Oregon. Portland upgraded its single space meters to multi-space meters several years ago. In a 2006 interview, the Parking Director reported that more people are paying for parking and that 73 percent now pay via credit card; the average credit card transaction was $2.50 compared to an average coin transaction of $1.25.[6]

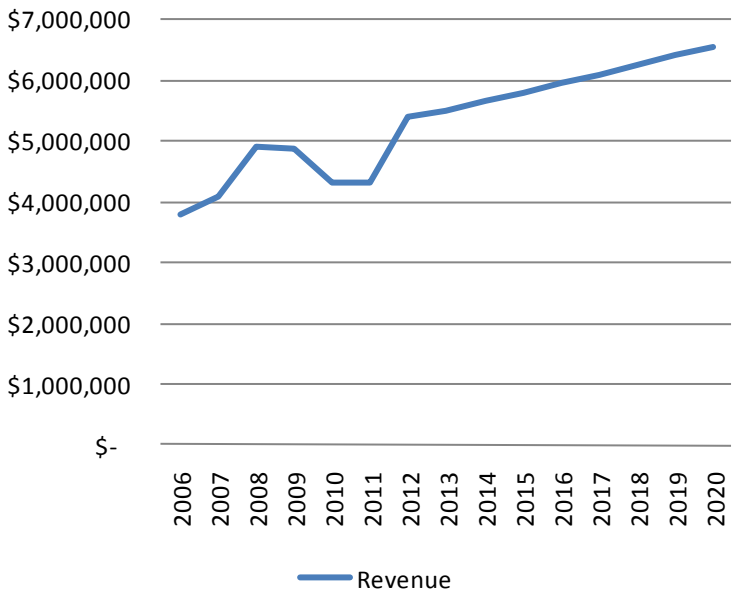
The potential for increases in revenues is well documented and can vary widely based on the system the meters are replacing. This increase does not come without a price, as discussed in the cost of processing the credit cards and increased compliance. Increased compliance is likely to result in fewer citations being issued, as noted by several cities such as Portsmouth, New Hampshire and Washington D.C., both reporting a five to ten percent decrease in citations. This may also be partially due to changes in enforcement techniques as the technology changes the way enforcement officers check for violations.

[10] Annie Linskey, December 26, 2008, quoted Peter Little, head of Parking Authority.
[11] "Analysis of the Lease of the City's Parking Meters", June 2009, Office of the Inspector General.

REVENUE ASSUMPTIONS FOR HONOLULU

Our assumption for this analysis is that meter revenue will increase by 25 percent over the base year. The base year is defined as the projected FY2010 meter revenue. Based on the figures supplied by the HPD, the base year meter revenue is $4,310,000 (rounded). Our analysis assumes an initial increase to the base revenue of 25 percent, plus an additional 2.50 percent annual increase. The following figure illustrates the historical and projected revenue based on the above assumptions.

Figure 2: Revenue Assumptions



Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total Thru
FY Ending June 30	2011	2012	2013	2014	2015	Year 10
Parking Spaces	3,723	3,723	3,723	3,723	3,723	
Base Revenue[1]	$4,310,000	$5,390,000	$5,520,000	$5,660,000	$5,800,000	
Annual Change %[1]	-	*2.50%*	*2.50%*	*2.50%*	*2.50%*	
Impact of New Meters[2]	*25%*					
Total Revenue	$5,390,000	$5,520,000	$5,660,000	$5,800,000	$5,950,000	$60,380,000
Increase Over Base Year Revenue[3]	$1,080,000	$1,210,000	$1,350,000	$1,490,000	$1,640,000	$17,280,000

Assumptions:

[1] Based on projected FY 2010 figures.

[2] New meters assumed to increase revenue by 25% from base year revenue.

[3] Difference between projected revenue and Base Year revenue.

Source: Walker Parking Consultants

FINANCIAL MODEL

The following tables provide pro formae using the revenue growth assumptions and five and eight year amortization periods to pay for the initial meter costs and the annual consumable costs. Each table shows the revenue followed by the two options for meter installation.

Table 6: Option 1a and 2a - $9,000 MSM's over 5 Years

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total Thru
FY Ending June 30	2011	2012	2013	2014	2015	Year 10
Parking Spaces	3,723	3,723	3,723	3,723	3,723	
Base Revenue[1]	$4,310,000	$5,390,000	$5,520,000	$5,660,000	$5,800,000	
Annual Change %[1]	-	*2.50%*	*2.50%*	*2.50%*	*2.50%*	
Impact of New Meters[2]	*25%*					
Total Revenue	$5,390,000	$5,520,000	$5,660,000	$5,800,000	$5,950,000	$60,380,000
Increase Over Base Year Revenue[3]	$1,080,000	$1,210,000	$1,350,000	$1,490,000	$1,640,000	$17,280,000
Option 1a: $9K MSM						
Consumables	$ 640,000	$ 660,000	$ 680,000	$ 700,000	$ 720,000	$ 7,300,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[4]	$930,000	$930,000	$930,000	$930,000	$930,000	$ 4,650,000
Annual Cost	$1,570,000	$1,590,000	$1,610,000	$1,630,000	$1,650,000	$11,950,000
Net After Increase	$ (490,000)	$ (380,000)	$ (260,000)	$ (140,000)	$ (10,000)	$ 5,330,000
Option 2a: SSM and $9K MSM						
Consumables[5]	$ 790,000	$ 810,000	$ 830,000	$ 850,000	$ 880,000	$ 9,010,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[6]	$510,000	$510,000	$510,000	$510,000	$510,000	$ 2,550,000
Annual Cost	$1,300,000	$1,320,000	$1,340,000	$1,360,000	$1,390,000	$11,560,000
Net After Increase	$ (220,000)	$ (110,000)	$ 10,000	$ 130,000	$ 250,000	$ 5,720,000

Assumptions:

[1] Based on projected FY 2010 figures.

