



Planning for On-Street Multi-Space Parking

Educational Guide



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Introduction

The transition from free parking, or old single-space meters, to new multi-space meters represents a significant shift for organizations implementing these changes as well as for the public who will be using the new technology. This document serves as a guide for the various topics that must be considered when planning to transition to multi-space meters. Additional research will be required to complete your business plan, given your unique environment and circumstances. However, this document will help guide you in the right direction.

Reasons for Change

The first step in determining whether you should switch from single-space meters to multi-space meters is to examine the reasons for making this change. Do any of these reasons apply to you?

- Servicing the single-space meters is problematic because it is difficult to obtain spare parts.
- Parkers are identifying meter problems before you do.
- Revenue security has been a problem with your existing meters.
- Revenue is being lost due to broken meters or parkers using spaces with time remaining on the meters.
- Parkers are asking for more payment options, such as credit card payment and Pay-by-Phone.
- Rate increases have made coin payment with single-space meters less than optimal.
- Your organization needs better parking revenue reporting and analysis.
- Customer service could be greatly improved by networking the meters so that parkers could pay for parking at any meter or add time to any meter.
- The old single-space meters are having a negative impact on the look of the streetscape.

All of these are valid reasons as to why you need to transition to multi-space meters, but it is important to remember that this kind of change is not trivial. Careful research and planning must take place to ensure the right decisions are made so that the transition will be a success.

Market Research

If you don't have clear answers as to whether you have valid reasons for change, it would be prudent to conduct some preliminary research. This research would involve surveying current stakeholders in your parking operation (for example, parkers, maintenance personnel, accounting, enforcement officers, collections) to understand their issues and to find out where new technology could help them. This evalu-

ation will also help point you in the right direction as to the features you will want to implement in your new multi-space meters. Areas of your current operation to evaluate include:

- Types of parking revenue controls currently in place (single-space meters, multi-space meters, or no revenue control)
- Payment options you would like to provide
- Parking rates and parking duration limits
- Hours of enforcement operations
- Changes to rates, duration limits, and policies you would like to introduce

In government environments, additional research should be done with government officials to obtain their input on change so as to ensure the political and financial support will be available when transitioning. These officials can also provide good advice on how to approach the project so that it is “sellable” to all parking stakeholders, government officials, and community members.

Market research should also extend to the types of technologies available in the market today and the types of technologies emerging. Such research will enable you to better understand what is available and what kind of platform you require to support new technologies that may emerge in the next five years.

Research can take the shape of either informal discussions with stakeholders or a comprehensive marketing study, potentially involving a third-party research firm that conducts extensive surveys and/or focus groups. These third-party research firms may also help analyze the parking market to provide preliminary ideas on the types of technology to consider and the directions to take.

Public relations (PR) should also be considered at this stage of the process as it is important to consider how these messages will be communicated to the various stakeholders involved.

Pay-and-Display vs. Pay-by-Space

There are advantages and disadvantages to both Pay-and-Display (PND) and Pay-by-Space (PBS).

In PND, enforcement is easier as you can simply read the ticket on the dashboard of the parked car. The disadvantage is that it requires parkers to walk to a meter and then walk back to their car to display the ticket. Another potential issue related to PND is the use of fraudulent tickets or the transfer of tickets with leftover time.

PBS is advantageous in that it doesn't require the parker to return to their car and it also makes it much easier to create reserved spaces. The disadvantage, however, is that enforcement requires the generation of valid space data from the meter that must be obtained regularly to ensure it is up-to-date. Some parking technologies can integrate this data with wireless handheld devices to reduce this additional effort. Another consideration is the display of the space numbers, if you are not already operating in a PBS environment. You should also consider the costs associated with adding space numbers, either through signage or street painting.

Carefully consider both operating methods before making a decision. You may also want to have a hybrid operation where certain areas are managed by PBS and others are managed by PND. If you want to operate in this manner, be sure to confirm with your equipment suppliers that they can support both methods at the same time.

Power Options

Multi-space meters may be powered by either AC or solar. When considering AC power, you will need to investigate, with your local power authority, how you will deliver power to each meter location. This work can involve significant costs and may require long lead times if government approvals are required for digging up right of ways.

If you choose to go the solar power route, you need to carefully review the potential locations. You want to ensure that the solar panels have the most unobstructed exposure to direct sunlight for the greatest number of hours during the day. Placing solar-powered meters under trees or street awnings is not going to help generate the maximum amount of power. To learn more about solar power considerations, refer to Appendix A.

Communication Options

Today, multi-space meters have the ability to connect directly to the Internet and provide you with remote access to reports, alarms, and real-time credit card processing capabilities. The communication options that are available usually include cellular, Wi-Fi, and direct Ethernet.

Cellular communications are the easiest to implement, but can result in high monthly communications fees. In addition, you will have to research which company provides the best cellular network for your meter locations. If the cellular network is weak in the area where the meters are located, this will impact the benefits of the communications system.

Wi-Fi can often be a very cost-effective solution; however, it too has challenges. Specifically, depending on the number of meters you are trying to access, Wi-Fi requires a series of access points and antennas that need line-of-site access to each meter. There are also distance considerations as to how far away an access point may be placed. Security also has to be considered when setting up a Wi-Fi network. If you don't have internal expertise in this area, there are numerous third party companies which can assist you in setting up a Wi-Fi network.

