Appendix A

Statement of Work
Single-Space Parking Meters and Management System

Table of Contents

TERMS AND ABBREVIATIONS 3
SECTION I: ADMINISTRATIVE 6
A. Administrative: General Specification Requirements 6
1. Training 6
2. Customer Support 7
3. Warranty 7
4. MMS Support and Licensing 9
5. Spare Parts: 9
6. Installation 10
7. Certification and Compliance 10
B. Additional Administrative Requirements 11
1. Pay-By-Phone Integration 11
2. Parking Meter Disposal 11
3. Revenue Processing *12*
4. Consultant Services Rate-Additional Services *12*
C. Administrative Optional Specifications 12
SECTION II: METER MECHANISM 14
A. Meter Mechanism General Specification Requirements 14
1. General 14
2. Coin Chute 14
3. Coin Validation 15
4. Screen 16
5. Meter Interface 18
6. Clock 18
7. Power 18
8. Visual Enforcement 19
9. Card Reader Payment and Processing 19
10. Revenue Audit Capabilities 20
11. Collection Event Recording and Revenue Counter Reset 21
12. Communications 21
13. Communication Dead Zones 22
14. Auditing and Reconciliation Procedures 22
15. Maintenance 22
SECTION III: MMS, Meter Programming and Data Integration 24
A. MMS, Meter Programming & Data Integration General Specification Requirements 24
1. MMS – General 24
2. MMS Documentation 24
3. MMS Users and Permissions 24
4. Asset and Inventory Management 25
5. Faults and Maintenance 25
6. MMS Alarms 25
7. Revenue Reports 26
8. Management of User Permissions and Alarms 27
9. Meter Location Assignment in MMS 28
10. Meter Backend Settings 28
B. MMS, Meter Programming, & Data Integration Additional Requirements 28
1. MMS – General 28
2. Meter Behavior Programming 29
3. Initial Meter Behavior Programming 32
4. Meter Programming Reconciliation 32

5. Faults and Maintenance 33
6. MMS Alarms 33
7. Revenue Reports 34
8. Management of User Permissions and Alarms 35
9. Meter Location Assignment in MMS 35
10. Meter Backend Settings 36
B. MMS, METER PROGRAMMING, & DATA INTEGRATION ADDITIONAL REQUIREMENTS 36
1. MMS – General 36
2. Meter Behavior Programming 37
3. Initial Meter Behavior Programming 40
4. Meter Programming Reconciliation 40
5. Screen Programming 41
6. MMS Customization 43
7. Inventory and Asset Management Reports 47
8. Faults and Maintenance 49
9. Revenue Reports 49
10. PBP Reports (used for visual indication of PBP transactions) 50
11. Data Integration 50
12. Meter Backend Settings 51
13. Re-Programming of Existing Metered Spaces 51
14. Special Event Programming (Hours, Rates, Time Limits, and Restrictions) 52
15. Transaction Data Feed 55
16. Monitoring Software 55
17. Mobile Maintenance Application / PDTs 55
18. Programming without Contractor Assistance 56

Attachments 1-13: Data Transmission Requirements
Attachment 14: Miscellaneous Documents

TERMS AND ABBREVIATIONS

The following definitions apply to the Specifications:

Term or Acronym	Definition
Active	Refers to the state when a payment is in progress.
ADA	Americans with Disabilities Act, as amended.
Backend Settings	Set of variables that affect Meter Behavior and exist in the Contractor's system but are not included in the Operating Schedule or the Price Schedule and are not stored in SFMTA's Data Warehouse. They control Meter Behavior, such as minimum credit card charge, grace period, backlight and LED settings.
Behavior	Variables that govern Meter performance; e.g., start/end times, time limits, rates.
City	The City and County of San Francisco.
Configuration	Set of Behaviors that make up the Meter Behavior for a standard week period.
Contractor	The Contractor who is awarded the contract.
Customer	Person who uses a Meter on the street for the purpose of paying for parking.
Data Warehouse	One of two database and reporting systems hosted and managed by SFMTA.
Descriptive Variables	Variables that describe attributes of metered spaces and do not affect Meter Behavior; e.g., area, street, latitude, longitude.
Effective Date	The date of certification of the contract, as evidenced by a notice to proceed issued from SFMTA to Contractor.
General Metered Parking or GMP	Refers to locations where parking meters are in effect for parking for all types of vehicles.
Hotlist	A listing of credit card and/or smart card numbers that are not valid forms of payment as a result of fraud, theft or other misuse.
Idle	Refers to the state when no payment is in progress. Screen displays static information messages until a payment is started, at which time the Meter switches to Active.
Industry Standards	
Meter Mechanism	The 'brains' of the Meter device.
Meter Operation, Operating Hours, Enforcement Hours	Days and times when payment is required for use of parking spaces..
Metered Space	A parking space managed by a single-space parking Meter or multi-space Meter.
Meter Shop	SFMTA's parking Meter maintenance and administration facility.
Mixed Payment Transaction	A transaction where a Customer uses more than one payment type (e.g., coin and credit card) to pay for a single parking session.
MMS	Meter Management System: A package of software applications consisting of a relational database, user interface, reporting applications , and Meter programming module.

Term or Acronym	Definition
Near Field Communication or NFC	The ability to pay for use of the parking Meter with a smartphone or certain smart cards by bringing them into close proximity with each other.
Operating Schedule	Set of rules that govern the overall hours that the Meter is in effect and may include TOW, prepayment settings, and time limits.
Parking Space ID	Unique permanent identifier assigned to a metered space when it is added to the Parking Space Inventory.
Payment Window	Window of time during which a Customer is conducting a payment at the Meter before the Meter considers the payment completed and transmits the transaction to the MMS.
PBP	Pay-by-Phone
PCO	Parking Control Officer employed by the City and County of San Francisco to enforce parking regulations.
PDT	Personal Data Terminal (handheld device)
PMR	Parking Meter Repairer
Post ID	Unique number that identifies the location of a metered space by street, block number and side of the street.
Prepay Time; Prepayment Time	Time of day before the beginning of Operating Hours when Customer is allowed to pay for time that commences at the beginning of Operating Hours.
Price Schedule	Set of rules that govern Meter rates
Parking Space Inventory or PSI	The complete listing of parking spaces that are or have been metered spaces in SFMTA's Data Warehouse. The Parking Space Inventory table stores all attributes of the metered spaces except for variables that govern Meter Behavior; the latter are in the Operating Schedule and Price Schedule tables.
Regulatory Requirements	Federal rules and regulations governing design and operation of the Meters.
RMA	Return Merchandise Authorization. The process by which defective parts are returned and replaced.
Screen	Display on the Meter that shows dynamic messages programmed remotely.
Serco	Serco Inc., the SFMTA's contractor for Parking Meter Collection and Counting Services.
SFMTA	San Francisco Municipal Transportation Agency, an agency of City.
SFMTA Parking Card	Prepaid cards sold by SFMTA that can be used at parking meters only.
SFPM	San Francisco Parking Management, a database and information system that provides maintenance and revenue information for all parking meters under the purview of the SFMTA. It is one of two databases managed by the SFMTA.
SFTP Site	Secure file transfer protocol site
Special Event	A public event for which SFMTA charges a premium parking rate.
Standard Variables	Meter programming and reporting variables typically included in the MMS, such as physical locators: area, street, latitude, longitude and Behavior.

Term or Acronym	Definition
Time Limit, Max Time	Maximum amount of time a Customer is allowed to park during Operating Hours.
Time Slot	A period within a day (12 AM to 11:59:59 PM) defined by a START time and an END time and assigned a set of rules that govern the Meter Behavior within those hours.
Tow	Refers to a period that a vehicle may be towed for violation of parking regulations.
User	Person who uses the MMS (e.g., SFMTA Meter Shop staff).
User-Defined Variables	Variables defined and supplied by SFMTA and not typically included in the MMS, primarily used to filter and sort metered spaces in ways that are useful to SFMTA only and do not affect Meter Behavior.

SECTION I: ADMINISTRATIVE

A. Administrative: General Specification Requirements

The Meter hardware and software specifications in the Contractor's submittal shall match the equipment capabilities and supporting software that the Contractor delivers upon execution of the contract.

1. Training

The Contractor shall provide the following training

- **a.** A local project manager and field service technician who shall provide ongoing training at any time required by SFMTA.
- **b.** Provide all training in San Francisco, California at a location to be determined by SFMTA. The Contractor shall cover all travel and other costs associated with training.
- **c.** Provide training in the MMS in all areas necessary to deploy, maintain, operate, and enforce parking meters to be supplied under the contract.
- **d.** Provide four eight-hour days of detailed training covering maintenance, finance/accounting/audit, enforcement, and MMS usage, as scheduled by SFMTA. If, at SFMTA's sole discretion, more training is required, the Contractor shall provide up to three additional, eight-hour days of detailed training covering maintenance, finance/accounting/audit, enforcement, and MMS usage, as scheduled by SFMTA. Ensure that Initial training for system managers, Meter Shop field personnel, and collection staff is completed prior to turning on the new Meter according to a schedule to be approved by the SFMTA.
- **e.** Conduct follow-up training for all other affected personnel throughout the period of installation, to be completed prior to turning on the new meters, and provided on an as-needed basis for a fixed period following system turn-on.
- **f.** Supply and keep current hard and digital copies of all operating, training and repair manuals.
- **g.** Grant the SFMTA rights to reproduce all training and operation manuals needed for staff.
- **h.** Train and certify SFMTA and/or its designee as Level II Support Technician to support the proposed Meter warranty (minimum five persons shall be certified).

The details of the Training Plan components are located in *Attachment 14 – Contractor Deliverables*.

2. Customer Support

a. The Contractor shall provide the customer support in the following areas:

1. Help Desk:

a. Contractor shall provide telephone based help desk services during standard business hours from 8am – 5pm PST. Contractor shall offer both in-state phone support and a toll-free telephone option.

b. Contractor shall provide after-hours service in the case of emergency, weekends, after hours and holidays.

c. Contractor will also provide contact information to all Contractor senior staff should such an emergency arise.

2. Online Help:

a. Contractor shall provide online help tools, such as access to all product manuals, frequently asked questions, as well as the ability to submit help tickets, and track the status of such tickets.

b. Contractor shall provide the online ability to monitor and track RMA status.

c. ***Within 120 days of the Notice to Proceed***, Contractor shall provide a video based training and help video library that can be accessed anytime, 24/7.

3. On-Site Support:

a. Contractor shall provide both on-site Project Management as well as on-site Field Technical Support for the entire term of the contract.

b. Contractor's Project Management and on-site Field Technical Support resources shall be fully dedicated to SFMTA during the installation periods, and continue to be available locally for the entire Contract term.

4. Customer support staff shall return a call from the SFMTA within 15 minutes during operating hours. Calls requiring a response from a senior member of the Contractor's staff shall be returned within 15 minutes during the above hours. City reserves the rights to change the business hours to reflect changes in the Meter hours and days of operation.

5. Any subcontractor(s), e.g., gateway companies, shall be subject to the same availability standards (i.e., between 8 am and 5 pm PST/PDT) and shall return calls within 15 minutes.

