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IMPLEMENTATION PLAN FOR SMART METERS IN ONTARIO

STAKEHOLDER COMMENTS

Stakeholder: Itron

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2.2.1 BENEFITS FOR CUSTOMERS

For customers to control their bill, it must be noted that the price differential between on-peak and off-peak pricing should be significant enough for them to warrant behavioral change.

On the note that DSM programs could be targeted to vulnerable consumers with poor access to capital to help them act, it is important to recognize that these consumers will likely need some form of rebate to obtain the smart meter if the capital costs of smart meter is to be passed on. In addition, it is likely that these are the group of customers who will not invest in energy efficient appliances due to their financial situation and the savings will have to come from purely load shifting which may or may not allow them to benefit depending on their ability to shift the loads between on-peak and off-peak.

3.1 PROCUREMENT STRATEGY

There is limited economies of scales for a vendor if one contract is let but the meters are shipped to 90 different "ship to" addresses, have 90 different programs, have to be badge for 90 different LDCs with 90 different specs and 90 different invoices. Meters are essentially customized for each Utility by the addition custom badges and programs. Up to the point that the badge is installed and the meter programmed, meters are essentially the same. A vendor is able to reduce its costs and pass on savings when all meters have the same badge and are programmed the same. For example, selling 100,000 meters to one account would result in savings that could be passed on. Selling the same 100,000 meters (same spec) to 10 different Utilities would not result in savings even though the meter spec is the same for all 10 Utilities. The only way that Ontario would see economies of scale is if all meters were badge the same, programmed the same, shipped to a limited number of ship to addresses and only one set of invoices were issued.

3.2 IMPLEMENTATION PRIORITIES

If the eventual goal is to place a smart meter on every account, the cheapest and best approach is to do a mass deployment. Recently, the Niagara Mohawk territory of National Grid (upstate New York) decided to upgrade to AMR. After investigating a number of implementation strategies, it was decided to replace all of their meters (approximately 1.5 million) in a mass deployment over 18 months.

Typically AMR implementations are very difficult to accomplish with a surgical approach. The cost of the infrastructure to read, process and communicate the information produced by a Smart Meter requires a Utility to deploy as many meters as possible to ensure that the cost per point (meter) is reasonable. Strategies that require targeting specific groups of customer i.e. New Homes or demands above 50kW must be

carefully analyzed to ensure that costs are controlled and assets are not stranded as the meters are implemented.

For example:

If the OEB was to set regulation in place to ensure that all customers with 50kW of demand and above should have a smart meter before the end of 2006 Utilities would likely implement phone line based modems. This technology is widely deployed, very familiar to Utilities and the only technology that could be quickly installed surgically. The problem is that even though the technology works, its reliance on the phone lines makes it expensive and difficult to manage. If the second phase of the smart meter implementation required a Utility to install an AMR system, the Utility would have the infrastructure in place to read the previously deployed 50 kW meters without relying on the modems. The new reading system would provide a number of benefits when compared to modems that the Utility would likely abandon the modem meters resulting in a stranded asset.

It is possible, practical and economic to install smart meters in small groups of 500 meters, provided the 500 meters are within close proximity of each other. What is difficult and expensive is to install smart meters with large distances between them.

3.2.4 SELF-SELECTION

If an AMR system is to be implemented, it will likely be an all or nothing proposition. Allowing for consumers' self-selection will not be a viable business case.

4. COST RECOVERY

In 2003, utilities have started buying electronic residential meters due to the change in the treatment of electronic versus electromechanical meters by Measurement Canada. This has leveled the playing field and created an acceptance for residential electronic meters. Most residential electronic meters allow for the easy integration of a personality module depending on the AMR technology of choice. The base meters can still be used thus reducing the issue of stranded assets for electronic meters purchased within the past 2 years.

5.1 MEASUREMENT

It should be noted that the definition of peak and off-peak should allow the consumer a reasonable time frame to act on their behavior change. The IMO definition of peak and off-peak appears to be too wide and might not give the consumers any incentives to alter their behavior.

5.2.1 TO BILLING ENTITY

Two different kinds of Time Of Use meters could be deployed:

1. Standard, solid state TOU meters with or without communication.
2. Solid state meters with capabilities to communicate interval data

The big advantage of standard TOU meters is that they process the consumption into predefined rate classes in the meter. This offers simplicity of use – both by the customer and the utilities. Minimal changes at the billing systems are required. TOU meters with communication may be read on a periodic basis with a cost effective wireless drive-by or fixed networks. TOU meters without communication are programmed for fixed rate buckets in the meter shop or factory prior to field deployment. They would be manually read on periodic basis.