With Ethernet communications, you have to consider how you are going to deliver a dedicated cable to each meter. If the locations do not already have underground conduit provisioned for such a purpose, it can involve significant work and money to deliver cable to each meter.

Credit Card Data Security

If you are considering multi-space parking meters that accept credit cards, ensuring the protection of credit card information is critical. Security breaches are proving immensely costly for businesses, banks, and credit card merchants, and also negatively affect consumer confidence.

In creating policies for your operation, review the requirements outlined by the Payment Card Industry (PCI) Standards Council (www.pcisecuritystandards.org). For service providers and software vendors under consideration, ensure they can provide evidence from Visa or other major credit card companies that their services and/or equipment meet the PCI standards. The provisions of voluntary security scan reports and questionnaires, as proof of compliance, should not, on their own, be considered acceptable.

Features to Consider

New multi-space parking meters have a wide range of capabilities that you may want to consider for your project. In evaluating each of these capabilities, ask yourself the following questions:

1. Will this feature help me as a municipality, operator, or university to make more money?
2. Will this feature improve the parking experience?
3. Will this feature help manage our business better?

A list of features you may want to consider include:

- Payment options that include coins, bills, and credit card
- Smart card acceptance
- Ability to operate in PND and/or PBS mode
- Rate choices that include hourly, daily, fixed, special events, and incremental
- Customizable messages on receipts
- Multilingual capabilities
- Real-time credit card processing
- Networked operations to provide the ability to pay or add time from any meter
- Remote management for real-time reporting and easy updating of meter rates and configuration
- Proactive alarming for maintenance issues and security
- Pay-by-Phone capability
- Support for numerous communication methods – cellular, Wi-Fi, Ethernet
- Extensive reporting options
- Open architecture platform that allows for future expandability
- Easy to maintain
- Aesthetically pleasing design
- Bright, easy to read, color screen for displaying instructions

A list of mandatory features you should consider include:

- Payment Card Industry (PCI) Data Security Standard compliance
- American Disabilities Act (ADA) compliance
- CSA and UL electrical compliance

Suppliers

When looking at various suppliers, ask yourself the following:

1. Does the supplier have equipment with the options I have identified as mandatory?
2. Has the supplier been in business for more than five years with a broad installation base?
3. Does the supplier have installations across various climate zones?
(for example cold winters, hot, dry summers, and areas of high humidity)
4. Does the supplier have a large number of references that can speak positively about the equipment and service?
5. Does the supplier provide service offerings or are they just trying to sell me technology?
6. What services do I want the supplier to provide?
(for example, telephone support, on-site support, extended warranty)
7. If the supplier is not local, do I need to have access to a local support firm certified by the supplier or do I have the internal resources that can handle maintenance and service activities with telephone support from the supplier?
8. Does the supplier provide comprehensive training and support?

Evaluate several of the leading vendors by meeting with each of them, learn about their options and recommendations, and then prepare and send out Request for Proposals (RFP) based on the complete set of information gathered.

Request for Proposal (RFP)

After all of the above questions have been considered and more information has been gathered, you can then consider preparing a formal Request for Information (RFI) or RFP. Either of these documents provides a formal structure for potential suppliers to respond to you so that you can evaluate each of the proposals on an equal footing.

In thinking about the preparation of your RFP, you have to consider the following:

1. What are the objectives of the document?
2. Is the RFP to formally evaluate technology options with an end goal of a pilot program or a finalized purchase?
3. If it is for a pilot program, how many vendors do you want to have as part of the pilot program, and have you determined in advance where this pilot program will take place? The number of vendors should be fairly limited in order to focus your decision. Three is probably optimal.
4. How long will this pilot program last? You don't want to leave your trial open-ended. A one or two-month trial should be reasonable, but in establishing the trial timeframe, you also have to consider what you will do when the trial is over so as not to disrupt your operations.
5. What timeframe will you give to suppliers to respond to your RFP and what deadlines will you expect them to meet for a trial or purchase?

All of these questions should be thought of before preparing and issuing an RFP. An RFP takes considerable work for suppliers to respond to and requires them to make a commitment to deliver on specific objectives if they are chosen. As a result, it is important to respect the time and effort of these suppliers to ensure you have everything in order on your end to successfully execute your commitments that are included within the RFP. To see a sample RFP, refer to Appendix B.

Implementation Timeline

In preparing the RFP and thinking about your rollout, it is important to have an overview of the implementation timeline and the milestones that should be considered. This timeline is even more important to consider once you have decided on a supplier.

Please note that the following timeline is optimal, and may be adjusted to meet your specific needs and the scope of your project. If necessary, it can be compressed into a very short period of time—weeks or even days. Generally speaking, any advance planning, no matter how compressed, is better than none at all.

