Requests for Proposals Number: 17-21
Addendum 2
Date: May 2, 2017

Acknowledgment of Addenda

The undersigned acknowledges receipt of the following addenda to the bidding document:

THE COMPLETED ACKNOWLEDGEMENT OF ADDENDA FORM SHOULD BE RETURNED WITH BID RESPONSE PACKAGE: NOT SENT TO RIPTA SEPARATELY

NOTE: Failure to acknowledge receipt of all addenda may cause the bid to be considered non-responsive to the solicitation. Acknowledged receipt of each addendum must be clearly established and included with the bid.

Name of Bidder

Street Address

City, State, Zip

Signature of Authorized Official

Date

Requests for Proposals Number: 17-21
Addendum 2
Date: May 2, 2017

Attached please find the following:

RIPTA Responses to follow up questions:

Revised Technical Specifications

Revised Bid Price Submittal Form
Electronic copies of Bid Price Submittal Form can be found at the following Dropbox Location:
https://www.dropbox.com/sh/qrdkohl5ewmna30/AADrJF0SLLEgxwPsn271q75ha?dl=0

CLARIFICATION BY RIPTA (Re: Question #6 of Addendum #1)

RIPTA's response to Question #6 of Addendum #1 was inadvertently missing some text. To prevent any confusion, the response to this question is reissued as follows:

> **RIPTA Response to Addendum #1 Question #6: Figure 2 on Page 4 of the Concept of Operations Report (found at the very end of the appendices to the original RFP pdf document) provides a list of legacy systems and anticipated interactions.**
>
> **An interface with Xerox OrbCAD is desired and RIPTA will be responsible for any 3rd party costs associated with this interface. Vendors may directly contact Maria Waddy, maria.waddy@conduent.com (443) 259-7291 at Xerox OrbCAD to discuss the potential interface.**
>
> **RIPTA does not foresee the need to develop third-party interfaces with any other legacy systems, including the GFI fareboxes (RIPTA will give up the ability for passengers to reload future fare media with cash when on-board vehicles).**

Requests for Proposals Number: 17-21
Addendum 2
Date: May 2, 2017
RESPONSES TO QUESTIONS

RIPTA Response to follow up questions submitted by Vendors
Follow-up to Question #26 of Addendum #2 (Re: Scope of Work Section 7.9)

In RIPTA's response to question 26, two statements make sense to us. However, the note states:

Note: RIPTA hopes to work with social service agencies to establish system allowing card-based client accounts that social service agency administrators can access and load through a special web portal. Section 7.9 describes the functionality that RIPTA would like built into the system in order to provide this future capability.

Our question relates to "card-based client accounts". Our reading of the requirements in Section 7.9 suggests that the barcoded tickets would be account based. But we are confused as to why any accounts should be card-based instead of all media—barcodes, long term cards, short term cards, mobile tickets, banking media, etc.—being account based. In our current implementations, we have found account based handling of all media to be preferable. It extends the advantage of having a single point in which to manage fare tables and other fare related rules. Further, with an anonymous account, availability of media for use is virtually immediate. Treating all media as account based simplifies the processes both on and off vehicle and standardizes them across all media. Is this acceptable to RIPTA?

> **RIPTA Response: The reference to "card-based client accounts" refers to clients that may have longer-term relationships with social service agency(ies) that would perhaps qualify them for an "agency-sponsored" smart card. Social service administrators would be able to access accounts associated with these client smart cards via a special web portal.**
>
> **RIPTA intends that all smart cards associated with the new system would be accounted-based.**

Follow-up to Question #51 of Addendum #2

Can RIPTA please clarify that the standalone processors referred to in Question 51 should be priced in Form C, Line 3? Also, we could not find any description of functionality for these items in the RFP. Can RIPTA please provide the expected functionality? We are assuming these to be Platform Readers/Validators enabling quick boarding for rapid transit lines.

> **RIPTA Response: Standalone processors are being considered for six future station locations along the proposed Downtown Transit Corridor (www.RIPTA-DTC.com). One concept under consideration is that passengers who both board and alight within this short 1.5 mile corridor could tap a wayside processor when alighting the bus to receive a fare discount for this short ride.**

Requests for Proposals Number: 17-21

Addendum 2

Date: May 2, 2017

RESPONSES TO QUESTIONS

You are correct that the Technical Specifications mistakenly did not include a section on the functionality of these processors. Please see the newly issued SECTION 19 – STANDALONE READERS. Note: See also revised TABLE OF CONTENTS. Sections 19 and 20 of the originally issued RFP should now be considered Sections 20 and 21.

Price Form C, Line 3 is the correct location to include a price for these standalone processors. It is assumed that twelve (12) processors would be needed.

RHODE ISLAND PUBLIC TRANSIT AUTHORITY
Request for Proposals 17-21-A2
REVISED TABLE OF CONTENTS

Technical Specification

Table of Contents

1 Project Overview

1.1 General

These Contract Documents specify the requirements for the design, manufacture, fabrication, furnishing, assembly, testing, and installation of the Rhode Island Public Transit (RIPTA) New Fare Payment Project (NFPP) and related services.
The Contractor shall provide a Fare Collection System that is service-proven as defined herein. The Contractor shall provide materials that are new and free of defects, and which conform to the requirements of this Scope of Work. RIPTA is beginning an effort to streamline fare payment practices by the use of new innovative technologies. The goal of this effort is to find better methods that permit new and existing Customers to more easily obtain and pay fares while introducing Customer-friendly products and Interagency Fares which support seamless travel throughout the region. The solution evaluated is a state-of-the-art, integrated, electronic fare payment, distribution, collection and processing system which incorporates a remotely hosted, centralized backend system and data warehouse, supporting the revenue collection needs of RIPTA and any adjacent participating agency. A key goal is to reduce the frequency of cash payments and purchases on-board vehicles. The new state-of-the-art System will utilize best practices of modern technologies in the consumer and fare payment sectors, capable of interfacing with both bank and non-bank financial clearing systems for transaction processing and settlement.

1.2 Base System Description

The deployment of NFPP will transform existing fare collection practices to new payment forms including contactless smart cards, mobile ticketing and secure barcode media. The new system (System) shall include:

1. Long-Term Use Smart Cards, operating as account-based media.
2. Barcode media for limited-use, short-term fare products.
3. On-Board Processors (OBPs) which shall accept contactless smart card and barcode media, for use on buses.
4. Integration of the OBP with other vehicle systems, including CAD/AVL, , and a shared operator control and display device.
5. A remotely-hosted Central Data System (CDS) to manage the devices, manage the assignment of fares, integrate financial transactions with agency and external entities, manage transactional communications, collect transaction data, track fare media inventory, provide database reports, and other central data services.

