
Ontario Energy Board
Smart Meter Implementation Plan
Draft Report for Comment

Introduction

This document contains two sections. Section I includes general comments relating to the high-level intent and direction of the Plan with respect to its consistency with the Minister's Directive. Section II provides feedback and comment on specific elements of the Plan. It is the intention of OZZ Corporation to support the Board to the best of its ability by providing constructive feedback, participating in the consultation processes and offering its resources to assist the Board in its undertaking in developing an implementation plan for Smart Metering in Ontario. OZZ Corporation submits this document to affirm its position on several critical issues.

Section I

Overview

We believe this position is consistent with and supportive of the stated objectives of the Government; to put Ontario at the forefront of the energy industry and to prepare for the future through the implementation of smart meters and a new generation of intelligent infrastructure.

Only an unwavering commitment to this objective will serve the interests of the sector and Ontario residents in the long term. Anything less will jeopardize the success of the initiative and destabilize the reliability of Ontario's energy supply infrastructure. We present here specific recommendations which we believe will secure success of this process and the future of the sector. The meter itself and the data that flows from it are critical enablers of virtually every aspect of emerging policy for the Ontario electricity market.

The Minister's Directive calls for province-wide smart metering that supports not only dynamic market prices, but also price and demand response programs including but not limited to critical peak pricing and residential load control. An important underlying objective is to provide the tools and incentives for consumers to proactively manage their energy consumption and to provide timely energy consumption information to consumers. By so doing, residential consumers who represent some 40% of the Province's demand for electricity will be able to proactively participate in achieving the Province's energy reduction targets.

OZZ Corporation endorses this plan, the timelines and the long-term vision articulated by Premier McGuinty and Minister Dwight Duncan in their policy proceedings, *Ontario needs an infrastructure that supports a dynamic energy market.*

To achieve this vision for the future, Ontario's implementation plan must reflect similar forward thinking. It must challenge the marketplace to come to the table with new approaches and solutions. Since its creation, Ontario-based OZZ Corporation has

participated in industry and government forums, invested significantly in technology and human resources and continues to support innovation in Ontario's energy sector.

We strongly encourage the Board to establish progressive and clear standards and to guard against the implementation of systems at, or approaching, the end of their technology lifecycles and to further encourage the adoption of new operational models within the utility sector. Technology alone is not sufficient to fundamentally change an operational paradigm. To perpetuate the status quo is to put at risk the tremendous investment contemplated under this initiative and will compromise the ability of the industry to support the evolving needs of the market. The probability of stranding these assets becomes a likely outcome of a direction. Ontario's energy industry and Ontario residents will live with (and pay for) this new infrastructure for decades to come. We must get it right the first time.

Recommendations

We present for your consideration the following specific recommendations for minimum requirements we believe are essential to both an efficient and effective implementation plan that maximizes long-term value, flexibility and leverages technical innovation.

1. **Hourly intervals set as the minimum requirement for data collection.** The draft plan alludes time of use data in several instances. Interval data enables critical activities and provides the explicit ability to:
 - a. Support the government's commitment to reduce (and measure) consumption across the province by 5%.
 - b. Enable daily critical peak pricing (CPP) - CPP times will not coincide with pre-programmed "TOU" buckets, requiring daily re-programming of millions of meters. Failure to correctly program meters during CPP times will create an outcry from consumers during high price periods and errors in billing.
 - c. Enable and settle demand response programs – Payment for load shedding will be based on MW displaced and the duration in hours.
 - d. Support, without constraint or incremental expense, all manner of regulated or retail price plans going forward without "obsoleting" meters.
 - e. Provide timely detailed consumption information to the consumer and enable credible load research.
 - f. Support retail energy services through measurement and verification using detailed load profiles.
 - g. Support spot market participation (HOEP) as is the right of every consumer in the regulations.
 - h. Provide data storage via on-board memory in meter to preserve the integrity of and access to raw hourly data.

Regardless of the nature of the rate plan in effect, only hourly interval data provides meaningful customer feedback. Any requirement less than this will severely limit the provinces ability to meet its reduction targets and respond to future needs. California, a jurisdiction facing similar challenges as Ontario, is actively endorsing 24 hourly intervals as the minimum.

