

## **Issues to be Addressed when Assessing Smart Meter Implementation Plans**

### **1.0 Approach to Addressing Implementation Questions:**

A coordinated execution plan should be established to implement and integrate changes to metering, data retrieval, settlements and customer billing systems to enable market-based electricity prices. This plan must address the following broad categories of issues:

- Regulatory and financial considerations.
- Customer considerations.
- Technology and integration issues.
- Roles and responsibilities (of the OEB, any central coordinating agency, LDCs and other stakeholders).
- Implementation priorities and timelines.

The major issues in each category are identified and discussed in the following submission. Hydro One agrees that the Board should establish task groups, whose task will be to define and address major implementation issues on a timely basis. To be effective, these task groups have to have clear mandates and timelines, and be kept to a small number of members. Hydro One would be pleased to participate on any working group(s) that the Board may establish.

We also generally support the EDA submission dated August 13, 2004, which identifies many of the implementation issues that must be addressed in launching this initiative.

### **2.0 Regulatory and Financial Considerations**

#### **2.1 *Cost Recovery***

There two aspects to cost recovery. First, there must be guaranteed recovery of revenue losses arising from this initiative. The cost of maintaining and sustaining distribution assets does not change simply because customers respond to the price signal and use less energy in peak periods. Second, there is the pure financial cost of smart meters, discussed in more detail below.

Regulatory mechanisms to enable timely and assured cost recovery should be established, otherwise LDCs' financial viability and creditworthiness will be impaired. Utilities should be granted rate relief for the levelized revenue requirement of the initiative over the PBR period. Otherwise, they will be perpetually behind in cost recovery and customers will be faced with the build-up of out-of-period charges.

Smart meters may have shorter lifetimes and more frequent re-verifications as required by Measurement Canada (MC). This will have implications for depreciation rates and replacement cycles.

## **2.2     *Financing***

The total cost of deploying smart metering and implementing some form of market-based pricing (e.g. time of use rates, interval metering, etc.) will be substantial. In fact, these costs will exceed the market ready costs that were incurred by LDCs in preparation for the retail market.

Hydro One considered the Board's suggestions for funding the program and we suggest the following:

- The cost of meters, telecommunications and data management center needed to provide minimum functionality (including O&M) should be treated as part of LDCs' revenue requirement. Costs should be recoverable and employ a deferral account approach to track costs incurred in the period up to and between rate re-sets. As customer bills are already complicated, we believe that a separate charge is likely unnecessary and that these costs may be incorporated into the existing service charge.
- The use of DSM "third tranche" funds has been proposed as a means of financing this program. The cost of the smart metering initiative is expected to well exceed the funds that are available from this source. There are also several pilot projects either underway or planned for which funding from this source is needed. It may be appropriate, however, to allow some part of this funding to be applied towards the smart meter initiative.
- Third party funding has also been proposed. However, this issue warrants further study. Prospects for meeting the Government's timelines would seem limited with this option, unless a rate base approved approach is adopted, or a central Government-run entity undertakes the investment.

## **3.0     *Customer Considerations***

To design the infrastructure that will be required, we must understand the services that will be provided to customers. Clarity respecting those services will allow utilities to define the information that must be collected, the business processes that collect the information and the tools needed to process the data. Properly identifying and defining these requirements at the outset of the project will increase the benefits of the smart metering program and reduce customer backlash, high call center inquiries and dispute resolution costs and unnecessary or inadequate investments.

### **3.1     *Commodity Pricing***

Appropriate commodity pricing options must be assessed and developed to enable smart metering investments to be effective. Although it would be preferable to establish long term pricing options first, we recognize that the anticipated schedule may not

accommodate this. Therefore, we would suggest that components of pricing options (such as time intervals for commodity and non-commodity time of use rates) should be developed and approved by the Board in parallel with this process. To the extent that the Province is moving toward regulated supply prices, some consideration also must be given to the effect of changing load profiles on those prices.

### **3.2     *Exceptions***

The Board should define exception criteria for the smart metering program that recognizes that some classes of customers (such as cottages, railway crossings and other low or very low volume consumers) may not realize a commensurate benefit from smart meter installation. Smart meter requirements should not be applicable to Hydro One's remote community customers who are not connected to the provincial grid.

### **3.3     *Customer Communication and Education***

A communication plan should be developed to provide information on the application and usage of smart meters and educate consumers on their benefits and costs and future electricity pricing.

### **3.4     *Information Delivery Media***

To realize anticipated benefits from smart metering, a task group should assess a variety of information delivery media (for example, web sites, in-house displays, newspaper, public broadcasts, etc.) to provide customers with necessary data to manage their consumption

### **3.5     *Nature of the Bills***

A simple and uniform electricity bill format and communication plan should be developed across the Province to accommodate various pricing models.

### **3.6     *Information Required for Validation and Dispute Resolution***

The information required to enable customers to validate their bill (founded on more complex market-based prices), must be defined.

## **4.0     Technology Selection and System Integration**

Meter and telecommunication technologies are rapidly evolving; new and better solutions will emerge through the course of the smart metering program. Implementation plans for the entire sector must ensure that we all employ a smart metering infrastructure that is open (as opposed to proprietary) and that platforms that are sufficiently flexible to adapt to changing products and technologies.