~~6. Communications infrastructure will be provided by RIPTA.~~

7. A series of Contractor-hosted web portals to allow customers, retailers, transit benefits coordinators, social service agencies, schools and staff of participating transit agencies to interact with the CDS.

8. Other services and support systems as described herein and as necessary for a modern fare collection system.

The System shall support a variety of fare policies (as identified in Section 3) and all existing RIPTA operations.

1.3 Future System Capabilities to be Supported

As delivered, the Fare Collection System shall support additional capabilities, should RIPTA choose to modify or configure the system to do so. These include Contactless credit card transactions using NFC bank-issued cards compliant with the Europay / MasterCard / Visa (EMV) standard.

1.4 Acceptability of Equipment

The award of this Contract does not imply RIPTA's approval of any of the equipment or materials identified in the Contract Documents. The Contractor is responsible for furnishing a completely functional system as defined herein.
If, at any time during the design, testing, or execution of work under this Contract, it is found that Contractor-furnished equipment or materials do not meet the specifications herein or will not provide a fully functional fare collection system as described herein, the Contractor shall, at no additional expense to RIPTA, take any and all steps necessary to furnish an acceptable fare collection system.

1.5 Services

The Contractor shall provide:

1. All design services necessary to develop hardware, software and complete integration to satisfy all requirements of this Scope of Work

2. Software design and development services necessary to develop the Central Data System to support the functions defined in this Scope of Work

3. Testing services – both in the Contractor's facilities and in RIPTA facilities – as specified herein to verify that the designed equipment and software satisfies all requirements of this Scope of Work

4. Comprehensive program management services to ensure that the project is completed on time to RIPTA's satisfaction

5. Installation services for all Contractor-supplied hardware and software

6. Remote hosting services for the Central Data System

7. Remote hosting services for web portals
8. On-site and on-call technical support as specified herein
9. Warranty services as specified in the Contract Documents
10. Documentation and training services as defined

If RIPTA exercises relevant options, the Contractor shall also provide:

1. Customer support call center services
2. Extended software support services
3. Post-warranty preventive and remedial maintenance services
4. Mobile-application to support customer purchases from Smart Phones
5. Retail sales services for distribution, sale, and replenishment of smart card media and accounts

1.6 Business Requirements

The System shall address RIPTA's current and long-term business needs. The System shall:

1. Be able to operate and meet all of RIPTA's needs as defined within this document;
2. Provide for an integrated, state-of-the-art electronic fare payment, distribution, collection and processing system utilizing smart card and mobile ticketing capability / barcode technology;
3. Be based on published, open standards, and employ an open architecture as defined herein;
4. Be deployable in a single phase but with flexibility to activate features at RIPTA's discretion;
5. Quickly, reliably and efficiently verify the validity of all presented fare media without operator interaction;
6. Allow for cash payment for products at all sales locations
7. Allow for credit/debit payment for products through all sales channels

8. Allow for the use of transportation benefit programs to offset the cost or the partially fund the purchase of products through all sales channels. The use of transportation benefits shall comply with all federal, state, and industry regulations regarding these purchases, which may vary per program.

9. Support the refund of fare products through either account credits or to the original form of purchase through all sales channels.

10. Substantially eliminate exposure to revenue losses, including losses due to the use of invalid fare media, fraudulent fare media, expired media or other weaknesses currently experienced by legacy fare collection systems currently in operation;

11. Offer easily purchased Interagency Fares for Customers riding vehicles with RIPTA regional partners;

12. Reduce the frequency of on-board cash fares by offering easily accessible pre-purchase alternative to customers;

13. Reduce bus service dwell times and customer waiting by maximizing transaction speed and throughput at all fare collection devices;

14. Be adaptable to innovations specific to the transit, banking, and communications industries;

15. Provide efficient administration of transit benefits programs through partnership with corporations, both directly and through the use of benefits providers such as WageWorks and Commuter Check;

16. Be able to securely accommodate and process fare media offered and/or distributed by authorized third parties;

17. Interface, with minimal installation efforts, with vehicles, on-board systems and infrastructure, specifically vehicle dashboards and handrails and the physical conditions at agency facilities;

18. Provide data to existing data, accounting and reporting systems for ridership, revenue and other operational needs, including for the production of historical and reconciliation reports;

19. Accommodate ongoing improvement programs/projects including construction of new facilities, communication system upgrades, information technology improvements, and changes to business processes;

20. Support all modes of transportation and the needs of all customer categories, including programs for specific types of customers;

21. Support a zone based fare structure, where Customers will have to tap their media to both open and close a trip, with the total value of the trip then determined based on the distance traveled;

22. And allow for free trips with zero value, for Customers traveling only within the first zone or a specific geographic area on select routes.

All Design Reviews, discussed in Section 8, shall include a review and assessment of the system's satisfaction of RIPTA's business requirements listed above.

1.7 Project Schedule

Time is of the essence for this project; the Contractor shall make all reasonable efforts to complete all work and provide a system that satisfies all requirements herein to RIPTA's satisfaction. The supplied scheduled must include milestones whereby the system will be able to be reviewed to meet deliverables.

1.8 System Implementation

RIPTA is seeking to implement the System on an aggressive schedule, and with a maximum degree of flexibility in how the new system is put into service. RIPTA recognizes that the System will require RIPTA and any participating agency to adopt many new internal procedures and organizational modifications. RIPTA acknowledges that its customers may also see numerous changes in how they interact with the agency and pay their fares.
Wishing to balance its desire for rapid deployment with the realization that both RIPTA and its customers are limited in the rate at which change can be absorbed, the Contractor shall plan and implement the System to satisfy the following objectives:

1. The Contractor shall design, develop, test, and install all elements of the System as a single, coherent program, and make all aspects of the system functional and ready for revenue service in a single coordinated phase.

2. The Contractor shall develop the System so that RIPTA may activate features and fare policies independently and on a schedule defined by RIPTA. For example, RIPTA may wish to initially activate only floating period passes that have identical pricing and policies as the agency's existing magnetic stripe media, and introduce new stored value products at a later date. In any case, the Contractor shall install and make ready the entire System in a single coordinated phase.

3. Regardless of the number of features and capabilities active at any time, the System shall satisfy all functional requirements of a modern fare collection system and incorporate best in class features and reliability.

