
	American Electric Power	4.2 Demand Response	Document ID: Use case # 2.9
	Title: Real Time Pricing Billing Use Case		
Subject Matter Expert:	Author:	Reviewed by:	
Don Taylor and Margaret Goodrich	Mark Wald		

Real Time Pricing Billing

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Version History			
Rev.	Date	Author	Change description
A	06/14/2011	Mark Wald	Initial document
B	8/10/2011	AEP Workshop	Various Updates
C	10/10/2011	Tim Simmons	Modified document
D	10/14/2011	Tim Simmons	Add needed structures
E	10/23/2011	Tim Simmons	Add initial BillingDeterminant diagram
F	13 April 2012	Frank Wilhoit	Add interface diagram; normalize terminology

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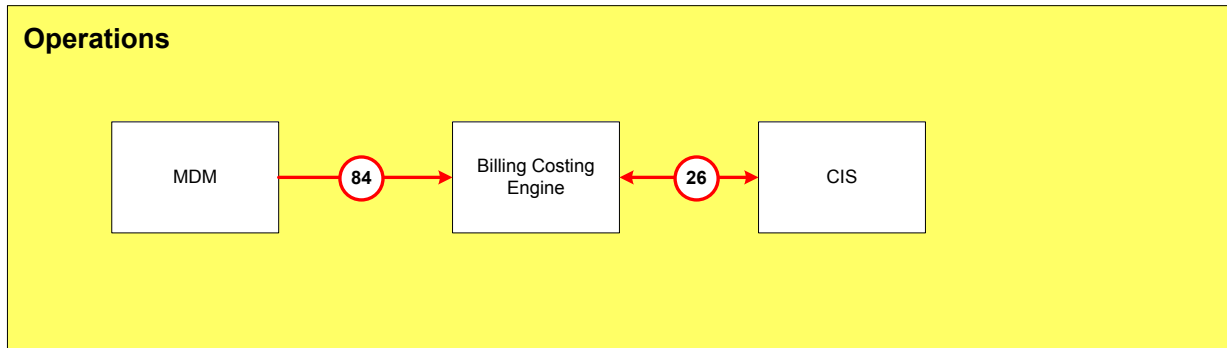
Summary:

This use case addresses the Real Time Price (RTP) Billing use case for the Utility's Smart Grid Dispatch.

Narrative:

The *Meter Data Management (MDM)* system provides meter readings to the *Billing Costing Engine (BCE)*, which calculates billing determinants from them. Subsequently, the *Customer Information System (CIS)* requests the billing determinants from *BCE*, generates retail bills from them, and provides *BCE* with copies of the bills.


Interface Diagram:



Actor(s):

The list of the actors and the roles that are participating in this use case described in the table below.

Name	Role description
BCE	The utility's Real-Time Pricing Billing Cost Engine provides billing determinants to CIS in this use case.
CIS	Customer Information System is the system of record for customer data and billing.
MDM	Consolidates information from the Metering System, performs data aggregation, VEE (validation, estimation, and editing), and triggers the retail billing creation process in this use case

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Participating Business Functions:

The participating business function, its acronym and what they provide in this use case are detailed in the table below.

Acronym	Business Function/Abstract Component	Services or Information Provided
BCE	The Utility's Real Time Pricing <u>B</u> illing <u>C</u> ost <u>E</u> ngine.	Consumes the price calculation data calculated by the Smart Grid Dispatch system, and the meter usage from MDM in order to provide billing determinants to CIS
CIS	Customer data and billing system	Publishes changes to customer accounts, customer agreements, pricing, service location. Provides retail billing info to BCE in this use case.
MDM	The system of record for meter readings.	The Meter Data Management system is responsible for collecting the reads from the AMI Head-End, performing VEE services and presenting the meter reads to BCE.

Assumptions / Design Considerations: None


There are no assumptions for this use case.

