

Vehicle Use Case Task Force
U1: Customer enrolls in a Utility Time of Use (TOU) program

Document History

Revision History

Revision Number	Revision Date	Revision/ Reviewed By	Summary of Changes	Changes marked

Approvals

This document requires the following approvals.

Name	Title

Vehicle Use Case Task Force

U1: Customer enrolls in a Utility Time of Use (TOU) program

1.1 Use Case Title

U1 – Vehicle Use Case
Customer enrolls in a TOU program

1.2 Use Case Summary

This use case details the awareness and specific enrollment process for the TOU program. This is precluded by an awareness process and includes collecting information pertaining to the customer, their vehicle and operating and charging plans that is described in use case E. This sequence of Use cases is followed by Use cases S1-3 that include the connection architectures.

1.3 Use Case Detailed Narrative

The Utility may offer the Customer a PEV tariff that provides a low rate for off-peak charging and a higher rate for on-peak charging. The utility must provide services to support energy supplied to customer PEV. These services include enrollment into a PEV program, PEV communications session binding, PEV energy billing, and PEV information services. The utility will implement an enrollment system for Customers with a PEV including registration and commissioning. The utility's Energy Services Communication Interface (ESCI) shall allow for the establishment of a communications session (communications binding), at a premise location each time a PEV plugs in for charging. Energy supplied to the PEV is reported to the utility for billing and presentation to the Customer. Information related to utility PEV programs, energy usage, and PEV charging status/information will be made available to the Customer for viewing via a website or other customer provided display equipment. This use case covers the following scenarios:

- Customer enrolls in PEV program and completes initial setup for PEV – Utilities communications
- PEV and Utility establish/re-establish communications session at the time of charging
- Utility provides billing services for PEV charging to Customer
- Utility provides Customer access to PEV charging and status information

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3. Step by Step Analysis of Each Scenario

Use Case U1: Customer agrees to a TOU utility program. The vertically integrated utility provides bundled residential premise services exclusively and that TOU is available on a self-selected basis.

3.1 Scenario Description

Primary Scenario (U1-A): Customer enrolls in TOU program. The vertically integrated utility provides bundled residential premise services exclusively and that TOU is available on a self-selected basis

This scenario describes the steps of the utility enrolling a PEV customer into Time-of-Use (TOU) pricing demand side management program (e.g., off-peak, mid-peak, on-peak, etc.). Assumes that a single, vertically integrated utility provides bundled residential premise service exclusively, and that TOU is available on a self-selected basis (voluntary that is TOU is not mandatory, it is an option). Default rate is an old traditional/conventional flat rate.

Triggering Event	Primary Actor	Pre-Condition	Post-Condition
<i>The Customer acquires a PEV and contacts the Utility to enroll in a TOU program</i>	<i>Customer</i>	<i>Customer has a PEV and wishes to enroll in TOU program; Utility offers PEV Programs to its customers. Assumes that a single, vertically integrated utility provides bundled residential premise service exclusively, and that TOU is available on a self-selected basis</i>	<i>The Utility has successfully enrolled a Customer PEV in a TOU Program and PEV has established initial communications session with the utility.</i>

3.1.1 Steps for this scenario

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
1	Customer	Customer initiates request to enroll PEV in a TOU Program by contacting Utility and provides Customer and PEV information (i.e. Customer Account information, PEV ID, etc.).	Customer uses phone, Internet, or other communications channel. Preference for PEV is PEV VIN #
2	Utility	Utility sends application form via web or mail	
3	Customer	Customer completes enrollment form, returns to utility via web or mail	
4	Utility	Utility make a decision if the customer is eligible or not. Not eligible he notifies the customer	
5	Utility	For eligible customers, utility notifies customer of in-service date	
6	Utility	Utility authenticates Customer, Customer account, and Premise information, and collects PEV information including PEV ID.	
7	Utility	Utility presents Customer with TOU Program information and schedule selections	
8	Utility	Utility schedules metering installation, issues cut-over order (internal process order, billing, parameters of billing, financial network), notifies customer of meter installation (in-service) date	
9	Utility	Utility installs meter, undertakes back-office administrative actions	TOU Recording Meter are preprogrammed based on TOU. It can have either two or three registers (peak, off-peak, shoulder peak). If the customer has AMI meter, utility informs the meter on the new data (two-way communication. It will change the instruction set. The cut in order will take the back office to cumulative in on-peak or off-peak