[2] New meters assumed to increase revenue by 25% from base year revenue.

[3] Difference between projected revenue and Base Year revenue.

[4] Option 1a over 5 years at 8.5%.

[5] See Cost Model.

[6] Option 2a over 5 years at 8.5%.

Source: Walker Parking Consultants

Table 7: Option 1a and 2a - $9,000 MSM's over 8 Years

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total Thru
FY Ending June 30	2011	2012	2013	2014	2015	Year 10
Parking Spaces	3,723	3,723	3,723	3,723	3,723	
Base Revenue[1]	$4,310,000	$5,390,000	$5,520,000	$5,660,000	$5,800,000	
Annual Change %[1]	-	*2.50%*	*2.50%*	*2.50%*	*2.50%*	
Impact of New Meters[2]	*25%*					
Total Revenue	$5,390,000	$5,520,000	$5,660,000	$5,800,000	$5,950,000	$60,380,000
Increase Over Base Year Revenue[3]	$1,080,000	$1,210,000	$1,350,000	$1,490,000	$1,640,000	$17,280,000
Option 1a: $9K MSM Only						
Consumables	$ 640,000	$ 660,000	$ 680,000	$ 700,000	$ 720,000	$ 7,300,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[4]	$650,000	$650,000	$650,000	$650,000	$650,000	$ 5,200,000
Annual Cost	$1,290,000	$1,310,000	$1,330,000	$1,350,000	$1,370,000	$12,500,000
Net After Increase	$ (210,000)	$ (100,000)	$ 20,000	$ 140,000	$ 270,000	$ 4,780,000
Option 2a: SSM and $9K MSM						
Consumables[5]	$ 790,000	$ 810,000	$ 830,000	$ 850,000	$ 880,000	$ 9,010,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[6]	$350,000	$350,000	$350,000	$350,000	$350,000	$ 2,800,000
Annual Cost	$1,140,000	$1,160,000	$1,180,000	$1,200,000	$1,230,000	$11,810,000
Net After Increase	$ (60,000)	$ 50,000	$ 170,000	$ 290,000	$ 410,000	$ 5,470,000

Assumptions:

[1] Based on projected FY2010 figures.

[2] New meters assumed to increase revenue by 25% from base year revenue.

[3] Difference between projected revenue and Base Year revenue.

[4] Option 1a over 8 years at 8.5%.

[5] See Cost Model.

[6] Option 2a over 8 years at 8.5%.

Source: Walker Parking Consultants

Table 8: Option 1b and 2b - $12,000 MSM's over 5 Years

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total Thru
FY Ending June 30	2011	2012	2013	2014	2015	Year 10
Parking Spaces	3,723	3,723	3,723	3,723	3,723	
Base Revenue[1]	$4,310,000	$5,390,000	$5,520,000	$5,660,000	$5,800,000	
Annual Change %[1]	-	*2.50%*	*2.50%*	*2.50%*	*2.50%*	
Impact of New Meters[2]	*25%*					
Total Revenue	$5,390,000	$5,520,000	$5,660,000	$5,800,000	$5,950,000	$60,380,000
Increase Over Base Year Revenue[3]	$1,080,000	$1,210,000	$1,350,000	$1,490,000	$1,640,000	$17,280,000
Option 1b: $12K MSM Only						
Consumables	$ 640,000	$ 660,000	$ 680,000	$ 700,000	$ 720,000	$ 7,300,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[4]	$1,220,000	$1,220,000	$1,220,000	$1,220,000	$1,220,000	$ 6,100,000
Annual Cost	$1,860,000	$1,880,000	$1,900,000	$1,920,000	$1,940,000	$13,400,000
Net After Increase	$ (780,000)	$ (670,000)	$ (550,000)	$ (430,000)	$ (300,000)	$ 3,880,000
Option 2b: SSM and $12K MSM						
Consumables[5]	$ 790,000	$ 810,000	$ 830,000	$ 850,000	$ 880,000	$ 9,010,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[6]	$540,000	$540,000	$540,000	$540,000	$540,000	$ 2,700,000
Annual Cost	$1,330,000	$1,350,000	$1,370,000	$1,390,000	$1,420,000	$11,710,000
Net After Increase	$ (250,000)	$ (140,000)	$ (20,000)	$ 100,000	$ 220,000	$ 5,570,000

Assumptions:

[1] Based on projected FY2010 figures.

[2] New meters assumed to increase revenue by 25% from base year revenue.

[3] Difference between projected revenue and Base Year revenue.

[4] Option 1b over 5 years at 8.5%.

[5] See Cost Model.

[6] Option 2b over 5 years at 8.5%.

