Appendix-7

Pilot System Requirements Specification

System Requirements Specification

Version 1.4

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Contents

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Revision History

Name Of Person Responsible For Change	Date Of Revision	Reason For Change and Short Summary of Revisions Made	Version Number
Matthew Dorfman	2/22/16	First Revision based on Caltrans and Vendor Feedback. Addition of Odometer message. Various clarifications throughout document.	1.1
Matthew Dorfman	2/29/16	Minor clarifications made based on vendor feedback on version 1.1.	1.2
Matthew Dorfman and Roshini Durand	3/2/16	Minor clarifications based on vendor feedback on test procedures.	1.3
Matthew Dorfman	5/9/17	Various post-pilot additions: ► Forbid fixed VINs for OBDII mileage meters ► Require OBDII mileage meters to diagnose vehicle failures preventing accurate recording of mileage data ► Require OBDII mileage meters to use fuel data as included in MY2019-2021 OBDII updates ► Add minimum requirements for invoice content ► Require Account Managers (AM) to update enrolled/compliant VIN and enrolled account holder counts every day ► Require reminders for noncompliance ► Require AMs to store payment information and support automatic payments ► Require AMs provide near-real-time data ► Require AMs to have test environment/test accounts ► Allow manual permits to be retroactive ► Require reasonableness checks of third party data ► Add beginning and ending of reporting period—reference business rules ► Require VIN compliance check ► If one periodic report is re-sent, all must be re-sent	1.4

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<u>**Preface**</u>

This is a systems engineering document provided to Caltrans in support of the development of Road Charge pilot program policies and procedures. The purpose of this report is to provide technical specifications for the road charge system.

System Requirements Specification

1. Introduction and System Overview

This section presents an introduction to the requirements document and an overview of the system being specified in this document.

1.1. Introduction

This System Requirements Specification (SRS) document represents the next step in the systems engineering process in the development of the California Road Charge pilot system follows the Concept of Operations (ConOps). The ConOps compiles the decisions of the Technical Advisory Committee (TAC) members into a description of how the system would work from the user's perspective and from the state's perspective. The TAC's design recommendations are summarized in the ConOps document.[1]

This requirements document was provided to potential vendors during the procurement process, and vendors responded with descriptions of how they meet the requirements. After they were selected for participation in the program, vendors had the opportunity to suggest additions to or modifications of this document. All suggestions were reviewed by the pilot project liaison and Caltrans, and only those found to be fully compliant with TAC decisions and significantly beneficial to the program were accepted.

The remainder of this section provides an overview of the Road Charge Pilot system and the rest of this document.

1.2. System Purpose

The intention of the Road Charge System is to implement a cost-effective system for collecting the road charge, one that is highly automated and is easy to use and understand, is highly accurate, and provides clear audit trains. The system developed for the Pilot Project was intended to have many of the features and processes of a potential future revenue generating road charging system. However, two main system attributes of the final system were not designed into this pilot system:

- ► The use of real money—all funds in the program were simulated
- ► Enforcement activities—while the pilot included activities to encourage compliance, it did not include any enforcement activities (penalizing lack of compliance)

1.3. Objectives of the Pilot Program

The following objectives of the Pilot program are repeated from the Concept of Operations:

- ► Evaluate the technical and operational feasibility, and viability of the RUC system
- ► Examine the revenue potential and benefits of the new system compared with gas tax revenues
- ► Understand different costs associated with the RUC program
- ► Test an open system design that is technology neutral and allows entry of multiple operational concepts and technologies

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[1] Design direction is summarized in the ConOps in section 2.1

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- ► Test interoperability of system with that of neighboring states
- ► Demonstrate ability to handle data securely and protect privacy of Motorists
- ► Provide pilot users with choices regarding road usage/mileage reporting
- ► Determine level of public acceptance of the RUC concept.
- ► Evaluate user-experience and response to different operational concepts
- ► Assess viability and cost-effectiveness of each operational concept through measurable outputs
- ► Understand operational aspects of the program; Identify corresponding issues and provide a quantitative base for recommendations
- ► Demonstrate transparency/auditability of system

1.4.   Document Overview

This SRS document contains the overall requirements for the Road Charge System and the specific subsystem requirements for the Mileage Reporting subsystem, the Account Management subsystem, and the Account Management Oversight Subsystem. After presenting a system overview, the document presents the full system requirements, followed by the requirements for each of the subsystems.

This version of the SRS is directed to potential Account Managers and Technology Providers and is intended to provide comprehensive requirements for the overall Road Charge System by defining the requirements for each of its subsystems.

The California Road Charge system includes a Mileage Reporting Subsystem, an Account Management Subsystem, and an Account Management Oversight Subsystem, as shown in Figure 1-1 below. Each of the three subsystems is described in this document.

Figure 1-1 The three subsystems that comprise the Road Charge System

1.5.   Project Documents

The technical aspects of the project work are documented primarily in this document. Other critical program aspects are described in these documents:

- ► The Concept of Operations which provides the operational concepts and functional capabilities which the project will address.
- ► The Interface Control Document (ICD) which provides technical specifications of all interfaces between subsystems specified here.

1.6.   Operational Concepts for Road Charging

This document codifies the ConOps into technical requirements. Readers are encouraged to read that document first, as it provides an overview of the system in an easily comprehensible manner.

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As a reference for readers of this document, the list below provides a brief description of the participant five operational concepts that the Technical Advisory Committee selected for use in the Road Charging Pilot Project. For details of each operational concept, see the Concept of Operations.

► **Time Permit**—the motorist prepays for the right to drive unlimited miles during a specific period of time.
► **Mileage Permit**—the motorist prepays for a specific number of miles.
► **Odometer Charge**—the motorist pays for the number of miles he or she drove, based on odometer readings (self-reported or made by officials).
► **Automated Distance Charge (no location)**—the motorist is invoiced by an Account Manager for miles driven as measured by using an in-vehicle device that does not contain any technology whose intent is to determine vehicle location.
► **Automated Distance Charge (general location)**—the motorist is invoiced by an Account Manager for miles driven as measured by using an in-vehicle device that includes technology to determine vehicle location in order to automatically prevent charging travel off of public roads or out of state.

For operational concepts requiring "official" readings of odometers—the odometer charge and the mileage permit—official readings may be accomplished by means of a mobile phone-based image capture and processing system, provided that the system incorporates verification and anti-fraud technologies.

References in this document describing daily collection and reporting of mileage data only applied to automated concepts other those using image-based odometer readings. Image-based odometer readings were collected and reported monthly.

1.7.   Document Contents

In the remaining chapters of this document, descriptive introductory sections precede the actual requirements. These descriptions are provided to help the reader understand and contextualize the requirements. They do not constitute requirements themselves. In case of any conflict between this language and the written requirements, the requirements always take precedence. All actual requirements are included in sections 2.3, 2.4, 3.3, 4.3, and 5.2.

The remainder of this document is organized as follows:

► **Section 2** System Level Requirements includes system level requirements, i.e., general requirements that apply to all subsystems.
► **Section 3** Mileage Reporting Subsystem Requirements includes requirements that apply to the mileage reporting technology, the technology in the vehicle that measures miles driven for the Automated distance reporting methods.
► **Section 4** Account Management Requirements includes all requirements that apply to the account management subsystem, the subsystem supporting the account managers. This subsystem interfaces directly with pilot participants and reports results to the state.
► **Section 5** Account Management Oversight Requirements includes all requirements that apply to the Account Management Oversight, the subsystem that supports the group that oversees the account managers and the overall operation of the pilot and maintains the road charging database as well as a limited amount of audit report formats.

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A significant portion of the contents of this document was patterned after the Oregon Department of Transportation's Road Charge System Requirements Document.[2] An advantage of this approach is to provide for the possibility of interoperability with Oregon and other states. However, it is recognized that the governmental units and organizations differ substantially between the two states. This document expands upon the Oregon requirements to incorporate several new mileage reporting technologies and manual operational concepts. It is also tailored to meet the considerations of a California pilot.

1.8.   Requirement Naming Conventions

The detailed software and system requirements appear in the "Detailed requirements" subsection of each subsystem requirements section below (subsections 3.3.2, 4.3.2, and 5.3.2). Each detailed requirement is named according to the following form:

<component abbreviation>.<function abbreviation>.<requirement index>

The detailed requirements are grouped by functions. Functions are high-level objectives of the subsystems. In the following document, functions are abbreviated using the three capitalized letters in the function name. For example, the first function of the Mileage Meter (MM) is "**R**ecord accumulated **M**ileage **T**raveled by day." The abbreviation of the function is thus RMT, and the requirements for this Mileage Meter function are coded:

MM.RMT.#, where # is the requirement index

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[2] Oregon Department of Transportation, Road Usage Charge Program System Requirements Specification version 1.5, June 5, 2015.

2. System Level Requirements

This section provides system level requirements – general requirements that apply to all subsystems. Requirements that are specific to each subsystem are provided in the following three chapters. The System Level requirements described in this chapter are presented in three sections: general requirements, security requirements, and performance requirements. This section also includes the system overview diagram.

2.1. System Level Requirements

This subsection provides a list of general system level requirements. Specific system level requirements in the areas of security and performance appear in sections 2.3 and 2.4 below:

- ► The system shall provide user choice of technology and service provider.
- ► The system shall support the five operational concepts for road charging: time permit, mileage permit, odometer charge, automated distance charging (no location), and automated distance charging (general location).
- ► The system shall be auditable.
- ► The system will not employ actual payments (real money) but provide notional charges and credits, which participants may pay for using simulated payment methods.
- ► The system shall record all mileage traveled in and, for the operational concept that uses general location, be able to distinguish between California roads and out of state highways.
- ► The system shall charge Road Charges to pilot participants for travel in California.
- ► The system shall provide credits for California fuel taxes paid.
- ► The system shall not charge out-of-state travel for users who choose a Mileage Meter with general location.
- ► The system shall not charge for travel off-road or on private lands for users who choose a Mileage Meter with general location that offers the functionality to determine travel off-road or on private roads (only testing off-road will be included in the pilot – private road differentiation will not be required or tested).
- ► The system shall support interoperability with other road charging systems.
- ► The system shall support up to at least 7500 users.
- ► The system shall provide an open architecture that allows private companies to provide either mileage collection technology or account management or both.
- ► The interfaces between subsystems shall follow the format defined in the Interface Control Document (ICD).