2. **Specify 2-way Communications capability** – Simply automating manual meter reading creates little or no value. Two-way communication allows consumers to actively participate with information in hand, in energy usage decision making; and it enables smart meter operators to make changes to configurations or request data as needed to support demand response, reliability response and customer service requests. Two-way communication supports the potential delivery of usage or pricing data to a consumer display/thermostat, as well as, the ability to synchronize time from a central reference. It can also reduce the cost of future demand response use, controlling devices during peak conditions.
3. **User-driven Procurement**– There is consensus that LDCs will have varying needs as a function of budget, scale, customer demographics, geography, density and other operational variables. These variables by definition preclude a one-size-fits-all solution. LDCs may well choose to form cooperatives for the purchase of their smart-metering solution; however, the purchasing entity must be accountable for implementation or performance. A central procurement agency cannot assume this role.
4. **Net Metering** – There has been little if any discussion regarding this important issue. OZZ Corporation believes this may be an important capability in the point-of-measurement-device. There is a proliferation of cost-effective technology coming to market from small scale generation including not only stand-by generation but also innovative photo-voltaics that, in conjunction with load control programs could see a residential home and certainly medium-sized enterprises delivering energy to the grid. On a mass deployment basis, this could contribute significantly to the supply side of Ontario’s energy equation. OZZ strongly recommends that the requirements for net metering at the residential level be addressed in this process.
5. **Encourage and Provide for New Technology** - The procurement process will continue for several years. The specification should support evolving technology without limiting options in the future. The draft recommends vendor eligibility based on 10,000 units in operation. This is an arbitrary measure. We concur that the vendor must be able to demonstrate capability, however, this threshold presents no guarantees for an LDC with a requirement for 200,000 devices. We acknowledge that some LDCs may not have the expertise to evaluate potential solutions; however, resources are available in the market to assist purchasers in evaluating their specific requirements and procuring solutions that meet the minimum requirements of the Smart Metering Initiative. LDCs have managed significant capital budgets for a variety of technical equipment and IT-based systems for CIS, SCADA, and other capital information solutions. “Caveat Emptor” has always been the basis of the procurement function and the

purchaser's terms and conditions must bind the vendor to capability at whatever volume is specified. We emphasize that it is not the mandate of this process to develop commercial terms for procurement. Technology evolution will continue its accelerated pace and Ontario should develop its implementation policies to leverage these opportunities going forward. The current recommendations effectively preclude new technology that might be available in as little as six months.

6. **Multi-utility reads** – This opportunity introduces an additional dimension to the nature of the data since multi-utility reads is another order-of-magnitude opportunities for synergies and savings. However, for water and natural gas, data collection requirements and rate plans will continue to evolve beyond our current ability to predict. Smart metering systems must be able to meet foreseeable rate structures for these commodities as well. Only point-of-use devices that collect and store hourly data will ensure that these assets are not stranded and/or become new barriers to future energy policy.

Summary

The meter is one component of an intelligent information and operational system. Its ability to communicate provides opportunity well beyond the traditional billing function. The flow of detailed data will enable the retail market, energy services, demand response, and Critical Peak Pricing and requires hourly data for effective delivery of these programs. The meter is the “cash register” for the energy delivery chain; however, it is also an integral part of the distribution and operational infrastructure.

OZZ believes there is a unique opportunity at hand, given the Minister's Directive, to install new *smart infrastructure* to support many of these activities, even those that may be rolled out later. While the business case for AMR has been debated, there is no question that a communications backbone that enables multiple modes is a tremendous opportunity to achieve unprecedented economies-of-scale savings.

The Smart Meter Initiative is a means to an end. Without the means to accurately measure and provide feedback to consumers, Ontario's energy reduction targets cannot be achieved. Smart metering infrastructure must support foreseeable rate structures and Ontario has an *hourly* market.

Existing service providers must acknowledge that the Minister's Directive calls for a new approach to measuring and managing energy, not simply the installation of meters that can be read automatically. And to achieve this, service providers including LDCs must adopt new business processes and develop new technical capabilities.