Source: Walker Parking Consultants

Table 9: Option 1b and 2b - $12,000 MSM's over 8 Years

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total Thru
FY Ending June 30	2011	2012	2013	2014	2015	Year 10
Parking Spaces	3,723	3,723	3,723	3,723	3,723	
Base Revenue[1]	$4,310,000	$5,390,000	$5,520,000	$5,660,000	$5,800,000	
Annual Change %[1]	-	*2.50%*	*2.50%*	*2.50%*	*2.50%*	
Impact of New Meters[2]	*25%*					
Total Revenue	$5,390,000	$5,520,000	$5,660,000	$5,800,000	$5,950,000	$60,380,000
Increase Over Base Year Revenue[3]	$1,080,000	$1,210,000	$1,350,000	$1,490,000	$1,640,000	$17,280,000
Option 1b: $12K MSM Only						
Consumables	$ 640,000	$ 660,000	$ 680,000	$ 700,000	$ 720,000	$ 7,300,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[4]	$850,000	$850,000	$850,000	$850,000	$850,000	$ 6,800,000
Annual Cost	$1,490,000	$1,510,000	$1,530,000	$1,550,000	$1,570,000	$14,100,000
Net After Increase	$ (410,000)	$ (300,000)	$ (180,000)	$ (60,000)	$ 70,000	$ 3,180,000
Option 2b: SSM and $12K MSM						
Consumables[5]	$ 790,000	$ 810,000	$ 830,000	$ 850,000	$ 880,000	$ 9,010,000
Annual Change %		*3.00%*	*3.00%*	*3.00%*	*3.00%*	
Amortized Meter Cost[6]	$380,000	$380,000	$380,000	$380,000	$380,000	$ 3,040,000
Annual Cost	$1,170,000	$1,190,000	$1,210,000	$1,230,000	$1,260,000	$12,050,000
Net After Increase	$ (90,000)	$ 20,000	$ 140,000	$ 260,000	$ 380,000	$ 5,230,000

Assumptions:

[1] Based on projected FY2010 figures.

[2] New meters assumed to increase revenue by 25% from base year revenue.

[3] Difference between projected revenue and Base Year revenue.

[4] Option 1b over 8 years at 8.5%.

[5] See Cost Model.

[6] Option 2b over 8 years at 8.5%.

Source: Walker Parking Consultants

FINANCIAL SUMMARY

The financial model indicates that although the single space smart meters offer a lower upfront cost when compared to multi-space meters, the single space smart meters have a higher annual operating cost. Over the 10-year anticipated life-cycle, the costs between the two systems is within 3 to 6 percent when considering multi-space meters that do not accept banknotes ($9,000 opinion of cost) and 15 percent when considering multi-space meters that do accept banknotes ($12,000 opinion of cost).

The first (and most likely second) year the new meters are in operation the increase in revenue will fall below the required payment to the meter vendor using the assumptions in the model. This assumes an interest of 8.5 percent and amortization terms of at least eight years. The model does however; indicate the change in technology will have a substantial positive impact on revenue. Over the ten-year life of the equipment, an increase of $3.2 to $5.7 million is projected, depending on the type of multi-space meter selected and amortization terms. Our model assumes no increases in the current meter rate and no changes to the hours/days the meters are enforced.

The most likely type of financing arrangement offered by the manufacturers to meet the City's goal of no upfront cost is a deferred lease payment in which the initial payment is not due until the installation is complete. The lease payments will be set and guaranteed by the City and County. Some firms will also likely offer discounts for upfront payments or request a percentage of the fee upfront. To meet the financial requests of the City and County to have no up-front costs for the meters, a longer amortization period will be required. Unfortunately, the longer the term the higher the financing costs and lower financial return on investment.

STATEMENT OF LIMITING CONDITIONS

This report is subject to the following limiting conditions:

1. Estimates and projections provided by Walker have been premised in part upon assumptions provided by our client and/or third party sources. Walker has not independently investigated the accuracy of the assumptions provided by the client, its agents, representatives, or others supplying information or data to Walker for its use in preparation of this report.

Walker has also drawn certain assumptions from its past work on other projects of similar or like nature, and has done so in a manner consistent with the standard of care within the profession. Because of the inherent uncertainty and probable variation of the assumptions, actual results will vary from estimated or projected results. As such, Walker makes no warranty or representation, express or implied, as to the accuracy of the estimates or projections.

2. The results and conclusions presented in this report may be dependent on assumptions regarding the future local, national, or international economy. These assumptions and resultant conclusions may be invalid in the event of war, terrorism, economic recession, rationing, or other events that may cause a significant change in economic conditions.

3. This report is to be used and may only be relied on in whole and not in part. None of the contents of this report may be reproduced or disseminated in any form for external use by anyone other than our client without our express written permission, as prescribed in our agreement.

4. Walker assumes no responsibility for any events or circumstances that take place or change subsequent to the date of our field inspections.

5. Walker is not qualified to detect hazardous substances, has not considered such, and therefore urges the client to retain an expert in this field, if relevant to this study.

6. Sketches, photographs, maps and other exhibits included herein may not be of engineering quality or to a consistent scale, and should not be relied upon as such.

7. All information, estimates, and opinions obtained from parties not employed by Walker, are assumed to be accurate. We assume no liability resulting from information presented by the client or client's representatives, or received from third-party sources.

8. All mortgages, liens, encumbrances, leases, and servitudes have been disregarded unless specified otherwise. Unless noted, we assume that there are no encroachments, zoning violations, or building violations encumbering the subject property (s).

9. This report is to be used in whole and not in part. None of the contents of this report may be reproduced or disseminated in any

form for external use by anyone other than our client without our written permission.

10. The projections presented in the analysis assume responsible ownership and competent management. Any departure from this assumption may have a negative impact on the conclusions.

11. Computer models that use and generate precise numbers generate some of the figures and conclusions presented in this report. The use of seemingly exact numbers is not intended to suggest a level of accuracy that may not exist. A reasonable margin of error may be assumed regarding most numerical conclusions. Conversely, some numbers are rounded and as a result some conclusions may be subject to small rounding errors.

AUGUST 11, 2010

TENTATIVE SCHEDULE

The City of Honolulu is pursing qualified proposals to upgrade its existing single space meters to either multi-space or single space smart meters for its on-street and off-street parking metered spaces. Following are the major milestones in the schedule.