2.2. Assumptions and Dependencies

- ► Pilot participants will be pre-registered in the program
- ► Interoperability of the system will be tested with states that have a currently operational road charging system. Interoperability will be tested only for automated mileage reporting methods, as manual methods do not support interoperability.

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> ► At least two Commercial Account Managers, and at least one State Account Manager, will participate in the pilot. Commercial Account Managers may also provide value-added services to participants.
> ► Multiple Technology vendors will participate in the pilot, covering the four main technologies: OBDII mileage meters, Smartphone mileage meters, Vehicle telematics mileage meters, and Commercial Vehicle Mileage Meters.

2.3. System Overview Diagram

The system described in this document provides the technology to support the program goals for the California Road Charge pilot program. The program context diagram shown in Figure 2-1 below illustrates key stakeholders within the program reliant on the system.

Figure 2-1 Road Charge Program System Overview Diagram
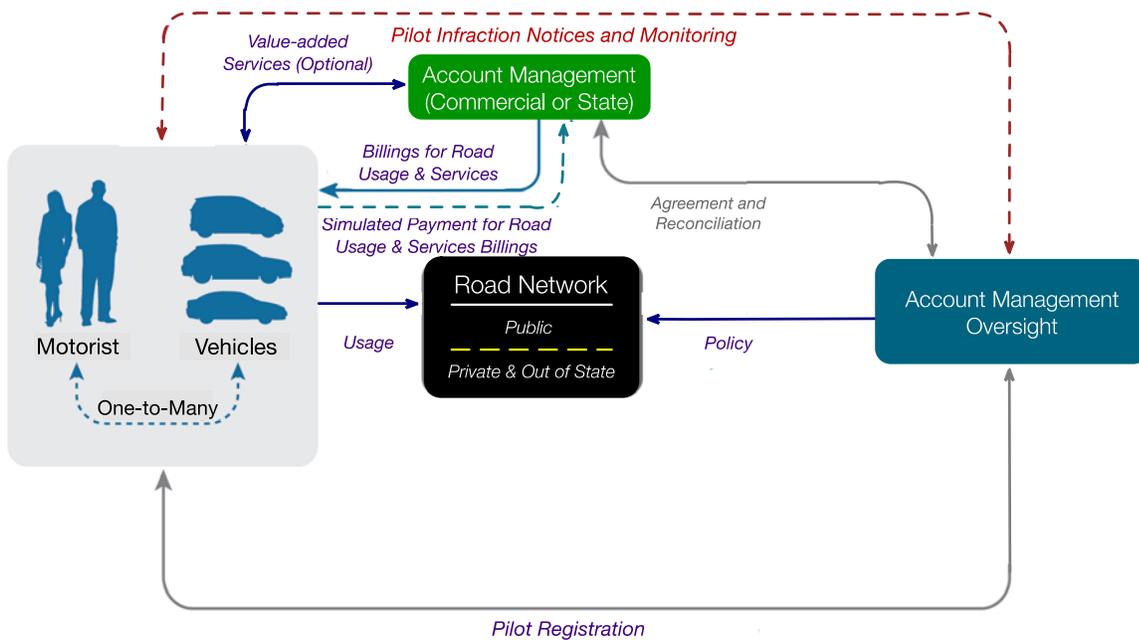
2.4. System Security, Disaster Recovery, and Data Retention

System security complied with the standards adopted by the TAC. As part of this, the system design and an inventory of information security controls were requested of the Account Managers before operation of the pilot system, during security verification checks. Account Managers proposed security and disaster recovery details for the overall system to ensure adequate protection and assurance of recovery options in the event of an unexpected incident. No unexpected incidents occurred during the pilot

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General Security Requirements:

SYS.SSD.1   The vendor shall provide a system architecture diagram which illustrates the location and key security measures proposed for the Road Charge Pilot Program system.

SYS.SSD.2   The vendor shall assess the security of their operation and systems based on the security requirements below (SYS.SSD.7 to SYS.SSD.24) and document their assessment.

SYS.SSD.3   The security assessment documentation shall list what Personally Identifiable Information (PII) is stored and the corresponding system and operational controls to maintain the appropriate level of security and access.

SYS.SSD.4   During system operation, the vendor shall make the Account Management Oversight aware of any system breach, or potentially significant informational breach immediately upon discovery via e-mail and phone call.

SYS.SSD.5   Account Managers shall define and operate a security policy during the pilot. The security policy should cover the Account Manager's security organization chart, governance structure, key security procedures, risk management policies, and monitoring of controls relevant to the security of the system.

SYS.SSD.6   Vendors should initiate Change Control processes when deficiencies in the design or operating effectiveness of security controls are identified during system operations and monitoring.

System Level Security Requirements:

To ensure the proper level of security within the systems that will be used, the following requirements detail the policies required of all account management and technology providers:

SYS.SSD.7   *Access Control:* The vendor shall provide Access Control on all road charging relevant systems. This should include but not be limited to user access set up and termination, password management, and administrator activities. Access control to physical sites housing the vendor's servers should be documented.

SYS.SSD.8   *Access Control related to password security and logging:* The vendor shall support and document authentication and access control as it relates to password security and logging of access to its systems. This should include but not be limited to password encryption, logging of access attempts (granted and denied), and administrative access to log files. Passwords should have a minimum of 8-character length, include letters and numbers and one capital letter, and require periodic password change.

SYS.SSD.9   *Access to Personal Identifiable Information (PII):* The vendor shall support User Roles with varied Access to Personally Identifiable Information (PII). The vendor shall provide a description of all authentication methods and user roles used for systems which will contain personally identifiable information. For the pilot project, employ user roles with limited rights to PII access. The vendor shall provide at least the user role of a Customer Service Representative. The

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Roles of Enforcement and Accountant/Auditor would be relevant to a potential future operational system but need not be included in the pilot.

SYS.SSD.10 *Antivirus and anti-malware:* The vendor shall provide up-to-date Antivirus and anti-malware software on all systems. This vendor should document the way antivirus and anti-malware applies to all applications being used; virus and malware scan and scope frequencies; and the vendor's the incident response process.

SYS.SSD.11 *Desktop security:* The vendor shall provide desktop security. This should include but not be limited to firewalls where needed; a regular software update process; and storage encryption with at least 128-bit Advanced Encryption Standard (AES) on portable computing devices used to store State-owned data.

SYS.SSD.12 *Server management:* The vendor shall provide secure server management. This should include but not be limited to firewalls where needed, at least 128-bit AES encryption on server storage used to store State-owned data, and Administrator processes.

SYS.SSD.13 *Back up management:* The vendor shall provide backup management. This should include but not be limited to testing and restore processes, access to back up information, encryption with at least 128 bit AES, and management of back up media.

SYS.SSD.14 *Network security:* The vendor shall provide network security. This should include but not be limited to firewalls where needed, public/private network separation, and encryption with at least 128 bit AES.

SYS.SSD.15 *Intrusion Detection:* The vendor shall provide Intrusion Detection and response. This should include but not be limited to intrusion detection, including all internal monitoring practices; and incident response.

SYS.SSD.16 *Encryption:* The vendor shall provide Encryption for all PII and road charging data, both in server storage and transmittal. The vendor shall provide their policy for encryption for each level where road charging data will reside (file, database, disk, etc.). This policy should include all procedures/measures for preventing unauthorized access. The vendor shall use at least 128-bit Advanced Encryption Standard (AES).

SYS.SSD.17 *System lifecycle management:* The vendor shall provide IT system lifecycle management. This policy should include but not be limited to the change control process (authorization through implementation), the security patch process, and ongoing maintenance of updates. Lifecycle management activities should occur throughout the system development lifecycle including design, acquisition, implementation, configuration, testing, maintenance, and replacement of system components.

SYS.SSD.18 *Remote access:* If a vendor provides remote access to their systems, the remote access shall be done securely. This step involves security for remote access to road charging data, authentication method(s), encryption used, mobile device policy and security measures.

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SYS.SSD.19   *Wireless management:* The vendor shall provide security for wireless access to their systems, if such access is offered. This should cover the specific uses of wireless access to road charging data, encryption used (specified at least 128-bit AES), guest/non-guest access levels, and incident response. Also, indicate if the vendor uses industry supported access standards 802.11, which standard is being employed. (i.e. 802.11a, 802.11b, 802.11e, 802.11g, 802.11i, 802.11n).

SYS.SSD.20   Mileage Data Destruction (Applies only for automated mileage reporting methods):

- ► All systems shall provide Pilot Participants the ability to opt in to preserve data for purposes of pilot data analysis or their own use.
- ► For participants who do not opt in, all mileage data shall be destroyed within 30 days after latest of:
  - > Simulated payment processing,
  - > Simulated dispute resolution, or
  - > Simulated noncompliance investigation.
- ► Data on mileage meters shall be destroyed when data receipt confirmation received from remote system (data collection subsystem or account management subsystem. as applicable).

SYS.SSD.21   The vendor shall provide a plan which details its process for Disaster Recovery should there be an incident which threatens or impacts normal business operations while contracted for the Road Charge program.

SYS.SSD.22   The vendor shall provide a Business Continuity plan which details how essential business functions continue to operate during and after an incident. The plan shall be updated to reflect organizational or system changes.

SYS.SSD.23   The vendor shall provide Data Masking for all relevant personal participant data from company employees. At a minimum, the vendor shall mask all means of simulated payment (i.e. credit card numbers).

SYS.SSD.24   The vendor shall provide a data modification notification for all relevant account details (at a minimum participant name, address, other contact information, and password) to the account contact provided.[3]

2.5.   System Performance

Performance requirements listed in this section specifically identify key areas of system performance on the various subsystems. These requirements are also in context with their related components in following chapters. Performance requirements include the following:

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[3] Applies only for online customers. Offline customers do not get a written notification.

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Accuracy

MM.RMT.9   The Mileage Meter shall calculate miles traveled per day to within +/-5% of the actual value.

MM.CFU.4   If data to calculate estimates of fuel consumption is available, the Mileage Meter shall calculate estimates of daily fuel consumption within +/-5% of the actual value, or use an approach to calculate miles traveled that has been approved by Caltrans.

