November 26, 2004

John Zych
Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street
26th Floor
Toronto, ON M4P 1E4

Re: RP-2004-0196

Dear Mr. Zych:

Please accept these comments of the Demand Response and Advanced Metering Coalition (DRAM) in response the Board's November 9, 2004 notice of Comment on the Smart Meter Initiative (RP-2004-0196) Draft Implementation Plan. Enclosed are 9 copies of our comments as well as an electronic copy of these comments.

Thank you for the opportunity to comment. Please direct any questions to:

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Sincerely,

Dan Delurey

Dan Delurey
Executive Director
DRAM Coalition

Comments

Of

Demand Response and Advanced Metering Coalition (DRAM)

On

Ontario Energy Board Draft Implementation Plan

For

Smart Metering Initiative

RP-2004-0196

November 26, 2004

A. Introduction

The Demand Response and Advanced Metering Coalition (DRAM[1]) welcomes this opportunity to provide comments on the November 9, 2004 Draft Implementation Plan for the Ontario Smart Metering Initiative. Our comments address both technical issues and cost estimates (both capital costs where we conservatively estimate that smart meter capital costs will be 40% lower than the amount stated in the Draft Plan and scale economies).

DRAM was a commenter on the July 19, 2004 OEB Staff Discussion Paper and subsequently became a member of the Strategy and Planning Working Group that helped development the Draft Implementation Plan. Based on its involvement to date, DRAM wishes to begin its comments by commending the Ontario Government on two counts: First, its foresight and vision in establishing the Initiative will allow consumers and businesses to better manage their energy use. In turn, this will provide a new energy

[1] DRAM is a diverse group of parties from the U.S. and Canada that is focused on providing information to policy makers and other audiences on demand response and its enabling technologies. More information about DRAM may be found at www.dramcoalition.org.

resource to the Province as it seeks to put together a diversified, balanced energy plan. Second, the OEB has moved the Initiative forward expeditiously yet diligently by tapping into the expert and stakeholder community for assistance. As a result, a well-balanced plan has evolved.

The fact that the stakeholder process was a successful endeavor is evident in the fact that the Draft Plan contains many constructive changes and decisions as compared to the OEB Staff Discussion Paper that was the starting point for the comment process Among these are the following:

O The OEB has decided that it makes the most sense to implement and deploy the smart meters and communications equipment through Local Distribution Companies (LDCs) rather than competitive meter operators. This is appropriate in that the overall objective of the Initiative is to get smart meters deployed as quickly and as cost-effectively as possible so that they can be coupled with time-based pricing (i.e. demand response) and be used to reduce and manage electricity consumption. Via mass procurement and universal deployment, LDCs are best equipped to deploy smart meters and communications equipment at the lowest cost. They are also in the best position to exercise judgement and flexibility as to what technologies and products, and combinations thereof, make the most sense for their particular service territory and its characteristics.

O The OEB recognizes that important scale economies exist with respect to smart meters, and it provides encouragement to LDCs to form and join buying groups. While the OEB appears primarily focused on hardware relative to this issue, it also has set the stage for the major economies that exist with respect to software, data servers, and meter data management to also be captured. . These economies extend to data collection and operations of data-related systems. The cost per meter for these system-level functions can be more than an order of magnitude lower for a million-meter system as compared to a 100,000-meter system.

O The OEB has rightfully rejected meter contestability. Whereas the idea of competition in the provision and operation of meters on a meter-by-meter basis may seem at first glance to be a proposition that would lead to lower costs and rapid market intervention by competitive suppliers, in reality it means a more expensive (5-6 times more expensive) and slower deployment than via mass deployment through the LDCs based on experience in the U.S. with contestability. Moreover, as the OEB has recognized, the economic advantages of competition can be still be seized via the competitive procurement processes of the LDCs, not only for the meters themselves but for meter related equipment and services that can be competitively outsourced.