1.9 Equipment Quantities and Locations

1.9.1 Base System Equipment

Not including spare parts and other support peripherals, for the base contract, the Contractor shall supply and install equipment and software as described in these Technical Specifications at the quantities shown in the Price Forms.
The locations of the equipment as described in this document are approximate and will be finalized after award with the selected Contractor.

1.9.2 Optional Equipment

If RIPTA exercises one or more options for additional equipment, the Contractor shall supply additional equipment, configured identically and with full integration to all other equipment supplied under this contract at the quantities defined in the Price Forms.

1.10 Definitions

Wherever in these Contract Documents the following terms and abbreviations are used, the intent and meaning shall be interpreted as follows:
Accuracy – The measurement of the fare collection system's precision in accounting for monies collected and dispensed, and the system's precision in collecting and reporting transaction, event, and other forms of data.
Action List – A list of unique card serial numbers that have been determined to be invalid or unacceptable, or require certain defined actions upon presentation to any System device.
Auto-replenishment – A replenishment transaction to an account, which is conducted as part of a usage transaction, paid for or directed by means usually associated with an on-line or direct interaction with a central computer system.
Availability – The time or rate, usually expressed as a percentage, that a device or system is fully operational.
Bankcard – A credit or debit card issued by a bank or financial institution.
Baseline Design – The design of the Fare Collection System or any of its components, apparatus, systems, subsystems, or materials that have received both drawing approval and First Article approval by the Contracting Officer.
Cable – A wire or group of wires contained within an overall insulating covering. Cable may also be referred to as multi-conductor cable or cable harness.
Comment – Written critiques of the Contractor's submittals to the Contracting Officer.
Component – Any device having distinct electrical or mechanical characteristics and having connection points to be connected to other components to form a subassembly.
Contract Deliverables Requirement List (CDRL) – Items to be provided by the Contractor to the Contracting Officer as defined by these Contract Documents.
Contract Drawings – Drawings provided as part of the Contract Documents.
Contracting Officer (CO) – The individual designated by RIPTA responsible for administering and managing this contract.
Contractor's Drawings – Items such as detail drawings, graphs, diagrams, and sketches that are prepared by the Contractor to detail its work.
Days – Unless otherwise designated, days as used in the Contract Documents shall be understood to mean calendar days.
Days, Working – Normal working days, Monday through Friday, exclusive of holidays. Office holidays are New Year's Day, Martin Luther King, Jr. Day, Memorial Day, Independence Day, Victory Day, Labor Day, Thanksgiving, Christmas Day, or days so celebrated.
Deliverable – A tangible item identified within this Technical Specification which is provided by the Contractor to RIPTA as part of the design, development, implementation and/or support of the System and/or Services being procured. Times/dates for delivery of each is usually based on a defined milestone and the contents of each deliverable are defined within this Technical Specifications. All deliverables are subject to review and approval by RIPTA upon submission. Unless

otherwise specified, if a deliverable is not approved, the Contractor shall resubmit the revised deliverable for approval with 10 business days.

Dormant Account – A smart card account that has had no transaction activity for a RIPTA-adjustable extended period of time, initially set to 2 years. If the account has no previous transaction history, the card issue or account set-up date shall be used to determine dormancy. The fare collection equipment shall deny attempts to use such cards.

Equal – Whenever the words "equal" or "approved equal" are used in connection with make or quality of material or equipment in these Contract Documents, the Contracting Officer's decision as to whether any material or equipment proposed is equal to that specified shall be binding and final on both the Contractor and RIPTA.

Factory Acceptance Tests – A series of tests conducted at the Contractor's facility using approved First Article devices. Factory Acceptance Tests are independent, unit tests conducted on each System device and subsystem, and designed to confirm that all hardware and software will function as required herein.

Factory Integration Test – A test conducted at the Contractor's facility to confirm that when installed, the complete System will function as designed. The Factory Integration Test occurs after successful completion of all Factory Acceptance Tests.

Failure – An event leading to the inability of a component or equipment to function or perform its intended function as designed or specified.

Failure Rate – The frequency of failure, expressed as failures per unit of time (in days) or failures per number of cycles (number of transactions). Failure rate is the mathematical reciprocal of MTBF and MCBF.

Fingertip Maintenance - Maintenance of individual modules that are fixed in unitized frames, rails, or slides with fast latching devices, captive fasteners, or other means that do not require the use of tools to remove and replace modules.

First Article – The first one of any production component of the System that is produced. All First Article devices shall be made and programmed according to RIPTA-approved drawings and design documents submitted by the Contractor at the Final Design Review.

First Article Configuration Inspection (FACI) – An inspection of the First Article in the factory to confirm that it complies with the approved design. For the inspection, the First Article need not be a functional device. All Factory Acceptance Tests shall use approved First Article units.

Independent Failure – A failure that is not the result of another failure, either directly or indirectly.

Indicated – As used in the Contract Documents, "indicated" shall be understood to mean, "as shown in the Contract Drawings," or "as described in the Contract Documents."

Interface – The points where two or more systems, subsystems or structures meet and transfer energy, data or information.

Interoperability - the capability of the system and its components to work with or use the parts or equipment of another system. Interoperability includes the capability of exchanging information.

Lowest Level Replaceable Unit – The lowest unit (component) of a device that is removable and replaceable from an installed position by standard attachments (*e.g.*, bolts and nuts, quick disconnects), including units such as printed circuit boards, displays, keypads, wiring harnesses, and complete electromechanical assemblies sold by the Contractor or OEM suppliers as spare parts, etc.
Maintainability – The ability of the System to be maintained by RIPTA's maintenance staff, including enhancement of access to equipment and components that require maintenance.
Mean Cycles Between Failures (MCBF) – The mean number of operating cycles between successive independent failures.
Mean Time Between Failures (MTBF) – The mean operating time interval between successive independent failures.
Mobile payments - a point-of-sale payment transaction made through a mobile device such as a smartphone, "smart watch", or tablet.
Mobile ticketing - a process whereby a transit rider can order, pay for, obtain and validate a transit ticket using a mobile device such as a smartphone, "smart watch", or other mobile device
Modular – Composed of standardized, interchangeable units, designed to facilitate maintenance and repair.
Module – A standardized, interchangeable unit, designed to facilitate maintenance and repair.
Non-Relevant Failure – A malfunction caused by conditions external to the machine or subsystem or caused by out of scope conditions. Non-relevant failures include:

