



eMeter- MDM General Overview

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Metering over the Years

● Once a month read for billing

-Generate a file and receive a file



1990

1995

2000

2010

● Daily read of meter for billing, off cycle read and analysis



● Remote collection for C&I meters

-Special data collection and processing



● Hourly data for all meters with significant post-processing

Before Smart

Batch files

Forecasts and models
using static data

Point of sale data once a
month

Flat, average prices

Customer
communications on
monthly/quarterly bill



With Smart

Real-time data files

Actual, timely data used in
Smart Grid operations

POS data daily

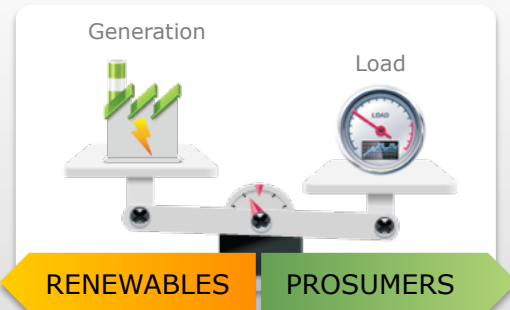
Time-based pricing options

Customer engagement
through online data and
appliance controls



Smart Meters & Grids Solve Critical Problems

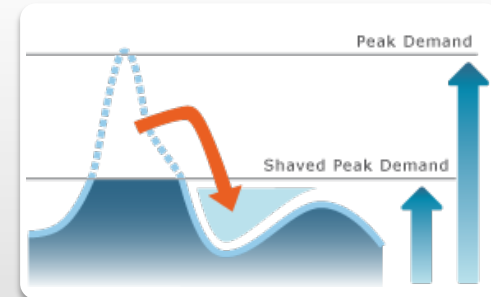
Balancing Renewables



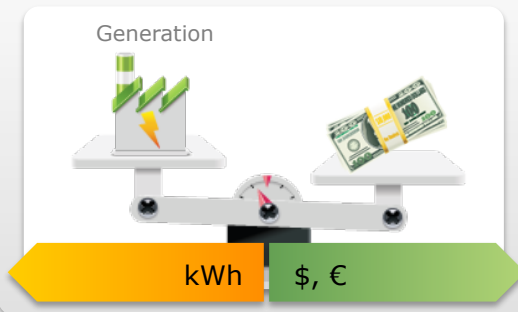
Customer Operations



Peak Management



Reduction of System Losses



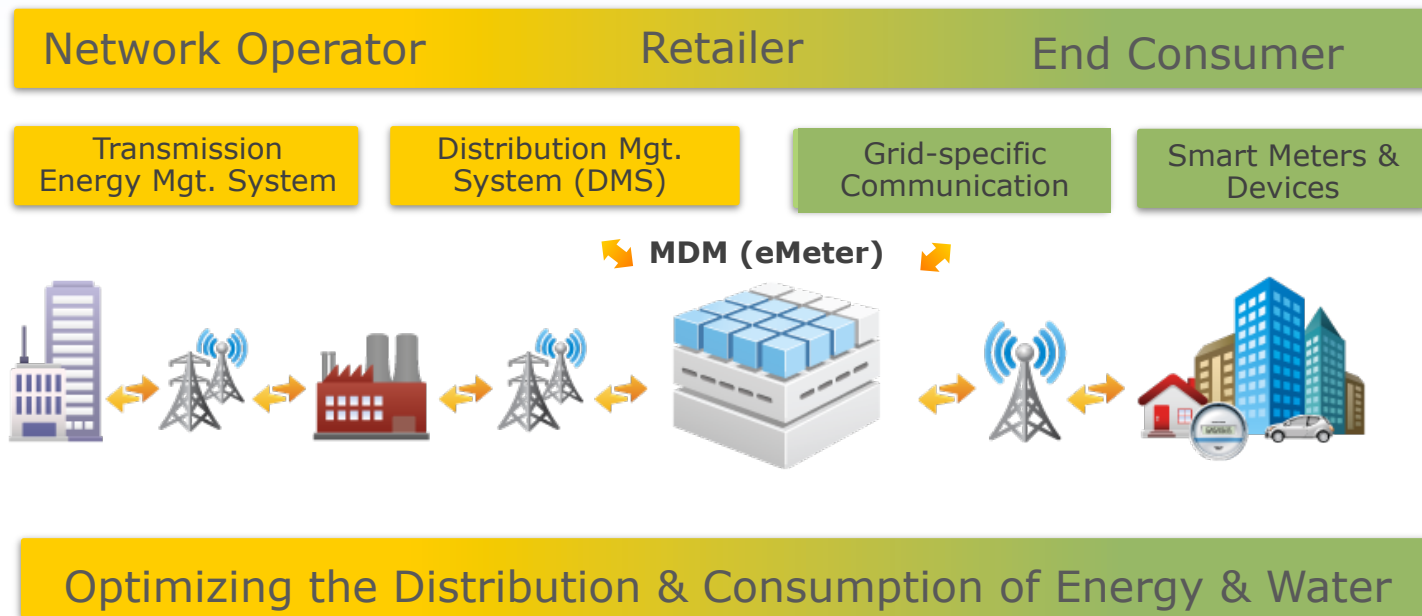
Outage Prevention / Restoration



Efficiency



DATA and MDM are the Critical Links to Delivering Smart Grid Value to ALL Stakeholders



MDM Based Applications of Market Participants

Retail Customer Operations



Analytics



Register Billing



Interval Billing



Prepayment Support



Customer Service Portal



Energy Engage



Revenue Protection

Grid Operations



Analytics



Remote Connect/Disconnect



Outage Management



Network Loss



Surgical Load Curtailment



Demand Response Management

Market Operations



Analytics



Network Loss



Settlements



Demand Response Management

Smart Meter Operations



Analytics



Device Lifecycle Management

Consumers



Information & Choice



EE /Savings



Automation



Demand Responsee



EV

What's and MDM

- Meter to bill
 - Meter data unification from multiple smart systems
 - VEE and delivery to billing system
 - Data repository
 - Synchronization between smart and billing systems

And much more... Smart Business Process Management, Analytics and Reporting and Integrate with the Enterprise

BUT in a nutshell: Collect, analyze, store the data and deliver meter reads

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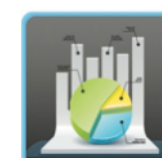


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EV



How MDMS Does This

Single interface to all smart systems (provision, read, control)

Perform real-time VEE on data and messages

Process and store valid and complete interval and billing determinant data

Present billing determinants (scheduled and *ad hoc*) to the billing system

Support the smart operations

Analyze meter reading data and identify issues

Identify events and automatically forward work or information to enterprise systems

Aggregate and/or transform metering data into information for enterprise systems and users

Proactively and on-request send data to enterprise systems and web portal



MDM Choice of Delivery Options



On Premise
Utility Back
Office



Smart Grid
Appliance



In The Cloud

Case Studies



- *Daily reads with 60 min interval data for over 4 M meters*
- *7 AMI system types integrated*
- *TOU Billing (>3.5 M customers)*
- *Multi-Org system for 76+ LDCs*



- *Daily mass market settlement*
- *Daily reg read and 15 min interval data for >2 M meters*
- *C/DC reduced > 2 M truck rolls*
- *eCurtaiment & Outage*
- *Analytics Framework*



- *Monitoring of network loss*
- *Actual hourly loss data*
- *Voltage monitoring and alarming*
- *Settlements*
- *Analytics Framework*



- *Net Energy Market Portal*
- *Hourly Usage Presentation*
- *Cost and CO2 presentation*
- *Alerts – text, email or phone*
- *Bill projections and history*