Nine months out

- Research and analyze existing parking operations
- Evaluate equipment and supplier options
- Issue RFP to equipment vendors

Six months out

- Select a vendor for implementation and order equipment
- Schedule weekly progress meetings with your vendor-assigned project manager
- Develop potential questions, complaints, and concerns to address
- Develop key messages for your communications plan
- Evaluate possible communication methods and programs

Three months out

- Apply key messages in all communications and advertising
- Create and post advance warning signs
- Issue press release and launch branded informational Web site
- Meet with businesses and organizations affected by the new parking system

One month out

- Issue second press release
- Begin distribution of informational brochures
- Organize staff so that all media calls and interviews go through one person
- Install and test meters, keep “bagged” or turned off until actual go-live day to avoid confusion
- Post all appropriate signage, keep covered until actual go-live day to avoid confusion

One week out

- Train meter greeters on meter operations and transaction process
- Train enforcement personnel on new processes and meter operations

Go-live day

- Remove covers from new signage and meters before going live
- Have staff on hand to explain how the new meters work and answer questions
- Have a manager ready to handle any media coverage that may occur
- Invite local merchants and retailers to learn how to use the new meters

Go-live first week

- Keep staff on hand as needed to explain the new meters
- Have a manager on standby to handle any media enquiries
- Issue warnings for non-compliance and include an informational brochure

Go-live first month

- Keep staff on hand as needed
- Conduct communications evaluation
- Evaluate the program and make changes

To see a more detailed sample schedule with estimated timeframes for each event, refer to Appendix C.

About Digital Payment Technologies

Digital Payment Technologies (DPT) is an innovative leader in the design, manufacture, and distribution of electronic multi-space parking meters, parking management software, and online services for the global parking industry. The company's products provide complete financial tracking, control, and reporting for parking revenue collected by municipalities, universities, parking management companies, and national parks, from customer payment through to bank deposit.

DPT first received official compliance as a Level 1 Service Provider in April 2007 after completing an audit by a qualified security assessor (QSA). DPT completed its third annual audit in May 2009. DPT's products received official validation under PCI's Payment Application Data Security Standard (PA-DSS) in December 2007 and its latest major software release was validated in May 2009. Confirmation of DPT's status may be found by reviewing the lists of Compliant Service Providers and Validated Payment Applications on Visa's Web site at www.visa.com/cisp.

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Appendix A – Solar Power Considerations

Because there are so many variables impacting solar power, it is very difficult to predict how a solar panel will perform and whether or not it will be sufficient to keep a battery charged. This section is intended to provide detailed information to anyone involved in making decisions regarding power and solar installation.

1. Environmental Variables

Latitude

The latitude, or the distance north or south of the equator, will impact the effectiveness of the solar panel. The further north a solar panel is installed, the less effective it will be both because of the increase in the amount of atmosphere the sunlight needs to pass through and also because of the reduced number of daylight hours during winter.

Climate

Clear, dry climates are better than wet, cloudy climates. A dry climate can have a significant beneficial impact and increases the success rate of a solar installation in northern latitudes.

View Corridor

Trees, buildings, signs, and other obstructions will have a significant impact on the amount of sunlight reaching the solar panel. As much as possible, a clear view south should be allowed for the solar panels. If even a small portion of the solar panel is in shade, the amount of power generated drops significantly.

Non-Sunlight Light Sources

Unfortunately, there are few sources of light that can be converted by a solar panel into electricity. Standard street lights will not work. Electrical lighting should not be considered a source of energy for charging batteries via the solar panel.

Indirect Sunlight

Indirect sunlight is converted by the solar panel into electricity. Therefore, during cloudy days, or if light is reflected from a building onto a solar panel, charging will occur. However, the amount of energy collected is significantly reduced.

2. Performance Variables

Number of Transactions

The number of transactions performed per day will have a significant impact on the success of a solar panel to replenish the batteries.

Payment Type

The type of payment used by a parker has a significant impact on the amount of power used per transaction. Studies have shown that the lowest power payment method is using a magnetic stripe card such as a credit card or smart card. Encouraging parkers to use these payment methods will increase the success rate of solar installations. After the card reader, the second lowest power consumption payment method is the bill acceptor. The coin acceptor consumes the most power of the three payment methods.

Number of Coins/Bills

When parkers are paying by cash, the more bills or coins that are inserted, the more the power consumption will be affected. Rounding rates to the nearest dollar or half dollar will have a positive effect on your power consumption.

Time of Day

If transactions are concentrated during a specific time of the day, this impacts the battery's ability to meet the power requirements. For example, commuter lots where all of the transactions are in a short time period early in the morning are not good candidates for solar power unless there is enough battery to sustain the equipment through the morning and then recharge all day. Most on-street applications have turnover throughout the day meaning that the battery will not be significantly depleted at any one time.

Time of Year

In combination with the latitude, the time of year can have a significant impact on the charging ability of a solar panel. In the winter, when days are short and the sun is low on the horizon, you may encounter a situation where normal usage patterns result in batteries being depleted whereas in the early spring or late fall this is not the case.

3. Equipment Variables

Online or Offline

The real-time communication capability will increase power consumption unless the connection is hard-wired. However, the amount of power used by modems is similar to adding a payment option such as a bill acceptor or coin acceptor.

Communication Type

Of the communications options available, hard-wired Ethernet consumes the least amount of power. A modem on the GSM/GPRS network is slightly better than a CDMA modem. The 802.11b/g option currently has the greatest power consumption of the wireless communication methods currently available.