- Accident, vandalism, maintenance errors, bent coins, and customer error
- Failure of expendable items that have exceeded specified life
- Dependent or secondary failures resulting from an independent or primary failure

On-board Processor (OBP) – A device installed adjacent to the bus farebox which reads electronic media such as Smartcards and bar codes, encrypts and transmits secure electronic messages to the back-end System.
Operating Cycle – A complete transaction for any System device, taken from the perspective of the user. Transactions involving dispensing multiple products or repeated use of a single product shall be considered one transaction.
Pass – A fare product valid for unlimited rides within a designated time period (*e.g.*, a specified number of hours, day, number of consecutive days, or a specified calendar period).
Payment Card Industry Data Security Standards (PCI) – The definitive security standards and regulations for merchant processing of bankcards. See: https://www.pcisecuritystandards.org/security_standards/
Pilot Test – A test of all functionality of the fully installed System, but limited to selected users. The Pilot Test will occur after the System Integration Test, and is intended to

further verify System functionality, and verify RIPTA's readiness and exercise all RIPTA procedures and operations.
Product Data – Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, warnings and other information furnished by the Contractor to illustrate or explain the fabrication, assembly, installation, maintenance or operation of materials, equipment, or some portion of the work.
Proof (used as a suffix) – Apparatus is designated as dustproof, waterproof, etc., when so constructed, protected, or treated that its successful operation is not interfered with when subjected to the specified material or condition.
Relevant Failure – A malfunction that prevents a fare collection device or computer system from performing its intended function within the performance criteria specified. Relevant failures include: verified failures including intermittent failures, not excluded under non-relevant failure types; and failures due to design errors or manufacturing defects.
All relevant failures, including intermitten failures, shall be chargeable in computation of demonstrated reliability. Reliability – The probability of performing a specified function without failure and within design parameters for the period of time or the number of cycles specified under service conditions.
Revenue Service Test – A test to occur during the initial full-public use of the System, intended to verify System reliability, availability, and accuracy.
Safe/Safety – The condition in which persons are free from threat or danger, harm, or loss arising from improper design, manufacture, assembly, malfunction, or failure of the fare collection system or any of its components or elements.
Section – In this document, references to a "Section" are specific to a section and all associated subsections to that section.
Service-Proven – Identical or near identical equipment which has demonstrated successful operation in a transit industry environment similar to that anticipated for RIPTA.
Shop Drawings – Drawings or sketches prepared by the Contractor for use in its manufacturing facility, assembly facility, or shop, to fabricate, assemble, and/or install parts of the Fare Collection System, whether manufactured by it from raw materials or purchased from others in a ready-to-use condition.
Stored value – The ability to load an account with a specific dollar value or other prepaid fare options that is then decremented with use.
Smart Card – An ISO/IEC 14443 compliant contactless card of the same dimensions as a standard credit card. The smart card includes a microprocessor executing specialized application software, Non-Volatile Random Access Memory, Read Only Memory, and a radio frequency interface.
Subassembly – Two or more components combined into a unit for convenience in assembling or servicing equipment.
System – The Regional Payment System developed by the Contractor.
System Integration Test – A test of the complete, installed, and configured System, ready for revenue service. The SIT is the final test prior to commencing revenue service and is intended to verify all System functionality is ready for revenue service.

Tamperproof – Items are designated as tamperproof when they cannot be easily loosened, opened, or penetrated with commonly available tools such as a flat blade or Phillips screwdriver or pliers.
Ticket – A printed or displayed fare instrument.
Tight (used as a suffix) – Apparatus is designated as watertight, dust-tight, etc., when so constructed that the enclosing case shall exclude the specified material.
Time-Out – When a prescribed amount of time has elapsed during which a specified action has not occurred.
Transaction – See Operating Cycle.
Wire – A single insulated conductor of any size.

1.11 Abbreviations

ABA	American Bankers Association
ACH	Automated Clearing House
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
AES	Advanced Encryption Standard
ANSI	American National Standards Institute
API	Application Program Interface
APOS	Administrative Point of Sale
ASCII	American Standard Code for Information Interchange
AVL	Automatic Vehicle Location
BDW	Barcode Decoding Workstation
BIN	Bank Identification Number
BTU	British Thermal Unit
C	Degrees Centigrade
CAD	Computer Aided Dispatch
CADD	Computer Aided Design and Drafting
CCID	Credit Card Identification
CDRL	Contract Deliverables Requirement List
CDS	Central Data System
CRC	Cyclic Redundancy Check
CSCP	Contactless Smart Card Processor
dB	Decibel
DES	Data Encryption Standard
ECU	Electronic Control Unit
EMI	Electromagnetic Interference
EMV	Europay / MasterCard / Visa
EPROM	Erasable Programmable Read-Only Memory
ERD	Entity Relationship Diagram
F	Degrees Fahrenheit
FACI	First Article Configuration Inspection
FDR	Final Design Review
FIFO	First In First Out

FIPS	Federal Information Processing Standard
FIT	Factory Integration Test
FRB	Failure Review Board
FTP	File Transfer Protocol
g/m^2	Grams per square meter (used as unit of paper density)
GCS	Garage Communications Server
GPS	Global Positioning System
GTFS	Google® Transit Feed Specifications
GUI	Graphical User Interface
hr	Hour
Hz	Hertz
IC	Integrated Circuit
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization
LAN	Local Area Network
lbs	Pounds
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LLRU	Lowest Level Replaceable Unit
LMS	Learning Management System
Mbps	Megabits per second
MCBF	Mean Cycles Between Relevant Failures
MIMO	Multiple Input Multiple Output
ms	milliseconds
MTBF	Mean Time Between Relevant Failures
MFVM	Multi-Function Vending Machine
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFC	Near Field Communications
NFPA	National Fire Protection Association
NRF	Non-Registering Farebox
NTP	Notice to Proceed
OBP	On-Board Processor
OCM	Operator Control Module
ODBC	Open Data Base Connectivity
OEM	Original Equipment Manufacturer
OS	Operating System
OSHA	Occupational Safety and Health Administration
PA DSS	Payment Application Data Security Standards (PCI)
PAN	Primary Account Number
PC	Personal Computer
PCI	Payment Card Industry
PCI DSS	Payment Card Industry Data Security Standards