MAJOR MILESTONES

	2010
August 9	System Definitions Report issued to City (draft)
August 9 – 13	City review of System Definitions Report
August 9 – 16	Walker drafts specifications
August 16	Comments from City to Walker to finalize System Definitions Report
August 16	Qualifications Proposals Due to City (4:00 pm)
August 16 – 18	Draft bid documents, including RFP Part 2 (using example from City)
August 20	Issue draft Specifications & bid documents, including RFP Part 2 to City for review
August 20 – Sept 3	City provides comments to Walker on Specifications, bid, and RFP Part 2 documents
September 6 – 10	Final Specifications completed and provided to City
September 15	Issue RFP Part 2 (Specifications)
September 29	Pre-proposal conference
October 4	Deadline for clarifications
October 7	Issue final addendum
October 15	Proposals Due (4:00 pm)
November 15	Presentations
December 10	Best and Final Offers
December 30	Award of Contract
	2011
January 31	Contract Execution and Notice to Proceed
October 31	Completion of existing meter replacement/ upgrade
November 1	Begin installation of any new meters

PUBLIC COMMUNICATIONS PLAN

Upgrading or replacing the parking meters is a major investment that must be effectively communicated to public to ensure its acceptance and success. The public communications plan is a critical step in the overall plan and is imperative to a successful implementation of the new meters.

Walker recommends the City engage a professional public relations firm to assist in implementing a creative and successful launch of the new meter program. It would also be beneficial to the City to discuss strategies of successful implementation with vendors during the interview process. Our comments are meant to supplement the professional public relations firm's efforts and do not present a final plan or actual material to be used in the communications efforts.

Many cities elect to conduct small tests of potential new meter systems before selecting and implementation a full system change. As the technology has gained acceptance, more cities are choosing to forego this type of testing. This makes the public communications plan even more important to ensure acceptance of the new system.

COMMUNICATIONS ACTIVITIES

Based on other cities' experience and successful installations of new meter systems, the following list provides examples of communications activities prior, during, and after installation:

- Six to three months prior to installing the new equipment, issue press release announcing plans for new system, with a focus on the positives of added customer convenience.
- Conduct community outreach meetings with the stakeholders in advance of the meter change.
- Deploy a website with project updates, meter directions, and an electronic survey form.
- Display a "sample" meter in a public area for people to see, touch, and feel prior to beginning the installation.
- Develop and provide instruction cards throughout the CBD and on the website, illustrating how to use the new meters.
- Develop a directional video for municipal television and or YouTube.

Pay-by-Space Signage in Tulsa, Oklahoma

- Train "ambassadors" to assist patrons with the proper use of the meters.
- Issue a progress press release a few weeks prior to the initial installation.
- Install meters and signage with covers with "Coming Soon" signage so that patrons can see where the new equipment is installed.
- Conduct a ribbon cutting and first use ceremony to officially welcome the new meters.
- Post parking ambassadors around the new meters to assist patrons with their use.
- Start the deployment of meters slowly so that any issues can be identified early and quickly as opposed to a mass-installation where the maximum number of meters are replaced at one time. Conduct a press release to showcase the new meters and utilize ambassadors to educate patrons. Installation can proceed on a quicker pace once any initial issues are corrected.
- Issue a press release of the deployment of the new meters and areas scheduled for deployment.
- Rotate ambassadors to new areas as meters are deployed.
- Provide citation warning for short period of time following meter deployment.

RECOMMENDED SIGNAGE

Signage is a key component of multi-space meter installations and is included as part of the RFP for the meter system. Our conceptual financial analysis assumes the addition of two signs per multi-space meter and one sign per 50 single space smart meters. We recommend following the Manual on Uniform Traffic Control Devices for Streets and Highways ("MUTCD"), 2009 Edition for any added signage.

R7-21

Section 2B.46 Parking, Standing, and Stopping Signs of the MUTCD cover signs governing vehicle parking, stopping, and standing. MUTCD specifically states *"If a fee is charged for parking and a midblock pay station is used instead of individual parking meters for each parking space, pay parking signs should be used. Pay Parking*

signs should be used to define the area where the pay station parking applies. Pay Station signs should be used at the pay station or to direct road users to the pay station". Examples of recommended signage are provided below and to the right with their MUTCD figure number. The example below would be placed at the actual meter facing both traffic directions. The examples to the right would be placed to direct patrons to the meter.

R7-20

R7-21a

R7-22

EDUCATIONAL HANDOUTS AND WEBSITES

Several educational handouts may be produced once the final system has been determined. This could include directions for using the new meters, commentary regarding the new conveniences offered, and a request for feedback in the form of a survey. In addition, once the new system is in place, tracking of revenue, citation issuance, and time for collections and counting should be done to measure the new system performance and benefits. Appendix C provides some sample handouts used by some cities to explain the new meters.

SUMMARY OF RECOMMENDATIONS

Press releases and public awareness campaigns are key factors to a successful implementation program. Website and printed material focusing on how the meters work has proven to be effective, as have survey's to collect feedback from patrons. A focus should be on the added convenience of the credit card payment feature and enforcement officers should go through training to assist patrons as the new meters are deployed to avoid a negative public reaction to the new meters.

APPENDIX A

SCOPE OF SERVICES

SCOPE OF SERVICES

TASK 1: SYSTEM DEFINITION

A: Conduct one meeting between Consultant and the City and County to identify and confirm agreement on the desired features for a metered parking solution that will meet the needs of the City and County of Honolulu. To that end, the City and County representatives will be educated by Consultant on state-of-the-art technologies, equipment and processes with their associated benefits and disadvantages. Study shall address, but may not be limited to, the following issues, concerns, and questions:

(1) Who are the likely manufacturers? What products do they offer? What business arrangements might they be willing to make with the City and County, keeping in mind that the City and County desires to not "go out of pocket" for the initial purchase of new PARCS equipment?

