

Comments
Of
Demand Response and Advanced Metering Coalition (DRAM)
On

Ontario Energy Board Staff Discussion Paper
Implementation Plan for Smart Meters in Ontario

RP-2004-0196

August 13, 2004

The Demand Response and Advanced Metering Coalition (DRAM)¹ welcomes the opportunity to provide the Ontario Energy Board (OEB) with comments on its July 19, 2004 Discussion Paper in RP-2004-0196. DRAM has previously provided comments to the OEB on the topic of smart metering and demand response and hopes to continue to provide input as the process continues.

DRAM first wishes to applaud the Ontario Government for the initiative that it has taken on smart metering. It puts Ontario not only in a national leadership position but one of world leadership. Its smart metering initiative seizes the opportunity to use new technology to achieve several objectives: the enabling of its electricity consumers and businesses to better manage their electricity use and lower their bills, the harnessing of the vast potential of these users to be a dynamic resource to the electricity system, the improvement of the environmental profile of electricity supply, and the creation of a smart grid that increases reliability and optimizes electricity delivery.

While the metering initiative is a bold vision, it is not an inappropriate or premature one for Ontario to pursue. The technology is available now, the evidence exists that customers want the information and capabilities that smart meters provide, and the dynamic pricing that such meters allow has been

¹ DRAM is an organization formed in 2001 for the purpose of providing information to policy makers and the energy community in general on demand response and advanced metering. Its members include utilities, technology companies, and public interest groups. More information on DRAM, including a membership list, can be found at www.dramcoalition.org.

demonstrated to lead to significant peak reductions as well as overall reductions in electricity use. Smart metering and demand response represent components of a balanced energy plan and an optimized electricity system and to not pursue them at this point in time would be a missed opportunity for Ontario that would lead to an unnecessarily higher cost and less reliable electricity system and market in the future.

DRAM offers the following comments on specific elements of the Staff Discussion Paper. DRAM stands ready to provide additional comments and provide additional information to the OEB as it continues this process.

Procurement Strategy

The OEB is correct to pursue an implementation plan that captures the benefits of economies of scale in the procurement of the smart metering technology required. However, this pursuit must be balanced with the design of a practical and workable implementation plan that will allow flexibility on the part of utilities to choose metering technologies and systems that best meet their particular needs and desires while meeting common specifications set forth by the Province.

It may be appropriate for a central entity to play a role, but this role must be a measured one and not involve the creation of a central buying entity that would undertake a “winner-take-all” bidding process. There has been tremendous innovation and product development in the metering industry in recent years and as a result there are a number of different technologies, systems and products, including different ones for different types of customers, which all can achieve the functionality and capability requirements that Ontario desires and which its utilities and customers will want to choose from in addressing their own particular needs and situations. Armed with the specifications set forth by the OEB, a central entity might serve the process best by acting in a coordination role and providing technical assistance to utilities as they take steps to meet the directive

and procure technology that is most appropriate to their particular needs. It might also serve as a process driver in terms of tracking progress against targets.

It is important to recognize that this would not result in a “hodge podge” system of metering and communications in the Province and would not lead to incompatibility of data or functionality. Just as a computer network may consist of a number of different hardware and software components and applications yet still utilize common communications protocols (e.g. the internet), achievement of demand response and a smart grid will be strengthened – not threatened by allowing flexibility to distributors in their choices of components in the smart metering systems that they deploy.

It may be the case that group purchasing is appropriate where similar distributor requirements have been identified. Important, however, is that such groups not be prescribed and be formed with the input and coordination of distributors that wish to participate in them.