O The OEB has determined that the minimum standard for a smart meter be that it can measure consumption on an hourly interval basis. This is an important threshold for the OEB to set in terms of making an investment for the future, avoiding investments in old technology, and ensuring the widest possible range of customer-rate options can be supported. As was evident at the OEB-sponsored Vendor Day held in September, where every presentation from the metering industry talked of their capability to accomplish hourly measurement (at a minimum) with their technology, the vast majority of metering and communications suppliers consider hourly to be the minimal standard and have developed their products and services accordingly.

B. Comments on Issues Raised in Draft Implementation Plan

DRAM offers the following comments on specific issues raised in the Draft Plan:

1. One-Way versus Two-Way Communications

Both the Directive issued by the Energy Minister and the OEB Staff Discussion Paper called for two-way communications to be a key component of a smart metering system. Yet the Draft Plan has chosen to have a "one-way" system be the minimum standard, without sufficient explanation as to why it shifted from its previous position. By setting one-way as the minimum standard, LDCs (which during the stakeholder

process to date have continually expressed their desire for fully-functional advanced metering systems) will be forced to make a business case showing for what should otherwise be an accepted baseline condition (i.e., two-way communications).

The overall goal of the Smart Meter Initiative is to enable functionality, not a particular technology (i.e., one- or two-way). The best course of action for the OEB on this particular issue may be not to dictate a decision between one and two-way communication but instead focus on the functional requirement. The OEB report calls for only 95% data accuracy, which is far below existing billing standards. These standards require 98% accuracy for electromechanical meters and 99.5% for solid-state meters. Thus, the OEB should set comparable standards for data accuracy and availability, which are key elements in making the SMS work to support dynamic pricing programs, where customers deserve the highest levels possible to ensure that they are fairly billed.
In this approach, the Board would simply mandate data availability and accuracy standards and allow vendors and distribution companies develop solutions to meet those standards.

The long-accepted standard for meter accuracy in Canada and the U.S. has been 98% and that should be a floor in such a standard. With solid-state ANSI standards at 0.5% accuracy, 99.5% is not an unreasonable standard. As to a data availability standard, DRAM recommends that 95% of all data be available by 8 am on a next day basis, and 99.9% be available within 72 hours.

2. 10,000 Units Previously Deployed

DRAM understands and agrees with the apparent intent behind the establishment of a threshold for technology/product eligibility, although given the broad flexibility provided LDCs elsewhere in the Draft Plan, and the encouragement of pilots to test technology, the existence of a threshold may be somewhat inconsistent. However, the specific details of how this threshold is specified are significant and if they are too restrictive, the number of eligible vendors will be reduced, competition in offerings to

LDCs will be reduced, and new and innovative technologies that are proven by most other measures will be prevented from being considered in Ontario.

Specifics to be avoided include the following:

a. The requirement should not be that 10,000 units of a specific product/technology must have been deployed at one LDC or in one particular geographic area. The requirement should be 10,000 in total.

b. The requirement should not be set based on the one-way communications capability set forth in the draft as a minimum standard. In other words, the requirement of 10,000 installed should be able to be met by any advanced meter components that have been installed, whether they be one-way or two-way.

c. The requirement should not be one that ties the previous deployment of smart meters to time-based pricing. In many cases, utilities have deployed smart meters without time-based pricing. While a smart meter enables time-based pricing, such pricing is not required to determine whether the product/technology "works", which should be the only objective of the 10,000 unit eligibility threshold

d. The requirement must not be 10,000-point installation of exact systems (i.e. combinations of specific meters and communications products). Meters and communications systems among vendors are matched for specific purposes and specific LDC applications. If there is to be a 10,000 threshold, it should be for the *components*, and not a specific system or combination of components.

3. Measurement Canada

Care must be taken to ensure that metering *system* approvals are expedited, or that conditional approval is granted, where components of the system have been individually approved. There are cases of where a meter and a communications module have been

approved by Measurement Canada as individual components but not approved as an integrated system. Such integrated systems will be sought by LDCs to implement the Metering Initiative and thus a Measurement Canada process that accommodates this situation should be prescribed.