(2) What contract terms is the City and County willing to accept including but not limited to term of agreement, parking rates, maintenance requirements, replacement, performance standards, equipment features, etc.?

(3) What considerations need to be addressed and resolved to implement new single head parking meters and/or pay stations?

(4) What methods of payment are to be allowed such as coin, token, paper money, cell phone, credit card, debit card, and smart card? What is the cost versus convenience for each of these methods?

(5) What is the parking enforcement process? As the organization responsible for parking enforcement and meter operations, what are the requirements of the Honolulu Police Department?

(6) Are there citation adjudication issues related to parking citations when using this technology?

(7) Are sensors required to automatically reset the meters when a patron vacates a space?

(8) Can pay stations accommodate variable rates? Special event rates?

(9) What impacts will there be to money collection procedures?

(10) How is money processed and the finances transacted?

(11) What signing and marking is needed to facilitate parking meters and pay stations?

(12) How do parking meters and electronic pay stations affect the ability to reserve stalls for a specific use (i.e., replace current meter bagging)?

(13) What type of maintenance issues will there be for parking meters and electronic pay stations?

(14) How long are parking meters and pay stations and their components expected to last and what is their reliability for the local climate?

B. Draft and issue a report documenting the findings and recommendations of this study. Revise as required per City and County feedback.

TASK 2: PREPARATION OF RFP SELECTION CRITERIA AND SPECIFICATIONS

Prepare recommended supplier selection criteria, product specifications, and a statement of work using the City and County's standard form RFP, that could be used to solicit offers for the lease and implementation of a metered parking pay system. Specifications for the system will not be unnecessarily restrictive or biased to a single source product.

For the approved system, prepare project performance specifications suitable for procuring the new metered parking pay system, in accordance with system technical requirements and standard details. Provide sample concession, lease, and/or management agreements for the City and County's consideration.

APPENDIX B

ON-STREET PARKING METER INVENTORY

LOCATION	TOTAL METERS	METER NUMBERS	RATE/HR	TIME LIMIT
Aala Place	12	1175-1185	$0.75	2 HRS
Aala St.	73	1101-1173	$0.75	2 HRS
Ahana St.	28	3100-3127	$0.75	2 HRS
Alakea St.	4	401-404	$1.50	1 HR
Alapai St.	16	2127-2142	$0.75	2 HRS
Aloha Drive	19	4601-4620	$1.50	2 HRS
Amana St.	25	3070-3094	$0.75	2 HRS
Auahi St.	45	3600-3644	$1.75	2 HRS
Aulike St.	19	5300-5318	$0.75	2 HRS
Beachwalk	6	4461-4468	$1.50	2 HRS
N. Beretania St.	41	944-984	$0.75	1 HR
S. Beretania St.	100	2880-2883	$0.75	1 HR
Bethel St.	19	1670-1688	$1.50	1 HR
Bishop St.	14	1631-1644	$1.50	1 HR
Cooke St. Ala Moana-Ilalo	21	3788-3892	$0.75	2 HRS
Cooke St. Pohukaina-S. King St.	84	3800-03883	$0.75	1 HR
Coral St.	10	3700-3709	$0.75	1 HR
Fort St.	18	1600-1617	$1.50	1 HR
Halekauwila St. Punchbowl-South	21	4301-4312, 4349-4357	$0.75	2 HRS
Halekauwila St. Punchbowl-South	36	4313-4348	$0.75	1 HR
Hale Makai St.	6	4026	$0.75	2 HRS
Hobron Ln.	35	4401-4435	$1.50	2 HRS
Hoolai St.	17	5551-5567	$0.75	2 HRS
Ilalo St.	18	4201-4218	$0.75	2 HRS
Kaheka St.	51	3128-3178	$0.75	2 HRS
Kainehe St.	18	5450-5467	$0.75	2 HRS
Kalaimoku St.	21	4541-4567	$1.50	2 HRS
Kalakaua Ave.	10	3241-3250	$0.75	1 HR
Kamakee St.	14	3405-3418	$0.75	2 HRS
Kanekapolie St.	13	507-525	$1.50	2 HRS
Kanunu St.	49	2701-2749	$0.75	2 HRS
Kapahulu Ave. Ala Wai-Date	18	125-145	$0.75	2 HRS
Kapahulu Ave. Winam-Harding	7	148-154	$1.50	1 HR