Implementation Priorities

DRAM recognizes that there is logic to the idea of including new homes as an implementation priority. To install old technology at the point of first installation would be a lost opportunity and would increase costs due to the need to eventually replace the system with a smart meter at a subsequent date. A stranded cost issue would also potentially be created. That said, it is important to recognize that new homes can represent scattered and disaggregated points that have been shown to be a costly approach to deploying smart metering. Also, such a scattered deployment may have implications on the communications options for such homes. In any event, should the Province move to make new homes a priority, it would seem important to set a date for the commencement of such a new home requirement that is consistent with the overall implementation and procurement plan set forth by the OEB and ultimately adopted by a distributor. Otherwise, coordination and cost-saving opportunities might be lost.

Further input from both the metering and distributor community is important on this issue.

DRAM also concurs with the appropriateness of targeting congested areas where peak management is most needed. With one of the core targeted benefits of smart meter installation being the enabling of dynamic pricing and other types of demand response, it only makes sense to target such areas. This strategy has been pursued in the United States to date in places such as Southwestern Connecticut where transmission and generation constraints have led to demand response programs specifically targeted at that geographic area.

Pursuing a geographically sequenced strategy is not inconsistent with equity considerations with respect to allocation of costs and benefits to customers. When only some customers undertake demand response actions which lower peak demand, all customers paying wholesale market prices benefit. To have all customers paying to create a benefit for all customers is acceptable.

DRAM may view self-selection in a different light than that conveyed by the Staff Discussion Paper. As in the case of competitive metering, a disaggregated, ad hoc approach to meter installation increases the costs of such dramatically. If such installation is matched with participation in a demand response program, the costs and benefits picture begins to brighten, but as the Paper points out, only if the demand response gains from the participating customers are significant and not diluted by the early entry of “free riders” with low on-peak use. Yet another factor is the cost recovery option chosen for these customers, i.e. whether there is a customer contribution to the cost of the meter. The inclusion of the latter can address the free rider issue but yet may be inappropriate for other reasons. Finding the right answer to how to include some degree of program-associated meter installation should be subject to specific detailed discussion as the implementation plan is further developed in the coming months.

Interim Targets

DRAM believes that the implementation targets, in total and on a monthly basis, are achievable and appropriate, assuming an implementation plan which does not include competitive metering and which provides flexibility in procurement. Regarding the latter issue, the development of a major centralized procurement entity, while aimed at cost reduction, might actually be a constraint to rapid deployment and the possibility of this should be considered.

Measurement Canada

DRAM recognizes and acknowledges the current system of meter certification via Measurement Canada. What is obviously important is for the system going forward to be able to match both the timing and capacity needs of the implementation schedule. There may or may not be other options to meet both the necessary standards of time and quality under Measurement Canada coordination, but given the scope of the deployment envisioned, DRAM would submit that such should perhaps be explored in the detailed discussions to come on the implementation plan.

Metering Functions

DRAM concurs in general with the stated implementation objective of “standardization with flexibility”. DRAM believes, however, that functionality and capability requirements – as opposed to technical standards in the strict sense – is the correct approach for Ontario to pursue.

By prescribing requirements for functionality and capability, the appropriate technology will be installed and all electricity users will be enabled for demand response, and distributors will capture all of the operational benefits that are possible through a mass deployment. Whether all capabilities are actually deployed at each premise at all times is a different issue, particularly in a major,

multi-year deployment of both smart meters and the dynamic pricing that will accompany and complement such.

DRAM urges the OEB to focus on smart “metering” as opposed to smart meters as it develops these requirements. To do so appropriately broadens the discussion to a view of the meter and communication technology as components of a smart metering installation. Not all of these requirements must necessarily be met by the on-site metering device itself. They may be met by the combination of the meter and communications system and other technologies and options that might be deployed. The metering industry has seen an explosion of innovation and technology development in recent years, particularly in the area of communications, and the result is a wide range of options for achieving the same functional requirement. These different options may bring with them different additional capabilities and functionality that may be desired or necessary by some distributors and customers but not needed or wanted by others.