4. Creation of a >50 kW to 200 kW class of customers

DRAM was surprised to see a third category of customer size (>50 to 200kW) in the Draft Plan. In the OEB Draft Plan, and throughout the Working Group process, two customer classes were proposed and contemplated. DRAM is aware of no party putting forth a proposal for the creation of this mid-size category and questions the creation of such. DRAM is not aware of any jurisdictions that have established such a third category and, in any case, is not aware of any compelling reasons to create this category. For simplicity and cost minimization, we recommend holding to the originally-proposed two categories (above and below 200 kW).

At the same time, should the OEB combine these two classes, it should not eliminate the requirement (addressed in #5 below) that all communications options should be considered for customers > 50kW.

5. Communications options for > 200 kW customers

DRAM understands the desire of the OEB to move forward expeditiously with smart meter deployment so that the ultimate objective of having the meters in place – implementation of time-based rates and other demand response options – can be achieved as soon as possible. DRAM further understands the logic of focusing initially on the large customer class for meter deployment, given that many of these customers already have advanced meters, and given that deployments to customers in this class are not subject to the cost economies of mass deployment that are present with other customer classes.

DRAM disagrees, however, with the choice that the OEB has made to prescribe that conventional telephone communications be used for these near-term deployments to large customers. Dedicated telephone lines are only one of the options to be used in a smart metering system for large customers. There are many other options (e.g. radio, PLC, wireless, etc) that have been proven in large deployments to not only work with large customers, but to do so more economically. Dedicated telephone line communications should not be excluded from consideration but neither should any of these other options. At present, the Draft Plan would have no accountability on the part of LDCs to demonstrate that these other options were considered. In fact, the Draft Plan goes beyond that to, as previously noted, *prescribe* telephone as the communications technology of choice. In almost all other parts of the Draft Plan, the OEB has appropriately steered clear of making a technology choice, instead choosing to establish functional standards, and require a demonstration of the appropriateness of an LDC's technology choice. That should be the case here. The OEB should establish a system where LDCs and their customers benefit from having a choice of all customer communications options for this class of customers.

6. Minimum Standards versus Business Case

The OEB has taken an approach in the Draft Plan to establish minimum standards which, if met by an LDC in its plans to implement the Initiative, allow the LDC to proceed without putting forth a business case. This approach is admirable, but yet it can only work if the minimum standards are set appropriately and if LDCs are provided with a clear and reasonable path to demonstrate and win approval of plans that go above and beyond the minimum.

As DRAM has noted earlier in these comments, the OEB may have "set the bar too low" when it designated a one-way communications standard (as discussed earlier in these comments, this standard should be replaced with a functional requirement). Given that LDC comments made on the Initiative to date indicate their desire to deploy two-way

systems, these LDCs will be forced to leap additional hurdles to accomplish what they otherwise consider to be a minimum functionality when it comes to communications.

Beyond that specific issue, however, recognition must be given to the fact that while demand response is the primary driver for the Smart Metering Initiative, the deployment of smart metering systems by Ontario LDCs represents an opportunity to seize other opportunities and benefits that come with the technology choices they will be making. These include a variety of customer service and system management capabilities as well as the obvious benefit of automated, remote meter reading. Just as a utility or a political jurisdiction that installed metering technology that only addressed meter reading could be criticized for not enabling the benefits of demand response to be captured, a focus solely on demand response capability can lead to other benefits of smart metering being left out of the process.

Absent changing of the one-way minimum standard proposed, or acceptance of alternative approaches such as that DRAM proposed in this document, DRAM encourages the OEB to provide as much encouragement and flexibility to LDCs as possible to make technology and deployment choices that capture as many benefits as possible while still demonstrating overall cost-effectiveness.

7. Smart Meter Costs

The Draft Plan cites potential metering costs of $3 to $4 per customer per month and total costs of approximately $250 per installation (equipment, installation and back office included). DRAM believes the total cost figure to be at the high end of the possible range of costs for the Ontario deployment. Even assuming significant additional back-office upgrade requirements of $15 per point (updates to billing, etc.), this number is very high. Based on costs of deployments in Pennsylvania and many other states, the cost is expected to be at least 40% lower – likely in the range of $150 CN.