LOCATION	TOTAL METERS	METER NUMBERS	RATE/HR	TIME LIMIT
Kapahulu Ave. Haring-Date	26	155-180	$0.75	HR
Kapahulu Ave. Date-Alawai	31	181-209	$0.75	2 HRS
Kapahulu Ave. Ala Wai-Kalakaua	39	387-429	$1.50	2 HRS
Kawaihao St.	52	2201-2252	$0.75	2 HRS
Keawe St.	9	3751-3759	$0.75	2 HRS
Keeaumoku St.	29	3020-3048	$0.75	2 HRS
Kihapai St.	22	5400-5421	$0.75	2 HRS
Kinau St. Ward Victoria	11	3314-3324	$0.75	2 HRS
Kinau St. Keeaumoku-Makiki (Makai)	5	3325-3329	$0.75	1 HR
Kinau St. Makiki-Keeaumoku (Mauka)	8	3330-3337	$0.75	3 HRS
N. King St.	16	1060-1061, 1079-1092	$0.75	2 HRS
N. King St.	15	1063-1067, 1069-1078	$0.75	1 HR
S. King St. Mililani-Ward	86	143-228	$0.75	2 HRS
S. King St. Pensacola-Kalakuau	78	2501-2578	$0.75	1 HR
S. King St. Kahuna-Kahoaloha	20	251-278	$0.75	2 HRS
Kohou St.	67	301-537	$0.75	2 HRS
Kokohead Ave.	29	103-131	$0.75	1 HR
Kukui St. Aala-College Walk	20	600-608, 661-671	$1.50	1 HR
Kukui St. Queen Emma St-River	52	609-639, 646-660	$0.75	1 HR
Kuulei Rd.	32	5200-5231	$0.75	2 HRS
Lauhala St.	12	4000-4011	$0.75	2 HRS
Lewers SR.	8	716, 721-722, 732-736	$1.50	2 HRS
Liliha St.	16	1040-1055	$0.75	1 HR
Liona St.	9	2801-2809	$0.75	2 HRS
Lunalilo St.	15	3338-3352	$0.75	3 HRS
Makaloa St.	81	3251-3279	$0.75	2 HRS
Makiki St.	7	3353-3359	$0.75	3 HRS
Maluniu Ave.	19	5101-5119	$0.75	1 HR
Marin St.	3	1650-1652	$1.50	1 HR
Maunakea St.	63	1238-1299	$1.50	1 HR
McCully St.	5	796-800	$1.50	2 HRS
Merchant St.	11	1655-1665	$1.50	1 HR
Metcalf St.	34	1400-1433	$0.75	2 HRS
Mililani St.	11	1885-1895	$1.50	1 HR

LOCATION	TOTAL METERS	METER NUMBERS	RATE/HR	TIME LIMIT
Mission Ln.	9	700-708	$0.75	2 HRS
Nahua St.	21	4701-4721	$1.50	2 HRS
Nohonani St.	13	4671-4686	$1.50	2 HRS
Nuuanu Ave.	56	1515-1570	$1.50	1 HR
Ohua Ave.	25	4801-4825	$1.50	2 HRS
Olohana St.	19	4513-4533	$1.50	2 HRS
Pali Hwy.	5	1501-1505	$1.50	1 HR
Paoakalani Ave.	18	4831-4848	$1.50	2 HRS
Pauahi St.	37	1701-1737	$1.50	1 HR
Pensacola St.	20	2351-2370	$0.75	2 HRS
Piikoi St. Kapiolani-Kamaile	16	2983-2987, 2997-3007	$0.75	2 HRS
Piikoi St. Hopaka-Waimanu, S. King-Young	15	2988-2996, 3008-3013	$0.75	1 HR
Pohukaina St.	60	3900-3959	$0.75	2 HRS
Poni St.	20	3201-3220	$0.75	2 HRS
Puncbowl St.	83	2401-2480	$1.50	2 HRS
Puniu St.	12	5500-5511	$0.75	2 HRS
Queen Emma Sq.	18	450-467	$1.50	2 HRS
Queen Emma St. Queen Emma Sq-Vineyard	17	411-427	$1.50	2 HRS
Queen Emma St. Cummins-Kamakee	7	3550-3556	$0.75	2 HRS
Queen Emma St. Coral-Cooke	3	3547-3549	$0.75	1 HR
Richars St.	32	1815-1846	$1.50	1 HR
River St.	27	1201-1230	$1.50	1 HR
Royal Hawaiian Ave.	7	4631-4640	$1.50	2 HRS
Rycroft St.	29	2782-2812	$0.75	2 HRS
Saratoga Rd.	19	4441-4459	$1.50	2 HRS
N. School St. Frog Ln-Liliha	7	1007-1013	$0.75	2 HRS
N. School St. Nuuanu-	6	1001-1006	$0.75	1 HR
Seaside Ave.	14	4651-4664	$1.50	1 HR
Sheridan St.	25	3280-3305	$0.75	2 HRS
Smith St.	36	1304-1339	$1.50	1 HR
South St.	36	2142-2144, 2152-2180, 2183-2186	$0.75	2 HRS
South St.	15	2145-2151, 2187-2194		1 HR
12th Ave.	9	85-93	$0.75	1 HR
Uluniu Ave. (Waikiki)	4	4771, 4773-4775	$0.75	2 HRS

LOCATION	TOTAL METERS	METER NUMBERS	RATE/HR	TIME LIMIT
Uluniu St. (Kailua)	53	5000-5052	$1.50	2 HRS
University Ave.	38	1435-1472	$0.75	2 HRS
Visctoria St.	39		$0.75	2 HRS
Vineyard St.	12	738-749	$1.50	2 HRS
Waialae Ave.	67	5-70	$0.75	1 HR
Waimanu St.	42	1901-1961	$0.75	2 HRS
Walina St.	16	4731-4746	$1.50	2 HRS
Ward Ave. S. King Kapiolani (Ewa)	7	2001-2007	$0.75	2 HRS
Ward Ave. Queen-Ala Moana	37	2008-2044	$0.75	1 HR
Young St.	56	2823-2878	$0.75	2 HRS
Total Meters	2,936			

APPENDIX C

SAMPLE PARKING BROCHURES

Houston, Texas Multi-Space Meter Directions

PaperorPlastic?

Houston's new solar-powered pay stations offer parkers more payment options than the standard coin-only meters, making paying for parking more convenient than ever.

Nochange?Noproblem.

Not only do the new pay stations accept nickels, dimes, quarters and dollar coins, but also paper bills and Visa or MasterCard credit and debit cards.

With fewer pay stations per block, sidewalks are less cluttered, giving pedestrians more walking space. "Metered Parking" signs line each block directing parkers to pay stations.

DowntownHopperPass

Make visiting downtown Houston a snap with the Downtown Hopper Pass. Paying only $6 at any pay station allows you to park at multiple metered spaces throughout the Central Business District. Time limit on each meter applies.