MM.VLD.1   All Mileage Meters with general location shall be able to determine the location of the vehicle with sufficient accuracy to be able to determine correctly in which Rule ID[4] the vehicle is traveling at least 99% of the time when within a half mile of the border between Rule IDs.

MM.VLD.2   Mileage Meters optionally shall be able to determine the location of the vehicle to within 50 feet to be able to determine whether the vehicle is traveling off of roads that will be assessed a vehicle Road Charge.

Availability

TP.HER.1   The Transactions Processor shall have high availability (99.9% uptime).

DC.FSM.21   If the Data Collection Component is housed in the Mileage Meter, the Data Collection Component shall transmit the mileage message to the Road Charge Processor, covering at least 99% of days that the Mileage Meter is operating and has communications.

MM.AMT.8   The Mileage Meter (other than smartphone and telematics) shall communicate with data collection (either transmit reportable miles to data collection or provide positive notification), covering at least 99% of days that the Mileage Meter is operating and has communications.

Durability

MM.HAV.1   The Mileage Meter shall be designed to continue to operate even under the following operating conditions:

- ► Voltage Range from 9.0 VDC to 18.0 VDC
- ► Maximum Relative Humidity – non condensing of 90%
- ► Temperature Range from -10ºC to +55ºC

  The mileage meter shall be designed to tolerate a Temperature Range from -40ºC to +85ºC.

MM.HAV.2   The Mileage Meter shall have an estimated Mean Time Between Failures (MTBF) of no less than 5 years.

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[4] As defined in the ICD, Rule ID's refer to large areas or zones which are charged at the same rate. In the California Road Charge Pilot Project, each RuleID corresponds to one state.

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MM.MPM.2   The Mileage Meter shall not cause a vehicle battery in good condition to discharge over a period of 2 months when the vehicle is not in use.

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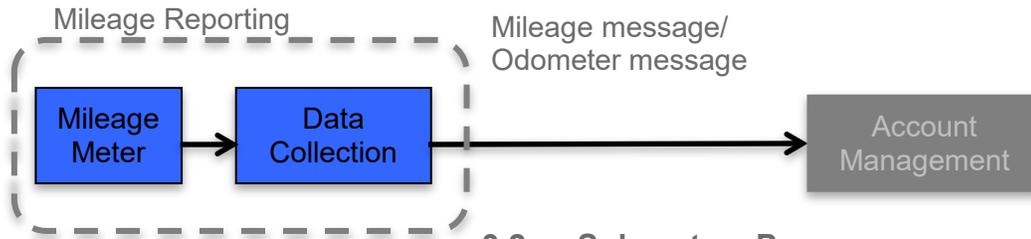# 3. Mileage Reporting Subsystem Requirements

3.1. Subsystem Overview

The Mileage Reporting subsystem is composed of two components, the Mileage Meter, which, in all cases except the case of the vehicle telematics mileage meter, will be located in a vehicle for the collection of mileage data, and the Data Collection component, which takes the raw data from the Mileage Meter, stores it for auditing purposes, and creates and sends the mileage messages or odometer messages to the Account Management subsystem. In the case of a vehicle telematics mileage meter, the mileage meter vendor provides an interface for the account manager to extract data from automaker vehicle telematics systems.

This subsystem applies only to the operational concepts that employ mileage meters, automated distance reporting (no location) and automated distance reporting (general location). Requirements for the manual operational concepts (time permit, mileage permit, and odometer charge) are included in the Account Management subsystem presented in the next chapter.

The block diagram in Figure 3-1 below illustrates the Mileage Reporting subsystem:

Figure 3-1: Mileage Reporting Subsystem (other than vehicle telematics)

3.2. Subsystem Purpose

The Mileage Reporting subsystem interfaces with vehicles subject to the Road Charge that use a mileage meter, and measures and records the miles traveled each day by the vehicle. The accumulated miles traveled are reported by the Mileage Reporting subsystem to the Account Management subsystem for computation of the Road Charge due by the pilot participant (or, in the case of the vehicle telematics mileage meter, the data is extracted by the Account Management subsystem). In case of a Mileage Meter with general location with location technology, and uses map technologies which identify the roads subject to the Road Charge for miles driven (generally publicly maintained roads within California), the map technology will differentiate miles driven on roads subject to the Road Charge in state and out of state. Likewise, if the map technology provides the capability, it will also differentiate between public and non-public roads.

Along with mileage information, the Mileage Reporting subsystem also tracks fuel use information when and where it is available, which can be used for computation of fuel tax credits by the account managers.

3.2.1. Objectives of the Subsystem

The Mileage Reporting subsystem must accomplish the following functions:

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- ► Monitor vehicle systems to accurately measure the miles driven each day, and in cases where possible, accurately measure the fuel consumed.
- ► For mileage meters with general location, allocate the miles driven each day by the miles driven on Road Charge-chargeable roads (public, in state) and by non-chargeable roads (public out-of-state, and, if applicable, private).
- ► Periodically send mileage data to the Account Management subsystem in mileage messages conforming to the format specified in the Mileage Reporting to Account Management Interface Control Document (ICD), and confirm the accurate delivery and receipt of data
- ► Operate with high availability, with built-in diagnostic components, automated error recovery from soft failures, auto-reset from hard failures, and a high mean time between failures (MTBF) as specified in these specifications. Monitor the health and performance of the subsystem and report health status (including errors and events) to the Account Management subsystem.
- ► Provide report any available diagnostics of operational conditions (system health codes).

The Mileage Reporting subsystem has two components, the Mileage Meter, and the Data Collection component, as illustrated in Figure 3-1 above. These two components may both be housed in one physical device, or the mileage meter may be housed in a device with the Data Collection component located at an external location.

The Mileage Meter provides the interface to the vehicle for measuring miles traveled and fuel consumption, and for Mileage Meters with general location, determining vehicle location for the purposes of determining chargeable miles driven. It is therefore necessary for the Mileage Meter to be associated with the vehicle systems.

The Data Collection component collects measurement and location data provided by the Mileage Meter, stores the data, both for later communication and audits, and creates and sends the standard format mileage messages to the Account Management subsystem.

The Data Collection component is not required to reside in the vehicle. Vendors have the option of physically locating the Data Collection component directly into the Mileage Meter and sending the mileage message to Account Management directly from the vehicle, or implementing the Data Collection component centrally, sending the mileage message to Account Management from the central system, and communicating between the Mileage Meter in the vehicle and the central Data Collection component for collection of vehicle data.

3.3. Subsystem Requirements

3.3.1. Subsystem Context

As described above, the Mileage Reporting subsystem comprises components used to collect and transmit the mileage message—the Mileage Meter, which is always located in the vehicle, and the data collection component, which may be housed with the Mileage Meter, or elsewhere. This was illustrated above in Figure 3-1.

3.3.2. Subsystem Security

Electronic security measures are vital to the success of the road charge system.

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A major part of electronic security is the Mileage Meter's resistance to fraud and tampering. It is desirable that the Mileage Meter be encased in a physical enclosure that resists tampering with the components of the device. As specified below, the Mileage Meter shall be installed in the vehicle in a manner which resists tampering with the device or deliberately altering the accumulation of mileage data. The Mileage Meter shall monitor its functions and accumulated data and detect any anomalies which are indicative of possible tampering or attempted fraudulent alteration of monitored data, and record such events in the performance logs.

If the Mileage Meter has multiple sources of data, it should verify that the data sources correspond. For example, if a Mileage Meter has both vehicle data information including vehicle speed from the vehicle data port, and location information, it should ensure that the speed information from the data port is within a reasonable tolerance of the speed derived from the location data. If data sources do not correspond, the Mileage Meter should set the appropriate health code(s).

The Mileage Meter should support measures to authenticate location data when the device is running on third-party software, such as when the Mileage Meter interfaces with a smartphone. Examples include comparing data derived from that device with data from the vehicle, checking for known fraudulent location data programs running on the device, checking for simple unusual location behavior (all location data being identical or within a very small confined region), and comparing the location of the receiver communicating with the device (such as a cell tower) with the location data produced by the device. If the location data cannot be authenticated, then the miles are undifferentiated and the Mileage should report degraded location data with the appropriate health code.

3.3.3. Types of Mileage Meters

The requirements presented below were written with the following four types of mileage meters in mind:

OBDII Mileage Meters, which are devices that plug into a vehicles OBDII port to get vehicular data. Such devices may include devices used to measure vehicle data for Usage-based Insurance (UBI). This category includes OBDII devices that interface to smartphones.

Smartphone Mileage Meters, which are applications or systems running on Smartphones or camera-equipped mobile phones that measure miles traveled by a vehicle, either by use of location information or by use of vehicle odometer images. Such mileage meters must record all miles that a vehicle travels when a phone is not in a vehicle or does not have power. They may do this via securely provided images of vehicle odometers.

Vehicle Telematics Mileage Meters, which is software that interfaces with the vehicle telematics systems of connected vehicles to extract data needed for road charging. These vehicles are factory equipped with telematics systems that include a cellular (3G/LTE) interface. These mileage meters do not push messages to the Account Managers, but rather allow account managers to pull data from the automaker telematics interface.

Commercial Vehicle Mileage Meters, which are hardware that is physically and/or electronically anchored in Commercial vehicles to measure distance traveled.

Note that some of the requirements below only apply to any in-vehicle hardware used in these technologies. OBDII mileage meters and Commercial Vehicle mileage meters always have in-vehicle hardware; vehicle

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telematics mileage meters never have in-vehicle hardware, and smartphone mileage meters may or may not include in-vehicle hardware.

3.3.4. Mileage RuleID and Sub Rule ID

RuleID is the code for the location (area) where the mileage is driven. All RuleID's refer to entire states, except 00, which refers to mileage driven for which there is no location data (state cannot be determined). The values are illustrated in Table 3-1 below. Sub Rule ID distinguishes between chargeable (public on-road) and non-chargeable miles driven within a given Rule ID.