PDR	Preliminary Design Review
PIN	Personal Identification Number
PM	Preventive Maintenance
POS	Point of Sale
PRM	Progress Review Meeting
PROM	Programmable Read-Only Memory
RAM	Random Access Memory
RDBM	Relational Database Manager
RFI	Radio Frequency Interference
RIPTA	Rhode Island Public Transit Authority
ROM	Read-Only Memory
RPOS	Retail Point of Sale
RST	Revenue Service Test
SAE	Society of Automotive Engineers
SCCW	Smart Card Certification Workstation
SCORM	Shareable Content Object Reference Model
SIT	System Integration Test
SNMP	Simple Network Management Protocol
SSL	Secure Sockets Layer
SQL	Structured Query Language
UID	Unique Identification (Number)
UL	Underwriters Laboratories, Inc.
UPS	Uninterruptible Power Supply
VAC	Volts, Alternating Current
VDC	Volts, Direct Current
VM	Virtual Machine
WAN	Wide Area Network
YMCK	Yellow Magenta Cyan Black

1.12 Reference Standards

The System design shall fully support and comply with all applicable local, state, and national codes, ordinances, statutes, standards, and federal rules and regulations existing at the time of Contract Award. The Contractor shall be responsible for identifying all codes, ordinances, statutes, standards, and federal rules and regulations applicable to the System at the time of Contract Award. This information and an explanation of how the System equipment meets these requirements shall be submitted. **CDRL 1-1**

The Contractor shall identify any standards relevant to the System for which an update has been published since Contract Award. For all such updated standards, the Contractor shall submit an analysis of the update's impact on the System and an estimated cost to comply with the updated standard. **CDRL 1-2**

Until Final Acceptance of the entire project, the Contractor shall be responsible for identifying all relevant changes to all applicable codes and laws, and notifying RIPTA of the changes and their impact on the project.

The Contractor shall design the System to be compliant with relevant standards to ensure that the System:

1. Presents no safety hazards for RIPTA's passengers and employees
2. Will withstand the rigors of the environments in which the equipment will be installed, and the public use to which it will be subjected
3. Provides for the secure storage and transmittal of data
4. Is designed using state-of-the-art methods to maximize quality
5. Satisfies federal, state, and other requirements for ergonomics and usability

The Contractor list for codes, ordinances, statutes, standards, and federal rules and regulations shall include, but not be limited to, the items below. The latest revision in effect for each standard at the time of NTP shall be used in conjunction with the Contract Documents.

1. Americans with Disabilities Act (ADA)
2. Americans with Disabilities Act Accessibility Guidelines (ADAAG)
3. Advanced Encryption Standard
4. ANSI X9.24, Financial Services Retail Key Management
5. APTA and FTA circular 4220-1
6. European Norm EN55022, Emissions standards for CE marking
7. European Norm EN55024, Immunity standards for CE marking
8. FCC Part 15 Class B – Radio Frequency Devices
9. FIPS 140-2
10. IEEE 802.11 b/g/n standard for wireless data communications
11. IEEE 802.11i standard for wireless data network security
12. International Electrotechnical Commission Standard 529 (IEC529)
13. ISO/IEC 7810, Identification Cards – Physical Characteristics
14. ISO 9001
15. ISO/IEC-8583 – Financial transaction card originated messages
16. ISO/IEC 14443 Parts 1 through 4 – Contactless Smart Card Standard

17. ISO/IEC 18092 / ECMA-340, Near Field Communication Interface and Protocol-1
18. ISO/IEC 21481 / ECMA-352, Near Field Communication Interface and Protocol-2
19. National Electrical Code (NFPA 70)
20. National Electrical Manufacturers Association Publication 250-2003
21. National Electrical Safety Code (ANSI C2)
22. National Fire Protection Association (NFPA) 130
23. NCITS 322-2002, American National Standard for Information Technology – Card Durability Test Methods
24. Occupational Safety and Health Administration (OSHA)
25. Payment Card Industry Data Security Standards (PCI DSS)
26. Payment Card Industry Payment Application Data Security Standards (PA DSS)
27. Society of Automotive Engineers SAE J1113-13 Electrostatic Discharge
28. Society of Automotive Engineers SAE J1455 Vibration and Shock
29. UL Standard 60950, “Information Technology Equipment – Safety”
30. World Wide Web Consortium, Mobile Web Application Best Practices

In the case of conflict between provisions of codes, laws, and ordinances, the more stringent requirement shall apply. The Contractor may design to alternate standards, including international standards, for any of the above requirements. If the Contractor designs to an alternate standard, they must demonstrate equilavlency of the alternate standard during the design review process.

1.13 Required CDRLs

The following CDRL items are referenced in this Section:

CDRL No.	Description	Section	Due
CDRL 1-1	Identification of all relevant standards	1.12	PDR
CDRL 1-2	Identification of changes to relevant standards	1.12	FDR

Table of Contents

NOTE: This is a new SECTION 19, issued as part of RIPTA RFP 17-21 Addendum #2. Sections 19 and 20 as originally referenced in RFP 17-21 are now effectively renumbered as Sections 20 and 21, respectively.

19 Standalone Readers

19.1 General

Standalone Readers (SARs) shall be deployed at selected locations as required by RIPTA, to process contactless smart media.

SARs shall be compact, ergonomically designed, simple to use, and sufficiently robust to withstand the operational environment encountered in unsheltered Regional Rail stations and to deter acts of vandalism. The SARs shall function in the following manner:

- Be able to be programmed such that they know the station and fare zone in which they are located; and
- Advise the CDS that the Fare Media has been tagged at the SAR, such that the CDS can “Open a Trip” or ”Close an Open Trip” at the appropriate fare (see Section 1).

Design drawings of the SAR in each of its configurations and all major assemblies shall be submitted. **CDRL 19-1**

The SAR shall be modularly upgradeable so that it does not need to be replaced in its entirety to increase memory capacity, to upgrade processing performance, to provide for additional Smart Media functionality or to maintain compatibility with ISO/IEC-14443 standards as they develop.

The SAR shall be capable of communicating directly with the CDS via an integrated 3G/4G/LTE cellular modem. In addition, the SAR shall be capable of communicating with either an integrated Ethernet connection that is connected to a RIPTA’s data network or or via integrated IEEE 802.11N compliant wireless communications.

A complete description of the functionality of the SARs shall be provided. Sufficient detail shall be provided to permit verification that all required functions are satisfactorily included. **CDRL 19-2**

19.2 Transaction Processing

The SAR shall incorporate a Smart Media Processor (SMP) to enable processing of Smart Media as appropriate to the type of validity information stored by the system and as identified in Section 4.

The SAR shall incorporate as part of its configuration data the location (zone, station, etc.) of installation. All fare calculations shall be performed at the CDS.