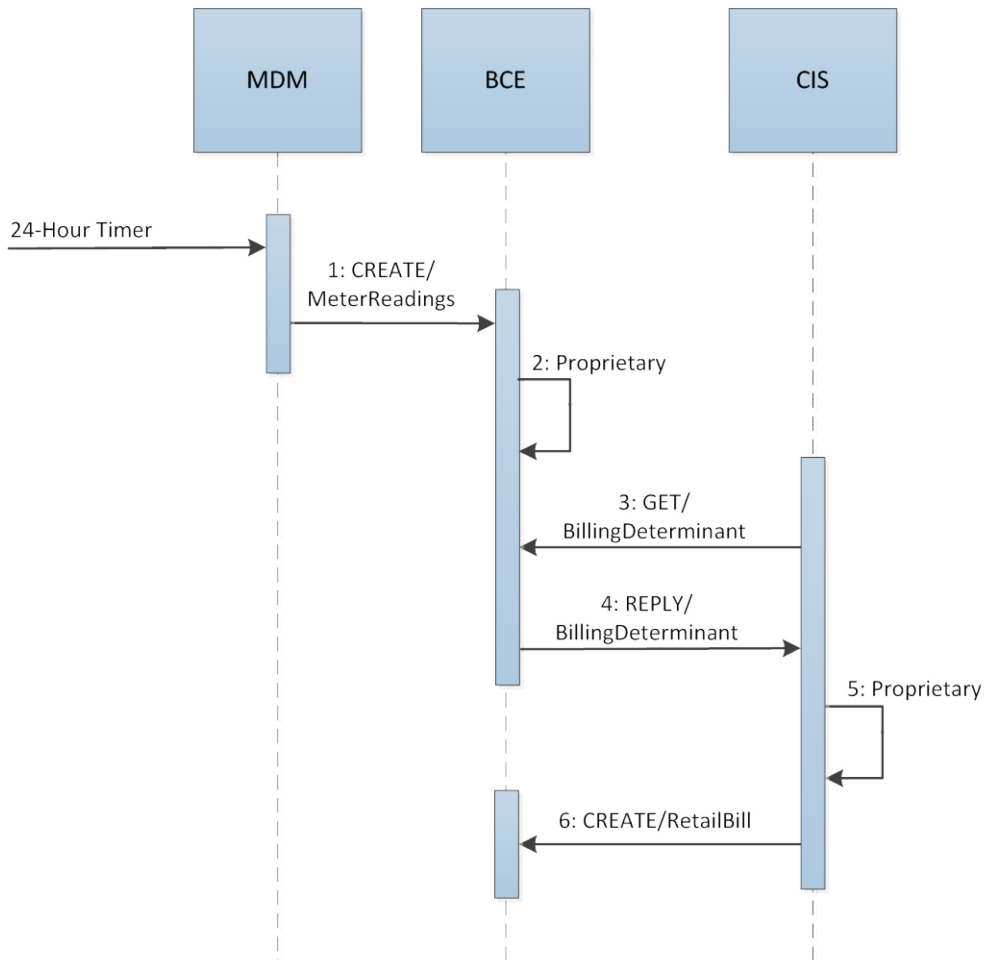
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Normal Sequence:

The sequences of events, showing the order in which they occur during the typical progression of this use case are provided in the table below. The Sequence Diagram that graphically depicts the events is presented immediately following the table.

Use Case Step	Triggering Event	Description Of Process	Information To Be Exchanged	Producer	Receiver	Message Type
1	24-hour timer fires	BCE received information from MDM	Meter data readings	MDM	BCE	CREATE /MeterReadings
2		BCE computes RTP billing determinants	Internal message	BCE	Internal	
3	X amount of time after 24-hour time fires	CIS requests RTP billing determinants from BCE	Request for RTP billing determinants	CIS	BCE	GET /BillingDeterminant
4		BCE provides RTP billing determinants to CIS	RTP billing determinants	BCE	CIS	REPLY /BillingDeterminant
5		CIS performs bill creation	Internal message	CIS	Internal	
6		CIS sends retail billing information to BCE	Retail Bill	CIS	BCE	CREATE /RetailBill

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Integration Scenarios:

Adapters will use the Common Information Model (CIM) in Extensible Markup Language (XML) to send and receive messages and events.

The following are the points of integration that must be tested for this use case. Other non-CIM message interfaces may be testable in this use case.

Actor	Interface Points
BCE	<ul style="list-style-type: none"> • MDM • CIS


Pre-conditions: None

Post-conditions: None

Exceptions / Alternate Sequences:

There are no exceptions, unusual events or alternate sequences defined for this use case.