Table 3-1 Definition of Rule IDs

State	Rule ID
No location data	00
Alabama	01
Alaska	02
Arizona	04
Arkansas	05
California	06
Colorado	08
Connecticut	09
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
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New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Washington	53
West Virginia	54
Wisconsin	55

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Mexico	98
Canada	99

Sub Rule ID has the following values:

> 1=all public on-road (chargeable) miles in given RuleID
> 2=all non-chargeable miles in given RuleID

3.4. Mileage Reporting Subsystem Requirements Specifications

The requirements that follow are organized by the functional architecture.

3.4.1. Overview

This software has two main processes.

Accumulate miles by day—record miles traveled by day, and in the case of mileage meters with general location information, by Rule ID/Sub Rule ID—completed by the Mileage Meter component.

Transmit miles to Account Management subsystem—create mileage message as specified in ICD and transmit to the Account Management subsystem—completed by the data processing component.

3.4.2. Detailed Functional Requirements

Subsystem: Mileage Reporting

Component: Mileage Meter

Function 1: Record accumulated mileage traveled by day

This function only applies to OBDII Mileage Meters, Commercial Vehicle Mileage meters, and Smartphone mileage meters that use location information.

MM.RMT.1　　The Mileage Meter shall interface with the vehicle in which it is installed to monitor and collect miles traveled by the vehicle.

MM.RMT.2　　The Mileage Meter shall record accumulated miles traveled by day.

MM.RMT.3　　The Mileage Meter shall not delete any data sent to Data Collection for computing accumulated mileage until the data is stored by Data Collection.

MM.RMT.4　　The Mileage Meter shall report the miles traveled to Data Collection in such a manner that Data Collection can determine the day on which the miles were driven.

MM.RMT.5　　The Mileage Meter without general location shall not contain any hardware designed primarily to determine location, even if such hardware is disabled by software.

System Requirements Specification

MM.RMT.6   The Mileage Meter with general location shall either contain hardware to determine location or interface with external user- provided wireless devices that contain hardware to determine location.

MM.RMT.7   When the Mileage Meter with general location can determine the location of the vehicle, it shall record the mileage traveled in the Rule ID and Sub Rule ID in which the vehicle is traveling. When the Mileage Meter with general location cannot determine the location of the vehicle, it shall record mileage traveled in the Rule ID for undifferentiated miles.

MM.RMT.8   If a Mileage Meter is capable of either using or not using location information, it shall provide an indication to the driver of which mode it is operating in at any time.

MM.RMT.9   The Mileage Meter shall calculate miles traveled per day to within +/-5% of the actual value, or use an approach to calculate miles traveled that has been approved by Caltrans.

MM.RMT.10   For OBDII Mileage Meters the Mileage Meter shall be installable in any vehicle and not limited to being installed in a vehicle of a specific VIN. A VIN may be pre-programmed into a mileage meter, but in case the device is plugged into a vehicle difference from the pre-programmed VIN, the device shall continue to transmit data as normal.

Function 2: Resist fraud and tampering

This function applies to all mileage meters.

MM.RFT.1   If the Mileage Meter includes hardware in the vehicle, the Mileage Meter shall be encased in a physical enclosure that resists opening and provides a means to visually verify unauthorized opening of the enclosure.

MM.RFT.2   The Mileage Meter shall provide a means to detect unauthorized firmware changes.

MM.RFT.3   The Mileage Meter shall verify consistency of all data sources available to detect any anomalies that are indicative of possible tampering or attempted fraudulent alteration of monitored data, and record such events in the performance logs.

MM.RFT.4   The Mileage Meter shall be attached to the vehicle. It shall provide the capability to detect when it has been removed or power has been lost to the device.

MM.RFT.5   When a Mileage Meter with an interface to the OBDII port has been reinstalled or the power has been restored, the Mileage Meter shall be capable of determining if it has been installed into a new vehicle or remains in the original vehicle, so long as at least one vehicle reports VIN. In the case of professionally, permanently installed mileage meters that do not interface to the OBDII port, the mileage meter shall notify the account management subsystem that it has been removed from the vehicle.

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MM.RFT.6   The Mileage Meter shall contain a record of the hardware and software version that is currently installed. Changes to the Mileage Meter hardware or software shall be reflected in the version number fields of the mileage message.

MM.RFT.7   The Mileage Meter shall have the capability to detect and record when software resets of the Mileage Meter are carried out.

MM.RFT.8   If a Mileage Meter with general location employs a connection to a third-party device for obtaining location data, it shall support measures to authenticate the location data from that device.

MM.RFT.9   If the Mileage Meter does not provide a secure means by which it can detect when it has been disconnected from a vehicle, then it shall provide a means of determining miles driven when the device is not in the vehicle or not powered on.

Function 3: Have sturdy physical structure and be installable safely in vehicle

This function only applies to OBDII mileage meters and Commercial Vehicle Mileage meters.

MM.SSS.1   The Mileage Meter shall be encased in a sturdy physical enclosure and be designed to mount securely to prevent disruption of normal operations, even under severe operating conditions of the vehicle.

MM.SSS.2   The Mileage Meter shall be mounted in the vehicle in a manner that does not compromise the operation of any other systems of the vehicle or prevent maintenance of any other system or component of the vehicle.

MM.SSS.3   The Mileage Meter shall be mounted in the vehicle in a manner that does not compromise the safety of the operator or passengers of the vehicle.

MM.SSS.4   The Mileage Meter shall be certified to comply with all relevant FCC regulations. A provisional or pilot certification by the FCC is acceptable for participation in the pilot project.

Function 4: Maintain power management

This function only applies to OBDII mileage meters and Commercial Vehicle Mileage meters.

MM.MPM.1   The Mileage Meter shall retain all stored data and parameters even under periods of sustained disruption of power to the unit.

MM.MPM.2   The Mileage Meter shall not cause a vehicle battery in good condition to discharge over a period of 2 months when the vehicle is not in use.

Function 5: Compute fuel usage

This function only applies to OBDII mileage meters.

System Requirements Specification

MM.CFU.1   In vehicles that use liquid fuel, if the vehicle interface used by the Mileage Meter allows monitoring of or an estimate of fuel usage (based on parameters such as MAF or MAP sensor data), the Mileage Meter shall record the accumulated fuel used by the vehicle by day.

MM.CFU.2   When the Mileage Meter with general location can determine the location of the vehicle and the Mileage Meter allows monitoring of or an estimate of fuel usage, it shall record the fuel usage in the Rule ID in which the vehicle is traveling. When the Mileage Meter with general location cannot determine the location of the vehicle, it shall record fuel usage in the Rule ID for undifferentiated miles.

MM.CFU.3   If the Mileage Meter determines that the data used to determine fuel usage is not reliable, it shall report no fuel data available.

MM.CFU.4   If data to calculate estimates of fuel consumption is available, the Mileage Meter shall calculate estimates of daily fuel consumption within ±5% of the actual value.

MM.CFU.5   OBDII mileage meters shall be able to read data required by the latest OBDII regulations regarding fuel usage.[5]

Function 6: Have high availability

This function applies to all mileage meters.

MM.HAV.1   The Mileage Meter shall be designed to continue to operate even under the following operating conditions:

▶ Voltage Range from 9.0 VDC to 18.0 VDC
▶ Maximum Relative Humidity – non condensing of 90%
▶ Temperature Range from -10ºC to +55ºC

The mileage meter shall be design to tolerate a Temperature Range from -40ºC to +85ºC.

MM.HAV.2   The Mileage Meter shall have an estimated Mean Time Between Failures (MTBF) of no less than 5 years.

Function 7: Maintain an indication of service/performance quality (health data) Description

This function applies to all mileage meters, but not all mileage meters will support all diagnostic functions.

MM.RSP.1.1-17   The Mileage Meter shall maintain a log of the following errors and events detected by the built-in diagnostics. Not all mileage meters may support all error. For example, disconnects and reconnects to the vehicle may only be detectible by OBDII mileage meters. Note that it is vital

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[5] Starting in model year 2019 with 30% of new vehicles, and completing in 2021 with 100% of new vehicles, fuel usage data will be added directly to OBDII data.

System Requirements Specification

that all mileage meters with a physical connection to the vehicle accurately diagnose case 16—vehicle failure preventing accurate reporting mileage meter. The Mileage meter shall support all errors and events that are detectible by its type of mileage meter:

1. Low Voltage
2. Anomalies in monitored vehicle functions and parameters which could compromise the collection and reporting of VMT data (e.g., MIL on - Check Engine light)
3. Storage full
4. Disconnects (also including time of disconnect and data on miles while disconnected if available)
5. Connected to new vehicle (first time connected to any vehicle, both initial installation and new VIN)
6. Vehicle interface communications failure
7. Location data degraded [Mileage Meter with general location only]
8. Incorrect date/time (conflict between date/time from vehicle interface and from wireless communications)
9. Software resets
10. Software updates
11. Degraded mileage data
12. Missed mileage
13. Inconsistent mileage data (between multiple raw data sources)
14. Mobile App failure (other than faults indicated above in 9-13)
15. Vehicle telematics interface failure (other than faults indicated above in 9-13)
16. Vehicle Failure preventing accurate recording of mileage data
17. Vendor-specific

MM.RSP.2   The Mileage Meter shall not delete any error or performance log entries until values are stored by Data Collection.

Function 8: Transmit accumulated mileage traveled, fuel usage data (optional), and health data

This function applies to all mileage meters.

MM.AMT.1   The Mileage Meter shall send the accumulated miles traveled, or data sufficient for the computation of accumulated miles traveled per day to the Data Collection component; or the Data Collection shall pull such data from the mileage meter.

MM.AMT.2   The Mileage Meter shall send error and event log data to the Data Collection component for reporting and storage; or the Data Collection shall pull such data from the mileage meter.

MM.AMT.3   The Mileage Meter shall send the accumulated fuel usage data, if computed, to the Data Collection component; or the Data Collection shall pull such data from the mileage meter.

MM.AMT.4   If the Mileage Meter detects it is installed in a new vehicle as identified by a new VIN and/or change in other data reported through the vehicle interface, the Mileage Meter shall send all unreported accumulated miles for the previous vehicle to the Data Collection component for completed days immediately (or as soon as possible if communications is not available) separately from the miles reported from the new vehicle. The Mileage Meter shall immediately

System Requirements Specification

(or as soon as possible if communications is not available) report to Data Collection that the Mileage Meter has been installed in a new vehicle including the VIN, if available.