In contrast, an Interval Meter creates the interval based consumption data. This interval data can be smartly managed at the utilities end where the data can easily be regrouped to achieve different TOU scenarios. For instance, if the utility needs to change its Critical Peak Pricing time, it does not need to modify anything in the meter. The data can be regrouped at the utilities' end to provide unparalleled flexibility. Smart enterprise based data repositories are now available to manage huge amounts of data, which can be archived and studied over time for seasonal elasticity of demand under various pricing scenarios. This provides an invaluable tool for OEB to achieve significant Demand Response.

For TOU meters without communication, the rate buckets can be changed in the field but it requires manual manipulation. Alternately, a TOU meter with communication can be deployed to allow for some form of remote manipulation of the rate buckets. This meter may not match the flexibility of an interval data capable meter network.

With reference to the prepayment meters, it should be noted that these meters are not formally approved by Measurement Canada. Prepayment meters provide flexibility of buying – but it is very difficult to implement tariff structures like Critical Peak Pricing.

5.2.2 TO CONSUMER

Smart interval data meters provide the customers to monitor their energy usage on a more granular basis. This coupled with Demand Response Gateways provide every residential customer with the right tools to participate in a demand response program effectively – especially Critical Peak pricing and in future- residential Real Time Pricing.

The consumer is provided the detailed energy usage pattern and graphs over the internet via very simple web interfaces. Although internet penetration can be an issue in utilizing the full potential, this can easily be supplemented by in-home displays for consumers without internet access.

Standard TOU meters on the other hand provide simple visual display of peak and off peak readings and the display.

5.3 DATA STORAGE

Enterprise based meter data repositories, which allow different users to create their own customized data analysis and reports are increasingly becoming a standard among progressive utilities.

5.4 BI-DIRECTIONAL COMMUNICATION

Bi directional communication at the meter level is usually stated to be required to achieve the following two purposes:

- Read a meter “on demand” to resolve a high bill complaint or a missed read
- Provide a load control mechanism in order to disconnect a customer for non payment or other reasons

These two functionalities can be achieved in various ways without the need to build a direct communication up to the meter – the proverbial “last inch”, which adds to significant cost in the meters. The “on demand” reads can easily be achieved by establishing two way communications to the fixed network data collectors that have the latest read from each meter- which is often just a few seconds old.

A hard disconnect or load control can be achieved by deploying public networks (e.g. paging) based networks. These load control switches may not be deployed at all residences - but may be selectively deployed in the areas of concern or high move in / move out areas.

Demand response programs, which required voluntary user participation, are more effectively administered by having in-home gateways, which have capability to control multiple devices (AC, heat, water pump etc.). These, coupled with smart web interfaces provide the residential users with effective choices.

6 OWNERSHIP

Measurement Canada requires all providers of meters to be registered contractors.

Initially as markets began to deregulate, it was theorized that allowing competitive supply of metering would lower costs to consumers. This has not happened largely due to the fact the Utilities are very efficient suppliers of metering services. Utilities are able to leverage field workers to perform metering related duties. This would not be available to third party suppliers of metering services.

7.1 MEASUREMENT CANADA REQUIREMENTS

Measurement Canada is in the process of removing basic telemetering (AMR) from the scope of its control when the telemetering device does not establish legal units of measurement. At the moment, all AMR devices have been required to receive approval from Measurement Canada prior to being used for billing purposes. The current new directions proposal will remove this requirement whenever legal units are not established. Under this proposal, telemetering devices that establish interval data will not require Measurement Canada approval but telemetering devices that establish demand will require Measurement Canada approval.

Measurement Canada presented a number of concepts at the Canadian Forum for Trade Measurement (CFTM) in November of 2003. Of particular concern to the industry was their desire to have the meter perform all interval functions and for this device to be approved and sealed. A more efficient meter reading system design may require some of these functions to be preformed outside of the meter within the meter reading or billing system.

Since introducing these concepts there has been very little debate between Measurement Canada and the Industry.

No mention in the document but of concern is the meter seal. Currently in Canada, meters that are deployed in the field are sealed. The sealing prevents the Utility from tampering with the meter and is mandated by Measurement Canada. In the case of electronic meters and especially Smart Meters it is sometimes necessary to access the meter behind the seal to manage the meters communication. Having better access to the meter once it is deployed in the field will help insure a successful implementation of Smart Meters.

8.2 PHASE II: WORKING GROUP

Itron would like to offer our assistance as a member of the working group. With over 30 million Automatic Metering Reading devices deployed, experience with mass deployments, significant meter data acquisition and manipulation experience and over 90 years of Canadian metering experience we can offer the OEB significant insight and experience.