3. Warranty

a. The warranty period on each phased deployment of meters shall commence when the entire phase is Accepted in writing by SFMTA. SFMTA and

Contractor shall establish a deployment schedule during contract negotiations.

b. The Meters shall be warranted to operate in full functionality for a period of at least three years from the date of Acceptance.

c. Contractor warrants that it shall convey good title to the Meters purchased by City and that at the time of any such sale the Meters shall be free and clear from all liens and encumbrances.

d. The Contractor shall pay for warranty shipments from the Meter Shop to the Contractor's warranty handling facility and back to the Meter Shop.

e. The Contractor shall be responsible for providing all new software and firmware releases (as they become available and approved by the SFMTA) at no cost to the SFMTA so long as the Meters are in use by the SFMTA.

f. The Contractor shall supply and maintain an adequate inventory of replacement components (e.g., card readers, coin validators, CPU boards) locally and/or at the Meter Shop.

g. Meters shall be warranted to operate as proposed within a temperature range of 0 to 140 degrees Fahrenheit and under environmental conditions found in San Francisco, including but not limited to wind-blown grime, rain, fog, salt air, sun (including direct sunlight), and vibrations.

h. Warranty coverage shall include repair and/or replacement, at Contractor’s discretion, of any part or modular component determined to be defective in material or workmanship under normal use and service in a timely manner and at no additional cost to the City.

i. Repair or replacement under warranty of any defective product (including any Meter or subcomponent) will not extend the warranty period for that product or subcomponent.

j. Returns for credit will only apply once Contractor has received the defective product (including any Meter or subcomponent) and confirmed that the defects arose within the warranty period and are covered under the terms and conditions of the warranty provided.

k. This warranty does not cover damages, defects or Failures solely caused by or due to accident, improper handling or operation, natural disaster (including earthquake), acts of terrorism, wars, riots, vandalism, neglect of routine maintenance as instructed by Contractor, or use of parts not authorized by Contractor.

l. City acknowledges that any modification (not to include required maintenance and repairs) not reasonably in accordance with Contractor's directions or performed by others in such manner to affect the work materially and adversely may void this warranty. Prior to any modification to the work, SFMTA shall notify Contractor in writing Contractor shall respond in writing within five business days describing how any such modification will affect the warranty.

4. MMS Support and Licensing

a. Maintenance and license requirements:

Contractor shall provide a hosted MMS, and maintain all required licensing for the MMS, for as long as the Meters are in use by the City. Licensing costs for the MMS are listed in *Appendix C – Pricing.*

b. Service Level Agreements (SLAs): Contractor MMS service level shall exceed 99% uptime.

c. Hardware requirements: Contractor shall provide a hosted MMS.

d. Contractor's MMS shall only require an internet browser to access the system. Contractor shall be responsible to upgrade or otherwise modify the MMS to accommodate future internet browser upgrades at no cost to the City.

5. Spare Parts:

A complete listing of Spare Parts is located in Appendix C-1 – Spare Parts and Services List.

6. Installation

a. Each mechanism shall be delivered complete, including all parts and materials needed for immediate deployment.

b. Meters shall be properly configured, tested, able to connect to the network and fully operational at the time the SFMTA takes possession of the meters.

c. As installation progresses, the Contractor shall create electronic inventory records for the installed meters, including but not limited to delivery dates, install dates, and post installation location code.

d. SFMTA Installation Deliverables

The SFMTA will provide the following deliverables prior to Meter shipment.

i. Meter locations and associated configuration parameters (rates, hours, display screens, etc.) as provided by Meter location and configuration worksheets as used during the SF*park* project.

ii. Merchant account information

iii. Logistics information (dates, quantities, and locations for delivery, etc.)

iv. Installation logistics requirements (number of people required to be provided by IPS)

v. Administrative information (Purchase orders, etc.)

vi. Access rights to MMS (users and associated access rights)

vii. Training (all functional groups identified)

viii. Customizations / Integration Information (contactless requirements, SAM requirements, licensed content or source code, etc.)

ix. Meter decals.

7. Certification and Compliance

Contractor shall have obtained prior to award of the Contract, renew as appropriate, and maintain throughout the Contract term, the certifications listed below with respect to the Meters and related applications and functionality provided under this Agreement. The Contractor shall provide a copy of all renewed compliance certificates or other documentation of the renewals ***no later than 30 days prior*** to the expiration of the current compliance certificate. At any time during the term of the Agreement, the Contractor shall provide documents regarding certification ***within two business days*** of a request from the SFMTA.

a. All required FCC Certifications

b. PCI-DSS Certification. The Contractor's credit card gateway shall maintain appropriate Payment Card Industry Data Security Standards (PCI DSS) certification as a Level 1 Service Provider. The Contractor shall comply with

Visa Cardholder Information Security Program (CISP) and MasterCard Site Data Protection (SDP) programs.

c. PA-DSS Certification

i. The Meter system payment application shall be Payment Application Data Security Standard (PA-DSS) validated by a Payment Application Qualified Security Assessor (PA-QSA) and be verified on PCI SSC's list of PA-DSS validated payment applications.

ii. Contractor's payment software submitted for PA-DSS validation shall incorporate:

- "Hold and Send" protocol
- Contactless Payment
- Remote connections capability such as Short Messaging Service (SMS)

d. New Regulatory Requirements and Industry Standards

i **EMV Certification.** Should EMV certification become a Regulatory Requirement or Industry Standard for acceptance of credit cards, the Contractor shall, at its own expense, obtain such certification and provide proof to the SFMTA that this certification has been established.

ii **Other New Requirements**. The Contractor shall, at its own expense, update certifications for Regulatory Requirements and Industry Standards that impact the Agreement as new requirements are established, and shall notify the SFMTA in writing of these new requirements when they are in effect. Should the SFMTA learn about new requirements, the SFMTA will inform the Contractor and request that the Contractor verify compliance with such requirements. The Contractor shall be responsible at its own expense to establish proper certification at the first available opportunity, and shall inform the SFMTA in writing of the timeline for compliance and any potential impact to services pending compliance.

B. Additional Administrative Requirements

1. Pay-By-Phone Integration

The Meter and the MMS shall be capable of integrating with SFMTA's designated Pay-By-Phone (PBP) service provider. The integrated solution must include communicating PBP payments so that the payment is clearly indicated on the Meter for customer verification and enforcement and maintenance inquiries.

2. Parking Meter Disposal

The Contractor shall dispose of all old Meters in compliance with applicable state environmental equipment disposal regulations. Any proceeds from recycling shall be remitted to the SFMTA as a credit to the support services invoices

issued beginning in the first month after the disposal process is complete. Contractor may also submit invoices for any recycling fees and actual labor and transportation costs incurred as part of the disposal process.

3. Revenue Processing

a. The SFMTA reserves the right to change the existing gateway provider to a City-preferred gateway at any time during the term of the contract. The SFMTA and the Contractor shall negotiate costs and charges associated with the change.

b. Credit card processing shall be performed by the acquiring bank under contract with the City.

c. Deposits must be made to a City-owned account.

4. Consultant Services Rate-Additional Services

The SFMTA may, at its sole discretion, exercise the option to request parking-related consulting services not required by other provisions of the Contract. Such services may include, but are not limited to: Analytical support for developing pricing strategies based on the best practices employed worldwide, Meter planning, inventory control, payment card development options and Meter maintenance and repair operations. Rates for these services are listed in Appendix C-1 -- Spare Parts List and Services.

5. Non-Warranty Meter Repair Services

In the case of non-warranty repairs, IPS shall provide the City a quotation for any such services on an as-needed basis after inspection of the products to be repaired. IPS shall perform non-warranty repair services upon receipt of a purchase order in the amount of the approved price of the work. IPS shall return non-warranty repaired Meters to the City within four to six weeks of receipt of an approved purchase order.

C. Administrative Optional Specifications

Contractor shall, upon request of the SFMTA, provide a timeline for developing one of two options of a user-facing website that would allow a credit card user to print a receipt of his or her transaction at home. The proposed website shall use “open architecture” to allow for integration with additional data sources.

1. Option 1: creating a site whereby a Customer would enter only the three following pieces of information:

- Date and approximate time of day (plus or minus 60 minutes) the transaction began;
- The Meter number
- Last four digits of credit card number.

2. Option 2: creating a site whereby Customers would register their email addresses and credit card numbers. Whenever a registered credit card number

was used at any Meter, the user would receive a receipt in a PDF format at the registered email address.

SECTION II: METER MECHANISM

A. Meter Mechanism General Specification Requirements

1. General

a. All materials and components of the Meter shall be new and unused.

b. Meters and associated systems shall comply with all applicable ADA regulations.

c. Meters shall have a modular design such that Meter components shall be able to be exchanged or replaced in the field in less than 10 minutes.

d. All electronic components, connections, CPU and wiring shall be fully weatherproofed for their useful life.

e. The proposed mechanism shall be equipped with two Secure Access Memory (SAMs) sockets capable of accepting card schemes.

f. Meters shall have built-in diagnostics software that date- and time- stamps all events for retrieval and analysis in field or remotely; all data shall be integrated with the MMS supplied under this contract.

g. Meters shall feature an out-of-order function that date- and time-stamps the out-of-order event for eventual comparison to parking citation information. This information shall be automatically sent wirelessly to the MMS (assuming that power and communications are available), and shall also be available for manual collection by maintenance personnel (via mobile MMS and/or handheld) or other manual interface at the meter.

h. The Meter shall allow for adding time to an existing parking session.

i. Meters shall accept all available types of payment for adding time.

j. Meters shall periodically download and store the Hotlist from the MMS so that they prevent cards on the Hotlist from being used even when communication is not available.

k. Meters shall be equipped with GPS technology that allows the MMS to enable the end user to enter the Meter terminal number in the search field and generate a report with the exact location of the Meter on the map.)

2. Coin Chute

a. Coins passing through the Meter shall be deposited directly into a sealed container in a separate vault area of the meter.

b. Meters shall provide a count of all invalid coins.

c. If the coin slot is inoperable, meters shall have the option to accept card payments (e.g., credit card and smart card), and third party payments (e.g., PBP payments).

d. The coin chute or track shall be a free-fall type.

e. The chute shall include an anti-backup provision to prevent the retrieval of deposited coins (e.g., attached to strings, paddles, wires).

f. The entrance to the chute shall be replaceable stainless steel to accommodate or screen out coins of various sizes.

g. The jam alarm shall only stay Active as long as the cause of the jam is present in the coin chute.

h. When the coin chute detects a jam, the jams shall be recorded in the maintenance log. At a minimum, the Meter shall be able to detect the following objects:

i. bent paper clip

ii. bent soda can tab

iii. cotton

iv. toothpick

v. paper matchbook cover

vi. folded plastic straw

vii. coffee stirrer

viii. coin-wrapped in tape

3. Coin Validation

a. Meters shall provide a count of all coins or other metallic objects passing through the coin chute that match the programmed characteristics of valid coins to a level of accuracy of 99 %, so 990 coins out of 1000 shall be recorded.

b. The coin validation mechanism shall be programmable to accept a minimum of 16 different coins and/or tokens including U.S. nickels, dimes, quarters and dollar coins.

c. The coin validation system shall accept all user-defined coins and tokens through software parameter changes only. Software changes shall be able to be sent to the Meter wirelessly and via a mobile MMS and/or a handheld device. SFMTA shall also have the option to manually train the Meter for this purpose.

d. Should the U.S. Mint change the existing currency in any way the Contractor shall, at its own expense mutually agreed-upon time, update the software to accept the new coins issued as well as the old coins as soon as new coins are available to the general population.

e. The Contractor shall be able to alter the coin table to add new coins or to improve screening of invalid coins upon the Agency's request. Any changes to the validation process shall be made within ten business days of written request by SFMTA. The SFMTA will provide at least 100 samples of items that it wants to be screened out as invalid coins.

f. The coin validator and coin chute operations shall incorporate no contact points that could be affected by grime or moisture, or a combination of the two.

g. The coin validation system shall register both metallic and non-metallic jams.