MM.AMT.5   The Mileage Meter shall either contain the data collection component, or shall contain communications hardware capable of direct communications with a data collection component (requiring no external communications devices).

MM.AMT.6   For mileage meters that send (push) data to the data collector, the Mileage Meter shall transmit data no less frequently than once per month. For mileage meters that send (push) data to the data collector and that have access to constant power and connectivity, the mileage meters shall transmit data no less frequently than once per week.

MM.AMT.7   The Mileage Meter shall accept an acknowledgement message from the Account Management subsystem that includes the message ID of the message received.

Function 9: Vehicle location differentiation to defined accuracy

This function applies to all mileage meters with general location.

MM.VLD.1   All Mileage Meter with general location shall be able to determine the location of the vehicle with sufficient accuracy to be able to determine correctly in which Rule ID the vehicle is traveling at least 99% of the time when within a half mile of the border between Rule IDs.

MM.VLD.2   Mileage Meters optionally shall be able to determine the location of the vehicle to within 50 feet to be able to determine whether the vehicle is traveling off of roads that will be assessed a vehicle Road Charge.

MM.VLD.3   If the mapping functionality is located in the Mileage Meter, the Mileage Meter shall provide a means for updating map definitions and data points, as well as the definitions of the Rule ID / Sub Rule ID when changes are warranted based on business rule definitions.

MM.VLD.4   If needed for general location mileage measurement, contractors must utilize one of the commercially available mapping services and propose it to road charge pilot program authorities for approval to differentiate taxable and non-taxable miles.

Component: Data Collection

Function 1: Receive data from Mileage Meter

This function applies all Mileage Meters.

DC.RDO.1   Mileage Meter providers shall provide a Data Collection Component or arrange with another selected vendor to provide the Data Collection Component.

DC.RDO.2   If the Data Collection component is implemented remotely from the Mileage Meter, the communications between the Mileage Meter and the Data Collection component shall be implemented to prevent any data loss, even after periods of disrupted communications.

System Requirements Specification

DC.RDO.3   If the Data Collection component receives data from multiple vehicles, it shall maintain the data from each vehicle separately

DC.RDO.4   Data Collection shall receive data sent (pushed) from the mileage meter; or in case of a vehicle telematics mileage meter, Data Collection shall retrieve (pull) data from the mileage meter.

Function 2: Have configurable parameters

This function applies to all Mileage Meters.

DC.CPM.1   The Data Collection component shall provide a means to change configurable parameters without having to reprogram any in-vehicle components.

DC.CPM.2   Configurable parameters shall include at a minimum the time period for reporting data to the Account Management subsystem, the communications address of the Account Management subsystem, and the storage period.

DC.CPM.3   Data must be reported to the Account Management subsystem at least once a month and must be reported for each day in the month. The time period for reporting data is subject to change and is a configurable parameter.

Function 3: Formulate and send messages to account management

This function applies to all Mileage Meters except the vehicle telematics mileage meter.

DC.FSM.1   The mileage message or odometer message shall be created from the accumulated data received from the Mileage Meter component.

DC.FSM.2   The mileage message or odometer message shall conform to the message defined in the Mileage Reporting to Account Management Interface Control Document.

DC.FSM.3   The mileage message shall reflect all error and event conditions reported by the Mileage Meter during the period reported in the mileage message and shall be encoded as defined in the Mileage Reporting to Account Management Interface Control Document.

DC.FSM.4   The Mileage Message shall be transmitted to the Account Management System after the configured time period.

DC.FSM.5   The Data Collection component shall ensure that there is no overlap in the dates between sequential reporting messages.

DC.FSM.6   If no data is received by the Data Collection component from the Mileage Meter during the configured time period, the Data Collection component shall send a mileage message with an error code for no Mileage Meter data received.

DC.FSM.7   The Data Collection component shall ensure that the Message ID is unique to each message sent.

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DC.FSM.8   The Data Collection component shall accept an acknowledgement message from the Account Management subsystem that includes the Message ID of the message received.

DC.FSM.9   The Data Collection component shall include accumulated mileage data, and if available, accumulated fuel usage data, for all complete days since the last day reported in the most recently acknowledged mileage message.

DC.FSM.10   If the Data Collection component does not receive an acknowledgement message from the Account Management subsystem for a mileage message sent, all accumulated mileage and fuel usage date from that message shall be included in a subsequent mileage message, and no later than the next scheduled mileage message transmitted to the Account Management subsystem.

DC.FSM.11   The Data Collection component shall update its date/time clock in such a way that the date/time of the Mileage Meter and other vendor system components are in sync. Examples include using an external source (i.e. GPS) or syncing with the internal clock of the Account Management subsystem.

DC.FSM.12   For purposes of reporting miles traveled by day, a day shall be defined as 12:00:00 am to 11:59:59 pm Pacific Time (PT). Daylight savings and standard time shall be accounted for. If this is not technically feasible, for purposes of reporting miles by day, a day shall be defined by the vendor consistently for all vehicles. The definition must include the offset from UTC time. The definition must be documented, provided to, and approved by the Agency.

DC.FSM.13   If the Data Collection Component is unable do to determine miles traveled by day, it shall record the miles traveled by a range of days/times, as specified in the ICD.

DC.FSM.14   If the Data Collection Component is housed in a Mileage Meter, it shall contain hardware capable of transmitting the Mileage Message to the Account Management subsystem without an external device for communications

DC.FSM.15   The Data Collection Component shall transmit the Mileage Message to the Account Management subsystem that is associated with the Mileage Meter ID number in the mileage message.

DC.FSM.16   If the Mileage Meter provides fuel usage data to the Data Collection component, the Data Collection component shall set the Fuel Use Method to the value indicating actual fuel use is calculated.

DC.FSM.17   If the Data Collection Component receives mileage from multiple vehicles (VINs) from a given Mileage Meter, it shall send the data from each vehicle in separate mileage messages.

DC.FSM.18   If the Data Collection Component receives notification that the Mileage Meter has been plugged into a new or different vehicle (including first installation), it shall immediately (or as soon as possible if communications is not available) send a mileage message with no miles to the Account Manager for the different vehicle with the new vehicle event indication set.

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DC.FSM.19   Mileage meters designed for commercial vehicles, if integrated with an account manager designed for commercial vehicles, may optionally choose to transmit data in a format other than the mileage message.

DC.FSM.20   Smartphone mileage meters that use odometer images shall transmit the odometer message, as specified in the Interface Control Document, instead of the mileage message. They shall transmit this message shortly after receiving the odometer image.

Function 4: Handle errors

This function applies to all Mileage Meters.

DC.HER.1   The Data Collection component shall include built-in diagnostics to identify processing errors, identify the cause of the errors and recover to an operational state when possible.

DC.HER.2   The Data Collection component shall maintain a log of all errors detected by the built in diagnostics.

DC.HER.3   The Mileage Meter shall not delete any error or performance log entries until values are stored by Data Collection.

Function 5: Determine mileage traveled by road charge rate code using location data

This function applies to all Mileage Meters with general location.

DC.DMT.1   The Data Collection component shall compute for mileage meters with general location information the miles traveled by RuleID (the code for the rate chargeable by location) by day. For the mileage meter with no location information, all miles traveled shall be included in the RuleID for undifferentiated miles. For mileage meters with general location information, the undifferentiated miles shall include all mileage not reported in other RuleIDs.

DC.DMT.2   The Data Collection component shall compute for mileage meters with general location information the fuel usage by RuleID (the code for the rate chargeable by location) by day. For the mileage meter with no location information, all fuel usage shall be included in the RuleID for undifferentiated miles.

DC.DMT.3   If the data from the Mileage Meter differentiates mileage traveled on non-taxable roads and/or off-road, then that mileage shall be included in the mileage message in the SubRuleID for non-taxable roads.

DC.DMT.4   The Data Collection Component shall determine the RuleID and Sub Rule ID based on location data from mileage meters with general location information using a Road Charge Administration approved map.

DC.DMT.5   If the mapping functionality is located in the Data Collection Component, the Data Collection Component shall provide a means for updating map definitions and data points, as well as the

System Requirements Specification

definitions of the Rule ID / Sub Rule ID zones when changes are warranted based on business rule definitions.

System Requirements Specification

4. Account Management Subsystem Requirements

4.1. Subsystem Overview

This section presents an overview of the account management subsystem. The Account Management Subsystem includes two components: the Transactions Processor, which is designed to receive mileage messages, and thus is the main interface with the mileage reporting; and the Pilot Participant Account Management System, which includes the account management functionality. The automated operational concepts will include a mileage reporting component and thus interface through the Transactions Processor. Other operational concepts, including the time permit, the mileage permit, and the odometer charge, interface directly with the Pilot Participant Account Manager.

Not all Companies that offer account management services will support all operational concepts. The State Account Manager supports the time permit, mileage permit, the odometer charge, and possibly the automated distance charge with no location; and that Commercial Account Managers support the Automated Distance Charging (no location and general location).

The Account Management interacts with the following external entities:

▶ Mileage Reporting Subsystem
▶ Account Management Oversight
▶ Pilot Participants

Figure 4-1 below provides an example implementation of the Account Management subsystem.

Figure 4-1 Account Management Subsystem
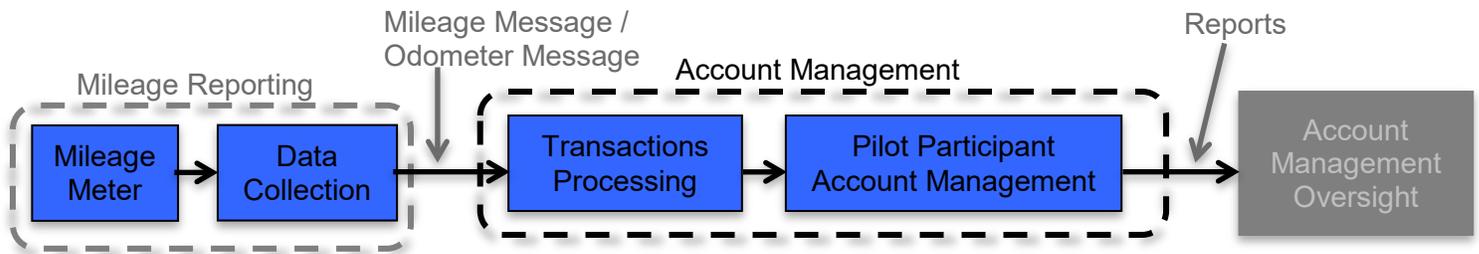
Subsystem Purpose (see 3.1 add picture here too add car)

The purpose of the Account Management subsystem is to collect mileage information from the Mileage Meters via the Data Collection component, convert mileage data to Road Charge amounts, remit summary reports to Account Management Oversight, and manage Pilot Participant (Pilot Participant) accounts (accounts of the individuals responsible for those vehicles). The purpose of the subsystem is also to simulate invoicing and payment of the road charge by participants, and to simulate fuel tax credits applied to these accounts.