When the SAR is communicating with the CDS, the Bad Number List stored on the CDS shall be used. When CDS communications are not available or transactions cannot be completed within the times identified in Section 4, the Invalid Fare Media List resident in the SAR shall be used. The Positive Number List shall also be used to verify the validity of Smart Media, as applicable.

The SAR shall operate so that when a Customer presents Smart Media the SAR shall advise the CDS that the Fare Media has been tagged at the SAR, such that the CDS can “open a Trip” or ”Close an Open Trip” at the appropriate fare. Upon completion of each transaction, the SAR shall:

1. Emit a distinct tone which identifies transaction validity; and
2. Illuminate the proper LED.

Data to be stored and transferred to the CDS by the SAR shall include as a minimum:

1. All events and alarms sensed;
2. All events and alarms cleared, including the identification of the user who cleared the alarm;
3. All completed transactions, with data to provide a complete record of the transaction;
4. All changes in status of the device or any module incorporated;
5. All configuration changes;
6. All successful communications;
7. All communication failures;
8. Power failures and restorations;
9. All commands issued by the maintenance, revenue service, and other personnel; and
10. Additional information required to provide a complete audit trail for revenues and Smart Media.

19.3 User Interface

The SAR shall employ a user interface that is flexible, easy to understand by the Customer and configurable by RIPTA without the intervention of the Contractor or one of its representatives. The interface shall consist of the no less than the following:

1. A backlit Customer graphical display, suitable for installation in unsheltered outdoor environments and readable in direct sunlight;
2. A simple green / yellow / red LED array to indicate the result of the transaction; and
3. An audio transducer

Upon completion of each transaction, the SAR shall identify the validity of the transaction on the Customer display, emit a distinct tone, and illuminate the proper red, yellow, or green LED, based on the results of the transaction.

Upon Customer removal of the Smart Media from the “read” field of the SAR, the unit shall revert to the "Ready" mode, enabled for processing the next item of Smart Media within one second.
Designs of the SAR fixed instructions and related graphics shall be submitted. **CDRL 19-3**

19.3.1 Customer Display

The SAR shall include a graphic display to provide Customers with the results of their transaction. The display shall be readily visible under all conditions of ambient light throughout the day and night and shall be protected.
This graphic display shall be capable of displaying at least four lines of alphanumeric text. Each line of text shall accommodate a minimum of twenty four (24) characters, and each character shall be at least 0.375 inches in height. Results of all transactions for the Customer shall be provided on this display.
The display shall also incorporate a “screen saver” function in a standard movie format. This screen saver shall be able to be replaced and deactivated by RIPTA without assistance from the Contractor or its representative. Settings for the screen saver shall also be able to be modified by RIPTA, and such settings shall include the time required for activation of the screen saver based on time of inactivity at the SAR. All configuration and parameter settings shall be submitted. **CDRL 19-4**
If a Smart Media read and/or write failure occurs for three out of five consecutive processing attempts or the unit fails in any other manner such as to inhibit its operation, the device shall revert to its "Out of Service" mode and not accept any Smart Media for processing. This shall cause the visual indicator to become red and an “Out of Service” message to be displayed on the SAR.
Screens shall be easily modifiable by RIPTA once the system is in operation. All screen formats and contents shall be submitted. **CDRL 19-5**

19.3.2 LEDs

The SAR shall include three LEDs – one each in green, yellow, and red – to indicate the status of the Smart Media transaction.

1. Green to indicate a successfully completed transaction;
2. Yellow to indicate a problem with processing the Smart Media; and
3. Red to indicate a failed transaction.

The status lamps shall be located on the face of the SAR and shall be positioned so that they are visible in all ambient lighting conditions by the user of the SAR. The LEDs shall be illuminated at the completion of the transaction for not less than two (2) seconds or until the start of the next Customer transaction, whichever is shorter.
In lieu of LEDs, the SAR may provide equivalent visual indication in the form of icons within the customer display. These icons shall comply with all functional requirements described within this Section.

19.3.3 Audible Tones

An audible tone shall be provided for the acceptance and processing of valid Smart Media. A second audible tone shall be provided for an unsuccessful transaction. A third tone shall be provided for presentation of invalid media.

19.4 Media Handling Hardware

The SAR shall have a commercially available ISO/IEC-14443 compliant Type A and B contactless Smart Media processor (SMP) as identified in Section 4.
The SMP antenna shall be located on the SAR such that Customers have easy access to tag their Smart Media. The external antenna shall not protrude from the exterior of the SAR enclosure. The SAR shall be made of materials that are impervious to weather conditions and resist overt vandalism.
The SMP shall be modularly upgradeable so that it does not need to be replaced in its entirety to increase memory capacity, to upgrade processing performance, to provide for additional Smart Media functionality or to maintain compatibility with ISO/IEC-14443 standards as they develop.

19.5 Control System

The modules within the SAR shall be controlled by an Electronic Control Unit (ECU). The ECU shall also communicate via a secure network with the CDS. All items required for the SAR to properly function including (but not limited to) bad and acceptable media lists, Customer display formats, configurable operating parameters, current date and time, and other such information shall be downloaded from the CDS. Transaction records and event records shall be stored in the ECU and then forwarded to the CDS based on RIPTA-selectable criteria.
The ECU shall incorporate an industrial grade microprocessor assembly. Each SAR shall be able to operate as both a stand-alone system and as a device that is part of a comprehensive network of equipment interfaced to the CDS.
There shall be two distinct, physically separate non-volatile memory locations for the storage of data within the device. One location shall be an easily removable and replaceable standard device. The other location shall be more permanent. The SAR shall store all data from its operation in a solid-state memory module.
All data sent to the CDS shall originate from this memory and all data received from the CDS shall be stored in this memory. This memory shall be unaffected by SAR power status.
The Contractor shall provide separate dimensioned drawings of the SAR showing all displays and openings/interfaces with doors/covers both open and closed. **CDRL 19-6**

19.5.1 Timeouts

The SAR shall provide a RIPTA-adjustable time-out to return the SAR to the idle state in prescribed times between transactions. This timer shall limit the amount of time the SAR waits after completion of a transaction before resuming the idle state. This inter-transaction time-out shall be initially set to 5 seconds but shall be adjustable by RIPTA from 0 to 15 seconds in increments of 1 second.