4. Screen

a. Screens shall have a configurable backlight feature.

b. Date and time shall be displayed on the screen at all times when the Meter is "on."

c. Meter Post ID shall be visible on one of the information screens.

d. Screens shall be able to electronically display:

i. Rates

ii. Days and hours of operation

iii. Tow information

iv. Instructions to the user

e. The screen shall be legible and visible under all daytime and nighttime lighting conditions, including fog and direct sunlight and at various angles, (e.g., a taller person will view the screen at a different angle than a shorter person.)

f. The screen shall be vandalism resistant.

g. During Operating Hours, the screen shall display the current time period and corresponding rate or regulation, and whether the Meter is in Idle or Active.

h. The screen shall be fully programmable to display, at a minimum, messages corresponding to the following conditions:

i. Condition 1: Meter is "on" and Idle before operating hours. Information: Days/hours of operation, time slots, rates, regulations; configurable "Free" message (e.g., "Free until XX:XX).

ii. Condition 2: Meter is "on," Idle, and unpaid during operating hours. Information: Days/hours of operation, time slots, rates, regulations; configurable "Expired" message.

iii. Condition 3: Meter is "on," Idle, and paid during operating hours. Information: Days/hours of operation, time slots, rates, regulations; countdown of time left before Meter expires.

iv. Condition 4: Customer inserts a card incorrectly during operating hours. Information: Error message specific to condition (e.g., "card inserted incorrectly").

v. Condition 5: Customer inserts credit card and it is declined. Information: Error message specific to condition (e.g. "Invalid card; use another card")

vi. Condition 6: Customer inserts parking card causing the Meter to become Active, adds/subtracts time and money using Meter inputs (e.g., +/- buttons), and confirms transaction (e.g., presses “OK” button). Information: configurable “please wait” message followed by configurable “transaction completed” message.

vii. Condition 7: Customer inserts parking card causing the Meter to become Active, but pulls card out before transaction is completed. Information: Configurable “transaction cancelled” message.

viii. Condition 8: Card slot is inoperable. Information: Days/hours of operation, time slots, rates, regulations; configurable error message specific to condition (e.g. “no cards; use coin”).

ix. Condition 9: Coin slot is inoperable. Information: Days/hours of operation, time slots, rates, regulations; configurable error message specific to condition (e.g., “no coins; use card”).

x. Condition 10: Both coin and card slots are inoperable. Information: Configurable message specific to condition (e.g., “out of order”).

xi. Condition 11: Customer presses “cancel” button. Information: Configurable “transaction cancelled” message.

xii. Condition 12: Meter is Active (payment is in progress). Information: current time slot and rate, time and corresponding payment stepping up or down as Customer adds coins or presses the +/- buttons to add/subtract time.

xiii. Condition 13: Meter is Active, current e has a rate assigned, next time period has a Tow regulation in the next time period; Customer adds money/time up to the beginning of Tow regulation. Information: Configurable “limit reached” message (e.g., “Limit Reached; Tow after XX:XX”).

xiv. Condition 14: Meter is Active, current time slot has a rate assigned, Customer adds money/time up to the time limit programmed in the meter. Information: Configurable “limit reached” message (e.g., “4-hr limit reached”).

xv. Condition 15: Meter is Idle, current time slot has Tow regulation. Information: Configurable “tow” message (e.g., Tow until XX:XX; DO NOT PARK”).

xvi. Condition 16: Meter is “on” and Idle after operating hours. Information: Configurable “Free” message (e.g., “No payment accepted”).

xvii. Condition 17: Meter has special programming in effect. Information: Days/hours of operation, time slots, rates, regulations; configurable “special” message specific to the special programming.

i. The screen shall support dynamic messaging functionality to reflect changes in pricing, regulations, display messages, format, or Configurations made in the MMS and communicated wirelessly to the Meter at least once per day.

5. Meter Interface

a. The Meter shall have a mechanism for inputting information (e.g., buttons, keypad).

b. The Meter shall have a mechanism that provides prompting and confirmation to the Customer as he/she conducts a payment at the meter.

6. Clock

a. Meters shall automatically adjust internal clocks for daylight savings time periodic changes.

b. Meter clocks shall be accurate to within plus or minus two seconds per day.

c. Meter clocks shall be synced each time they communicate with the MMS.

d. Meter clocks shall track each day of the week.

7. Power

a. Based on the operational parameters identified in Section II. A.7) j. i. of the Request for Proposals, new and fully charged Meter Non-Rechargeable Battery Pack (part # 795-600-H3) shall function and be warranted for one year from installation date.

b. Meters shall include a means to augment power through solar technology.

c. SFMTA shall be able to purchase both rechargeable and non-rechargeable battery components individually.

d. Batteries shall be standard “off-the-shelf” battery products available for consumers or shall be provided as an application specific battery pack by the Contractor.

e. Non-rechargeable batteries shall not include any electronic boards or components besides wire connection to the mechanism.

f. The voltage check system for rechargeable and non-rechargeable batteries shall be integrated into the mechanism reset sequence.

g. SFMTA maintenance personnel shall be able to replace non-rechargeable batteries without the use of tools (i.e., nothing should be screwed in or otherwise constrained from removal).

h. A low battery remote alarm indicator shall be included to facilitate timely replacement of batteries.

i. If a Meter loses power (solar and/or battery), or the battery becomes depleted or disconnected, the Meter shall be able to retain all stored programming, operational, and financial audit data for a minimum period of one year.

8. Visual Enforcement

Meters shall have a means for a PCO to determine payment status through visual inspection of the Meter itself.

9. Card Reader Payment and Processing

a. Meters shall accept the following: NFC payment, and, at a minimum, Visa and MasterCard. The NFC functionality shall only work with the card or device intended by the Customer to be used for parking payment.

b. Meters shall have the ability to be programmed for additional payment systems upon request of the SFMTA.

c. The maximum number of credit card transactions accepted before automatically disabling credit card payment method shall be configurable via MMS.

d. The credit card payment gateway provider shall be compatible with and certified for use by credit card processor at the acquiring bank of the SFMTA's choice (currently Bank of America Merchant Services "BAMS"); BAMS requires that the payment gateway provider be "certified" by its credit card processor (TSYS, formerly Vital, and FirstData).

e. The meter's card reader shall be non-locking and shall always permit users to remove cards without damage to the card, especially during a fault situation or power failure.

f. If a credit card is inserted improperly, the card shall be easily removed by the Customer without the use of any tools.

g. If the card slot or reader is inoperable, the Meter shall have the option to accept coin and contactless methods of payment.

h. The card connector shall be rated at more than 250,000 cycles under ideal conditions.

i. The Meter shall use a switch for the card connector.

j. The card reader module shall have no electronic intelligence of its own. All of the driver and decision-making circuitry that establishes communication with inserted cards shall be located on the main board.

k. Meters shall be able to accept a GemClub Memo Card, the smart card the SFMTA currently uses in its parking meters, or future-developed payment card.

l. At SFMTA's request, the Contractor shall develop alternative card payment option(s). The SFMTA and the Contractor shall mutually agree to a timeline for delivery and negotiate development costs.

m. A payment by SFMTA parking card shall consist, generally, of the following steps:

i. Customer inserts SFMTA parking card in card slot.

ii. Meter reads and displays balance in the parking card.

iii. Customer adds/subtracts time and money using Meter input mechanism.

iv. Customer confirms payment using Meter input mechanism.

v. Meter writes new balance back to the SFMTA parking card while displaying configurable "please wait" message.

vi. Meter displays configurable "transaction completed" message and starts counting down time.

10. Revenue Audit Capabilities

a. Electronic information (coin count and revenue totals) shall be 99% accurate when compared to the following:

i. Coins: between MMS collection report and physical coin count.

ii. Credit Card: between gateway report and bank deposit.

iii. Coin, credit card and smart card revenue: between MMS, financial reports and real-time transmission.

b. Proposed meters shall record/store the number and value of all valid coins, including a count of each individual type of valid coin and the date and time each coin was inserted.

c. Meters shall record/store a count of each invalid coin.

d. Meters shall record/store the number and value of valid pre-paid and credit card transactions, and a summary of electronic cash amounts.

e. Each type of payment information (valid coins, invalid coins, electronic payments) shall be stored separately in the mechanism's memory.

f. Audit information shall be available for retrieval through MMS (both standard and mobile versions and/or handheld device).

g. Financial audit data shall not be affected by the reading or retrieval of maintenance data, by resetting the meter, or by other maintenance events.

h. Meter shall be capable of storing 300 individual transactions or 60 Days of transactions, whichever is higher, without a communication event.

i. Memory for all Meter events and transactions shall be capable of being stored for the lifetime of the meter; however the Meter shall clear memory of transaction that were successfully transmitted to the MMS.

j. Meter audit record attributes shall include but are not limited to the following:

- Post ID and device serial number
- Date and time stamp
- Method of payment

- Value of payment
- Time purchased
- Time transmitted to MMS

k. Contractor shall ensure that any record transmitted can be retrieved through the standard MMS, on a mobile device, or through the MMS Meter maintenance application. Any event or record that has not been transmitted due to a communication failure shall be retrieved and transmitted to the MMS by re-establishing the wireless connection or via manufacturer's in-house terminal software.

11. Collection Event Recording and Revenue Counter Reset

a. On the Effective Date of the Agreement, the Contractor shall provide an ability to reset Meter coin counters at the time of the physical coin collection through the use of coin collection cards that record time of collection and who collected the coins, and resets the coin counters.

b. SFMTA reserves the right to request that the Contractor develop at its own expense either or both of the two following options:

i. Develop a wired/wireless vault door solution with input from SFMTA, so that when the vault door is opened, the Meter revenue counters are automatically reset.

ii. Integrate the electronic lock MMS collection audits into the MMS so that the data is available for reporting and revenue reconciliation.

c. Using any of the methodologies listed above, the Meter shall be able to record the time and date of the door opening, and detailed coin audits since the last collection within the MMS.

d. Meter shall be able to support opening of the vault door for maintenance purposes without resetting mechanism coin counters.

e. All data regarding vault opening events or physical coin collection events shall be entered into the MMS and be available as report filters.

f. The SFMTA shall have the option to reset the coin counters of Meters remotely from the MMS (both stand alone and mobile). This feature shall support both individual mechanism reset and group resets that depend on set MMS groupings. Implementation shall be contingent upon specifications to be developed by the Parties.

12. Communications

a. Meters shall ensure that at least 95% of transmit payment data and maintenance alert data shall be sent to the MMS wirelessly within 120 seconds after determining the transaction to be completed.

b. Meters shall support secure on-line authorizations of credit cards and smart cards at the time of the transaction.

c. Meters shall support a "hold and send" feature for credit card payments that can be activated when the communication network is down or not available and credit card payments cannot be authorized in on-line mode.

d. Meters shall initiate communication with the MMS periodically, on a schedule mutually agreed upon by SFMTA and the Contractor, regardless of the occurrence of transactions or faults.

e. Contractor shall provide the SFMTA with the option to determine what type of modem they wish to install in the Meters, including GPRS (T-Mobile) or CDMA (Verizon). SFMTA reserves the right to vary the type of modem used, depending on communications viability in both modem types in a particular install area.

f. When Meters are stored as part of the SFMTA's spare Meter inventory, the Meters' SIM or Electronic ID shall remain active or in stand-by mode, as determined by the SFMTA, so that the Meter can be powered up and made to communicate within 24 hours, for the term of the Agreement.