It is also important to delineate between the requirements for large customers as opposed to those for small, mass-market customers. The need and/or desire for data and the opportunity and/or ability to modify usage and shift demand among different periods varies not only between customer classes but within customer class based on particular end uses and business types. It is also not always the case that the business customer is the one most capable or inclined to participate in demand response activities. While program participation in the U.S. to date shows more activity in the C/I sector, this has been by design under the strategy of capturing the “low hanging fruit” whereby large, single-point savings potential would be more meaningful and achievable from the standpoint of both customer and provider. Yet there is evidence that mass market customers may be more inclined to shift peak usage than large customers and that the sector as a whole offers a greater total potential than that in the C/I sector. The bottom line is that different technologies and products and services

have been developed to address these varying needs between and within customer classes, and functionality and capability requirements should be designed accordingly.

DRAM offers the following comments on functionality and capability requirements:

Frequency of Measurement

DRAM believes that a smart meter for the mass market customer should be one that has the capability to measure consumption on at least an hourly basis. We believe that the capability for a large C/I customer should be on a 15 minute basis.

Frequency of Data Retrieval and Access by the Distributor

DRAM believes that smart metering systems should be those capable of providing data to the distributor on at least a daily basis.

Frequency of Information Provided to the Customer

The capability for customers should be that they receive interval measurement data from the distributor on at least a monthly basis. Customers wishing more frequent access to data can be provided with such by accessing data from their distributor via web access to a secure distributor site, or via other options. The important guideline is to make the information easily understandable and easily obtainable in close proximity to planned or past purchases. Some customers will want it more frequently than others and may want to receive it via different communications media.

DRAM does not believe that a requirement should exist for customers that they be capable of accessing data directly from the meter itself. Such a requirement would unnecessarily preclude metering systems that can meet the required customer and distributor needs and desires in other ways.

Price Signals

Key to smart metering and demand response is to provide information that the customer can act upon, whether to better understand and manage their energy usage or to actively modify their usage in response to price signals.

Key to this is the customer receiving a price signal that indicates what the time-based cost is of the electricity purchased, and receiving in as close proximity as practicable and cost-effective to the actual consumption that will take place or which has already occurred. Important here is that the signal needs to be received by the customer – not the meter per se. It is possible for the meter to serve a gateway device and for automated control devices to be deployed which can respond automatically to a price signal. But it is also possible for customers to receive a price signal via a wide variety of means under a wide variety of time bases – ranging from real time signals and displays to a properly presented retrospective display on a monthly bill. The nature of the price signal will also obviously be a major factor, and that will be the outcome of the concurrent pricing and rate design that is underway by the OEB. Different applications of dynamic pricing may require or be better supported by different types of price signal conveyance.

Bi-directional communication

Thus DRAM believes that bi-directional communication must focus on the communication of data between the distributor and the metering system for the purpose of data retrieval and access, and for the purpose of changing measurement parameters. Bi-directional communications need not be defined

as a requirement that a price signal be sent to the meter. As the Staff Paper points out, it is possible for bi-directional communications to serve as a platform for other services and capabilities, including those not related to demand response or even to electricity provision. Distributors and customers that desire such capabilities should be allowed the flexibility to have such.

Changing Metering Parameters

DRAM believes that a smart metering system should be one where the measurement parameters of the metering system can be changed without removal of the meter.

Data Storage

As stated above, DRAM believes that the metering systems deployed should be capable of hourly measurement for mass market customers and 15 minute interval measurement for commercial/industrial customers. Data storage by the distributor for one year on a rolling basis would be appropriate.

Ownership

DRAM believes that the best approach to meter ownership is one where the distributor is the entity that is responsible for the metering function and the provision of technology and related services. To do otherwise will make the Ontario effort more costly and longer to implement.