Sleep Timer

Usually configurable through software, the Sleep Timer is the amount of time the pay station waits before powering down if there is no activity. Generally, the shorter this amount of time, the greater the power consumption. However, some amount of time (30 seconds) should generally be the minimum to allow for parkers who are lined up behind one another.

Battery Age

Most parking meter batteries are sealed, lead-acid batteries. The charging and discharging of the batteries is regulated to the manufacturers' specifications. As a result, normal operating units should see a three- to five-year battery life. As the battery approaches its end-life, the performance will be degraded.

4. Important Installation Considerations

Signs

Any signage must be placed below or to the north of the solar panels. Signage blocking the solar panel for even part of the day can have a significant impact on the amount of light collected.

Plants

When planning installations, it is important to take into account plants not only as they are but also as they will be. Leaves and growth significantly affect plants and can lead to noticeably blocked solar panels.

Direction

In almost all situations, solar panels should be facing toward the equator—due south or north.

To learn more about solar power, read the DPT white paper *Solar Energy and the Parking Industry*.

Appendix B – Sample Request for Proposal (RFP)

ORGANIZATION REQUEST FOR PROPOSAL MULTI-SPACE PARKING PAY STATIONS

1. General

The **Organization** manages (XXXX) parking spaces consisting of a combination of surface lot, garage, and on- and off-street parking. Of these parking spaces, (XXXX) are single-metered parking.

2. Scope of Services

The **Organization** is looking to convert and consolidate designated parking from single-meter parking to multi-space meter parking with the capability of coin and bill acceptor, credit/smart card reader. This system must have the ability to be managed and monitored remotely and must be capable of operating in Pay-and-Display (PND) or Pay-by-Space (PBS) mode.

As part of this proposal, the respondent must be willing to provide temporary demonstrator equipment, at no cost, for client evaluation, input, and satisfaction.

3. Technical Specifications

Please respond with the ability to comply or not comply with the following technical specifications:

3.1. Hardware

3.1.1. Cabinet and Pedestal

- Cabinet must be minimum 12-gauge cold rolled steel. Stainless steel must be quoted as an option.
- Pedestal must be minimum 12-gauge steel with four locations for anchor bolt fasteners. Anchor bolts cannot be exposed outside the pedestal.
- Surface finish must be a powder-coating paint that is electro-statically charged and baked on.
- Unit must be available in a variety of colors and with the option for customized decals.
- In general, the cabinet must have an aesthetically pleasing design that is easily recognizable as related to parking.

3.1.2. Physical Security and Lock

- The main access door must be tamper-resistant with multiple locking points.
- No locks can be exposed beyond the flush mount of the cabinet.
- Locks must have programmable keys.
- Pay station must have vibration and shock sensing audible alarms with a stand-alone power source.
- Cash status, audit reports, stall reports, and revenue reports must all be printable at the pay station without opening the cabinet door; password protection to reports is mandatory.

3.1.3. Liquid Crystal Display (LCD)

- The unit must have a color LCD screen with 640 x 480 resolution display, which is easy to read in various lighting conditions.

- All instructions and rates are to be provided through the LCD display, eliminating the need for external signage.
- The screen must be recessed and protected by a security cover.
- The screen must be vandal-resistant, weather-proof, and corrosion-resistant.
- The screen must be modular and easily unplugged and replaced with basic tools for easy servicing.
- For increased contrast, the screen must display dark lettering on light background, or light lettering on dark background. These contrast settings must be selectable and must automatically change from one to the other and back at a predetermined time during the day.
- The LCD must have the ability to display at least five options simultaneously.
- The LCD must be able to display a color graphic and/or photograph for a user-defined amount of time when the pay station is turned on.
- All prompts on the pay station must be user-configurable.

3.1.4. Keypad

- The unit must have a full numeric, tactile-feel keypad.
- When a key is pressed, an audible indication must be given to provide feedback to the parker.
- The keypad must be vandal-resistant, weather-proof, and corrosion-resistant.
- The keypad must be modular and be easily unplugged and removed with basic tools for easy servicing.
- The keypad will be used to turn the pay station on when it is in sleep mode.

3.1.5. Receipt Slot

- The receipt slot must be protected with a sliding door.

3.1.6. Coin Slot

- The coin slot shall accept all U.S. coins through a single slot.

3.1.7. Coin Acceptor

- Must be capable of accepting nickels, dimes, quarters, and dollars (both Susan B. Anthony and Sacagawea).
- All excess coins to be channeled into a coin compartment for subsequent removal.
- Must reject fraudulent and foreign coins immediately through coin return cup.
- Must be modular construction to allow for easy removal with basic tools.
- Machine's display should show the parker that "exact change" or "credit card only" is needed when necessary.

3.1.8. Coin Hoppers

- To provide additional change, proposed off-street pay stations must support two coin hoppers with a capacity of at least 1,800 coins.
- Hoppers must be lockable without access by maintenance personnel.
- Hoppers must be easily removed for replacement.

3.1.9. Coin Compartment

- All denominations of coins must be held in a double-locked, secured coin bag or metal coin canister.