#### **4.1 Functional Requirements of a Smart Meter (Minimum and Optional)**

Functional requirements for smart meters could be defined under two categories:

- I. Minimum (mandated) functionality that must be available within the meter, for example:
  - Time of Use (TOU) and interval metering (IM) metering capability with data processing capability within the meter to accommodate on-going changes to rates and rate structures.
  - Automated meter reading (AMR) capability.

The minimum functional requirements should be (a) developed by carefully considering the primary and secondary objectives of such installations and (b) sufficiently flexible to accommodate emerging technologies and new pricing structures. For example, TOU meters may not be able to effectively facilitate critical peak pricing. In addition, smart meters without bi-directional communication may not be useful for load management. The OEB and its task groups should determine the overall “project economics” for the minimum (mandated) functionality that is recommended to the Minister.

- II. Value added (optional) functionality over and above the minimum requirements could include:
  - Operational benefits in addition to AMR (e.g. connections and disconnections, load control to respond to contingencies, system control and monitoring, etc.).
  - Gateway applications (e.g. appliance control and monitoring).
  - Power quality monitoring.
  - Prepaid metering technology (i.e., swipe cards).
  - Web account access.

Individual utilities should prepare a business case justifying the “project economics” for any value added (optional) functionality they ultimately decide to implement.

#### **4.2 Telecommunications**

In order to minimize costs and processes to connect smart meters for data retrieval and processing, Hydro One believes that a communications network will be required that is integrated into the smart meter base across the province. This infrastructure could involve a variety of technologies (e.g. conventional telephone, wireless, power line carrier etc.) depending on the local circumstances. We note that while urban LDCs may have access to a number of these options, rural customers as served mainly by Hydro One Distribution often do not.

#### **4.3 Data Management**

The Board should assess the functional requirements of one or more data management centers that could serve as hubs for all smart meters across the Province and feed

information into the LDCs' billing systems as an alternative to 90 different systems. Such central systems could also facilitate an efficient load management practice (i.e., load control) during critical peak periods.

#### **4.4 *Billing Systems***

LDCs will likely have to address changes to (or replacement of) their existing billing systems to process large volumes of data based on consumption interval (time of use or interval metering), calculate a charge for each consumption interval and generate a bill. LDCs will need enough time to assess impacts and implement needed changes in their billing systems.

#### **4.5 *Contestability***

Introducing contestability as an aspect of the smart meter implementation process would inject further logistical complexities into a program with exceedingly tight timelines. It would also heighten concerns regarding the management of confidential customer information and data, as two companies manage the needed interface while undertaking meter change-outs. Finally, if LDCs had the obligation to be the residual meter service provider, they would be left to serve high cost situations without the offsetting scale economies.

### **5.0 *Roles and Responsibilities***

#### **5.1 *Centralization and Decentralization of Specific Tasks, Technology and Data Processing***

##### **5.1.1 *Overall Planning and Coordination***

There is a need for project coordination across the province. The coordination effort could (for example) be provided through the OPA with appropriate input from LDCs. The OEB and the OPA should work together to ensure no ambiguity exists respecting the plans that LDCs are required to undertake.

##### **5.1.2 *Procurement and Installation***

LDCs should drive their procurement, implementation, billing and installation process within the context of the decisions above, to ensure appropriate long-term operation of this critical sub-system of the overall power system. LDCs should leverage their existing procurement processes to:

- determine design specifications to accommodate functional requirements and unique LDC circumstances,
- discuss products and options with suppliers and
- negotiate procurement contracts, etc.

LDCs may establish consortia to benefit from economies of scale and efficiencies.

## **5.2     *Roles***

We recommend that the OEB define the roles and responsibilities of each entity (OEB, the central agency (if appropriate), LDCs and other stakeholders) for an effective and efficient process.

## **6.0     Implementation Prioritization, Coordination and Timelines**

### **6.1     *Phasing-In Implementation***

The OEB's plan should suggest development schedules based on the areas of highest benefit or impact first. In determining priorities the OEB should recognize that benefits and costs would vary by LDC. The following prioritization could be considered:

- a. Installations for all customers above 50 kW.
- b. Installations for all General Service Class (20-50kW).
- c. Change building codes for new housing and commercial developments to require smart meters.
- d. Replacement of the remaining existing installations, finishing with those which are least impactful on demand.

In establishing priorities and timetables, consideration should be given to the experience of other jurisdictions, keeping in mind that the experience of others may not be exactly comparable either in scope or timing.

The implementation plan should adopt the principle of achieving the greatest possible benefit with the lowest risk of implementation failure. The use of pilot tests is an effective risk mitigation technique.

### **6.2     *Resources and Labour Issues***

Resourcing will be critical. Implementation across the Province should be coordinated and prioritized to ensure that the available installation capacities (including skilled labour) are applied to the most cost-effective installations first.

LDCs will also have to address potential labour relations issues once a specific direction and program implementation path are chosen. Hydro One, for example, would need to thoroughly review potential options for sub-contracting meter installations to ensure that we undertake the work in compliance with our collective agreements. More fundamentally, should smart metering reduce the need for meter reading staff, LDCs must develop strategies to manage the re-sizing of their staff complement (i.e., the potential reduction in the meter reading function may be counter-balanced by the need for some potential hiring and training for others). Finally, introducing contestability into

meter ownership and services provision could also raise issues related to the transfer of associated staff to new companies.