13. Communication Dead Zones

Contractor, at its own expense, shall conduct pre-installation surveys using both Meter equipment and handheld multi-carrier single-strength testers (Squid testers) to highlight any potential problem areas and address with carriers in advance of the deployment. Such surveys shall be conducted at each specific Meter location and at both ends and the middle of each block in order to provide representative data. If any trouble spots are found, Contractor will bring the carrier in for additional survey and remediation in advance.

14. Auditing and Reconciliation Procedures

Contractor shall ensure the following:

a. A card transaction is authorized on a Meter and assigned a unique transaction ID.

b. The transaction is securely transferred according to PCI-DSS Level 1 to the MMS and removed from the Meter memory.

c. Once the transaction has been settled in a batch, the batch ID shall be recorded for further record keeping and funds are transferred from the cardholder bank to the SFMTA merchant account every day.

d. A record of all transactions and credit card settlement statements are available within the IPS MMS. This can be reconciled on a daily basis (in a daily summary) or as each individual transaction on a given day.

15. Maintenance

a. Meters shall be easily maintained and serviced, and shall be designed so that metallic and non-metallic foreign objects can be cleared from the coin chute or track and/or card reader slot within a three-minute timeframe, under any weather conditions. No special tools shall be required.

b. Meters shall return to full functionality within one minute of replacing a coin chute or track and/or and card reader. The replacement process shall take no longer than three minutes. No special tools shall be required for replacement of these items.

c. Meters shall feature on-board diagnostics that include a full on-screen menu or display that shows electronic error codes that enable technicians to analyze problems on-site.

d. Meters shall allow for SFMTA's maintenance and Meter shop staff to add time without making payment and/or having the payment register as revenue in the audit information (e.g., if a Customer's payment has to be deleted during maintenance). This usage shall be logged as a distinct payment type (e.g., instead of the payment being labeled "cash" or "credit", it might be labeled "maintenance"). The value of the payment shall be logged as $0.00.

e. The proposed mechanism shall have the ability to temporarily disable the recording of cash and card (credit and smart card) totals to allow audit data test purchases by coin or card without being recorded in the payment audit data. After this feature is invoked, the recording of any coins/cards shall be immediately disabled to allow for testing. The test coins/cards shall not register until there has been no activity for a set period of time provided by the SFMTA (this shall be configurable via MMS), after which time the registering of payments is enabled automatically. Once the Meter testing is completed, the Meter shall automatically revert back to normal operation without further operator intervention or commands.

f. The proposed mechanism shall have a feature that allows maintenance staff to add a full day's time (up to 24 hours) to the mechanism without adding coin or card payments. (e.g., when a new Meter is installed in a previously unmetered area).

g. Contractor shall provide a smart phone maintenance application.

SECTION III: MMS, Meter Programming and Data Integration

A. MMS, Meter Programming & Data Integration General Specification Requirements

1. MMS – General

a. Login to the MMS shall take less than 60 seconds.

b. MMS shall contain, at a minimum, the following general modules:

i. System Administration

ii. Asset and Inventory Management

iii. Faults and Maintenance Reports

iv. Revenue Reports

v. Management of User Permissions and Alarms

vi. Hotlist

vii. Meter Behavior Programming

viii. Management of the maintenance work orders

c. MMS shall be server-based and accessed via the web. MMS shall not require any custom software to be installed on the end user's machine, other than the SFMTA standard web browser.

d. The Contractor shall be responsible to deliver any and all updates to its MMS to ensure full compatibility with the latest versions of the internet browsers for the useful life of the meters.

e. MMS shall offer a uniform user interface, in which the same colors, fonts, nomenclature, icons and logos are used for all MMS modules.

2. MMS Documentation

a. All standard reports in the MMS shall be fully documented and explained in the MMS manual, including allowable values.

b. All standard Meter Behavior programming variables shall be fully documented and explained, in the MMS manual, including allowable values.

c. All standard Meter Backend Settings shall be fully documented and explained, in the MMS manual, including allowable values.

3. MMS Users and Permissions

a. MMS shall support a minimum of 10 different user groups, each with its own set of permissions for viewing reports and/or conducting changes to Meter programming.

b. MMS shall allow SFMTA to manage users and permissions directly, without having to go through the Contractor in order to add users or create or modify user permissions.

4. Asset and Inventory Management

MMS shall, at a minimum, have the ability to record and display the following information:

a. Date- and time-stamp of all maintenance, inventory, and audit data.

b. Mechanism serial numbers, maintenance routes and descriptions, and parking space Post ID numbers.

c. Audit, maintenance, inventory and programming transactions for a given space parking space Post ID number.

5. Faults and Maintenance

a. The MMS shall contain reports on Meter health status.

b. The MMS shall record Meter maintenance performed by repair staff.

c. The MMS shall record all meters' general status and performance, including fault and maintenance events, parking sessions, financial transactions, and payment status time.

d. The MMS shall contain, at a minimum, the following reports:

i. Maintenance activity by mechanism serial number, parking space Post ID, parking Meter repairer, or operational status.

i) Exception report for meters not repaired.

ii) Exception report for meters that have not communicated with the MMS within 24 hours or more, including the number of hours since last communication.

iii) Operational status by: mechanism serial number, parking space Post ID, date and time. The latter shall include automatic health events created by Meter and manually entered by PMR's maintenance activity (e.g., cleared cotton jam, cleaned Meter dome, remove graffiti).

6. MMS Alarms

a. The MMS shall log all alarms and retain information, including time of alarm, time resolved, who resolved the problem, and the action taken.

b. The MMS shall include, at a minimum, initial warning alarms and subsequent shutdown/failure alarms for the following events:

i. Coin collection – when physical collection occurs.

ii. Coin collection – when the coin canister is full.

iii. Initial low battery setting has been reached.

iv. Battery is experiencing a fault.

v. Wireless communications interruption.

vi. Coin payment and card payment operation failure.

vii. Operating system fault.

viii. Operational functions.

ix. Door open detection (vault and maintenance doors, if applicable).

x. Status/record of all file transfer activities.

xi. Live alarm to detect communication status.

xii. Service agent number/technician and IT trail.

xiii. Notice of various initialization and machine setting routines.

xiv. Communication failure alarm in back office software.

xv. No transaction within defined timeframe.

xvi. No coin transaction within defined timeframe.

xvii. No card or credit card transaction within defined timeframe.

xviii. MMS is "frozen" or down.

xix. Server that accepts Meter data, and supports the MMS, is down.

c. The MMS shall alert SFMTA every day that the number of meters in the non-reporting meters list reaches 2% of the number of accepted meters.

7. Revenue Reports

a. The MMS shall contain summary revenue reports.

b. The MMS shall contain detail revenue reports, to the Meter level.

c. The MMS shall report revenue broken down by payment type (i.e., coin, SFMTA parking card, credit card, other).

d. The MMS shall include a Transaction Detail Report that lists the Transaction ID and Transaction Date, Transaction Start Time, Transaction End Time, the Amount Paid, the Payment Type, the Time Purchased. In the case where payment is made during prepayment hours, the Time Purchased shall include only time starting at the beginning of operating hours for which payment is required.

e. The MMS shall, at a minimum, have the ability to generate the following (or similar) reports by date/date range:

i. Revenue by parking space Post ID, collection zone, maintenance route, or other geographically defined areas, e.g., Parking Management Area or Parking Management Zone.

ii. Payment for parking session by parking space Post ID, collection zone, maintenance route, or other geographically defined area.

iii. Current location of mechanism by mechanism serial number.

iv. Daily Meter collection report with Meter numbers, route numbers and amount collected by metered space.

v. Exception report for meters not collected.

vi. Revenue over a specified time period.

vii. Collection revenue over a specified time.

viii. Average number of meters and % of inventory out of order over a specified time period.

ix. Average repair time over a specified time period.

x. Rejected and Declined cards (e.g. credit cards, smart cards, NFC cards etc.) over specified period of time and area (e.g. collection route, maintenance route, enforcement route etc.). The report shall also be able to identify overall share of rejected/declined transactions based on card transaction counts and revenue.

f. The MMS shall have flexibility in reporting functions, including user-generated customized reporting. To the extent reports cannot be modified by the user, the Contractor shall develop any additional non-standard reports at no extra cost. Timing of development will be dependent on the complexity of the report requested. The Parties shall negotiate the schedule for development prior to commencement of this Work.

g. The MMS shall provide time and date range reporting capabilities of various payment statuses (e.g. coin revenue, credit card revenue, smart card revenue etc.), revenue collection, alarm status, operational status, current and historic Meter faults.

h. The MMS shall include a standard report showing the usage of the maintenance cards, maintenance feature that disable revenue totaling, and maintenance payments.

i. The MMS shall include a standard report showing the number of rejected smart cards and credit cards per machine broken out by reason for rejection including at least the following three reasons:

i. Bank declined the charge

ii. Communications failure prevented an authorization from being approved, and

iii. The card was unreadable

j. The MMS shall include a standard report showing revenue from each collection day to the following collection day.

k. The SFMTA shall be able to introduce new payment types and have them reflected in the Revenue Reports.

8. Management of User Permissions and Alarms

The MMS shall be configurable to send alarms to designated personnel if a Meter is not functioning.

9. Meter Location Assignment in MMS

a. The MMS shall accommodate at least twelve symbol alpha numeric format of the Meter identification numbering sequences, including but not limited to Meter number (i.e. Post ID), parking space number, collection zone number, enforcement zone number etc., (The current format is nine characters: eight numeric & one symbol, e.g., 111-11111).

b. The MMS shall allow for assignment of Meter locations in batches via CSV file.

c. Meter Location Assignment

The Contractor shall enable Meters to communicate their location and download the correct Meter Behavior parameters from the MMS.

10. Meter Backend Settings

a. The following Meter settings shall be programmable:

i. Standby mode and times

ii. Card payment settings

iii. Coin payment settings

iv. Screen parameters

v. Backlight settings

vi. LED settings

vii. Pay-by-Phone payment display settings

viii. Other Meter settings as applicable

b. The Meter card payment system shall be programmed with a customizable time delay for the user to cancel a transaction.

c. The Meter shall have the ability to be programmed for a configurable grace period, so that an amount of time, as specified by the SFMTA, may be added to any completed time purchase prior to expiration of the Meter.

B. MMS, Meter Programming, & Data Integration Additional Requirements

1. MMS – General

a. Date format shall be consistent throughout the entire MMS and shall be customizable by SFMTA.

b. MMS shall include a search module that allows the user enter in a parking space identifier (i.e. Post ID) and date or date range to get a list of the then currently applied rates (including any Special Event rates) and hours of operation.

c. The Contractor shall provide and maintain for the term of the contract (at no cost to SFMTA) SFTP site for the purpose of exchanging all XML and CSV files with SFMTA, except for incoming transaction data XML.

d. ***Within 60 Days of the Notice to Proceed***, the Contractor shall provide a file structure in the SFTP site as specified by SFMTA.

e. MMS shall be able to transmit Pay-By-Phone payment status to the meter.

f. The MMS shall allow SFMTA to create ad-hoc reports combining user-defined and standard variables. The Contractor shall develop any additional non-standard reports at no extra cost. The Parties shall negotiate the schedule for development prior to commencement of this Work.

g. The Contractor shall be able to develop (at no additional cost) up to 25 custom reports for the term of the contract.