- The coin bag/coin canister must be secure when removed and must have a minimum capacity of 900 coins.
- A key is required to remove the coin bag/coin canister from inside the unit and a different key is required to open the coin bag/coin canister.
- Maintenance personnel without keys must not be able to remove the coin bag/coin canister.

3.1.10. Bill Acceptor

- The bill acceptor must electronically accept \$1, \$5, \$10, \$20, and \$50 bills or any combination thereof. The ability to determine what bills are accepted must be configurable using the back-office software and loaded onto the pay station manually or remotely through a wireless connection.
- The bill acceptor must be four-way and accept bills in any direction (face up or face down).
- Must have an acceptance rate of 98 percent for street quality bills. All rejected bills must be returned.
- The bill acceptor must be programmable on site for any new bank notes issued by the U.S. mint.
- The bill acceptor must be modular and be easily unplugged and removed with basic tools for easy servicing.
- Maintenance personnel must be able to clear bill jams without the use of special tools and without accessing the bill storage compartment within five seconds of opening the pay station.

3.1.11. Bill Stacker

- All denominations of bills must be held in their own metal vault.
- The bill stacker must have a minimum capacity 600 notes and be upgradeable to 1,000.
- The bill stacker vault must be a self-sustaining lockable unit. A key is required to open the unit after it is removed from the bill acceptor.
- The bill stacker must be modular and be easily unplugged and removed with basic tools for easy servicing.

3.1.12. Credit Card Reader and Operation

- The credit card (CC) reader must be flush-mounted with no part of the reader protruding outside of the cabinet.
- The CC reader must only partially ingest card, so that the parker maintains control of the card at all times.
- The CC reader must accept and process Visa, MasterCard, Amex, Diner's Card or Discover or any combination thereof, and must be configurable via the back-office software.
- The CC reader must be modular and be easily unplugged and removed with basic tools for easy servicing.
- The CC reader must read Tracks 1, 2, and 3 of all magnetic stripe cards conforming to ISO 7810 and 7811.
- The CC reader must read and write to chip-based smart cards conforming to ISO 7810 and 7816.

3.1.13. Transaction Process

- Vendor-supplied software should provide management control and reporting of credit card process via Internet.
- System should allow both offline batch credit card processing and online real-time processing of credit cards.
- Process should be simple, one-step procedure to automatically transfer credit card data to clearing-

house. No duplicate checks or transfer of data between files or spreadsheets should be required.

- System must process and reconcile transactions with XXXX merchant processor, either directly or through a gateway processor such as Authorize.Net.
- Credit card/smart card transactions that are declined should automatically populate a file of bad credit cards/smart cards to prevent future acceptance of bad credit cards/smart cards.
- Pay station must be capable of being used as a smart card reload station with the ability to check card balances.
- Vendor-supplied management software should allow for manual entry of cards into a bad credit card/smart card file. Bad credit cards/smart cards should be prevented from use in any payment machine in the network.
- Vendors supplying parking equipment to the Organization must meet the credit card data security requirements outlined by the PCI Standards Council (www.pcisecuritystandards.org) for service providers and/or software vendors. All vendors must provide a letter from a Qualified Payment Application Security Professional (QPASP) confirming the status level they fall under within the PCI standards or show evidence that PCI Certification and Payment Application Data Security Standard (PA-DSS) validation has been achieved through a third-party audit process. The provision of voluntary security scan reports and questionnaires as proof of compliance will not be accepted.

For vendors who are deemed to require PCI certification by a QPASP, the vendor must show achievement of certification through an audit completed by a QPASP or show evidence that certification will be completed within a reasonable timeframe. All software vendors must also show evidence that they have completed or will complete validation of PA-DSS requirements by a QPASP within a reasonable timeframe. While PA-DSS is only voluntary for software vendors, the Organization is requiring that the vendor complete official PA-DSS validation by a QPASP in order to provide assurances to the Organization that the vendor's equipment will enable the Organization to meet its own PCI certification.

3.1.14. Printer

- The printer must be a high quality thermal printer with a simple paper path and a reliable cutting edge.
- The Organization would like to evaluate a two-inch wide ticket.
- The paper roll must be easily removed and replaced in less than 60 seconds.
- The printer must be modular and be easily unplugged and removed with basic tools for easy servicing.
- Pay station should allow report and receipt printing in the field. Pay station should have capacity of producing at least 2,900 tickets/reports prior to replacing a print roll.

3.1.15. Receipt Paper

- The receipt paper must have the capability to be pre-printed with customized messages on the back and logo watermarks on the front.
- The tickets must be heat-, fade- and curl-resistant, and must be capable of being left on a vehicle dashboard for extended periods of time.
- Paper must be 100 percent recyclable.

3.1.16. Power Operation and Recharging System

- The pay station must operate on battery power with either an AC or solar recharging system for the batteries.
- The solar panel must be pole mountable.
- The battery must be a minimum of a 12V, 35 Amp per hour, sealed gel-cell.

- A battery voltage check system must be integrated into the pay station cabinet and the voltage of the battery must be determined in less than five seconds.
- The battery storage area must allow the battery to be removed and replaced in less than 60 seconds for servicing.
- Describe the pay station's unique power consumption capabilities.

