Smart/Intelligent Grid Development and Deployment in Thailand (Smart Thai)

Smart Thai Corporate Exchange: Smart Metering AMI Session

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PEA Building 4, 11th Floor,
Planning and System Development Meeting Room
Leadership through Innovation
Corporate Exchange: Smart Metering AMI Session
What is Advanced Metering Infrastructure?

AMI Refers to the System of Collecting, Measuring, and Analyzing Energy Usage from ‘Smart’ Meters via Various Communications Media.

• AMI enables the communication and analysis of data by multiple business applications and provides the ability to integrate metering information with other enterprise systems.

• AMI is a key enabler for demand management programs and inter-system reciprocity. It also provides command and control functions such as remote connectivity analysis, price and load signaling, and “last gasp” outage notification.

• Components of AMI include:
  – ‘Smart’ meters with enterprise system interaction capability
  – Gateway devices, such as programmable communicating thermostats
  – Communications channels, including leased line, power line carrier, and wireless
  – Data repository, management and business intelligence systems
An AMI System Representation

MDMS
- Control Information
- Critical Peak Pricing
- CIS Interface

LAN (Urban Suburban Apps)
- Interval Data
- Remote Disconnect
- Tamper Indicators
- ‘Last Gasp’ Outage Data

PLC (Rural Applications)
- Interval Data
- Remote Disconnect
- Tamper Indicators
- ‘Last Gasp’ Outage Data

Home Area Network & Devices
- Smart Thermostats
- Load Control Devices with 2-way capability
An Inflection Point was Reached with the US Energy Policy Act of 2005

- Components of AMI had been proven but lacked a market catalyst. The EPACT was enacted by the US Federal Government, and other jurisdictions (CA and Ontario) quickly followed. A significant market opportunity was then created.

- While limited results of mass market deployments are available, the tipping point for mainstream adoption has been reached, due to the widespread availability of AMI technology, the improving economics, and growing public interest.

Technology and Regulation are Driving the Adoption Rate
Effective Strategies Combine both External and Internal Points of View

• Mass market and regulatory acceptance of AMI expenditures will require tangible improvements in the customer experience specific to a utility’s operating environment. “We do not all live in the same country”, so one solution will not fit all utilities or customers.
• However, AMI is critical to closing the gap between customer expectations and utility operational capabilities.
AMI Complements SCADA

**SCADA**
- Monitor and Control of both feeders
- Overhead feeder opens due to fault

**Fault Location**
- Causes OH feeder to open

**Midpoint Switch** – Normally closed
- SCADA Controlled
- SCADA Current Monitoring
- Will be opened to isolate segment

**Tie Switch** – normally open
- SCADA Controlled
- SCADA Current Monitoring
- Will be closed to connect outage segment to underground feeder

**AMI**
- Load data – near real-time within the switching segment
- Used in the switching automation to determining if the switched load is too much for the underground feeder to handle
Develop an Enterprise Strategy

The Enterprise Strategy Integrates the “Outside” and “Inside” Points of View:

- The “Outside” Point of View is Customer-Focused
  The strategy should incorporate the market, regulatory and customer considerations that are relevant to the utility’s service territory. The required analyses will include market research, customer needs analysis and segmentation, the development of specific product and service offerings, and associated promotional and customer enrollment considerations.

- The “Inside” Point of View is Operations-Focused
  The strategy must encompass the operational benefits of an AMI implementation, including meter reading savings, outage/restoration notification, load profiling, network analysis and capacity planning, switching plan development and maintenance optimization.

The optimal utility strategy incorporates both points of view and delivers the best return on investment!
Develop an Enterprise Strategy

Integrating Both Point Of Views

Define the Drivers
- Energy Mgmt / Cost Control
- Environmental Concerns
- Reg. Directives
- Supplier Competition

Develop Initiatives
- Time of Use / CP Pricing
- Direct Load Control
- Home Energy Mgmt Solutions

Pilot & Evaluate
- Define Segments & Create Offerings
- Monitor Results
- Refine / Optimize Adoption Rates & Business Case

Customer Focused

Operations Focused
- Peak Reduction
- Asset Utilization / Capacity Planning
- Outage Response
- O&M Reduction - Turn-on / Turn-off - Maint. Planning
- Load Profiling
- Feeder-Segment Analysis
- Outage / Restore Notification
- Maintenance Optimization
- Pilot and Test
- Monitor Results
- Integrate AMI Inputs with OMS / SCADA
- Refine / Optimize Operational Benefits

Optimize Portfolio

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