2. Meter Behavior Programming

a. The MMS shall accept Meter programming in at least two different ways:

i. Manually, via web user interface in the MMS or mobile MMS.

ii. Automatically, via XML or CSV file deposited in Contractor's SFTP site, per the specifications in Attachments 1-13.

b. The MMS shall allow SFMTA to determine which variables related to a metered space may be edited via XML, CSV or web user interface.

c. The Meters shall accept programming for subsets of the rules required in section III.B.2.c and as described in Example III.B.2.c.

Example III.B.2.c

Rule Type	Overall Behavior	Rule	Specific Behavior
FREE	Meter has no rate assigned, does not accept card payment, and does not display time purchased if a coin is dropped. Time limit is 0.	FREE1, FREE2, FREE3	Meter displays one of three possible pre-defined FREE messages
PREPAY	Meter accepts payment before the beginning of operating hours, for the first hour of operating hours.	PREPAY1, PREPAY2	Meter displays one of two possible pre-defined PREPAY messages
RATE	Meter accepts payment and credits time based on programmed rate for specified hours of the day.	RATE00.00, RATE00.05,… RATE18.00	Meter charges specified rate during specified hours
TOW (no parking)	Meter has no rate assigned, does not accept card payment, and does not give time if a coin is dropped	TOW1, TOW2, TOW3	Meter displays one of three possible pre-defined TOW messages
TIME LIMIT	Meter has time limit assigned so that the amount of time a Customer can purchase is restricted for specified hours of the day.	TL0010, TL0015, … TL1440	Meter restricts purchase to specified time limit during specified hours.

d. The MMS shall accept programming for a set of Behaviors listed in requirement III.B.2 as defined by SFMTA during the development and testing phase, as listed below:

- Time periods programmed with behaviors FREE, PREPAY, RATE, and TOW have to be mutually exclusive; i.e. no period of day may not have two of these rules assigned at the same time
- Time periods programmed with behaviors PREPAY may only precede time slots programmed with rule type RATE.
- Time periods programmed for FREE or TOW may not have time limits assigned to them
- Time limits apply only to time slots programmed with RATES.

e. SFMTA shall be able to program RULE TYPE “RATE” with a rate = $0.00 (different than RULE TYPE “FREE”). When RULE TYPE “RATE” = $0.00,

Meter behaves the same as RULE TYPE “FREE”, but displays the information differently.

f. Meters shall accept programming of time limits independent of rates.

g. ***Within 90 days of the Notice to Proceed***, the user shall be able to program and re-program meters in batches, whether or not the original programming within the selected batch was the same, and without affecting other parameters of the original Meter Behavior.

h. The SFMTA shall have the option to determine the Configuration name rules for the Meters. Using these rules, the MMS shall automatically assign the proper Configuration name to the Meters when adding or updating the inventory.

i. The Meter shall never allow a Customer to purchase time in excess of the following, whichever is smallest, as illustrated in Example III.B.2.i:

i. The total number of operating hours for the day (i.e. if Meter operates from 9am to 6pm, the maximum number of hours a Customer can purchase is 11, and only if the time limit is “no limit”).

ii. The total number of hours left in the operating hours at the time the Customer conducts the transaction.

iii. The maximum number of continuous operating hours from the time of payment excluding TOW periods.

iv. The time limit programmed in the meter

j. Meters shall accept programming for a minimum of 15 unique time slots within a 24-hr period between 0:00:00 and 24:00:00 hours, each with its rule, as illustrated in Example III.B.2.j. Meters shall also be capable of displaying all time slots on the screen at any time of the day.

k. Meter shall accept programming for time slots as small as ¼ of an hour.

l. Meter shall accept programming for up to four different types of days within a week, where each day type contains a unique set of time slot + rule combination.

m. SFMTA shall be able to program rates in $0.05 increments.

n. If a Meter is programmed with two different rates in adjacent time slots and a Customer pays for time starting in one time slot and ending in the next, the Meter shall prorate the amount charged for the time purchased.

o. When programming meters via the web user interface, the user shall be able to set the effective time and date when he/she wants the new Meter Behavior take effect.

p. At any given time, meters shall behave in accordance with programmed Meter Behavior parameters until such time as a new set of parameters becomes effective.

3. Initial Meter Behavior Programming

a. The MMS shall support automatic initial programming of any new set of metered spaces at any time via XML files and CSV tables deposited in the Contractor's SFTP site. The programming of any new set of metered spaces will generally consist of up to four files submitted to the Contractor simultaneously or successively at short intervals as listed below:

i. Parking Space Inventory XML file, as specified in Attachment 1

ii. Operating Schedule XML file, as specified in Attachment 2

iii. Price Schedule XML file, as specified in Attachment 3

iv. Special event pricing and regulation XML file, as specified in Attachment 4

b. SFMTA will require initial programming of meters via XML file as follows:

i. After Notice to Proceed, following the programming development and testing phase: existing metered spaces, phased in batches of minimum of 100s, specific schedule to be agreed upon between SFMTA and the Contractor during contract negotiations

ii. Whenever newly-metered spaces are legislated in future, in batches of minimum of 100s.

iii. Whenever individual meters are added to already-metered blocks, as needed.

c. Any number of metered spaces submitted for programming by 11:59:59 PM any day shall be programmed into the system by 6:00 AM three business days later, i.e. metered spaces submitted by 11:59:59 PM Monday shall be programmed into the system by 6:00 AM Thursday and so on, barring holidays.

d. Following Meter programming, at SFMTA's discretion Contractor shall:

i. Provide a reconciliation XML file for verification in accordance with the specification in Attachment 7

ii. Set the programmed metered spaces to "Active" so that they are ready to go live on the street.

4. Meter Programming Reconciliation

a. Following initial programming or re-programming of any batch of meters, at SFMTA's request, the Contractor shall issue an XML file in accordance with Attachment 7 "Reconciliation XML specification" and deposit it in the Contractor's SFTP site for pickup by SFMTA.

b. ***Within 90 Days of the Notice to Proceed***, the MMS shall allow SFMTA to select any subset of meters using any combination of standard and user-defined filters and an effective date, and generate an XML file as specified in Attachment 7 "Reconciliation XML specification" and deposit it in the Contractor's SFTP site for pickup by SFMTA..

c. The MMS shall issue a reconciliation XML file containing the entire Parking Meter Space inventory and associated Descriptive Variables (both user-defined and standard) per the specification in Attachment 7 to the SFTP site for pickup by SFMTA. SFMTA will use the reconciliation XML to routinely compare the attributes of metered spaces in the SFMTA and the Contractor databases for the purpose of verifying programming and correcting any discrepancies that may arise.

5. Faults and Maintenance

a. The MMS shall contain reports on Meter health status.

b. The MMS shall record Meter maintenance performed by repair staff.

c. The MMS shall record all meters' general status and performance, including fault and maintenance events, parking sessions, financial transactions, and payment status time.

d. The MMS shall contain, at a minimum, the following reports:

ii. Maintenance activity by mechanism serial number, parking space Post ID, parking Meter repairer, or operational status.

iii. Exception report for meters not repaired.

iv. Exception report for meters that have not communicated with the MMS within 24 hours or more, including the number of hours since last communication.

v. Operational status by: mechanism serial number, parking space Post ID, date and time. The latter shall include automatic health events created by Meter and manually entered by PMR's maintenance activity (e.g., cleared cotton jam, cleaned Meter dome, remove graffiti)

6. MMS Alarms

a. The MMS shall log all alarms and retain information, including time of alarm, time resolved, who resolved the problem, and the action taken.

b. The MMS shall include, at a minimum, initial warning alarms and subsequent shutdown/failure alarms for the following events:

i. Coin collection – when physical collection occurs.

ii. Coin collection – when the coin canister is full.

iii. Initial low battery setting has been reached.

iv. Battery is experiencing a fault.

v. Wireless communications interruption.

vi. Coin payment and card payment operation failure.

vii. Operating system fault.

viii. Operational functions.

ix. Door open detection (vault and maintenance doors).

x. Status/record of all file transfer activities.

xi. Live alarm to detect communication status.

xii. Service agent number/technician and IT trail.

xiii. Notice of various initialization and machine setting routines.

xiv. Communication failure alarm in back office software.

xv. No transaction within defined timeframe.

xvi. No coin transaction within defined timeframe.

xvii. No card or credit card transaction within defined timeframe.

xviii. MMS is “frozen” or down.

xix. Server that accepts Meter data, and supports the MMS, is down.

c. The MMS shall alert SFMTA every day that the number of meters in the non-reporting meters list reaches 2% of the number of accepted meters.

7. Revenue Reports

a. The MMS shall contain summary revenue reports.

b. The MMS shall contain detail revenue reports, to the Meter level.

c. The MMS shall report revenue broken down by payment type (i.e., coin, SFMTA parking card, credit card, other).

d. The MMS shall include a Transaction Detail Report that lists the Transaction ID and Transaction Date, Transaction Start Time, Transaction End Time, the Amount Paid, the Payment Type, the Time Purchased. In the case where payment is made during prepayment hours, the Time Purchased shall include only time starting at the beginning of operating hours for which payment is required.

e. The MMS shall, at a minimum, have the ability to generate the following (or similar) reports by date/date range:

i. Revenue by parking space Post ID, collection zone, maintenance route, or other geographically defined areas, e.g., Parking Management Area or Parking Management Zone.

ii. Payment for parking session by parking space Post ID, collection zone, maintenance route, or other geographically defined area.

iii. Current location of mechanism by mechanism serial number.

iv. Daily Meter collection report with Meter numbers, route numbers and amount collected by metered space.

v. Exception report for meters not collected.

vi. Revenue over a specified time period.

vii. Collection revenue over a specified time.

viii. Average number of meters and % of inventory out of order over a specified time period.

ix. Average repair time over a specified time period.

x. Rejected and Declined cards over specified period of time and area. The report shall also be able to identify overall share of rejected/declined transactions based on card transaction counts and revenue.

f. The MMS shall have flexibility of reporting functions, including user-generated customized reporting. To the extent reports cannot be modified by the user, describe how requests for non-standard reports will be supported in terms of any additional costs and turnaround times.

g. The MMS shall provide time and date range reporting capabilities of various payment statuses (e.g. coin revenue, credit card revenue, smart card revenue etc.), revenue collection, alarm status, operational status, current and historic Meter faults.

h. The MMS shall include a standard report showing the usage of the maintenance cards, maintenance feature that disable revenue totaling, and maintenance payments.

i. The MMS shall include a standard report showing the number of rejected smart cards and credit cards per machine broken out by reason for rejection including at least the following three reasons,

i. Bank declined the charge

ii. Communications failure prevented an authorization from being approved, and

iii. The card was unreadable

j. The MMS shall include a standard report showing revenue from each collection day to the following collection day.

k. The SFMTA shall be able to introduce new payment types (i.e. Tap and Go cards) and have them reflected in the Revenue Reports.

8. Management of User Permissions and Alarms

The MMS shall be configurable to send alarms to designated personnel if a Meter is not functioning.