We strongly encourage the Board to ensure that Ontario's Smart Meter Initiative creates maximum value for the capital deployed by defining the requirements for state-of-the-art smart meter infrastructure that will position Ontario at the forefront of the energy sector and ensure that this capital investment can enable the future without constraint or compromise.

Section II - Specific Comments to Draft Plan

This section provides comment on specific aspects of the Draft Plan. For convenience, its sub-sections refer to the numbering of the original document.

1.2 Objective

It is fundamental to acknowledge that the implementation of smart metering systems is a means to an end with respect to energy conservation. The Minister's Directive clearly identifies the need for consumers to see price signals and to have access to detailed data about their consumption patterns. These two elements are integral to a program to modify consumer behaviour and encourage electricity conservation. The capabilities of the measuring device are therefore critical to achieving the energy reduction target which is the ultimate objectives of the smart metering initiative.

1.5.1 Definitions – Smart Meter

This section underpins the entire functional specification and is unclear with regards to key issues.

Multi- Utility Reading

The Minister's Directive clearly requires the Board to investigate the ability of the meter to read multi-utility data, i.e., water and natural gas. This section specifies that a meter measures electricity only and is therefore non-compliant with the Minister's Directive. Tremendous economies can be achieved, to the benefit of ratepayers and taxpayers by leveraging the capabilities of smart metering technology. The Board must address this in its plan.

Hourly Reads

This section must state definitively that the "smart meters" measure and record "hourly consumption". It has been argued that hourly data only need be recorded if there is an hourly price plan in effect. Critical Peak Pricing and demand response programs, two elements of The Minister's Directive require at least hourly data to implement. Ontario's electricity market is an "hourly" market and every customer in Ontario has the right to access that market and therefore the minimum requirement is a meter that records hourly consumption. Meters must record time-stamped consumption during hourly intervals and provide for accumulated consumption reads to support the process of validation, editing and estimation for missing intervals.

Net Metering

This section does not address or acknowledge the issue of net metering. Smart metering technology is fully capable of providing this functionality and is critical to the implementation of distributed generation solutions in the Province.

OZZ encourages the Board to consider the role of the meter not only as the cash register for the LDC, but also as an integral part of the Province's distribution infrastructure and an enabling device for load control, critical peak pricing, time-based commodity and non-commodity rates, and as a point-of service device for Ontario consumers. Devices that do

not support these programs will strand metering assets at the expense of rate and taxpayers.

Implementation

Timelines

OZZ believes time is of the essence and strongly urges the Board to accelerate its timelines for deployment. Systems in operation for three months can clearly demonstrate functionality and integrability. We do not see the benefit of such an extended process. The commencement of mass deployment in mid-2006, some 18 months from now not only defers benefits that could accrue in the interim, but also puts pressure on implementation, the majority of which would have to be completed in just 18 months.

Experience from the U.S. and specifically from the PSE implementation project (as presented by OZZ in conjunction with the project manager of PSE to the Planning and Strategy working group during the consultation process), indicated the need for concurrent development of back-office systems and asset management systems, not a sequential approach. Not only are timelines compressed, but better integration operation and cost-savings would be realized.

Notwithstanding the benefits of migrating the large energy users on a priority-basis, the residential customer is a key stakeholder as the Government can no longer justify the subsidization of electricity at the expense of taxpayers. One of the key objectives of this initiative is to provide consumers information and tools to manage their energy and to positively influence behaviour towards a culture of conservation. The implementation of the Regulated Rate Plan cannot commence without smart metering. The Government cannot meet its promise to bring some 7,000 MW of coal generation off-line in 2007 if residential consumers are not responding to price signals well before then. To do otherwise would be an invitation to a major supply crisis in Ontario's electricity sector.

The implications of unstable supply to the economy of Ontario are potentially catastrophic as a lack of confidence could see billions of dollars of business investment move out of the Province, not only in new investment but also in the departure of existing business operations.

OZZ believes the timelines of this plan significantly increase the risk of destabilization of Ontario's electricity supply.

3.1 Customer Impacts

The issues identified here highlight the importance of in-home display for real-time energy consumption and two-way communication to the meter. Reliance on public media (print or broadcast) creates additional administrative burden and unnecessary cost, given the capabilities of present-day and emerging technologies. We believe that any process or system that is not automated, and that does not leverage direct communication to the home will create customer backlash when critical peak prices are introduced and segments of the market are unaware or have poor understanding.