In any potential future operational road charging system, the purpose of the subsystem would also include collecting funds from road charge payers and remitting funds owed to the state. However, in the pilot program, no funds will be exchanged—all payments will be simulated.

System Requirements Specification

Objectives of the Subsystem

The objectives of the Account Management subsystem are to:

- ► collect mileage records from the Mileage Reporting subsystem,
- ► calculate the Road Charge due, and
- ► store the mileage/Road Charge records.

Additionally, the Account Management subsystem should be designed to create and maintain the Pilot Participant accounts, collect the Road Charge payments from the Pilot Participant, and settle the Road Charge owed on a periodic basis.

4.2. Subsystem Requirements

The Account Management subsystem is the core component of Road Charge System that collects mileage information from the Mileage Reporting subsystem, calculates and summarizes Road Charge due, and collects the simulated Road Charge.

Subsystem Context

The Account Management interacts with the following external entities:

- ► Mileage Reporting Subsystem
- ► Account Management Oversight
- ► Pilot Participants

Figure 4-1 above illustrated the Account Management subsystem.

Subsystem Security

The Account Management subsystem is responsible for collecting and maintaining records for Road Charge owed, and collecting the Road Charge (with simulated payment).

The system requirements which cover security, backup and recovery shall also cover specific details for this subsystem. Additionally, the security of the Mileage message and odometer message and the various messages from the Account Management subsystem to the Account Management Oversight Subsystem are discussed in the ICD.

4.3. Account Management Subsystem Requirements Specifications

The Transaction Processing component collects mileage and configuration/status messages from the vehicles, calculates the Road Charge, logs the messages, and forwards each message for storage in the Account Management database.

System Requirements Specification

Software Overview

The Transaction Processing component performs four primary tasks.

1. Collection of information from the Mileage Reporting subsystem (including error and event and Configuration/Status messages) on a periodic basis.

2. Calculation of the Road Charge for the miles driven.

3. Logging of Mileage/Configuration messages.

4. Forward the Mileage/Configuration messages to the Account Management database.

The Pilot Participant Account Management component performs seven primary tasks.

1. Storage of Pilot Participant Account Information, Mileage/Configuration data in a database.

2. Creation and maintenance of Pilot Participant information in a database including registration of pilot participant vehicle or vehicles.

3. Generation of Pilot Participant statements on a periodic basis, and transmittal of statements to the Pilot Participant.

4. Collection of Road Charge Payments from the Pilot Participant, and recording of these payments in the database.

5. Transfer of Summary Mileage and Road Charge Payment information to the Account Management Oversight on a periodic basis.

6. List of all VINs managed by Account Management subsystem to the Account Management Oversight on a periodic basis.

7. Provide an online service interface for Pilot Participants to enroll and manage their account.

4.3.1. Detailed Functional Requirements

Subsystem: Account Management

Component: Transactions Processor

This component applies to all Account Managers supporting Automated Operational Concepts.

Function 1: Collect mileage message from data collection and send acknowledgement to data collection

TP.CMM.1   The Transactions Processor shall receive Mileage Messages on a 24x7 basis so that the Mileage Reporting subsystem can transmit at any time.

TP.CMM.2   The Transactions Processor shall acknowledge receipt of the mileage message as specified in the Mileage Reporting to Account Management Interface Control Document after storing the received data.

System Requirements Specification

TP.CMM.3   The Transactions Processor shall pull mileage data from vehicle telematics mileage meters according to the interface provided by the vehicle telematics mileage meter provider.

TP.CMM.4   The Transactions Processor shall receive mileage data from vehicles with OBDII devices even if the vehicle VIN in the differs from one originally programmed into the device.

TP.CMM.5   The Transactions Processor shall perform reasonableness checks on all mileage data received from third party vendors (vendors other than the Account Management vendor). Reasonableness checks shall, at a minimum, include checking that the data is within reasonable bounds as defined in the business rules (typically 0-1500 miles per day).

Function 2: Handle errors

TP.HER.1   The Transactions Processor shall have high availability (99.9% uptime).

TP.HER.2   The Account Management subsystem shall log errors that are message associated with the Mileage Message received.

Function 3: Calculate/apply Road Charge

TP.CAR.1   The Account Management subsystem shall calculate the Road Charge for the miles driven using the mileage rate specified by Caltrans.[6]

TP.CAR.2   After the Mileage Message is validated; the Account Management subsystem shall calculate the Road Charge and store it in a manner that it can be associated with the Mileage Message.

TP.CAR.3   The Account Management subsystem shall calculate the Road Charge for undifferentiated miles at the mileage rate for the RuleID for undifferentiated miles, as determined by the state in which the vehicle is registered.

TP.CAR.4   The Account Management subsystem shall create one unique transaction record for each day's mileage record received or pull from the vehicle telematics mileage meter vendor, and that record shall be assigned a unique number. Numbers for each transaction shall be assigned so as to support auditing that there are no gaps in the transaction record.

TP.CAR.5   Transactions with high uncertainty levels due to inconsistent data, suspicion of fraud shall be flagged with the appropriate error codes to identify the nature of the issues with that data.

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[6] In the Road Charge Pilot Program, 1.8 cents per mile was used in California, and 1.5 cents per mile was used in the simulated interoperability with Oregon.

System Requirements Specification

Function 4: Archive (store) all mileage data received, including incoming timestamp and Road Charge applied/fuel tax credit computed

TP.AMM.1   The Account Management subsystem shall archive (store) Mileage Messages and pulls from the vehicle telematics mileage meter.

TP.AMM.2   The Account Management system shall maintain a sequential transaction log.

TP.AMM.3   Except in the case of heavy commercial vehicles, the Account Management system shall destroy the saved mileage messages location and daily metered use information not later than 30 days after completion of payment processing, dispute resolution for a single reporting period or a noncompliance investigation, whichever is latest, unless otherwise agreed to by the Road Charge payer.

TP.AMM.4   The contractor shall have a way to flag a VIN on an account to identify if there is an issue on the account that is being researched. By flagging this VIN, the account will not purge the related mileage data until the flag is removed. This requirement does not apply to heavy commercial vehicles.

TP.AMM.5   If the Pilot Participant has not expressly consented to the retention of location and daily metered use data, the contractor shall have a method to determine the appropriate Pilot Participant data for purging (destruction) location and daily metered use information not later than 30 days after completion of payment processing, dispute resolution for a single reporting period or a non-compliance investigation, whichever is latest. This requirement does not apply to heavy commercial vehicles.

Function 5: Transmit Road Charge information to the Pilot Participant Account Management component

TP.TRI.1   The Transaction Processor component shall send the mileage and Road Charge data to the Pilot Participant Account Management component.

TP.TRI.2   The Transaction Processor shall send any computed Fuel Tax credit based on fuel usage to the Pilot Participant Account Management component.

TP.TRI.3   The Transaction Processor shall send any error and event information associated with the mileage and Road Charge data to the Pilot Participant Account Management component.

Function 6: Validate mileage message for: Mileage Meter-VIN, total miles driven vs. road charge rate code, complete message, and accumulated miles are incrementing logically

TP.VMM.1   The transactions processor shall verify that the VIN number (if available) and the Mileage Meter ID number in the message correspond to the Mileage Meter ID number associated with the VIN as stored in the Account Management account.

System Requirements Specification

TP.VMM.2   Data validation shall occur in transactions processing. Data validation is comprised of: Mileage Meter-VIN validation; total miles driven vs. mileage driven in each RuleID; validate that message is complete; validate that accumulated miles are incrementing logically.

TP.VMM.3   The Account Management subsystem shall perform the following reasonableness/sanity checks on the data in the Mileage message:

► Message IDs are increasing.
► Check that VIN and Mileage Meter ID correspond to values in same account as stored by Account Management values in database.
► Check that date/time is increasing and mileage is not decreasing. Check that the Rule ID is valid.

TP.VMM.4   The Account Management subsystem shall record message errors and failures and send a message to the Data Collection system as specified in the ICD.

Function 7: Compute fuel tax credit based on optional fuel usage data

TP.FTC.1   If fuel usage data is available, the Pilot Participant Account Management component shall provide the capability to generate a fuel tax credit based on number of tax-liable miles traveled, using the EPA average fuel mileage based on vehicle parameters for the vehicle associated with the account and Mileage Meter.

TP.FTC.2   If the fuel consumption is reported in the Mileage Message for a given vehicle (using measured or approved EPA methods), the Pilot Participant Account Management component shall calculate a fuel tax credit based on this value.

Component: Pilot Participant Account Management

Function 1: Receive Road Charge information from transactions processor for vehicles with a Mileage Meter

This function only applies to all Account Managers supporting Automated Operational Concepts.

RPAM.RRI.1 The Pilot Participant Account Management component shall receive mileage and tax information from the Transactions Processor.

RPAM.RRI.2 The Pilot Participant Account Management component shall receive error and event information from the Transactions Processor.

RPAM.RRI.3 If the Pilot Participant Account Management component has no account for a VIN, the component shall create an exception and retain the data for a minimum of 60 days, for processing if/when an account is created. This information shall be transmitted to Account Management oversight with all unknown fields written as "Unknown").

System Requirements Specification

Function 2: Receive Data for Time Permits

This function only applies to all Account Managers supporting Time Permits.

RPAM.RTP.1 The Pilot Participant Account Management component shall receive time permit information via secure Internet connection (using HTTPS and certificate management), phone, or paper mail.

RPAM.RTP.2 The Pilot Participant Account Management component shall store the dates of validity (start date and end date) of each time permit purchased for all vehicles using the time permit operational concept.