3.1.17. Electrical and Electronic Components

- All major components must be modular and be easily unplugged and removed with basic tools for easy servicing.
- All electronic connection plugs must be physically differentiated and must fit one way only.

3.1.18. CPU/Controller Box

- The CPU must be specifically designed for operation with the pay station.
- The CPU must be custom designed, built, and supported by the manufacturer.
- The CPU must contain Flash memory that can record a minimum of 10,000 transactions to allow data to be preserved when power has been removed.
- The CPU must be modular and be easily unplugged and removed with basic tools for easy servicing.
- The pay station must have a bad card maintenance list that can store up to 16,000 card numbers for offline processing.
- To enable seamless additional application integration, the pay station operating system must be Microsoft Windows CE-based.
- The pay station must be able to automatically adjust internal clock for Daylight Savings Time (DST) changes.
- The pay station must be able to be configurable to support multiple languages and not be limited to the Roman alphabet used in English/Spanish/French/German languages (for example, Russian, Hebrew, simplified Chinese, Arabic).

3.1.19. Online Communication

- The pay station must be able to support direct Ethernet connection without any additional hardware.
- For wireless communication, an optional choice of GSM/CDMA modem and Wi-Fi (802.11b/g) modem must be available.

3.2. Software

3.2.1. Payment Options

- The pay station must support the following payment options:
 - U.S. bills: The denominations accepted must be configurable for each pay station.
 - U.S. coins: The denomination accepted must be configurable for each pay station.
 - Credit cards: Type of credit cards accepted must be configurable for each pay station.
 - Smart cards: Must be configurable for each pay station.
 - Cell phone payment: The solution must have an option of paying for parking with cell phone in a PBS deployment.
- The pay station must have the ability to allow for adding time to the existing time purchased in either PBS or PND deployment. For PBS and PND deployment, a PIN number printed on the ticket must be entered when adding time to ensure that only the original parker can add time.

- The parker must be able to pay for any space from any pay station provided the pay stations are online (communicating to the central server).

3.2.2. Cell Phone Integration

- The solution must have an option of paying for parking with a cell phone in a PBS deployment.
- If the initial payment was made at the pay station, the parker must have the ability to add time through the cell phone.
- If the initial payment was made through the cell phone, the parker must be able to have the ability to add time at the pay station.
- If a payment was made through the cell phone, the system must be able to notify the parker through the cell phone prior to expiration of the parking time.
- For enforcement purposes, the enforcement officer must be able to print a report at a pay station showing valid spaces paid for regardless if these were paid for at the pay station or by cell phone.

3.2.3. Enforcement

The enforcement officer must be able to perform the following at the pay station:

- Generate valid stall reports within the entered stall range regardless of how (pay station or cell phone) and at which machine the spaces were paid for. The report must clearly display the expiration time for each valid space.
- Generate an expired stall report within entered stall range that clearly displays which spaces have not been paid.

The **Organization** has a long-term goal of having PBS data at the pay station integrated with the **Organization's** selected enforcement system for consolidated reporting purposes. Vendor should identify how this might be achieved in the next 12 months.

3.2.4. Management Software Capabilities

The management software must have the following capabilities:

- Ability to set up unlimited amount of pay stations at unlimited amount of lots (depending only on available computer memory).
- Password access at the pay station for collection and service personnel.
- The ability to set Sleep Timer mode for the pay station.
- The ability to configure pay station to operate in PBS (with a minimum of 99,999 spaces) and/or PND mode.
- Enable/disable additional time to be added to paid spaces.
- Ability to configure credit cards that will be accepted.
- Enable online "real-time" credit card authorization (with Ethernet connection or modem option).
- Enable/disable issuance of printed refund slip.
- Enable/disable issuance of refund slip for cancelled payment.
- Allow a four-line custom message on introduction LCD screen.
- Allow a four-line custom message on exit screen.
- Allow a four-line custom message on receipt header.
- Allow a four-line custom message on receipt footer.
- Allow a four-line custom message on refund receipt.

- Allow configuration of special spaces (in PBS mode) for exclusion from transient parking on specified days and times.

3.2.5. Standard Rate Capabilities

Please confirm that the equipment provided can address the following rates desired by the **Organization**:

Standard rate capabilities must include:

- Rates by the minute, hour, day, week, and month.
- Special event pricing.
- Different values can be assigned to different hourly increments (for example, first hour at \$2.00 – each additional hour at \$1.00).
- Progressive, regressive, flat, evening, and early bird rates.
- Programmable minimum and maximum time periods.
- Ability to pre-set special rate structures up to a year in advance.
- One-step uploads of bad credit card/smart card file.
- Incremental rates with minimum increment being five minutes.
- Ability to provide monthly passes.
- Rate descriptions must be user-configurable up to 20 characters in length.
- The pay station must be able to display rates and instructions in multiple languages, not limited to Roman alphabet.

3.2.6. Management Reports

Vendor should provide samples of all reports to allow for evaluation of reporting features.