DRAM agrees with most of the operating cost estimates. However, three categories of operating costs should be significantly lower. First, at a 40% lower capital cost, the maintenance cost (still about 1% per year of total capital) is also 40% lower. Second, data storage, provided that scale economies are captured (see below), should be less than half the estimated cost included in the report. Third, usage data presentment on the Internet can be a fraction of the number estimated, again provided that data management scale economies are captured.

8. Grandfathering and Retrofitting

Many existing meters can be retrofitted to become smart meters. However, such should not be the default situation. Depending on the situation, meter replacement may result in technology being deployed that provides additional functionality and benefits that warrant examination in a business case.

9. Economies of Scale Via Buying Groups

The Draft Plan allows and encourages LDCs to form buying groups to take advantage of the economies of scale that are available when procurement is done in higher volume. Meter and communications hardware costs can indeed benefit from buying group economies for two reasons. The first is quantity discounts. The second is shared communications infrastructure. Virtually all smart meter communication solutions have local neighborhood nodes that support from 500 to 10,000 meters. To the extent the communications coverage provided by these nodes includes customers from multiple LDCs, savings are realized when those LDCs share the communications network.

An equally important area of scale economies is in IT systems and smart meter system operations. There is a base cost for a minimum IT system to support the Government's goals for smart metering. This includes data collection software, network management software, asset management software, data validation software, data translation software, EBT interface software, outage data management software, unaccounted for energy detection and management software, databases for meter data

storage and system management, a database of Internet data presentation, an application for Internet data presentation, system servers, disaster recovery equipment, and so on. The larger the customer base served by the IT system, the smaller the cost per customer. Thus, a five-million dollar IT system is $50 per customer for a 100,000-customer utility, but only $2.50 when serving two million customers.

These economies also apply to IT operations. Since different expertise is required to operate different systems (data collection, databases, Internet data presentation, etc.), personnel costs are not scalable below a certain point (i.e., at least one person is needed for each major area of operations expertise). Facilities maintenance is another important area of operational economies, including maintenance of application and database servers, periodic server upgrades to avoid obsolescence, building and power systems maintenance, backup/disaster recovery facilities maintenance, and so on. Finally, and critically, scale economies greatly affect process automation. A multi-million-dollar project to automate, for example, data handling related to Internet usage data presentment would be cost-prohibitive to a small LDC, which would then likely rely on manual processes. The manual approach avoids the upfront cost, but significantly increases ongoing costs. The automated approach incurs the upfront expense, but then reduces operating costs to very low levels; for example, Internet usage data presentation could cost perhaps 20% of the estimated $0.50 per customer-month in the OEB report if all processes are fully automated.

C. Summary

The Smart Metering Initiative places Ontario in not only a national leadership position but one of world leadership as well. But it is important, particularly in light of some of the criticism aimed at the Initiative to date, that all parties understand that the Initiative is not a premature effort in terms of the technology in question being available. Large scale smart metering systems have been deployed in the U.S. and elsewhere in the world to date. Smart meters and communications systems have been tested and are available as off-the-shelf products as opposed to being products just emerging from

research and development. Costs of such systems are lower than commonly assumed, reflective of their established product status.

What is important about the Smart Metering Initiative is the recognition by Ontario of the significance of having smart meters in place to be able to enable customers to respond to price signals and other incentives to modify the way they use electricity and thereby save on their electricity bill. With much evidence accumulated to date to show that customers will respond to such signals and want to have more control over their electricity bills, the Smart Metering Initiative is not just about meters or about new technology. It is about empowering customers to become a dynamic resource in the Province's plan – one that will lower prices and increase reliability. It is about taking a step to invest in Ontario's future by putting in place not only smart meters, but a key component of a smart grid and smart electricity system.

Viewed from another standpoint, to not pursue the Smart Metering Initiative at this point when it is seeking to rebalance its electricity portfolio would be a missed opportunity for Ontario. Not employing demand response on a going forward basis would lead to unnecessarily higher costs and a less reliable system, and would leave the Government open to criticism that it was not diligently pursuing all options to optimize its electricity plan. Smart Meters directly translates into smart energy policy and thus Ontario deserves praise for its vision in this area and for its pursuit to make this vision a reality.