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
10	Utility	Utility switches service to TOU and issues final bill for old service to customer	
11	Customer	Customer commences TOU service Customer selects PEV Program and Service Plan, sets PEV program parameters (i.e. guest charging, allow roaming, etc.). The Customer and PEV are now enrolled in a utility TOU program.	Same schedule applies till a rate case or rate change takes place, (TOU structure typically does not change). Nominal prices are subject to change based on utility supply cost (eg. fuel price).

3.2 Alternative Scenario Description

Alternative Scenario (U1-B): Customer enrolls in TOU program – Customer Taking Commodity from ESCO

This scenario assumes customer choice to enrolling a PEV customer into Time-of-Use (TOU) pricing demand side management program (e.g., off-peak, mid-peak, on-peak, etc.). Assumes that customer can have unbundled residential premise service. He gets the wired service from the utility and commodity service from ESCO. If customer takes bundle service, then process is the same as previous case. Otherwise, the illustrated processes are involved. Utility sets TOU meter.

<i>Triggering Event</i>	<i>Primary Actor</i>	<i>Pre-Condition</i>	<i>Post-Condition</i>
<i>The Customer acquires a PEV and contacts the Utility to enroll in a TOU program</i>	<i>Customer</i>	<i>Customer has a PEV and wishes to enroll in TOU program; Gets wires services from the utility and commodity service from ESCO.</i>	<i>ESCO has successfully enrolled a Customer PEV in a TOU Program and PEV has established initial communications session with the utility.</i>

3.2.1 Steps for this scenario

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
1	Customer	Customer initiates request to enroll PEV in a TOU Program by contacting ESCO and provides Customer and PEV information (i.e. Customer Account information, PEV ID, etc.).	Customer uses phone, Internet, or other communications channel. Preference for PEV is PEV VIN #
2	Clearing House	Clearing house determines who provides the commodity	If the commodity is bundled then use the previous scenario, if the service is unbundled then utility is informed but the utility does not have to take any action
3	ESCO	ESCO sends application form via web or mail	
4	Customer	Customer completes enrollment form, returns to ESCO via web or mail	
5	ESCO	ESCO make a decision if the customer is eligible or not. Not eligible he notifies the customer	
6	ESCO	For eligible customers, ESCO notifies customer of in-service date	
7	ESCO	ESCO authenticates Customer, Customer account, and Premise information, and collects PEV information including PEV ID.	
8	ESCO	ESCO presents Customer with TOU Program information and schedule selections	
9	ESCO	ESCO requests TOU meter install from utility	
10	Utility	Utility confirms to ESCO both in service and meter install date	
11	Utility	Utility sends signal to customer about the meter date	
12	ESCO	ESCO sends the message to the customer about the in-service date	
13	Utility	Utility schedules metering installation, issues cut-over order (internal process order, billing, parameters of billing, financial network)	