The pay station must issue a report from the printer with the following information:

- Machine serial number
- Date and time of collection
- Date and time of previous collection
- Total amount of money in the collection
- Total amount of bills by denomination
- Total amount in coins
- Total amount of credit card payments by credit card type
- Total number of tickets issued
- Total amount of refunds issued
- Total amount of change issued
- Pay station firmware version
- Stall reports showing valid spaces, unpaid spaces or paid since last report spaces

The pay station must issue a report with the history of the machine with the following information:

Transaction details:

- Date of the transactions with “from” and “to” parameters
- Total deposits

- Overpayments
- Total transactions
- First transaction number
- Last transaction number

Transaction detail must have the capability of providing the following information at the pay station:

- Today's total
- Last 24 hours total
- Yesterday's total
- This month's total
- Last month's total
- This year's total
- Last year's total
- Third year back
- Fourth year back
- Fifth year back
- History total since commissioning of pay station

Using the back-office software, reports must be able to be generated based on the following parameters:

- Transaction date
- Transaction time
- Payment method
- Rate
- Pay station number
- Credit card type

3.2.7. Remote Management

The\would like to evaluate having remote management options hosted either by the vendor or on site. Both options must be presented. The capabilities provided through remote management must include the following:

3.2.7.a. Real-Time Reporting/Pay Station Configuration

Real-time reporting:

- The pay station must provide, as an option, the ability to generate all of the reports as listed under "Reports" above through any computer with an Internet connection using up-to-date "real-time" information.

Remote pay station configuration:

- The solution must allow for changes in the rate structure remotely from the office, provided the pay stations are online.
- The solution must allow for other changes listed under "Management Software Capabilities" and must be configurable from a remote PC and capable of being uploaded to the pay station in real-

time (with a maximum upload delay of five minutes), provided the pay station is online.

3.2.7.b. Real-Time Monitoring/Intelligent Dispatch

The pay station must provide, as an option, the ability to monitor at a minimum the following parts and systems, and communicate any malfunctions or supply requirements through e-mail or cell phone:

Critical alarms:

- Alarm on
- Shutdown due to low battery power
- Shock from being bumped, tilted or shaken

Major alarms:

- Coin jam
- Bill acceptor jam
- Bill acceptor unable to stack
- Battery voltage low
- Printer paper low
- Printer lever disengaged
- Printer paper out

The alarms must be transmitted within 10 seconds of the event occurring at the pay station.

3.2.7.c. Real-Time Credit Card Authorization

- The pay station must provide, as an option, to have credit cards processed in real-time.
- The unique authorization number received from the credit card clearinghouse must be clearly displayed on the receipt.
- The authorization number must be available in the back-office software to be used as criteria for credit card transaction searches.
- The pay station must be configurable to accept or not accept credit card payment in the event that the communication to the pay station becomes temporarily unavailable.
- Assuming adequate communication signals are in place, real-time credit card authorization must be completed within three seconds typically, and within 10 seconds maximum.
- For online credit card transactions, batch processing of the credit cards at the end of the day is not acceptable.

3.2.7.d. Communications Software Must:

- Enable manual updates and retrieval of information from each pay station using a portable device such as a USB key.
- Download all configuration and rate table settings.
- Upload all transactional data from the pay station.
- The process to download/upload transactions must be easily done by onsite personnel.
- Vendor should demonstrate adequate security of data through password protection and layered levels of privileges.

3.2.8. Future Capabilities

The identification of features that will be available after the equipment is deployed may also be mentioned, but descriptions should clearly state when features will be available for deployment and any hardware upgrades associated with such upgrades.

4. Training and Support

Vendor shall provide training on an individual location basis or in a group setting as approved by the **Organization**. The Vendor shall provide additional training if needed or as requested at prevailing rates throughout the length of the contract. Additional training shall be determined by the **Organization's** need and provided based on practicality and reasonableness. Vendor shall provide a training program for technicians and staff responsible for:

- Installation, start up, and maintenance of the units.
- Coin collection.
- Programming rates, valid parking times, etc., through the management software.
- Monitoring the equipment.
- Data file collection, credit card file downloading, system monitoring and auditing, setup and maintenance of user account passwords, etc.
- Vendor shall provide a thorough outline of the training content and provide a training schedule for both software and hardware. The schedule shall include periodic refresher training (continuing education), including, but not limited to, emphasis on particular areas of the **Organization's** choice and upgrades of software and/or hardware.
- The successful Vendor shall provide a minimum of (XXXX) hours of training at a designated **Organization** facility for each **Organization** technician to develop expertise in the maintenance and repair of their product, including, but not limited to:
 - Installation
 - Maintenance
 - Troubleshooting repairs
 - Operations – programming, inventory, and collections
- (XXXX) copies of operating manual in English for installation, maintenance, and use (complete with wiring diagrams and specifications) are to be provided at the time the units are delivered.

5. After Sales Support

The Vendor must provide access to 24/7 telephone support. The Vendor must also outline what support options are made available with regards to online knowledge databases.

6. References

Vendor must supply at least (XXXX) references using the product proposed.

7. Pricing

Vendor must identify, itemize, and price every component or sub-system required for payment machines to perform satisfactorily as a fully functioning system. Any software, hardware, cabling, communications connections, printers, papers, batteries, ribbons, lubricants, adapters or other items required for proper operation as a working network of machines must be offered during submittal.