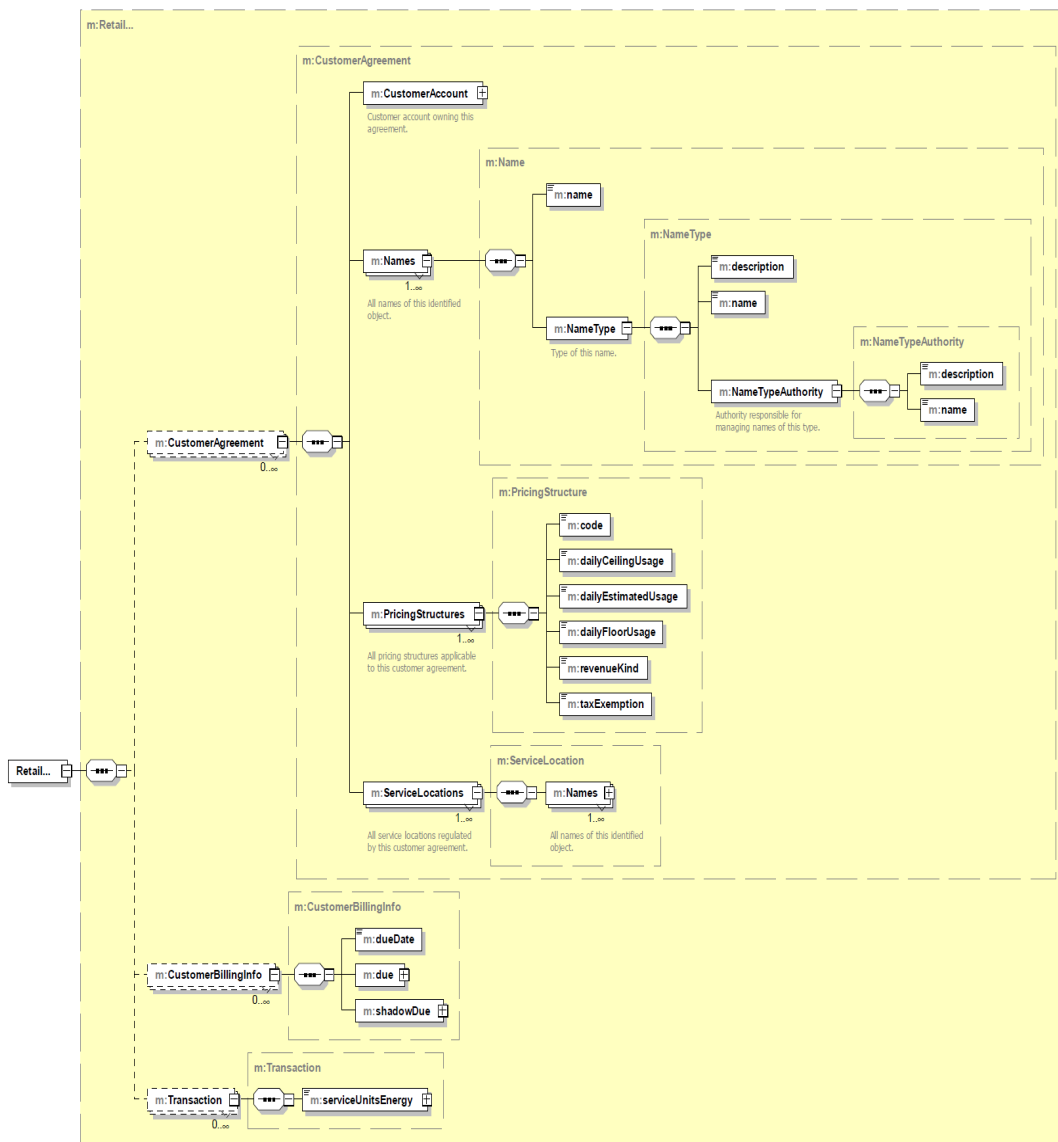
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Message Type(s) Diagram:

The following XSD diagrams shows the normative and informative parts of the message. This use case will only use the normative parts and such portions of the informative parts as necessary.

