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Mr John Zych
Board Secretary
Ontario Energy Board
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Re: Smart Meter Initiative – Further consultations – Board File No. RP-2004-0196

The OEB is seeking additional comment regarding two-way communications for "Smart Meters". A significant part of my professional background has been specifying and commissioning Supervisory Control And Data Acquisition (SCADA) systems for governments and municipalities – all require communications networks. In Alberta, energy continues to be deregulated, and this situation is an ongoing driver for new approaches to energy information and its impact on customer behavior.

The draft Smart Meter Implementation Plan is clearly generated by those in the industry familiar with the economics of current product offerings, and the strategy of starting implementation with the largest users is good economically. Suppliers are aware of those economics, and the OEB need not plan for large customers – they are capable of proper Demand Side Management (DSM) and Demand Response (DR) via contractors and engineers. Time linked incentives give larger entities (> 200 kW) reason to plan energy timing into their DSM & DR programs. Cost effective communications systems are available and justifiable for them, if they aren't in place already.

Achieving effective Demand Response in the larger population - down to individual households - requires much larger scalability and better economics. Changing a meter where there is little likelihood of a change in behavior (can providers know before changing a meter?) will not lead to improved demand or efficiency, and many millions have been spent on promotion and public education in past decades with limited behavior impact. Getting desired changes in energy consumption behavior could use the analogy of "carrots and sticks", with proactive energy information (such as CPP's) going to customers as a "carrot" with "sticks" of terminating service (from pay-as-you-go meters), large demand charges and blackouts. Hitting customers in the pocketbook after the fact is bound to have repercussions – some unrelated to changing consumption behavior.

From my reading of the information posted on the OEB website, it appears that the minister is interested in managing demand and more efficient use of electricity supply, but no reference is made to the fact that the population's energy demand at specific times of the day is a root cause of demand peaks – consumption at certain times is worse for the grid than others. To date, the most significant impact with Ontario energy consumers seems to be where remote displays are used. It should follow that getting energy information to remote displays could also be a substantial "carrot" and may be the most important factor in changing consumer behavior. The larger goals of energy conservation, particularly at specific critical times may also be achieved using a remote display.

Scalable, proactive information delivery should recognize that utility grids by nature serve fixed geographic locations and areas. The nature of messages is a key consideration. Messages going out across the province (from where, their uniqueness and frequency), the messages to come back (from each location, to where, and how often) and utilizing existing infrastructure where possible are key to keeping the system cost within reason. In this case utility market and CPP messages going out to large geographic areas would be identical, short, infrequent, need "real time" delivery and display, and would come from the market operator in a one to millions relationship. The messages coming from each location would be unique to the customer, and would be a private transaction for trade purposes (Measurement Canada regulated) between the customer and their energy provider .....a much different structure with privacy (PIPEDA?) implications and related system security requirements.

The OEB could provide guidance and a plan to implement Smart Meters by establishing desirable **performance** characteristics and metrics from pilot projects to be run by LDC's over the FY 2005, **including** measurable characteristics like peak to baseline energy demand ratio, total cost of installation, ongoing maintenance costs, monthly communication charges compiled as a total cost of energy management. These metrics could be established at a community/substation metering level as well as each individual meter location, speeding up deployment and reducing long term costs, and potentially using community/social learning to customers' advantage.

Issue #1 – Benefits and Drawbacks of mandating a two-way communication network

In mandating a two-way communications network, the interpretation of two-way could easily be misunderstood to mean a single communication provider with a specific technology base. Such a mandate is easy to state, but could elevate the cost to customers substantially upon OEB endorsement, and slow dissemination of utility market information and Smart Meters – limited by device approvals at Measurement Canada and the providers' ability.

In specifying and/or selecting a communication network, there are fundamental concerns of performance, quality of service (QoS) coverage, information security/privacy and cost, both installation and monthly. Often overlooked are location based addressability (sending messages to specific geographic areas), supporting (open) protocols and applicability of available infrastructure – these topics are better left to the industry to sift through, with OEB monitoring and sharing results

Communications in each direction (is this two-way?) are needed for different reasons, have different requirements and will likely be served with better performance and cost by different providers. Again the OEB could suggest technology independent performance and cost criteria while monitoring and sharing results

Issue #2 – Should electricity distributors be responsible for operating the communication network

Trends in the communication industry that will likely impact meter data initiatives are Voice over Internet Protocol (VoIP), and BroadBand Over Powerline (BoPL). Recent rulings by FCC in the U.S. have allowed substantial R&D efforts to move ahead which will impact metering initiatives. As the level of sophistication rises, for OEB to require LDC's to retain trained staff to operate and maintain a network will become an increasing burden to rates in some areas of the province

The LDC's should have the option of contracting communication services that meet their needs as required.

Issues #3 and 4 – Communication operators and rates

This issue should be addressed by a performance specification from potential suppliers for the components of the communication requirements they can deliver. Broadcast/multicast of operating messages to a remote display (from IMO, LDC) and messages to meters (synchronization, time-of-day). Return messages from meters to billing entity – energy providers, etc. Collection and maintenance of local energy consumption could be done on local computers by interested customers, or as a value added service from energy providers as part of their offerings and contracts.

Issue #5 – Would an open data protocol aid development and availability of end-devices and services?

An open (published?) data format (not a protocol) and meter information format is key to protecting customers' investment – there is no guarantee how long a given supplier will be in business. For a good example of an international protocol independent standard, http://www.motion.aptd.nist.gov/ shows how the instrumentation industry manages multiple sensors effectively, on any communication network. For the meters themselves, there are CSA and ANSI/IEEE standards already in place.

Some of the replies to the OEB have mentioned the use of XML as an open data protocol, and it is important to note a Smart Meter that is communication ready could use micro-server technology (Dallas TINI is one example) to serve meter data DIRECTLY to the local customers personal computer or hand-held PDA using local wireless TCP/IP links via UWB, Bluetooth, 802.11, IR links, etc. Customers can easily collect and archive data locally, do their own analysis or have an energy provider assist them……at any time they prefer, all without LDC's having to add staff for systems that may see minimal use (you have to go there after the fact to look at it) and costs which would pass through to higher rates. Software for home energy evaluation has been around for some time, an example is http://energygauge.com/USARes/default.htm and commercial contractors and engineers provide these services to larger customers whose energy consumption justifies it.

I hope these comments are helpful to the OEB in responding to the Minister's request.

Sincerely,
(Original signed by)

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