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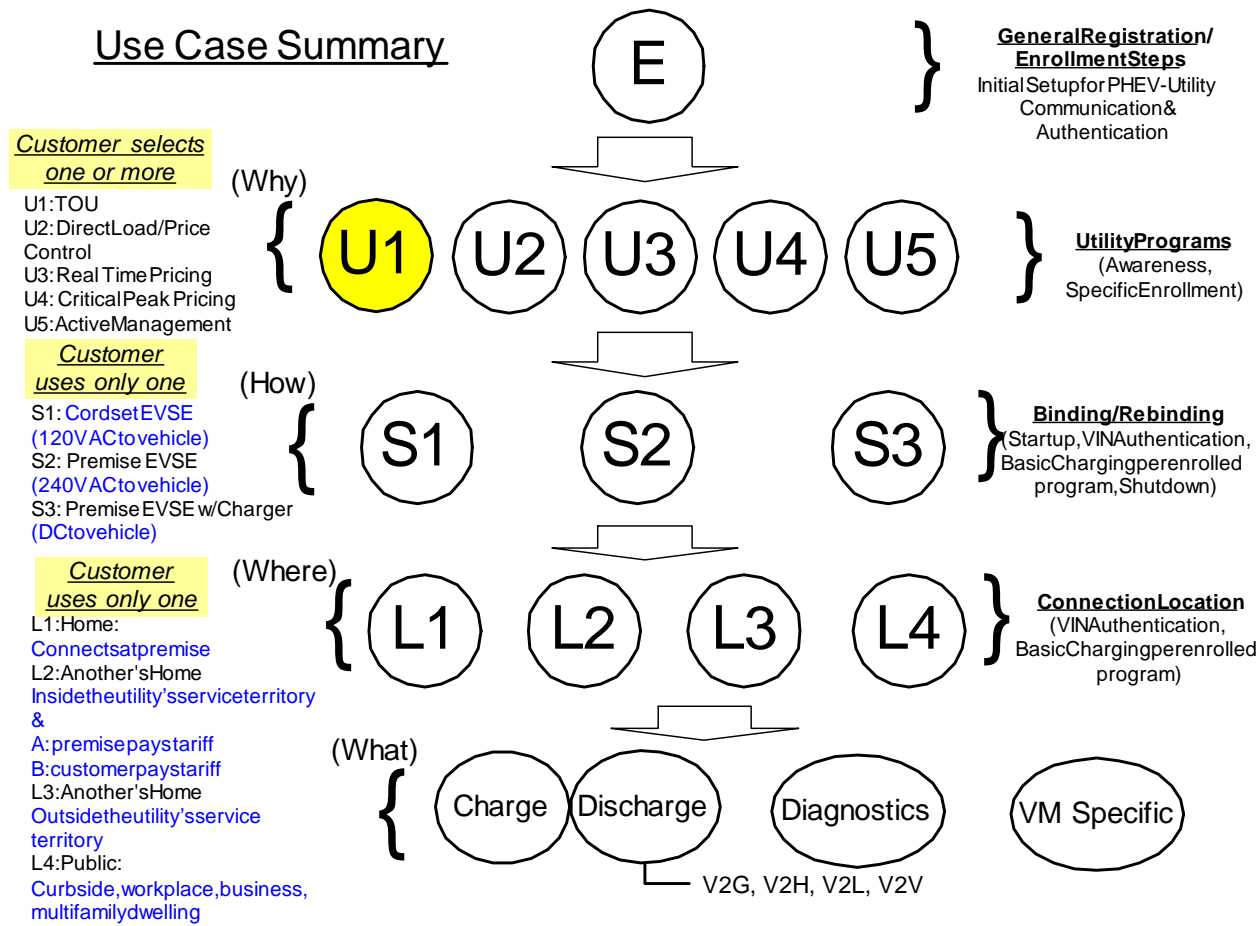
<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
14	Utility	Utility installs meter, undertakes back-office administrative actions	TOU Recording Meter are preprogrammed based on TOU. It can have either two or three registers (peak, off-peak, shoulder peak). If the customer has AMI meter, utility informs the meter on the new data (two-way communication. It will change the instruction set. The cut in order will take the back office to cumulative in on-peak or off-peak
15	Utility	Utility switches service to TOU and issues final bill for old service to ESCO	
16	ESCO	ESCO notifies customer that TOU service is initiated	
17	Customer	Customer commences TOU service Customer selects PEV Program and Service Plan, sets PEV program parameters (i.e. guest charging, allow roaming, etc.). The Customer and PEV are now enrolled in TOU program.	Same schedule applies till a rate case or rate change takes place, (TOU structure typically does not change). Nominal prices are subject to change based on utility supply cost (eg. fuel price).

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4. Requirements

This use case is the 2nd in a series that follows Use Case E for general enrolment. This use case defines the TOU utility program for awareness and specific enrolment steps. The Utility and the Vehicle Manufacturer will offer these to their customers. The complementary use cases (U2 thru U5) describe the specific details of the four other categories of programs. This series of Use cases are then followed by Use Cases S1, 2 or 3 for specific connection architectures.