9. Meter Location Assignment in MMS

a. The MMS shall accommodate at least twelve symbol alpha numeric format of the Meter identification numbering sequences, including but not limited to Meter number (i.e. Post ID), parking space number, collection zone number, enforcement zone number etc., (The current format is nine characters: eight numeric & one symbol, e.g., 111-11111).

b. The MMS shall allow for assignment of Meter locations in batches via CSV file.

d. Meter Location Assignment

The Contractor shall enable Meters to communicate their location and download the correct Meter Behavior parameters from the MMS.

10. Meter Backend Settings

a. The following Meter settings shall be programmable:

i. Standby mode and times
ii. Card payment settings
iii. Coin payment settings
iv. Screen parameters
v. Backlight settings
vi. LED settings
vii. Pay-by-Phone payment display settings
viii. Sensor settings
ix. Other Meter settings as applicable

b. The Meter card payment system shall be programmed with a customizable time delay for the user to cancel a transaction.

c. Meter shall allow programming for a configurable grace period where specified amount of time is added to any completed transaction time purchase.

d. Meter Backend Settings

Contractor shall provide the following Meter Backend Settings

i. Standby mode and times
ii. Card payment settings
iii. Coin payment settings
iv. Screen parameters
v. Backlight settings
vi. LED settings
vii. Pay-by-Phone payment display settings
viii. Sensor settings
ix. Other Meter settings as applicable

B. MMS, Meter Programming, & Data Integration Additional Requirements

1. MMS – General

a. Date format shall be consistent throughout the entire MMS and shall be customizable by SFMTA.

b. MMS shall include a search module that allows the user enter in a parking space identifier (i.e. Post ID) and date or date range to get a list of the then currently applied rates (including any Special Event rates) and hours of operation.

c. The Contractor shall provide and maintain for the term of the contract (at no cost to SFMTA) SFTP site for the purpose of exchanging all XML and CSV files with SFMTA, except for incoming transaction data XML.

d. ***Within 60 Days of the Notice to Proceed***, the Contractor shall provide a file structure in the SFTP site as specified by SFMTA.

e. MMS shall be able to transmit Pay-By-Phone payment status to the meter.

f. The MMS shall allow SFMTA to create ad-hoc reports combining user-defined and standard variables.

g. The Contractor shall be able to develop (at no additional cost) up to 25 custom reports for the term of the contract.

2. Meter Behavior Programming

a. The MMS shall accept Meter programming in at least two different ways:

i. Manually, via web user interface in the MMS or mobile MMS.

ii. Automatically, via XML or CSV file deposited in Contractor's SFTP site, per the specifications in Attachments 1-13.

b. The MMS shall allow SFMTA to determine which variables related to a metered space may be edited via XML, CSV or web user interface.

c. The Meters shall accept programming for subsets of the rules required in section III.B.2.c and as described in Example III.B.2.c.

Example III.B.2.c

Rule Type	Overall Behavior	Rule	Specific Behavior
FREE	Meter has no rate assigned, does not accept card payment, and does not display time purchased if a coin is dropped. Time limit is 0.	FREE1, FREE2, FREE3	Meter displays one of three possible pre-defined FREE messages
PREPAY	Meter accepts payment before the beginning of operating hours, for the first hour of operating hours.	PREPAY1, PREPAY2	Meter displays one of two possible pre-defined PREPAY messages
RATE	Meter accepts payment and credits time based on programmed rate for specified hours of the day.	RATE00.00, RATE00.05,… RATE18.00	Meter charges specified rate during specified hours
TOW (no parking)	Meter has no rate assigned, does not accept card payment, and does not give time if a coin is dropped	TOW1, TOW2, TOW3	Meter displays one of three possible pre-defined TOW messages
TIME LIMIT	Meter has time limit assigned so that the amount of time a Customer can purchase is restricted for specified hours of the day.	TL0010, TL0015, … TL1440	Meter restricts purchase to specified time limit during specified hours.

d. The MMS shall accept programming for a set of general business rules that govern the specific rules listed in requirement III.B.2 as defined by SFMTA during the development and testing phase,.

- Time periods programmed with behaviors FREE, PREPAY, RATE, and TOW have to be mutually exclusive; i.e. no period of day may not have two of these rules assigned at the same time
- Time periods programmed with behaviors PREPAY may only precede time slots programmed with rule type RATE.
- Time periods programmed for FREE or TOW may not have time limits assigned to them
- Time limits apply only to time slots programmed with RATES.

e. SFMTA shall be able to program RULE TYPE “RATE” with a rate = $0.00 (different than RULE TYPE “FREE”). When RULE TYPE “RATE” = $0.00,

Meter behaves the same as RULE TYPE “FREE”, but displays the information differently.

f. Meters shall accept programming of time limits independent of rates.

i. ***Within 90 days of the Notice to Proceed***, the user shall be able to program and re-program meters in batches, whether or not the original programming within the selected batch was the same, and without affecting other parameters of the original Meter Behavior.

j. The SFMTA shall determine the Configuration name rules for the Meters. Using these rules, the MMS shall automatically assign the proper Configuration name to the Meters when adding or updating the inventory.

m. The Meter shall never allow a Customer to purchase time in excess of the following, whichever is smallest.

v. The total number of operating hours for the day (i.e. if Meter operates from 9am to 6pm, the maximum number of hours a Customer can purchase is 11, and only if the time limit is “no limit”).

vi. The total number of hours left in the operating hours at the time the Customer conducts the transaction.

vii. The maximum number of continuous operating hours from the time of payment excluding TOW periods.

viii. The time limit programmed in the meter.

n. Meters shall accept programming for a minimum of 15 unique time slots within a 24-hr period between 0:00:00 and 24:00:00 hours, each with its rule. Meters shall also be capable of displaying all time slots on the screen at any time of the day.

o. Meter shall accept programming for time slots as small as ¼ of an hour.

p. Meter shall accept programming for up to four different types of days within a week, where each day type contains a unique set of time slot + rule combination.

o. SFMTA shall be able to program rates in $0.05 to $0.01 increments.

p. If a Meter is programmed with two different rates in adjacent time slots and a Customer pays for time starting in one time slot and ending in the next, the Meter shall prorate the amount charged for the time purchased.

q. When programming meters via the web user interface, the user shall be able to set the effective time and date when he/she wants the new Meter Behavior take effect.

r. At any given time, meters shall behave in accordance with programmed Meter Behavior parameters until such time as a new set of parameters becomes effective.

3. Initial Meter Behavior Programming

a. The MMS shall support automatic initial programming of any new set of metered spaces at any time via XML files and CSV tables deposited in the Contractor's SFTP site. The programming of any new set of metered spaces will generally consist of up to four files submitted to the Contractor simultaneously or successively at short intervals as listed below:

i. Parking Space Inventory XML file, as specified in Attachment 1

v. Operating Schedule XML file, as specified in Attachment 2

vi. Price Schedule XML file, as specified in Attachment 3

vii. Special event pricing and regulation XML file, as specified in Attachment 4

b. SFMTA will require initial programming of meters via XML file as follows:

i. After Notice to Proceed, following the programming development and testing phase: existing metered spaces, phased in batches of minimum of 100s, specific schedule to be agreed upon between SFMTA and the Contractor during contract negotiations

ii. Whenever newly-metered spaces are legislated in future, in batches of minimum of 100s.

iii. Whenever individual meters are added to already-metered blocks, as needed.

c. Any number of metered spaces submitted for programming by 11:59:59 PM any day shall be programmed into the system by 6:00 AM three business days later, i.e. metered spaces submitted by 11:59:59 PM Monday shall be programmed into the system by 6:00 AM Thursday and so on, barring holidays.

d. Following Meter programming, at SFMTA's discretion Contractor shall:

i. Provide a reconciliation XML file for verification in accordance with the specification in Attachment 7.

ii. Set the programmed metered spaces to "Active" so that they are ready to go live on the street.

4. Meter Programming Reconciliation

a. Following initial programming or re-programming of any batch of meters, at SFMTA's request, the Contractor shall issue an XML file in accordance with Attachment 7 "Reconciliation XML specification" and deposit it in the Contractor's SFTP site for pickup by SFMTA.

b. ***Within 90 Days of the Notice to Proceed***, the MMS shall allow SFMTA to select any subset of meters using any combination of standard and user-defined filters and an effective date, and generate an XML file as specified in

Attachment 7 “Reconciliation XML specification” and deposit it in the Contractor’s SFTP site for pickup by SFMTA.

c. The MMS shall issue a reconciliation XML file containing the entire Parking Meter Space inventory and associated Descriptive Variables (both user-defined and standard) per the specification in Attachment 7 to the SFTP site for pickup by SFMTA. SFMTA will use the reconciliation XML to routinely compare the attributes of metered spaces in the SFMTA and the Contractor databases for the purpose of verifying programming and correcting any discrepancies that may arise.

5. Screen Programming

a. Screens shall be able to communicate rates and regulations for every time slot programmed in the meter, each time slot in one line, so that a Customer arriving at any time of the day when the Meter is on can see all the time slots and related rates and regulations for that day.

b. If Meter requires more than one screen to display all time slots and rates for one day, then user shall be able to program lines that repeat across all screens and lines that change from screen to screen.

c. All time slots, rates and screens programmed shall be visible in the MMS.

d. ***Within 90 Days of the Notice to Proceed,*** all messages on Meter screens, including messages related to special programming, shall be based on pre-defined variables, as illustrated in Example III.B.5.d.

e. User shall be able to program Descriptive Variables, whether standard or user-defined, into Meter screens, as illustrated in Example III.B.5.e.

f. ***Within 120 Days of the Notice to Proceed***, the screen editor shall be independent of rate or tariff editor, so that messages are uniform across all Meter programming, as illustrated in Example III.B.5.f.

Example III.B.5.d/III.B.5.e/III.B.5.f [refers to all three requirements above]

User shall be able to introduce user-defined variables (such as Post ID in example below) into the screens.

User shall be able to pre-define all variables used on screens, so that changing a global message on all screens of all meters requires only changing a single variable.

[Post ID] [EXP1] – [TL_TXT] [TL1]
[ENF_TXT] [DAYF]-[DAYL]
[TS1_ST] – [TS1_END]: [RATE_1.50]
[TS2_ST] – [TS2_END]: [RATE_2.00]
[TS3_ST] – [TS3_END]: [RATE_3.00]
[DAY], [TIME]
[SCRL_TXT]

Results in:

470-01250 EXPIRED – MAX 30 min
ENFORCED MON-SUN
7:00am – 12:00pm: $1.50/hr
12:00pm – 3:00pm: $2.00/hr
3:00pm – 6:00pm: $3.00/hr
6 July 2012, 5:22 pm
MORE ↓

Where:

VAR NAME	VAR VALUE	SOURCE
Post ID	Post ID	User-defined variable stored in MMS
EXP_TXT	"EXPIRED"	User-defined variable with text content; tied to Meter status (Meter not paid)
TL_TXT	"MAX"	User-defined variable with text content
ENF_TXT	"ENFORCED"	User-defined variable with text content
DAYF	First day of week Meter is enforced	Meter behavior programming
DAYL	Last day of week Meter is enforced	Meter behavior programming
TSX_ST	Time slot X start time	Meter behavior programming
TSX_END	Time slot X end time	Meter behavior programming
RATE_1.50	RATE = $1.50/hr	Meter behavior programming
…		
DAY	CURRENT DAY	MMS/Meter clock
TIME	CURRENT TIME	MMS/Meter clock
SCRL_TXT	"MORE ↓"	User-defined variable with text content

If user wishes to change "ENFORCED" to "IN EFFECT" in all Meter screens, all he/she needs to do is change the value of variable ENF_TXT from "ENFORCED" to "IN EFFECT", and that will update every screen where variable ENF_TXT is called.

g. User shall be able to set default formats for displaying rates, times, time limits and other information on the screens

6. MMS Customization

a. The MMS shall allow for SFMTA or its designee a mechanism to prevent any number of credit cards or smart cards from being accepted, also known as a Hotlist. If used, any card (e.g. credit card, smart card, debit card etc.) account number the SFMTA adds to the Hotlist shall be denied at the meter.

b. ***Within 90 Days of the Notice to Proceed***, the MMS shall allow SFMTA to choose custom descriptors for standard variables routinely supported by the MMS in a master file or master page. Once saved, custom descriptors shall propagate throughout the MMS where the standard descriptors once appeared.