Followthesesimplesteps:

1. Press any key to get started.
2. Choose the preferred language - English, Spanish or Vietnamese.
3. Select parking option - hourly, Downtown Hopper or commercial.
4. Make payment by one of three methods: bills, coins or credit/debit cards. Parking time will increase based on purchase amount.*
5. The receipt will print, displaying the total amount paid, date and expiration time.

6. Place receipt on the driver's side dashboard of your vehicle. Make sure the expiration time is clearly visible through the window. A receipt turned upside down or not clearly visible is subject to citation for an expired meter. Tear at dotted line and take to track your expiration time.

** Please note the pay station does not provide change.*

For further assistance, please locate a Parking Ambassador who will be happy to help. Please call 3-1-1 or 713-837-0311 to report a meter not in service.

Log onto www.houstonparking.org for more information and answers to common questions about parking in Houston.

City of Houston Parking Management

1001 Avenida de las Americas
Houston, Texas 77010
713.837.0311 ph.
713.853.8278 fax
www.houstonparking.org

Parking Management is a division of the City of Houston Convention & Entertainment Facilities Department.

San Diego, California Multi-Space Meter Directions

City of San Diego

- Locate the **Pay & Display Meter** on the block
- Find an available parking space.
- **PARK**.
- **PAY** at the Pay & Display meter.
- **DISPLAY** the larger portion of the receipt properly in your vehicle.
- Take the smaller portion of the receipt with you.

High Tech Parking Hits Downtown

WHAT:
50 new multi-space, pay & display parking meters in selected areas downtown to maximize parking opportunities.

WHEN:

- Meters **'Go Live'** Monday, June 5th, 8 a.m.
- Parking is enforced Monday through Saturday, 8 a.m. to 6 p.m. except certain holidays.

WHY:

- Provide more payment options for parking customers; including credit cards, prepaid parking meter cards and coins.
- Allow easy programming for rate changes, holidays and special events.
- Consumers will have receipt for their parking with the expiration time on it.
- The meters give a direct report to City Staff when they need service or emptying saving significant time & labor for City staff.
- Meters provide invaluable data for future parking design by reporting data by usage by area, date, time, payment type.
- One pay & display meter can replace 10 single head meters. Single-head, traditional meters are getting increasingly difficult and costly to replace.

DOWNTOWN LOCATIONS:

- Ballpark
- Core/Columbia
- East Village
- Marina District

Pay & Display Parking

City of San Diego

Parking Meter Operations
Phone: (800) 808-5998
E-mail: Parking@sandiego.gov

METERS:

- Battery-operated, solar powered.
- Contains a backup system to immediately report malfunctions.
- Accepts Mastercard, Visa, ($1.25 minimum credit card purchase), City of San Diego Prepaid Parking Debit Cards, and coins (dollar coins, quarters, dimes & nickels.)
- These meters do **NOT** refund prepaid Parking Meter Debit Cards.

PARKING RATES:

- Rates are posted on meters and area signage.

Milwaukee, Wisconsin Multi-Space Meter Directions

LUKE
THE MULTI-SPACE PARKING METER

INSTRUCTIONS

1. Press the green "**OK**" button or any button on the key pad to start.
2. Enter parking space number followed by the green "**OK**" button.
3. Press "**1**" to "**Purchase Time**" to pay for a parking space or press "**2**" to "**Add More Time**" to pay for additional time for a space you already paid for.

To Pay With Coin

1. Insert coins for the desired amount of time.
2. Press the green "**OK**" button to complete transaction or the red "**CANCEL**" button to cancel transaction.
3. Take receipt from lower window.

To Pay With Credit/Debit Card

1. Insert and remove credit card. Wait seconds for processing.
2. Press "**1**" to add time desired (1 hour minimum) or press "**9**" for the maximum time allowed.
3. Press the green "**OK**" button to complete transaction or the red "**CANCEL**" button to cancel transaction.
4. Take receipt from lower window.

FEATURES

1. Pay at any LUKE meter that is the most conveniently located. Enter the parking space number.
2. Accepts MasterCard/ Visa credit/debit cards only.
3. Accepts 5¢, 10¢, 25¢, or $1.00 coins.
4. Provides receipt.
5. For convenience, receipt includes time when meter expires and space number.

P A R K / S / M / A / R / T
milwaukee
www.parking.mpw.net

Making Paying For Parking Easier For You!

Boston, Massachusetts Multi-Space Meter Directions

When are the parking meters in operation?

Parking Meters in the City of Boston operate Monday through Saturday from 8 AM – 8 PM. Meters are free on Sundays and Holidays.

What are the meter rates?

25 Cents per 15 Minutes

$1.00 per 1 Hour

2 HOURS MAXIMUM

The minimum charge for dollar coins and dollar bills will be one (1) hour. The minimum charge for card payments will be two (2) hours.

Look for these new signs for helpful information

Boston Transportation Department
One City Hall Square, Room 721
Boston, MA 02201
Phone (617) 635-4-BTD
Email: BTD@CityofBoston.gov

CITY OF BOSTON

MULTI-SPACE PARKING METER PROGRAM

Boston Transportation Department

Thomas M. Menino, Mayor of Boston
Thomas J. Tinlin, Commissioner

WHAT IS A MULTI-SPACE PARKING METER?

The City of Boston is implementing a new parking meter program that uses kiosks that accept MasterCard and Visa debit/credit cards, dollar bills, dollar coins and quarters, and dispenses pay and display receipts.

This system is designed to be more convenient than a coin only parking meter.

HOW DO I FIND THE MULTI-SPACE METER?

Simply park your car and look for a sign indicating "Pay Meter Here" and follow the instructions on the kiosk to receive your "pay and display" receipt.