Vendor should identify and price any components that are recommended as “spare” or stocking repair parts or supplies to provide timely repairs for broken equipment. Vendor must identify an authorized provider for installation, repairs, service, and warranty.

8. Warranty

The Vendor guarantees for a period of a minimum of one (1) year from the date of installation to repair and/or replace any part or modular component determined to be defective in material or workmanship under normal use and service at no additional cost. Extended warranty options must be made available and outlined within this proposal.

Appendix C – Sample Detailed Implementation Timeline

DAYS	START DATE	COMPLETE	DESCRIPTION	EVENT TYPE
1	29-Jul-06	30-Jul-06	Kick Off Meeting	PREPARATION
1	30-Jul-06	31-Aug-06	Contract discussions and finalization	CONTRACT
1	4-Aug-06	5-Aug-06	Sending of Payment Station Color Choices	FINALIZE CONFIGURATION
21	5-Aug-06	26-Aug-06	Review and selection of Payment Station color options	FINALIZE CONFIGURATION
14	23-Aug-06	6-Sep-06	Finalization of Custom Paper requirements	FINALIZE CONFIGURATION
14	23-Aug-06	6-Sep-06	Review and selection of Payment Station label color, text, and graphic options	FINALIZE CONFIGURATION
5	23-Aug-06	28-Aug-06	Finalize Payment Station site selection and Pay By Stall Numbering Sequence	INSTALL PREP
1	23-Aug-06	24-Aug-06	Test Wireless or Cellular Coverage at Site Locations	INSTALL PREP
35	23-Aug-06	27-Sep-06	Rate Table Decisions - important to determine before signage completed.	INSTALL PREP
50	23-Aug-06	12-Oct-06	Signage Preparation	INSTALL PREP
20	24-Aug-06	13-Sep-06	Development of Pre-Installation Key Themes and Signage Ideas for Communications Plan.	COMMUNICATIONS
3	24-Aug-06	27-Aug-06	Finalize communications methods and costs	INSTALL PREP
3	26-Aug-06	29-Aug-06	Prepare sample rendering of Payment Station color choices	FINALIZE CONFIGURATION
3	29-Aug-06	1-Sep-06	Finalize Colour Choices for Payment Station	FINALIZE CONFIGURATION
60	1-Sep-06	31-Oct-06	Payment Station in Vendor Production	VENDOR MANUFACTURING
14	1-Sep-06	14-Sep-06	Obtain Quotes on AC Power Installation and Book Dates	INSTALL PREP
14	6-Sep-06	20-Sep-06	Final Decision on Label Proof	FINALIZE CONFIGURATION
1	13-Sep-06	13-Sep-06	City Council Approval of the Communications Plan	COMMUNICATIONS
1	14-Sep-06	15-Sep-06	Pre-Training Review of BOSS Software	TRAINING
25	15-Sep-06	10-Oct-06	Create and post advanced warning signs subject to Council approved Communication Plan.	COMMUNICATIONS
3	15-Sep-06	18-Sep-06	Create and Issue First News Release subject to Council approved Communication Plan.	COMMUNICATIONS
3	15-Sep-06	18-Sep-06	Website Content is posted subject to Council Approved Communications Plan.	COMMUNICATIONS
1	15-Sep-06	16-Sep-06	Organize staff so all media calls and interviews can go through one person subject to Council approved Communication Plan..	COMMUNICATIONS
21	11-Oct-06	1-Nov-06	Credit Card Merchant Account Processor Set Up	INSTALL PREP
14	13-Oct-06	27-Oct-06	Pay By Space Numbers painted on all spots - every space must have a unique number when considering all lots under use.	INSTALL PREP
14	20-Oct-06	3-Nov-06	Documenting Employee Procedures for Operating	INSTALL PREP
7	20-Oct-06	27-Oct-06	Cellular Account Set Up	INSTALL PREP
10	27-Oct-06	7-Nov-06	Site Preparation for Installation - Concrete Pads, Conduit	INSTALL PREP
3	3-Nov-06	6-Nov-06	Create and Issue Second News Release subject to Council approved Communication Plan.	COMMUNICATIONS
	10-Nov-06	10-Nov-06	Payment Stations On Site	INSTALL PREP
10	14-Nov-06	24-Nov-06	Payment Stations Installed	INSTALLATION
1	14-Nov-06	24-Nov-06	All appropriate Signage is installed subject to Council approved Communication Plan. Signage covered until Go Live Day.	INSTALLATION
2	16-Nov-06	18-Nov-06	Vendor Training of Staff on Software, Maintenance, and Enforcement.	TRAINING
14	25-Nov-06	9-Dec-06	Post Installation Live Phase - Machines go live for first time and staff on hand to explain how new machines work and field questions subject to Council approved Communication Plan..	COMMUNICATIONS
1	9-Dec-06	9-Dec-06	Payment Station Go Live Event - Media Day involving City Councilors subject to Council approved Communication Plan.	COMMUNICATIONS
14	10-Dec-06	24-Dec-06	Evaluate program and make any needed changes subject to Council approved Communication Plan.	COMMUNICATIONS
4	3-Jan-07	7-Jan-07	Implement Needed Changes and Communicate Changes via News Release, Advertising, and/or Website	COMMUNICATIONS