RPAM.RTP.3 The Pilot Participant Account Management component shall send a reminder notice to each participant using the time permit operational concept at times before and after the time permit will expire specified in the business rules. The reminder notice is sent by e-mail or, for participants without email, by postcard.

RPAM.RTP.4 The Pilot Participant Account Management component shall support time permits starting retroactively (in the past).

Function 3: Receive Data for Mileage Permits

This function applies to all Account Managers supporting Mileage Permits.

RPAM.RMP.1 The Pilot Participant Account Management component shall receive mileage permit information, including the vehicle, permit number, and starting odometer reading via secure Internet connection (using HTTPS and certificate management), phone, or paper mail. It shall also receive any odometer reports, both official and unofficial/self-reported via secure internet connection), phone, or paper mail.

RPAM.RMP.2 The Pilot Participant Account Management component shall store the odometer readings of permit validity (start odometer reading and end odometer reading) of each mileage permit purchased for all vehicles using the mileage permit operational concept.

RPAM.RMP.3 The Pilot Participant Account Management component shall send a reminder notice to each participant using the mileage permit operational concept at a date specified by the participant. This reminder is sent by e-mail or, for participants without email, by postcard.

RPAM.RMP.4 The Pilot Participant Account Management component shall store all odometer reports, both official and unofficial/self-reported, for each mileage permit purchased for all vehicles using the mileage permit operational concept.

RPAM.RMP.5 The Pilot Participant Account Management component shall support mileage permits starting retroactively (at odometer readings that have already been surpassed).

Function 4: Receive Data for Odometer Charges

This function applies to all Account Managers supporting Odometer Charges.

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RPAM.RDO.1 The Pilot Participant Account Management component shall receive and store any odometer reports, both official and unofficial/self-reported via secure Internet connection (using HTTPS and certificate management).

RPAM.RDO.2 The Pilot Participant Account Management component shall send a reminder notice to each participant using the odometer charge operational concept one week before an odometer reading is due, also indicating the type of odometer reading required (official or unofficial). During the pilot, the first and last odometer readings will be official, while the others will be unofficial. The reminder notice is sent by e-mail or, for participants without email, by postcard. The reminder notice need not specify how the official readings are taken, if multiple official reading methods are possible.

RPAM.RDO.3 The Pilot Participant Account Management component shall perform a consistency check (cross-reading) between successive odometer reports. When discrepancies are discovered (such data indicating negative odometer movement or positive odometer movement greater than 1000 miles per day), these records shall be flagged as specified in the ICD.

RPAM.RDO.4 The Pilot Participant Account Management component shall support payment of Odometer charges for participants who may not have already declared an odometer charge, and shall support payments for such charges retroactively (for odometer readings that have already been surpassed).

Function 5: Account setup by the Pilot Participant and account closeout

This function applies to all Account Managers.

RPAM.ASC.1 The Pilot Participant Account Management component shall allow account setup and account closeout. Activation of a mileage permit, time permit, or odometer charge shall constitute account setup.

RPAM.ASC.2 For accounts with an automated concept (using a mileage meter), the Pilot Participant Account Management component shall validate that the Mileage Meter ID is the correct Mileage Meter ID for the VIN in each mileage message. If a Mileage Meter ID-VIN mismatch is discovered in a mileage message, the Pilot Participant Account Management component shall log and report the issue as described in the ICD. However, being plugged into a different vehicle shall not cause the loss of mileage data or any other change in functionality for the account.

RPAM.ASC.3 The Pilot Participant Account Management component shall be able to handle accounts that have multiple vehicles associated with them, including vehicles on different operational concepts.

RPAM.ASC.4 The Pilot Participant Account Management component shall request the reason for account closeout from the Pilot Participant, and if the Pilot Participant responds, the Account Management system will include this information in the VIN list as specified in the ICD.

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RPAM.ASC.5 The Pilot Participant Account Management component shall validate all VINs provided by participants using a connection to the motor vehicle registry database and/or commercially available software to ensure that only compliant VINs (VINs that can be decode into vehicle make/model/etc.) are included in the database.

Function 6: Administration of Pilot Participant attributes (contact details, vehicle/Mileage Meter information, billing details)

This function applies to all Account Managers.

RPAM.ARA.1 The Pilot Participant Account Management component shall support maintenance (adding, deleting or updating) of Pilot Participant account information, including VINs (for one or more vehicles) and associated Pilot Participant information.

RPAM.ARA.2 The Pilot Participant information maintained by Pilot Participant Account Management shall include, at a minimum, all information provided on the Pilot Participant application.

RPAM.ARA.3 For each vehicle associated with a Pilot Participant account, the following information, at a minimum, shall be stored in the database:

For all accounts:

1) Vehicle Identification Number (VIN)
2) Current Operational Concept
3) All Payment Records
4) Billing Adjustments to Account
5) Beginning odometer reading
6) License Plate Number

For accounts with an automated concept (using a mileage meter):

1) Meter ID
2) Mileage Meter Model / Hardware Version Number
3) Mileage Meter Firmware Version Number
4) RuleID ("Zone") Map Version Number
5) All Configurable Mileage Meter Parameters
6) Current Road Charge Due (or Credit)
7) All Mileage Messages, up to data retention limit
8) All Configuration/Status Messages

For accounts on a time permit:

1) Time Permit start and end date

For accounts on a mileage permit:

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   1) Mileage Permit start and end mileage

   2) Any official or self-reported odometer readings

For accounts on an odometer charge:

   1) Any official or self-reported odometer readings

RPAM.ARA.4 The Pilot Participant Account Management component shall provide a secure online service interface for Pilot Participants to check the status of the Pilot Participant's account.

RPAM.ARA.5 The Pilot Participant Account Management component shall maintain a record of all Pilot Participant account information, and Mileage/Configuration messages.

RPAM.ARA.6 The Pilot Participant Account Management component shall log each change to Account information, with identification of the person or system process making the change, the reason for the change, and previous values of all fields changed.

RPAM.ARA.7 The Pilot Participant Account Management component online service shall be able to handle simultaneous internet access attempts from a load of 150% of the number of participants signed with the given account manager.

RPAM.ARA.8 The Pilot Participant Account Management component shall have the ability to add a text based comment to the account, for the Account Manager to enter comments as necessary.

RPAM.ARA.9 The Pilot Participant Account Management component shall retain all data on previous operational concepts. Only data for which destruction is required (daily mileage data) should be destroyed as specified in SYS.SSD.20.

RPAM.ARA.10 The Pilot Participant Account Management component shall retain the date of any change of operational concept.

RPAM.ARA.11 The Pilot Participant Account Management component shall retain an accurate count of enrolled and compliant vehicles and enrolled account holders each day (accurate within a 24-hour period). Compliant vehicles are defined as follows:

> OBD-II—plugged in once during reporting period
> Smartphone—reported during reporting period
> Telematics—able to pull data during reporting period
> Time permit—time permit not expired
> Mileage permit—mileage permit not overrun based on most recent odometer reading and odometer readings submitted on required schedule
> Odometer charge—odometer readings submitted on required schedule and paid in full to last odometer reading

RPAM.ARA.12 The Pilot Participant Account Management component shall send messages to account holders of noncompliant vehicles reminding them to become compliant. For all methods,

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> reminders shall be possible by email, text message, or automated phone call. For Smartphone methods, reminders shall also be possible by in-app message. Timing and frequency of reminder messages for each mileage reporting method shall be defined in the business rules.

RPAM.ARA.12 The Pilot Participant Account Management component shall provide customers updated mileage data on available interfaces (web portal and/or mobile app) within 48 hours of that data being sent to the Account Manager.

Function 7: Claims management, including incorrect payment claims as well as refunds/credits for fuel taxes

This function applies to all Account Managers.

RPAM.CMG.1 The Pilot Participant Account Management component shall provide claims management, including incorrect payment claims, if such claims are possible.

RPAM.CMG.2 The Pilot Participant Account Management component shall provide the capability to manually add an adjusting entry to the account for changes in miles.

RPAM.CMG.3 The Pilot Participant Account Management component shall apply the fuel tax credit, if any, to the account.

Function 8: Billing to Pilot Participants

This function applies to all Account Managers.

RPAM.BLL.1 The Pilot Participant Account Management component shall provide billing to Pilot Participants on the automated concepts.

RPAM.BLL.2 The Pilot Participant Account Management component shall generate Pilot Participant invoices on a periodic basis for vehicles on the automated concepts, and make statements available to the Pilot Participant.

RPAM.BLL.3 The Pilot Participant Account Management component shall maintain a record of statements generated and, for automated methods, the ability to regenerate past statements.

RPAM.BLL.4 The Pilot Participant Account Management component shall provide itemized bills giving details of what is invoiced and method used to compute charges; and major exceptions encountered while computing charges. Further details on billing will be provided in business rules.

RPAM.BLL.5 The Pilot Participant Account Management component shall provide invoices that include, at a minimum: account holder name/address, total miles driven, total charges, and for location-based methods, charges by state (Rule ID), and non-chargeable miles driven by state (Rule ID).

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Function 9: Collection of all Road Charge simulated payments

RPAM.CTF.1 The Pilot Participant Account Management component shall post all payments to individual Pilot Participant accounts, including purchase and payment of mileage permit and time permits as well as payments towards the other operational concepts.

RPAM.CTF.2 The Pilot Participant Account Management component shall support simulated payment types offered by the contractor for Road Charge Account payments.

RPAM.CTF.3 The Pilot Participant Account Management component shall, if the account holder chooses, store the account holder payment information, so that the account holder does not need to enter it each time to make a payment.

RPAM.CTF.3 The Pilot Participant Account Management component shall support automatic payments, which shall be used, if the account holder chooses to enable them, to automatically pay each invoice.

Function 10: Subsystem availability

This function applies to all Account Managers.

RPAM.SAV.1 The Pilot Participant Account Management component shall have high availability (99.9% uptime).

Function 11: Send VIN list and data file reporting to Account Management Oversight

RPAM.SVN.1 The Pilot Participant Account Management component shall report a summary of all registered VINs to Account Management Oversight subsystem on a periodic basis as defined in the ICD.