RetailBill:





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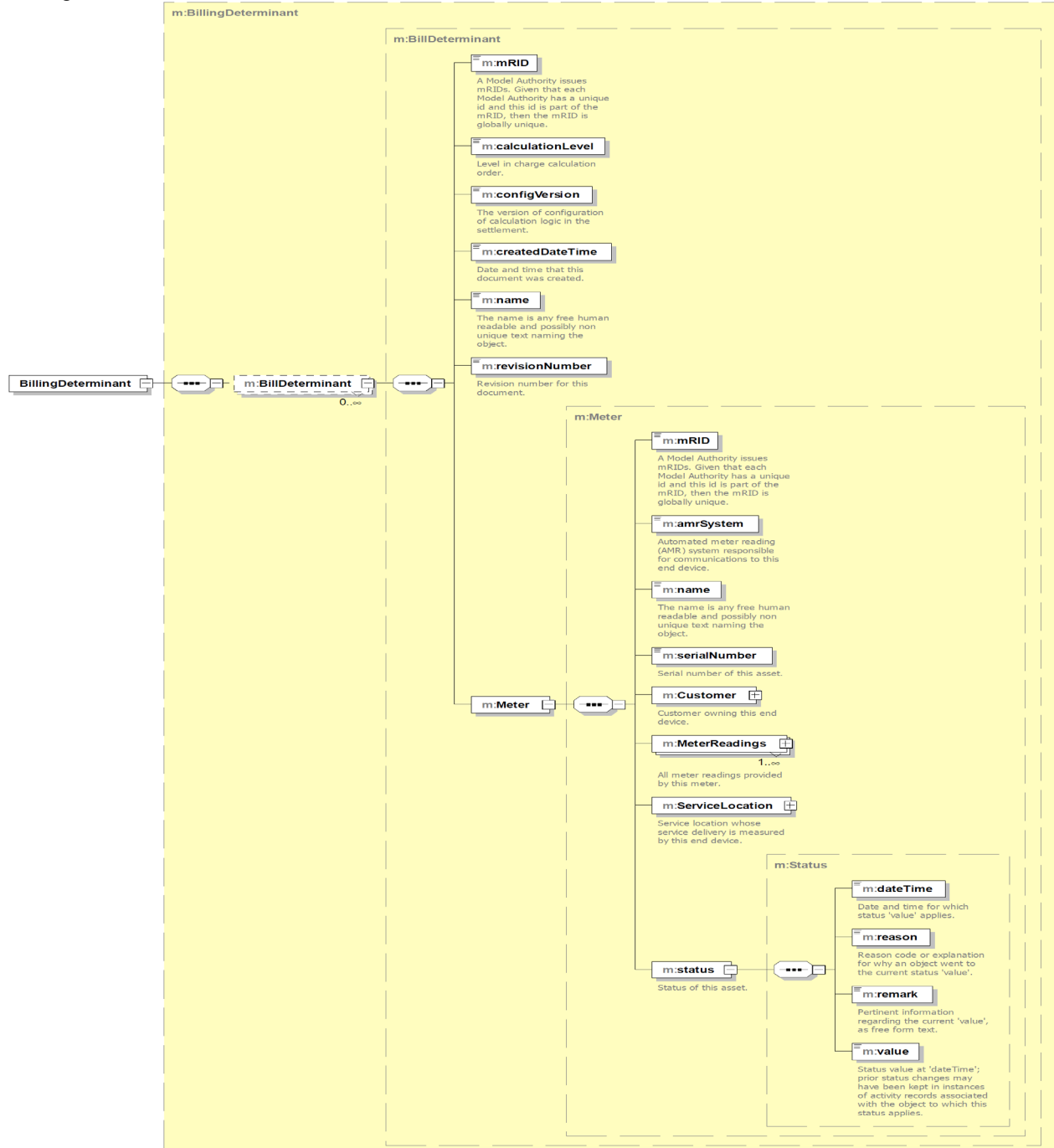
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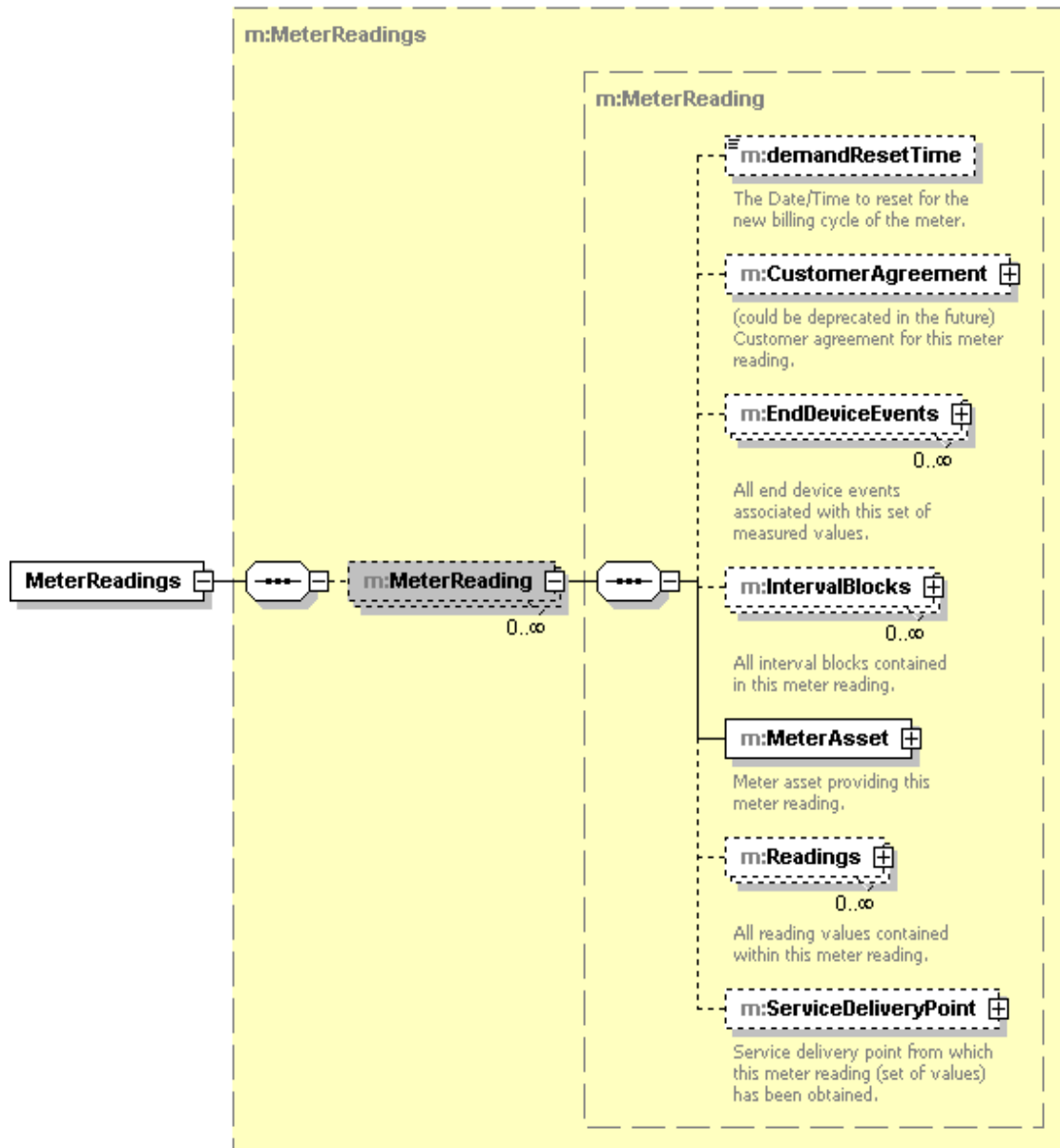
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BillingDeterminant:



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MeterReadings:



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References:

Use Cases or other documentation referenced by this use case include:

- **20100625 AEP Ohio Interoperability Plan V1.docx:** Section 4.2.2 (Use Case – Real-Time Pricing)
- **20100625 Use Cases EPRI Report_V2.4.docx:** Section 2.1(Real-Time Pricing)
- **61968_9_MeterReadingAndControl_FDIS090428-final.docx**
- **IEC 61968-8 Ed.1: Application integration at electric utilities – System interfaces for distribution management – Part 8: Interface Standard For Customer Support**

Issues: None

ID	Description	Status

Miscellaneous Notes: None