Example III.B.6.b

Master list of descriptors:

STANDARD DESCRIPTOR	DESCRIPTION	CUSTOM DESCRIPTOR (chosen by SFMTA)
Pole	Parking space identifier	PostID
Area Name	Name of street where pole is located	Street
…	…	…

Then:

ORIGINAL PAGE NAME	NEW PAGE NAME
Find Pole	Find PostID
Inactive Poles	Inactive Post IDs
Manage Poles	Manage Post IDs
Pole Transaction Detail	PostID Transaction Detail
Manage Areas	Manage Streets

And a report with the following original column headings:

Zone	Area	Pole

Shall have custom column headings:

Zone	Street	PostID

And so on.

c. ***Within 90 Days of the Notice to Proceed,*** in addition to vendor defined variables typically supported by the MMS, the MMS shall be capable of

storing SFMTA-defined variables as described in Table III.B.6.c and in Attachment 6.

Table III.B.6.c

Variable Name	Type/Size	Sample	Description
PARKING_SPACE_ID	number	100281	This is a surrogate ID automatically generated by SFMTA when a parking space is added to the database
JURISDICTION	varchar2(5)	SFMTA	Entity with jurisdiction over metered space (SFMTA or PORT)
OLD_RATE_AREA	varchar2(10)	Area 1	Corresponds to regulations that applied to metered spaces prior to SFpark, and still govern metered hours and rates in areas outside SFpark.
AREA_TYPE	varchar2(10)	Pilot	SFpark pilot area, SFpark control area, or "-" if neither.
STREET_BLOCK	varchar2(35)	BAY ST 100	Street name + street type + block number where metered space is located.
STR_NUM_PARITY	varchar2(4)	Even	Odd or even side of the street, based on street addresses.
ON_OFFSTREET_TYPE	varchar2(3)	ON	Describes whether the metered space is on street or off street.
CAP_COLOR	varchar2(10)	Grey	Colors correspond to how the metered space is regulated as described below. In the case of Grey, Green, Yellow, and Red, they also correspond to the actual cap (dome) color on the street.
DOME_COLOR	varchar2(10)	Grey	The actual color of the dome on single space meters.
SPACE_TYPE	varchar2(20)	GMP	Describes the type of metered space (GMP, GMP-ST, ML (Meter loading), MTL (Meter truck loading), MC (motorcycle), TOUR BUS, BOAT TRAILER); related to CAP_COLOR above
ACTIVE_METER_FLAG	char(1)	M	Describes Meter status (metered, temporarily removed, legislated but not yet installed, etc).
PMR_ROUTE	varchar2(10)	J-2	Parking Meter Repairer (maintenance) route.
COLLECTION_ROUTE	varchar2(10)	411	Describes coin collection route.
COLLECTION_SUBROUTE	varchar2(10)	411.52	Describes coin collection subroute.
PCO_BEAT	varchar2(7)	109A	Describes enforcement beats for SFMTA's Parking Control Officers (PCOs).
TOW_FLAG	char(1)	Y	Y/N indicates metered space has a TOW schedule.
PAX_FLAG	char(1)	Y	Y/N indicates metered space has a Passenger Loading hours.
COMMERCIAL_FLAG	char(1)	Y	Y/N indicates metered space has commercial loading hours.

d. ***Within 90 Days of the Notice to Proceed***, the MMS shall provide the ability to store **ten** additional user-defined variables (empty1, empty2, etc.). The SFMTA shall be able to designate these variables on as needed basis.

e. The MMS shall store the equivalent of the parameters contained in SFMTA's operating schedule type "OP" as defined in Attachment 2 – OUTGOING Operating Schedule XML specification and as listed below:

i. Days of week

ii. Prepayment time

iii. Start time

iv. End time

v. Time limit

f. The MMS shall allow SFMTA to pre-load allowable values for San Francisco street names and types (i.e. street, avenue, boulevard, etc) so that only existing names and types can be entered in the street data field.

g. ***Within 90 Days of the Notice to Proceed***, the MMS shall accept content provided by SFMTA via XML file to populate user-defined variables as well as standard variables as described in Attachment 1 – OUTGOING Parking Space Inventory XML specification.

h. ***Within 90 Days of the Notice to Proceed,*** the MMS shall accept content provided by SFMTA in CSV format to be uploaded to the MMS to populate user-defined variables as well as standard variables.

i. The MMS shall be able to export content into XML files as specified in Appendices 6 – INCOMING Parking Space Inventory XML specification and Attachment 7 – INCOMING Reconciliation XML specification on demand, for any Meter or set of meters selected by the user.

j. ***Within 60 Days of the Notice to Proceed,*** the MMS shall support expansion of the number of characters in both standard and user-defined variables.

k. ***Within 90 Days of the Notice to Proceed,*** user-defined variables shall consist of attributes of metered spaces only and shall not affect Meter Behavior; however, MMS shall allow SFMTA to filter by user-defined variables for grouping meters for the purpose of batch editing Meter Behavior, as illustrated in Example III.B.6.k.

Example III.B.6.k

Scenario: SFMTA currently has GMP meters that have 1-hr and 2-hr time limits, but may have different operating hours or regulations (e.g. some may have a TOW restriction in the morning whereas others do not). SFMTA wishes to change the time limit in all 1-hr GMP meters to 2 hrs. The user shall be able to select all meters where SPACE_TYPE = GMP and MAX_TIME = 1 hr and assign a 2-hr time limit to all of them at once

l. ***Within 120 Days of the Notice to Proceed,*** the MMS shall support the addition of any subset of the user-defined variables as columns to standard

reports to create ad-hoc reports that combine user-defined and standard variables, as illustrated in Example III.B.6.l.

Example III.B.6.l

Scenario: User wishes to insert additional information into the standard Meter Faults report for the purpose of assigning PMRs to maintenance shifts in the Marina neighborhood, and to optimize maintenance routes by having PMRs walk one side of the street first, then the other.

Sample standard Meter Faults report columns:

Area	Street	Post ID	Fault	Date

Standard Meter Faults report with user-defined columns, filters, and sorts added:

Area [Filter 1: Marina]	**PMR Route [Sort 1: ascending]**	Street	**Street and Block [Sort 3: ascending]**	**Side [Sort 2: ascending]**	Post ID	Fault	Date

m. The MMS shall support filtering and sorting based on user-defined variables as well as standard variables for programming, reporting, or other purposes.

n. The MMS shall support exporting daily Meter revenue CSV file as defined in Attachment 9.

o. The MMS shall support exporting daily Meter maintenance CSV file as defined in Attachment 10 and 11.

7. Inventory and Asset Management Reports

***Within 90 Days of the Notice to Proceed**:*

a. The MMS shall support a Parking Space Inventory Report that describes Meter Behavior for every time slot of each day, as illustrated in Example III.B.7.a.

Example III.B.7.a – Parking Space Inventory Report

	Street and Block	Post ID	Cap Color	Days	From	To	Free	Prepay	Tow	Rate	Time Limit
1	05TH ST 600	205-06621	Green	Mo,Tu,We,Th,Fr	12:00	8:00	X				
2					8:00	9:00		X			
3					9:00	3:00				$2.25	15 min
4					3:00	6:00				$2.00	15 min
5					6:00	12:00	X				
6				Sa	12:00	8:00	X				
7					8:00	9:00		X			
8					9:00	12:00				$1.50	15 min
9					12:00	3:00				$2.00	15 min
10					3:00	6:00				$1.75	15 min
11					6:00	12:00	X				
12				Su	12:00	12:00	X				
13	TOWNSEND ST 300	684-03121	Yellow	Mo,Tu,We,Th,Fr	12:00	6:00	X				
14					6:00	7:00		X			
15					7:00	6:00				$3.00	30 min
16					6:00	12:00	X				
17				Sa	12:00	6:00	X				
18					6:00	7:00		X			
19					7:00	6:00				$3.00	30 min
20					6:00	12:00	X				
21				Su	12:00	12:00	X				
22	03RD ST 300	203-03090	Grey	Mo,Tu,We,Th,Fr	12:00	7:00	X				
23					7:00	9:00			X		
24					9:00	12:00				$1.00	no limit
25					12:00	3:00				$2.00	no limit
26					3:00	4:00				$2.50	no limit
27					4:00	7:00			X		
28					7:00	12:00	X				
29				Sa	12:00	6:00	X				
30					6:00	7:00		X			
31					7:00	12:00				$0.50	no limit
32					12:00	3:00				$2.00	no limit
33					3:00	6:00				$2.25	no limit
34					6:00	12:00	X				
35				Su	12:00	12:00	X				

b. The Parking Space Inventory Report in the MMS shall allow customization by removal and addition of columns containing both standard and user-defined variables, as illustrated in Example III.B.7.b.

Example III.B.7.b – Customized Parking Space Inventory Report

The report below has the following differences as compared with the original report:

- Columns “Free” and “Prepay” have been removed, along with the associated time slots (rows).
- Column “Cap Color” has been removed.
- Columns “Space Type” and “Meter Type” have been added.

	Street and Block	Meter Type	PostID	Space Type	Days	From	To	Tow	Rate	Time Limit
1	05TH ST 600	SS	205-06621	GMP-ST	Mo,Tu,We,Th,Fr	9:00 AM	3:00 PM		$2.25	15 min
2						3:00 PM	6:00 PM		$2.00	15 min
3					Sa	9:00 AM	12:00		$1.50	15 min
4						12:00 PM	3:00 PM		$2.00	15 min
5						3:00 PM	6:00 PM		$1.75	15 min
6	TOWNSEND ST 300	SS	684-03121	ML	Mo,Tu,We,Th,Fr	7:00 AM	6:00 PM		$3.00	30 min
7					Sa	7:00 AM	6:00 PM		$3.00	30 min
8	03RD ST 300	SS	203-03090	GMP	Mo,Tu,We,Th,Fr	7:00 AM	9:00 AM	X		
9						9:00 AM	12:00		$1.00	no limit
10						12:00 PM	3:00 PM		$2.00	no limit
11						3:00 PM	4:00 PM		$2.50	no limit
12						4:00 PM	7:00 PM	X		
13					Sa	7:00 AM	12:00		$0.50	no limit
14						12:00 PM	3:00 PM		$2.00	no limit
15						3:00 PM	6:00 PM		$2.25	no limit

c. The MMS shall include reports that track Meter Behavior changes, and historic parameters shall be archived in a manner that they are searchable, as illustrated in Example III.B.7.c.