RPAM.SVN.2 The Pilot Participant Account Management component shall, upon request from the Account Management Oversight system for the purpose of compliance investigations, provide all mileage messages for a specified group of VINs (or for all VINs in its database) for a specified range of dates to Account Management Oversight, subject to data that is retained.

RPAM.SVN.3 The Pilot Participant Account Management component shall report to Account Management Oversight all errors and events associated with each VIN for a given reporting period, along with the date upon which the error or event occurred, as specified by the ICD.

RPAM.SVN.4 Messages from the Pilot Participant Account Management component to the Account Management Oversight subsystem shall conform to the Interface Control Document for that interface.

RPAM.SVN.5 The Pilot Participant Account Management component shall log all summary messages sent to the Road Charge Account Management subsystem.

RPAM.SVN.6 The Pilot Participant Account Management component shall report the Account and VIN Updates associated with each VIN for a given reporting period as specified in the ICD.

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RPAM.SVN.7 The Pilot Participant Account Management component shall report the Road Charge Revenue associated with totals of VIN activity for a given period, as specified in the ICD.

RPAM.SVN.8 Reporting periods shall be specified in the business rules with beginning date/times and ending date/times.

RPAM.SVN.9 If any report to the Account Management Oversight must be updated for any reason, the Account Manager shall re-send all reports to the Account Management oversight required in the ICD, whether or not data has been updated in them.

Function 12: Systematically support Mileage Rates

This function applies to all Account Managers.

RPAM.SMR.1 The Pilot Participant Account Management component shall utilize the mileage rate specified by Caltrans for all chargeable miles.[7]

Function 13: Have Test Environment

This function applies to all Account Managers.

RPAM.HTE.1 The Pilot Participant Account Management component shall have a test environment in addition to a production environment. New software features shall be tested on the test environment before being added to the production environment. Test accounts shall be located on the test environment only. No test data shall be added to the production environment.

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[7] In the Road Charge Pilot Program, 1.8 cents per mile was used in California, and 1.5 cents per mile was used in the simulated interoperability with Oregon.

System Requirements Specification

5. Account Management Oversight Subsystem Requirements

5.1. Subsystem Overview

This section provides an overview of the Account Management Oversight subsystem. The Account Management Oversight shall be managed by the Pilot Delivery Team. The Account Management Oversight system or database will be required to store received and processed data from Account Managers and disbursements to program participants.

Subsystem Purpose

The purpose of the Account Management Oversight subsystem is to provide a tool for the Account Management Oversight Team to verify data has been properly and accurately collected and posted and Account Manager compliance with the program. The Account Management Oversight subsystem provides assurance that volunteer Pilot Participant vehicles are enrolled in the system, that mileage and revenues are being accurately collected, and that the Road Charge Program is performing all functions designed required by the contracted scope. It should also provide a tool to detect abnormal variations in data to assist in fraud detection. The Account Management Oversight subsystem will also provide a basis for review of information which may be part of initial and recertification of Account Managers.

These objectives are listed below:

- ► *Objective 1: Account Management Oversight Internal Testing and Reconciliation* - The primary purpose of the system is to receive, reconcile and analyze reports from Account Managers. This provides the Account Management Oversight Team the ability to verify several levels of program compliance as well as review program level activity. This primary system objective supports the additional Account Management Oversight Team objectives.
- ► *Objective 2: Account Management Audits* – The second objective is to provide a basis for auditing. It includes review and testing of the Account Manager's systems and accuracy to record mileage and perform calculations. Auditing may also occur as a function of the certification process. Auditing by the Account Management Oversight will also include analysis and review of Account Manager reporting for the purpose of reviewing Pilot Participant compliance. Account Management Oversight will work with the Account Manager and Pilot Participants directly depending on the results of this analysis.
- ► *Objective 3: Account Manager Initial Certification and Periodic Recertification* – The Account Management Oversight Team will participate in the initial certification and recertification of Account Manager's based on contract tender terms and conditions.
- ► *Objective 4: Manual Credits* – the Account Management Oversight Team will support the provision of manual credits for fuel taxes paid and out of state travel for users of operational concepts that do not support the automatic credits or non-charging.

In any potential future operational road charging system, the purpose of the subsystem would also include verifying funds transferred from account managers to the state are correct. However, in the pilot program, no funds will be exchanged—all payments will be simulated.

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5.1.1. Software Overview

The requirements for this software may be met by one or more applications or report generators. The team will require a database application to receive, evaluate, store and report the results of Account Manager monthly submissions. Some of the reports identified for the Account Management Oversight subsystem may be made available to Account Managers so that they can monitor the health, functionality and performance of their systems.

The Account Management Oversight subsystem performance is expected to meet the daily business needs of the Account Management Oversight team for their use.

The Account Management Oversight subsystem is internal processing software that will not compromise Account Manager systems.
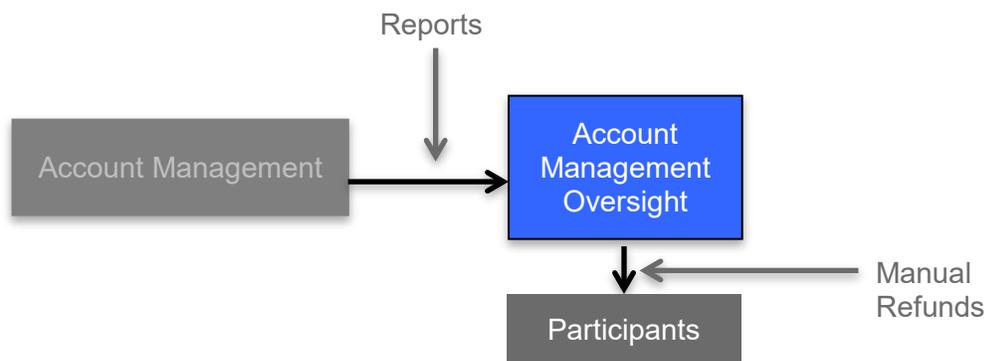
5.2. Subsystem Requirements

The subsystem for the Account Management Oversight subsystem is expected to receive and record transmissions from Account Manager at regular intervals. Processing and reconciliation of Account Manager communications is expected to be conducted during the normal workday.

Account Management Oversight auditors will take advantage of auditing through the Account Managers' records. The Account Management Oversight processing and funds settlement functions will be based on a database of Account Manager reports and Account Management Oversight reports and will be auditable.

Subsystem Context

Figure 5-1 below provides an example implementation of the Account Management Oversight Subsystem.

Figure 5-1 Account Management Oversight Subsystem

The Account Management Oversight interacts with the following external entities:

► Account Management Subsystem
► Pilot Participants (for manual refunds)

System Requirements Specification

As specified in the ICD, the interface between the account managers and the Road Charge Pilot Project Administration subsystem has five defined messages:

1. **Mileage and Road Charge Revenue Report**: Transfer of Summary Mileage and Road Charge Revenue report to the California Department of Transportation on a periodic basis.

2. **VIN Summary Report**: A Summary of all VINs and related data managed by Account Managers to the Account Management Oversight on a periodic basis.

3. **VIN Manual Methods Summary report:** A summary of all VINs using Manual Methods managed by the State Account Manager to the Account Management Oversight on a periodic basis. Account Managers who do not support manual methods do not send this report.

4. **Errors and Events Report**: An Errors and Events Report, which provides exception (or health) codes on Mileage Reporting/Account Manager hardware or data gathering to monitor performance of the system.

5. **Account and VIN Update**: Report of all account attribute changes and status updates regarding status in the program. This flow also returns data to indicate status of the volunteers.

5.2.1. Detailed Functional Requirements

Subsystem: Account Management Oversight

Component: Account Management Oversight Subsystem Functions

Function 1: Verify that all Road Charges owed have been received from the Account Managers

This function of the subsystem provides the ability to verify report receipt, validate tax reported and simulated payments.

Function 2: Receive scheduled reports list and accounting/statistical data from Pilot Participant account management

This function of the subsystem provides the ability to receive reports as outlined in the ICD and analyze reports from each Account Manager. It will assist the Accounting Team to determine anomalies and investigate further.

Function 3: Monitor Account Manager accounts

This function of the system involves creating an account profile for Pilot Participants. The intent of this process is to consolidate information per VIN and provide the Account Management Oversight Team a means to analyze activity and perform claims management.

Function 4: Provide system information for certification

The Account Management Oversight subsystem functions may be used to support testing and certification purposes.

System Requirements Specification

Function 5: Verify that all enrolled Pilot Participants are registered with an operational concept

The subsystem shall provide the ability to list all Pilot Participants registered with an operational concept. This list can be compared to a complete list of pilot participants to verify that all participants are registered with an operational concept.

Component: Account Management Oversight team functions

Function 1: Operate Road Charge Database

Pilot participant information will be stored in the road charge database.

For all participants, the Road Charge Database Record shall include Participant name, address, phone, vehicle VIN, vehicle make/model/year vehicle classification for road charge calculation purposes, current operational concept, and account manager where the vehicle is currently registered. One Participant may have more than one vehicle / VIN entry; vehicle fleets registered to a participant may have a theoretically unlimited number of entries.

The database shall also record: any vehicle odometer readings (indicating whether they are official or self-reported); all weekly mileage reports for vehicles on the automated operational concepts (including both total miles and chargeable miles); all time permits bought (including start and end validity date); all mileage permits bought (with start and end odometer readings; and the dates of changes of operational concept or account manager.

Function 2: Provide overall management of the road charge accounting functions

The team function is to provide program management for the Road Charge Pilot project. The Program Manager will interface with the Account Managers on program changes, issues and updates to the processes.

Function 3: Perform auditing checks of Account Managers

The function of the team is to periodically audit Account Managers for compliance. Auditing activities may include but not be limited to reviewing of accurate mileage transactions and tax calculations, and reviewing the versions of Mileage Meter, software and other IT compliance functions.

Function 4: Provide road charge credits for manual gas tax credit or off-road / out-of-state credit requests

The function of the team is also to support Pilot Participant requests for manual refunds. The Pilot Participant is responsible for providing information when requesting a manual refund. The Account Management Oversight team will review this information and provide a credit as appropriate.

Function 5: Provide certification review

The Account Management Oversight Team may participate in initial, interim or follow-up testing and certification activities for Account Managers.