3.2 New Costs

We see only the incremental costs discussed in this document. There is no discussion or quantification of the avoided costs of the several thousand MW of peak demand that will be enabled through the implementation of smart metering.

The avoided costs of incremental capital for increasing system capacity due to spiking demand, as well as, the maintenance savings of reduced overloads to protection and transformation equipment should accrue to the benefit of the project and the overall cost estimates.

Hydro One Networks acknowledges that a significant portion of their meter population can be upgraded solely through their on-going meter upgrades, change-outs and new construction. Also missing in the cost equation is the drastic reduction in estimated bills and related customer complaints (call center load, investigations, missed reads costs, hard-to-reads) which are all currently costed in the LDC rate applications. While there are incremental costs, there will be net operational savings which should be reflected to customers in the new distribution rates.

Many LDCs have commented that if the meter is to incorporate additional functionality, including load control or other access/service to the home, then the LDC should have the right to extend access to the device (i.e. to third party operators) for a fee. This would be an unacceptable approach since ultimately the LDC is recovering any incremental cost of smart metering from the customer through the distribution rate and that the meter then becomes an enabling tool for energy conservation or demand response and should be available for such purposes in accordance with Government policy or third party programs.

4.41 Minimum SMS Functionality

Data Compression for TOU

The meter must record hourly data as a minimum. Any compression or manipulation of the data should occur at the SMDCC. Compressing it in the meter destroys the raw data. OZZ strongly opposes the use of TOU meter configuration as hourly data will be essential to third party services, CPP programs, and to provide meaningful customer consumption information.

Minimum Quantities of Devices in the Field

OZZ has more experience with smart metering technology than any other entity in the province, with thousands of devices in *operation*, including phone-based, powerline carrier and wireless systems. Although OZZ is not a manufacturer, it recognizes the accelerated pace of development of this technology and strongly encourages the Board to reconsider the minimum deployment of 10,000 devices as a criterion for qualifying technologies.

Demonstration of capability is a commercial/contractual issue for procurement. There are many mechanisms to ensure performance under a contract, including performance bonds. Technology that is introduced over the next three years should be available for implementation and it should be the purchaser's obligation to ensure backward and forward compatibility, integrability and interoperability with other devices and systems already in the field. It is not the role of the Board or within the scope of this Plan to prescribe means to protect LDCs from purchasing sub-optimal systems at the risk of excluding leading-edge technology. The Minister has articulated his desire to place Ontario at the leading edge of the energy sector, and the limitation prescribed here effectively precludes the achievement of that vision.

Read Transmission Success Rate

This is an unmanageable target for large-scale deployment. The threshold should be 95% success at any *one* attempt. Over three days, the success rate of extracting a given data set would then become well over 99%, a more reasonable performance standard for the large data flow.

Construct Hourly Demand

The requirement here is unclear. Three distinct activities are described as alternatives not as requirements. Which is specified? We believe the system must:

- a) record hourly data; AND
- b) record register reads; and
- c) is essential to accurately reconstruct any missing intervals to the benefit of customers.

4.4.2 SMDCC Reporting and One-Way Communication

A system with one-way communication capability is unable to perform meaningful diagnostics or reporting on the health of the system. Furthermore, a system with one-way communication is unable to execute on-demand reads, (for final, move-in/out, check reads). A system with one-way communication capability is also unable to remotely update any resident applications that will undoubtedly change over time from the manufacturer. One-way communication also precludes a viable means for communicating CPP or other information directly with the premises.

4.6 Information to Third Parties

This section contemplates incremental charges to third parties for the provision of data with detail not currently being collected. This contradicts the minimum requirement which is hourly data. The preservation of the raw data in this format is essential. Should data be compressed for billing purposes, the LDC must ensure the integrity and availability of the original hourly data. The notion of incremental costs is an unjustified financial disincentive to customers and retail providers of products and services which will be focused on demand side management and demand response, programs that are deemed essential by the Minister. This direction would create a barrier to the achievement of the Minister's objective.