Ontario’s Smart Metering System Implementation Program - Lessons Learned

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1. The IESO and its role in Ontario’s Smart Metering Initiative
2. The Smart Metering System Implementation Program (SMSIP)
3. Lessons Learned
• The IESO is a non-profit entity established in 1998 under the *Electricity Act* to manage Ontario’s power grid.

• The IESO:
  • Directs the flow of electricity across the transmission system to meet the province’s power needs
  • Balances demand for electricity against available supply through the wholesale market
  • Manages the financial operations of the $10-billion wholesale market
  • Oversees emergency preparedness activities for Ontario’s power system
  • Sends real-time price-signals to trigger demand response
• The **Smart Metering Initiative (SMI)** is the Government of Ontario’s initiative to create a conservation culture and a toolset for demand management based upon the province-wide deployment of smart meters.

• The **Smart Metering System Implementation Program (SMSIP)** is responsible for managing the initiative’s implementation.
• **Smart Metering Entity (SME):** the organization mandated by law to help facilitate the goals of the Smart Metering Initiative over the long term.

• The IESO was named as the Smart Metering Entity in July of 2007 under regulation by the Government of Ontario.
Ontario Smart Metering Initiative (SMI) - Governance

- **Ontario Ministry of Energy and Infrastructure**
  - Policy direction and regulatory authority
  - AMI Standards
  - Various regulations

- **Ontario Energy Board**
  - Licence Conditions
  - SME Rate Order
  - Time-of-Use Rates
  - Cost Recovery Decisions
  - Retail Settlement rules

- **Smart Metering Entity**
  - MDM/R Services
  - Program Coordination

- **Measurement Canada**
  - (Federal Government)
  - Common Technical Standards for smart meter technology

- **MDM/R Service Recipients (LDC’s)**
- **Billing Agents**
- **AMI service providers**
Components of the Smart Metering System

The Energy Information Loop

- **LDC Responsibility**
  - Smart Meters Track Hourly Energy Use
  - Meter Read Data Sent To Neighbourhood Collectors

- **IESO Responsibility**
  - Control Computers receive data from Collectors and Transmit it to Smart Meter Data Repository.
  - IESO Smart Meter Data Repository Prepares Time-of-Use Billing Quantity Data

- **LDC Responsibility**
  - LDC Provides Customers with Energy Use Information through Invoices and Online Access
  - Time-of-Use Billing Data Sent Back to LDCs
  - Your Electricity Consumption
    - On-peak, Mid-peak, Off-peak
Smart Metering System Implementation Program
Smart Meter Installations as of September, 2009

Installed 65%

Remaining Customer base 35%

Ontario Government Target: end of 2010

Installed 100%

Remaining Customer base 0%
The Ontario Government is targeting to have 3.6 million customers enabled for TOU billing by Spring, 2011.
Current Operational Status – November, 2009:

- ~3.0 million smart meters installed by various LDCs
- 9 active LDCs in MDM/R production environment with over 125,000 smart meters registered with the MDM/R
- The remaining 4 of the original group of 13 LDC’s are at various stages of the MDM/R Registration and Enrollment Process
- The next target group beyond the initial group of LDC’s is currently preparing for MDM/R enrollment

Note: Hydro One is also one of the designated LDC’s although this map does not illustrate smart meter activities in Hydro One service areas throughout the province.
Lessons Learned

^ Being
Ontario is served by over 80 Local Distribution Companies (LDCs) – ranging in size from over a million customers to under 1,000…

More than two thirds of the customer base are covered by the 12 largest LDCs…
Lesson: AMI is a maturing technology.

- ‘AMI’ should not be confused with its older sibling, ‘AMR.’
- Ontario committed to the Smart Metering Initiative in advance of common communication standards for AMI which are currently being developed.
- Currently the MDM/R has to support six different meter read interfaces.
- Today, major initiatives are underway to develop standards for future generations of smart meters.
- One of the most prominent standards development efforts is currently being carried out by the U.S. National Institute of Standards in Technology (NIST)
Lesson: Privacy and data security cannot be ignored.

- Since its inception, the IESO, Smart Metering System Implementation Program has paid close attention to privacy and data security issues.
- The 2006 MDM/R procurement program applied rigorous standards, including subjecting all aspects of MDM/R operations to a Section 5970 audit.
- Recently the Ontario Information & Privacy Commissioner of Ontario issued a report outlining their expectations for the broader set of smart grid technologies that might be deployed in this province.
Lesson: Achieving TOU is about more than just the smart meter.

- Registration
- GUI training
- SIT/QT
- Business process validation
- Cut-over self assessment, etc.

LDC achieves capability to enroll individual customers in the MDM/R

TOU billing begins for this group of customers

- Groups of customer service delivery points enrolled in MDM/R
- Education process for individual customers

Organizations-level Activities

Customer Group 1

Customer Group 2

Customer Group ‘n’

Customer-level Activities
Lesson: Effective customer communication is essential.

- Over the past 2 years, the IESO has worked closely with the Ministry of Energy and Infrastructure, LDCs, Ontario Energy Board and other organizations to develop communications tools and strategies to prepare Ontario customers for time-of-use pricing.

- Many early-adopter LDCs have learned that preparing customers well in advance pays huge dividends following implementation.

- Various education vehicles are currently in development.
Lesson: Like any other project in history, it's never too early to start planning.

- As the first group of designated LDCs complete the MDM/R registration and enrolment process, attention is now firmly focused on the next groups.
- The OEB now reports that 65 LDCs are at various stages of smart meter installation.
- The IESO is offering a variety of training, planning and preparation resources to get those organizations prepared for MDM/R integration...today.
The Smart Metering System Implementation (SM SIP) is the framework in which Ontario's Smart Metering Initiative (SMI) will be carried out. The SMI is the Government of Ontario's initiative to create a conservation culture and a toolset for demand management based upon the province-wide deployment of smart meters.

**ANNOUNCEMENTS**

**Friday, October 5, 2007:** The IESO has published MDM/R V1.0 Reports Technical Specifications document, Issue 2.3 - reflecting changes outlined in two previously published Interim MDM/R Document Change notices (SME IMDC_0002 and SME IMDC_0003). In addition, the IESO has issued an Interim MDM/R Document Change notice (SME IMDC_0004) which outlines further clarifying changes to this document.  
*For more information: please see the Technical Interfaces and Samples page.*

**Thursday, October 4, 2007:** The IESO has posted two technical interface sample files, related to the Meter Read Interface for the Tantalus and Trilliant sub-types. In addition the IESO has also posted a sample of MDMR Report 3R17: FTS Processing Failure Report.  
*For more information: please see the Technical Interfaces and Samples page.*

**Wednesday, October 3, 2007:** The IESO has posted a number of new technical interface sample files, related to Universal Service Delivery Point (SDP) Requests and Responses, and the Sensus Meter Read Interface.  
*For more information: please see the Technical Interfaces and Samples page.*

Visit SMSIP website at: www.smi-ieso.ca
Thank you.