All system time-outs, including valid ranges, shall be identified and submitted for review. **PDR 19-1**

19.5.2 Transaction Records

The SAR shall be capable of locally storing data representing no less than 50,000 transactions.
The SAR shall be capable of detecting basic internal malfunctions. The malfunction detection shall cover at least failure of power or control circuitry, and any failure of the Smart Media read/write unit that could result in a false, incomplete, or corrupted encoding of a Smart Media.
The information displayed shall indicate the type of failure that caused the SAR to shut down. A description of the maintenance and service indicators and displayed information for the SAR shall be submitted. **CDRL 19-7**
The structure and layout of all transaction records shall be submitted. **CDRL 19-8**
Transaction and event data shall be uploaded to the CDS periodically throughout the RIPTA business day (times and frequency configurable by RIPTA).

19.6 Communications

The SAR will be required to connect with CDS for operation in the system. To enable this communications, as outlined in Section 19.1, the SARs shall incorporate the following:

1. Integrated Ethernet
2. 3G/4G/LTE cellular modem
3. IEEE 802.11n WLAN communications

The SARs shall communicate with the CDS at a frequency to meet the real-time operational requirements (or as otherwise approved by RIPTA).
When Smart Media is presented to the SAR it shall be provided the highest communications priority. No revenue transaction shall be precluded from completing at any system device.
The Contractor shall submit a full description of the communications capabilities of the SAR. **CDRL 19-9**
If the SAR is receiving a data transfer from the CDS and Smart Media is presented, the SAR shall process the Smart Media while suspending the data download from the CDS. When Smart Media processing is completed, download from the CDS shall automatically continue from the point of suspension.
At a frequency acceptable to RIPTA, and at a minimum at the conclusion of each day, the SAR shall upload all transaction data to the CDS. At the same time, the CDS shall download data to the SAR, including but not limited to the RIPTA invalid Smart Media list, encoding format updates, security keys, and date/time information.
In the event of loss of communication, downloading and uploading of all stored information and operational data shall be possible on a local basis for an individual SAR through the use of a compact flash RAM with a minimum capacity of 8GB.

In cases of network failure, the SAR shall have sufficient capacity to store, at a minimum, 50,000 Customer, alarm and event transactions. This information shall be stored in both the SAR main memory and in non-volatile memory. Upon successful re-connection of network operations, all stored data (e.g., alarm, event, Customer) shall be automatically transmitted to the CDS.

19.7 Structure and Finish

The SAR enclosure shall be constructed of non-rusting stainless steel (Grade 304L) with a random orbital finish or other revenue service proven material. When installed, all displays and Customer controls shall be as high as possible yet still stay within the height restrictions of the Americans with Disabilities Act. Maintenance access to the SAR internal components shall be via one or more panels that are secured with high-security locks and locking mechanisms. These access panels shall incorporate sensing to identify when any panel is opened and/or closed.

Access to the internal components of the SAR shall be protected by appropriate locking devices to prohibit unauthorized access. Should unauthorized access to these internal components be gained, an intrusion alarm shall be generated and transferred to the CDS. This alarm shall have the highest priority and shall immediately be transferred from the SAR to the CDS.

The SARs shall permit mounting to both a separate pedestal and to a wall, based on the needs of RIPTA. The Contractor shall supply pedestals, mounting brackets and all other mounting hardware as required to ensure a secure and robust installation. Pole mounting shall not be permitted. Providing an SAR which can only be pole-mounted shall not be permitted.

The Contractor shall submit drawings and supplier specifications and details of all locks, lock assemblies, and mounting hardware. **CDRL 19-10**

19.7.1 Installation

The SARs shall be installed on station platforms and at other exterior locations, which may be unsheltered from the environment. Once installed the SAR shall meet all ADA requirements as identified in Section 2.

19.8 Required CDRLs

The following CDRL items are referenced in this Section:

CDRL No.	Description	Section	Due
CDRL 19.1	SAR Design Drawings	19.1	PDR, FDR
CDRL 19.2	SAR Functional Description	19.1	PDR, FDR
CDRL 19.3	Designs of the SAR fixed instructions and related graphics	19.3	PDR, FDR
CDRL 19.4	SAR Configuration and parameter settings	19.3.1	PDR, FDR
CDRL 19.5	SAR screen formats and contents shall be submitted	19.3.1	PDR, FDR
CDRL 19.6	Dimensioned drawings of the SAR showing all displays and openings/interfaces with doors/covers both open and closed	19.5	PDR, FDR
CDRL 19.7	Description of the maintenance and service indicators and displayed information for the SAR	19.5.2	PDR, FDR
CDRL 19.8	Structure and layout of all transaction records	19.5.2	PDR, FDR
CDRL 19.9	Description of the communications capabilities of the SAR	19.6	PDR, FDR
CDRL 19.10	Drawings and supplier specifications and details of all locks, lock assemblies, and mounting hardware for the SAR	19.7	PDR, FDR

RIPTA Revenue Collection Project

Form A - Summary

Number	Form	Page Total
1	Form B - Bus Systems	$ -
2	Form C - Sales Equipment	$ -
3	Form D - System Interface Software	$ -
4	Form E - CDS Equipment and Software	$ -
5	Form F - Special Tools and Warranty Spare Parts	$ -
6	Form G - Fare Media	$ -
7	Form H - Fixed Costs	$ -
8	Form I - Services	$ -
	Total Base System Cost	$ -
9	Form J - Service Options	**See Individual Option Prices**
	TOTAL SYSTEM COST	$ -

Date _____

Proposer _____

Name _____

Signature _____

Title _____

RIPTA Revenue Collection Project

Form B - Bus Systems

Item	Description	Quantity	Unit Price	Item Total
Equipment				
1	On Board Processors - RIPTA	270		$0.00
Implementation Tasks				
2	On Board Processors - RIPTA	241		$0.00
Bus System, Total of Items 1 through 2				**$0.00**
Also Entered on Summary Form A Item 1				

Note: Estimated quantities, actual may vary.

RIPTA Revenue Collection Project

Form C - Sales Equipment

Item	Description	Quantity	Unit Price	Item Total
Equipment				
1	Administrative POS Terminals Base Components	3		$0.00
2	Administrative POS Terminals Smart Card Printer	3		$0.00
3	Stand-Alone Readers	13		$0.00
4	Ticket Vending Machines	13		$0.00
5	Alternative Ticket Vending Machines	13		$0.00
Implementation Tasks				
6	Administrative POS Terminals Base Components	3		$0.00
7	Administrative POS Terminals Smart Card Printer	3		$0.00
8	Stand-Alone Readers	12		$0.00
9	Ticket Vending Machines	13		$0.00
10	Alternative Ticket Vending Machines	12		$0.00
Sales Equipment, Total of Items 1 through 10				**$0.00**
Also Entered on Summary Form A Item 2				

Note: Estimated quantities, actual may vary.