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4.1 Functional Requirements

Func. Req. ID	Functional Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)

4.2 Non-Functional Requirements

Non-func. Req. ID	Non-Functional Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)

4.3 Business Requirements

Bus. Req. ID	Business Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)

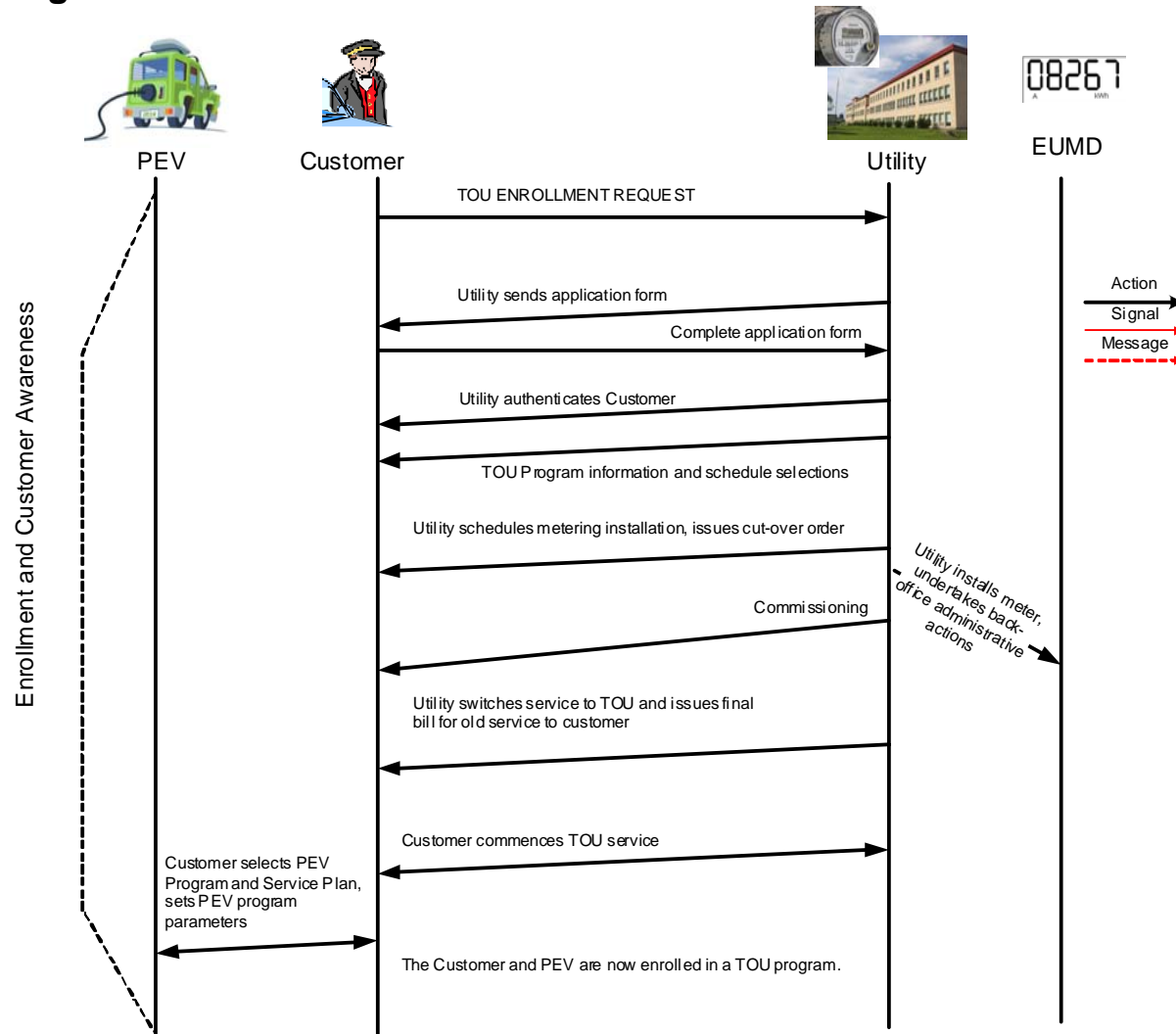
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5. Use Case Models

5.1 Sequence diagram for primary scenario U1-A.

5.2 Sequence diagram for alternative scenario U1-B



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