Example III.B.7.c

Scenario: The user wishes to find out how the Meter with Post ID 464-03100 was programmed on 6/12/12. He/she shall be able to enter these two parameters and search an archive, and see a report similar to the one below:

Date: 6/12/12

	Street and Block	PostID	Cap Color	Days	From	To	Free	Prepay	Tow	Rate	Time Limit
1	HAYES ST	464-	Grey	Mo,Tu,We,	12:00	8:00	X				
2	300	03100		Th,Fr	8:00	9:00		X			
3					9:00	3:00				$2.25	4 hr
4					3:00	6:00				$2.00	4 hr
5					6:00	12:00	X				
6				Sa	12:00	8:00	X				
7					8:00	9:00		X			
8					9:00	12:00				$1.50	4 hr
9					12:00	3:00				$2.00	4 hr
10					3:00	6:00				$1.75	4 hr
11					6:00	12:00	X				
12				Su	12:00	12:00	X				

8. Faults and Maintenance

a. The MMS shall include a maintenance management module that records Meter and repair activity using automatically generated and manually entered faults and maintenance events.

b. The module shall support reporting of parking Meter repair activity (PMR) including by not limited to employee name, date range, fault characteristic, area etc.

c. ***Within 120 Days of the Notice to Proceed,*** The MMS shall allow for import of data in batch files. For example, when reconfiguring the hours of operation on 100 meters, the end user should be able to upload that data in batches. Including but limited the following data sources: XML, Excel, CSV etc.

9. Revenue Reports

Within 90 Days of the Notice to Proceed*:*

a. The MMS shall allow SFMTA to add user-defined variables to revenue reports, and to filter or sort reports based on user-defined variables as well as standard variables.

b. The MMS shall allow SFMTA to perform non-standard calculations in revenue reports. The SFMTA will define and approve the definition of the data in terms of its format, validation and semantics. In the case of calculated fields, the City shall define and approve the definition of the mechanism by which the data is derived, the sources of data employed in the calculation and the circumstances of data selection.

10. PBP Reports (used for visual indication of PBP transactions)

The MMS shall include a report searchable by date range that lists the following information:

a. Post ID.

b. Date/time of receipt of Pay-By-Phone transaction by the MMS.

c. Transaction amount.

d. Time purchased.

e. Date/time of receipt of Pay-By-Phone transaction by the Meter.

f. Transmission status (successful, pending, failed).

11. Data Integration

a. MMS shall be able to submit all the payment (coin, credit card, smart card etc.) and maintenance alerts data via XML format described in the Attachments 5 and 8 within 10 seconds after receiving the data from the meters.

b. The MMS shall support the ability to deliver usage and status data to SFMTA in batched manner (at the end of the operating day or as designated by the SFMTA).

c. The Contractor shall enter the programming development and testing phase where Contractor shall work closely with SFMTA to develop and test its ability to accept XML and CSV files as specified in Attachments 1-13, and conduct the necessary programming specified therein within the required timelines.

d. The frequencies of transmission for each file described in the Anticipated Frequency of Transmissions (Attachment 14) and shall be mutually independent; i.e. if an Operating Schedule XML file is submitted today for re-programming of a batch of 1000 meters, this does not prevent the submission of a Price Schedule XML file for the re-programming of the same 1000 meters two weeks from today.

e. In cases where the Contractor's system has a standard variable equivalent to a variable in SFMTA's system but named differently, the Contractor shall be responsible for translating the variable in all its communications with SFMTA.

f. The Contractor shall be required to translate system variables from default names to SFMTA-specific names.

g. In the cases where the Contractor's system cannot store a variable in the exact same format as submitted by SFMTA, the Contractor shall develop the

ability to translate SFMTA's data to fit within the equivalent in its system, as illustrated in Example III.B.11.g. Furthermore, the Contractor shall translate content both when its system receives OUTGOING XML files from SFMTA and when its system issues INCOMING XML files to SFMTA.

12. Meter Backend Settings

a. SFMTA shall be able to establish a default set of Backend Settings to be applied to every new Meter added to the inventory.

b. ***Within 120 Days of the Notice to Proceed*** SFMTA shall be able to upload a CSV file to the MMS containing Backend Settings on a per-Meter basis.

c. The format of the CSV file shall be agreed upon between SFMTA and the Contractor during the programming development and testing phase.

d. ***Within 90 Days of the Notice to Proceed*** user shall be able to select the unit that serves as basis for each default payment setting for coins and cards (money or time, mutually exclusive for each parameter).

e. User shall be able to select what conditions will cause the Meter screen backlight to turn on.

f. If Meter uses LED lights for visual enforcement, then user shall be able to configure LED lights..

13. Re-Programming of Existing Metered Spaces

a. Following the programming development and testing phase and initial programming of metered spaces, the MMS shall support automatic re-programming of any subset of metered spaces at any time via XML files and CSV tables deposited in the Contractor's SFTP site. The re-programming of subsets of metered spaces shall generally consist of any combination of the following:

i. Operating Schedule XML file, as specified in Attachment 1

ii. Price Schedule XML file, as specified in Attachment 2

iii. Special event pricing and regulation XML file, as specified in Attachment 3

b. The steps and timing for re-programming of existing metered spaces shall be coordinated so that the deadline for completing each step is described based on the completion of a previous step and "(B) days" represents business days.

c. ***Within 60 Days of the Notice to Proceed,*** in the event that a newly-metered space is created directly in the MMS, the MMS shall automatically notify SFMTA's system by sending it an XML file containing the Post ID identifier and any associated standard and user-defined data as described in Attachment 6 – INCOMING Parking Space Inventory XML specification.

d. ***Within 60 Days of the Notice to Proceed*** if a record with the Post ID identifier exists in SFMTA's Data Warehouse and the XML contains the Post ID identifier only (i.e. it does not contain associated standard and user-

defined content such as geographic locators and space attributes), then the MMS shall accept an XML file to populate both standard and user-defined variables.

14. Special Event Programming (Hours, Rates, Time Limits, and Restrictions)

a. The MMS shall allow programming of special exceptions to standard programming that can be assigned and/or removed by specific start and end dates on a calendar, consisting of time slot start/end times and one or more of the following rule types:

i. Rates

ii. Tow

iii. Free

iv. Time Limits

b. ***Within 90 Days of the Notice to Proceed*** the MMS shall allow programming of a minimum of 20 special exceptions that can be assigned to a minimum of 100 combinations of start and end dates, as described in Example III.B.14.b. The resulting Meter Behavior for each day is a combination of the standard programming for that day and the special exceptions programming. If the standard programming is different for different days of the week, then the resulting programming depends on the day of the week the override programming is scheduled for.

Example III.B.14.b

If the standard programmed Meter behavior is as follows:

Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mon-Fri	FREE					PREPAY				RATE_3.50			RATE_3.75			RATE_4.00			RATE_0.25				FREE		
										TL = 120 min									TL = 240 min						
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sat	FREE					PREPAY				RATE_0.25													FREE		
										TL = 120 min									TL = 240 min						
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sun	FREE					PREPAY							RATE_0.25										FREE		
													TL = 240 min												

Then the user shall be able to program a minimum of 20 distinct special overrides as illustrated below:

Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
SP_01																			**RATE_7.00**						
																			TL = 240 min						
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

SP_02	**FREE**																							
…																								
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
SP_30										**TOW**															

That can then be scheduled for a minimum of 100 combinations of start and end dates as illustrated below:

DATE_START	**DATE_END**	**OVERRIDE**
09/14/12	09/15/12	SP_30
09/21/12	09/22/12	SP_01
DATE_START	**DATE_END**	**OVERRIDE**
11/22/12	11/22/12	SP_02
12/25/12	12/25/12	SP_02

Resulting in:

Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
09/14/12	FREE										TOW						RATE_4.00			RATE_0.25				FREE	
(Fri)																	TL=120 min			TL = 240 min					
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
09/15/12	FREE										TOW						RATE_0.25							FREE	
(Sat)																	TL=120 min			TL = 240 min					
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
09/21/12	FREE					PREPAY				RATE_3.50			RATE_3.75			RATE_4.00			RATE_7.00				FREE	
(Fri)										TL = 120 min									TL = 240 min						
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
09/22/12	FREE					PREPAY				RATE_0.25									RATE_7.00				FREE	
(Sat)										TL = 120 min									TL = 240 min						
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
11/22/12	FREE																								
(Thu)																									
Hour:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
12/25/12	FREE																								
(Tue)																									

Where:

	represents the override programming scheduled for a particular day
	represents standard programming parameters affected by the override <u>on that day</u>

c. ***Within 60 Days of the Notice to Proceed***, the MMS shall accept programming for special overrides or exceptions in accordance with Attachment 4 - Special event pricing and regulation XML specifications.

d. In the event that SFMTA submits an operating schedule or price schedule change after submitting programming for special overrides, the MMS shall update the override programming accordingly.

15. Transaction Data Feed

a. The Contractor shall transmit all parking Meter transaction data from the MMS to SFMTA's Data Warehouse in accordance with Attachment 5 – INCOMING Transaction Data XML specifications.

b. The Contractor's system shall differentiate between two possible transaction event types: new session and add-time session, where an add-time session is defined as one where a Customer adds time to a parking session already in progress (i.e. the Meter is already paid when the Customer conducts his/her transaction).

c. The Contractor's system shall differentiate between payment time and parking session start time.

d. Mixed payment transaction: When a Customer uses more than one payment type (i.e. coins and credit card) within a payment window to pay for a single parking session, the Contractor's system shall transmit separate transactions for the different payment types.

16. Monitoring Software

a. The Contractor shall implement a monitoring and alerting system (aka "watchdog software") to monitor all data transmissions to and from SFMTA, including but not limited to:

i. Receipt of OUTGOING XML files described in Anticipated Frequency of Transmissions (Attachment 14) in its SFTP site.

ii. Interruptions in the transmission of INCOMING Transaction Data XML feed (Attachment 5) including complete failure to transmit, partial transmission results from equipment problems and failure to transmit certain transaction types

iii. Failures in scheduled periodic transmissions of INCOMING XML and CSV files.

iv. Any other data transmissions not currently anticipated in accordance with the schedule agreed to by the Parties.

b. The Contractor shall, at SFMTA's request, send alerts directly to SFMTA staff via email, text message, or other agreed-upon communication method.

17. Mobile Maintenance Application / PDTs

a. The MMS shall have two versions: desktop and mobile.

b. Field communications shall be conducted via mobile MMS and/or via handheld device. All proposed Meter systems shall recognize and verify commands from an authorized device only, ignoring all other signals or devices.

c. Both desktop and mobile versions of the MMS shall be able to record Meter maintenance activity (both automatically generated by the Meter itself and

manually recorded by PMR via means of entering designated Meter repair code).

d. The mobile version of the MMS shall be able to run on any mobile platform (Apple, Windows, Android, Blackberry, etc.).

e. PMRs shall be able to perform the following activities using either mobile version of the MMS and/or a designated handheld.

i. Reprograming of Meter Behavior parameters including times, rates, time limits, etc.

ii. Reprogramming of the Backend Settings.

f. Retrieval of revenue audit information and electronic cash transactions (including mechanism serial number).

g. Retrieval of fault and maintenance information (including mechanism serial number and battery voltage).

h. Each communication session updates the mechanism's clock, calendar, and day of week information.

i. Changes made to Meter programming via mobile MMS and/or PDT shall be reflected in the desktop MMS.

18. Programming without Contractor Assistance

Within 180 Days of the Notice to Proceed, the MMS shall be configured so that the SFMTA can conduct global rate changes, various attributes reconciliation, Special Event pricing and other global programing features within MMS without assistance of the Contractor.