RIPTA Revenue Collection Project

Form D - System Interface Software

Item	Description	Quantity	Unit Price	Item Total
Software				
1	RIPTA Interface Software	Lump Sum		$0.00
Implementation Tasks				
2	RIPTA Interface Software	Lump Sum		$0.00
System Interface Software, Total of Items 1 through 2				**$0.00**
Also Entered on Summary Form A Item 3				

RIPTA Revenue Collection Project

Form E - CDS Equipment and Software

Item	Description	Quantity	Unit Price	Item Total
Equipment				
1	Primary Central Data System Hardware	0		$0.00
2	Recovery Central Data System Hardware	0		$0.00
3	Test Lab Central Data System Hardware (at 2 Agency On-Site locations)	1		$0.00
4	Test Lab Central Data System Software Licenses	1		$0.00
5	Contractor Central Data System Software - Perpetual License for Hosted System - Primary and Backup Installations	1		$0.00
6	OEM Central Data System Software - 5 Year License for Hosted System - Primary and Backup Installations	1		$0.00
Central Data System, Total of Items 1 through 6				**$0.00**
Also Entered on Summary Form A Item 4				

Note: Estimated quantities, actual may vary.

RIPTA Revenue Collection Project

Form F - Special Tools and Warranty Spare Parts

Item	Description	Quantity	Unit Price	Item Total
Test Equipment				
1	Special Tools (attach List and Quantities)	Lump Sum		$0.00
Warranty Spare Parts (Supply for 2 Year Warranty)				
2	Recommended Consumable Parts (attach List and Quantities)	Lump Sum		$0.00
3	Recommended Replacement Parts (attach List and Quantities)	Lump Sum		$0.00
4	Recommended Repair Parts (attach List and Quantities)	Lump Sum		$0.00
5	Recommended Overhaul Parts (attach List and Quantities)	Lump Sum		$0.00
Special Tools and Warranty Spare Parts, Total of Items 1 through 5				**$0.00**
Also Entered on Summary Form A Item 5				

RIPTA Revenue Collection Project

Form G - Fare Media

Item	Description	Quantity	Unit Price	Item Total
Fare Media				
1	Smart Card - Pre-printed 2 Sides, Serialized, full fare (Initial Quantity)	60,000		$0.00
2	Limited Use Media (Smartcard)	75,000		$0.00
3	Bar Code Media (Rolls)	200		$0.00
4	Receipt Stock for APOS (Rolls)	200		$0.00
5	Employee Smart Cards	1,000		$0.00
Fare Media, Total of Items 1 through 5				**$0.00**
Also Entered on Summary Form A Item 6				

Note: Estimated quantities, actual may vary.

RIPTA Revenue Collection Project

Form H - Fixed Costs

Item	Description	Quantity	Unit Price	Item Total
Fixed Costs				
1	Hardware Non Recurring Engineering	Lump Sum		$0.00
2	Software Non Recurring Engineering	Lump Sum		$0.00
3	Web Portal Design Services	Lump Sum		$0.00
4	Mobile Ticketing Software	Lump Sum		$0.00
5	Retail Sales	Lump Sum		$0.00
4	Program Management	Lump Sum		$0.00
6	Test Program	Lump Sum		$0.00
7	Manuals and Documentation	Lump Sum		$0.00
8	Training	Lump Sum		$0.00
9	Performance Bond (0.5% of contract value)	Lump Sum		$0.00
Fixed Costs, Total of Items 1 through 9				**$0.00**
Also Entered on Summary Form A Item 7				

RIPTA Revenue Collection Project

Form I - Services

Item	Description	Quantity	Unit Price	Item Total
Other Operating and Warranty Support Services				
1	2 Years System Warranty - Hardware	Lump Sum		$0.00
2	2 Years System Warranty - Software	Lump Sum		$0.00
3	5 Years CDS Hosting Services	60		$0.00
4	5 Years Web Portal Hosting Services	60		$0.00
5	5 Years Retail Fare Media Sales - Administration	60		$0.00
6	5 Years Mobile Ticketing - Administration	60		$0.00
Other Support Services, Total of Items 1 through 6				**$0.00**
Also Entered on Summary Form A Item 8				

Item	Description	Quantity Calculation	Value
Mobile Ticketing Transaction Fees			
7	5 Years Mobile Ticketing Transaction Fee	% of Total Fare Value	
Retail Media Sales Fees and Commissions			
8	5 Years Card Packaging and Design	$ Per Card	
9	5 Years Transaction Commission (Loads/Reloads)	% of Total Fare Value	
10	5 Years Farecard Commission (Card Purchase)	% of Card Price	

RIPTA Revenue Collection Project

Form J - Service Options

Item	Description	Quantity	Unit Price	Item Total
Additional Operating Services				
1	Extended CDS Hosting - Monthly - Five Year Period after Base Time Period Expires	60		$0.00
2	Extended Web Portal Hosting Services - Monthly - Five Year Period after Base Time Period of 5 years Expires	60		$0.00
3	Extended Retals Sales Services - Five year period after Base Period of 5 years expires	60		$0.00
4	Extended Retals Sales Services - Five year period after first extension expires	60		$0.00
Additional Warranty Services				
5	Extended Software Warranty Services - Monthly - Two year period	24		$0.00
6	Extended (Post-Warranty) Software Support Services - Three Year Period	36		$0.00
7	Extended (Post-Warranty) Software Support Services - First Option - Two Year Period	24		$0.00
8	Extended (Post-Warranty) Software Support Services - Second Option - Two Year Period	24		$0.00
9	Extended (Post-Warranty) Software Support Services - Third Option - Two Year Period	24		$0.00
Turnover Operations				
10	CDS Hosting Migration	LS		$0.00

Item	Description	Quantity Calculation	Value
Additional Mobile Ticketing Transaction Fees			
11	5 Years Mobile Ticketing Transaction Fee - Five year period after Base Period of 5 years expires	% of Total Fare Value	
Additional Retail Media Sales Fees and Commissions			
12	Card Packaging and Design - Five year period after Base Period of 5 years expires	$ Per Card	
13	Transaction Commission (Loads/Reloads) - Five year period after Base Period of 5 years expires	% of Total Fare Value	
14	Farecard Commission (Card Purchase) - Five year period after Base Period of 5 years expires	% of Card Price	