Look for these new signs for helpful information

1. Choose Payment Method


Quarter, Dollar Coins


Dollar bill or


MasterCard or Visa debit/credit card. *Press BLUE button to confirm card payment.*

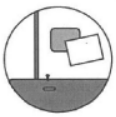
Please pay for all time needed. You cannot add time to your Initial purchase.

2. Press GREEN Button for Receipt.

This receipt is valid only on the street block on which your vehicle is currently parked.

3. Place the Receipt in Your Vehicle Curbside window.

Use the removable backing of the receipt to tape your receipt to the INSIDE curbside window with date and time visible.



**For motorcycles, stick the receipt to the headlight. Retain second receipt for your records*

What Do I do if the Meter is Not Working?

If the meter is out of order use another meter on the street block where your vehicle is parked. Please note that if one payment option is not functioning the remaining two will still be available

Barnstable Massachusetts Multi-Space Meter Directions

When are the meters in operation?

Parking meters at Bismore Park operate 24 hours per day year round.

What are the meter rates?

Meter rates are adjusted seasonally according to the following schedule:

Summer Season
May 20th - September 8th

$2.00 Per Hour – First 2 hours
$3.00 Per Hour – Thereafter to a maximum of 6 hours

Shoulder Season
September 9th - December 15th

$1.00 Per Hour –to a maximum of 6 hours

Winter Season
December 16th - May 19th

$0.25 Per Hour – First 2 hours
$0.50 Per Hour – Thereafter to a maximum of 6 hours

Look for these new signs.

Barnstable Parking Clerk
200 Main Street
Hyannis, MA 02601
(508)-862-4673

TOWN OF BARNSTABLE

MULTI-SPACE PARKING

PAY AND DISPLAY

AT BISMORE PARK

What is a multi-space parking meter?

The Town of Barnstable is implementing a new parking meter system that uses kiosks.

The kiosks accept MasterCard, Visa, and American Express credit/debit cards, US coins including nickels, dimes, quarters and dollar coins.

The kiosk dispenses pay and display receipts that need to be placed inside the vehicle on the driver's side window facing out. Use the removable adhesive back of the receipt to adhere it to the window.

How do I find the kiosk containing the multi-space parking meter?

Simply park your car and look for a sign indicating "Pay Here – Parking Pay Station"

How do I use the multi-space parking meter?

You can pay using
Coins *or* MC/Visa/AMEX credit/debit cards
(NO REFUNDS OR CHANGE MADE)

Coins (nickels, dimes, quarters & dollar coins)

- **Insert coins**
  Time will automatically be calculated as coins are inserted. The time displayed is the parking expiration time.
- **Confirm payment/time**
  Press (hard) the green button for receipt.
- **Display your receipt**
  Peel the sticky backing off the receipt and use it to stick the receipt to the INSIDE of your driver's side window.

Debit/Credit Cards (MC/Visa/AMEX)

- **Insert card** – wait until prompted to remove card
- **Add time**

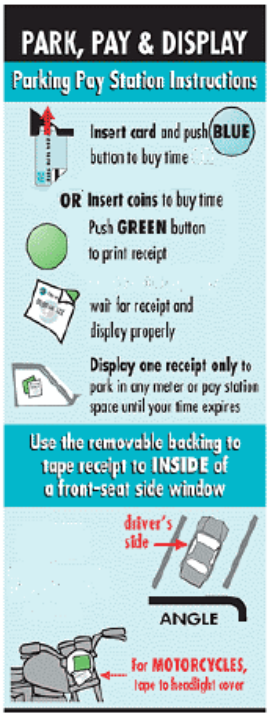
Incrementally - Press the blue button ***on the right*** that says "add time". The time displayed is the parking expiration time. Confirm payment/time by pressing (hard) the green button for receipt.

OR

Maximum time (6 hrs) – Your card will ***automatically*** be charged the **MAXIMUM** amount (no refunds or change is available). Press the blue button ***on the left*** – your receipt will print automatically.

- **Display your receipt**
  Peel the sticky backing off the receipt and use it to stick the receipt to the INSIDE of your driver's side window.

Motorcycles
Motorcycles adhere receipt to the headlight cover. More than one motorcycle can park in a space.



APPENDIX D

PARKING METER
MANUFACTURERS

APARC Systems (Siemens)

Multi-Space Meters

San Francisco, CA (U.S. Office)

www.aparcsystems.com

info@aparcsystems.com

Cale Parking System USA, Inc.

Multi-Space Meters

Tampa, FL

www.caleparkingusa.com

rbonardi@caleparkingusa.com

Digital Payment Technologies

Multi-Space Meters

Burnaby, BC

www.digitalpaytech.com

info@digitalpaytech.com

Duncan Solutions, Inc.

Single space and multi-space meters.

Milwaukee, Wisconsin

www.duncansolutions.com

jkennedy@duncansolutions.com

IPS Group, Inc.

Single space meters that accept credit cards.

San Diego, CA

www.ipsgroupinc.com

info@ipsgroupinc.com

MacKay Meters, Inc.

Single space and multi-space meters.

New Glasgow, NS

www.mackaymeters.com

sales@mackaymeters.com

Metric Parking

Multi-space Meters

Mount Laurel, NJ

www.metricparking.com

Parkeon

Multi-Space Meters

Dennis Charlton, 800.732.6868 x 327

Moorestown, NJ

www.parkeon.com

ussales@parkeon.com

POM

Single space meters; can accept credit cards as an option.

Russellville, AR

www.pom.com

aadkison@pom.com

VenTek *International*

Single space meters; can accept credit cards as an option.

Petaluma, CA

www.ventek-intl.com

sales@ventek-intl.com