Many states in the U.S. moved to meter contestability in the late 90's commensurate with the liberalization of their commodity markets. The push for such came largely from retail marketers and other parties that saw ownership and control of the meter as a way to better secure customers but also as a potential business opportunity in its own right. Those parties that did pursue

competitive metering found that the cost of installing the meters on a one-by-one, ad hoc basis led to higher than acceptable costs, with costs 5-6 times higher than via a mass deployment being cited. Also, utilities became understandably wary of making new investments in metering and creating new potential stranded investment. As a result, the U.S. has largely pulled back in this area. Moreover, some of the leading retail marketers now talk in opposition to competitive metering and acknowledge openly that what they really want is access to the data that a smart meter provides, so that they can have quick and accurate settlements and offer new pricing products to customers. They want the meter to be in place and they now realize that the best way for that to happen is via mass deployment via the existing utilities.

All of this is not to say that distributors must own all of the system and must internally provide all of the necessary related services. Some distributors may wish to enter into leasing or outsourcing arrangements and they should be afforded the flexibility to do so. The primary objective should be for the metering function to be the responsibility of the distributor.

Cost Recovery

The Smart Metering Directive has been put forth in the context of a comprehensive, multi-faceted plan to rebalance and optimize the provision and consumption of electricity in Ontario. It is being pursued for reasons ranging from economic to environmental.

Smart metering is one of the enabling platforms by which the Province will achieve its objectives in this, as only with smart metering can time-based pricing and other demand response options be offered to customers, and only then can customers be harnessed as a resource for peak demand management.

As such, it is important that the first tenet of how to pay for smart meters must be that distributors be provided with assurances that they will be able to recover appropriate costs of such an implementation that are not offset by an operational benefit that accrues to them, including any unamortized costs on their books for their existing metering fleet. This is not just a question of recovery of the capital costs of such a deployment. There is also the issue of lost revenue as customers begin to reduce their overall usage via demand response.

First, however, DRAM wishes to comment on the metering costs themselves. DRAM understands that cost numbers for advanced metering used in discussions to date regarding the Metering Directive may be too high. DRAM understands that estimates of \$400 per meter/premise have been used, a number which DRAM finds much too high. It may be that the origin of this number may be that of an average for different types of metering systems for different types of customers, both large and small. Indeed, the costs of the appropriate meters for residential customers are different than those appropriate for large industrial customers. However, it appears that the number of \$400 per meter/premise may be being used in the Province as a number for mass market metering. In that context, DRAM wished to introduce costs (in U.S. dollars) that it believes are appropriate.

DRAM submits that the cost of a mass market (residential and small commercial) smart meter, with the measurement and communications capabilities envisioned by the Metering Directive, to be from \$45 to \$100. DRAM estimates that the installation costs for such meters can range from \$5 to \$10 per meter on a mass deployment basis. (We estimate that the cost for such under ad hoc scattered deployment to be in the range of \$50-100). For the communications network, including installation, we estimate costs to fall between \$20 and \$100. The total cost range for all components together would be \$70-\$225.

For large commercial and industrial customers, DRAM submits that meter costs could range from \$300-1000. We estimate that installation costs could be \$50-100 under a saturation deployment and from \$150 to \$250 under a scattered deployment scenario. The costs for the communications network would be in the same range as for the mass market (\$20-\$100) resulting in a total cost range for all components together of \$370 to \$1250.

There are many different factors that dictate the costs of an actual metering deployment and these costs should only be used as reference points. DRAM believes, however, that current cost numbers being discussed in Ontario for mass marketing smart metering could be as high as four times the costs that might be expected and submits these cost estimates to counter what we understand to be usage of inappropriately high cost estimates.

How to pay the costs is a separate issue from distributor assurance on cost recovery and involves decisions on the timing and method(s) used to fund the expenditures required by a smart metering implementation. DRAM believes that since all customers benefit from a smart metering system, particularly when combined with demand response, payment approaches which involve all customers sharing in payment are appropriate. As such DRAM believes that a rolled in rates approach may be appropriate for consideration. A separate but related question is whether such a charge should be broken out from rates, and whether it should take the form of a wires charge. DRAM believes that wires or "system benefits charges" are appropriate for funding smart metering and demand response and that they are a logical extension of their use in funding energy efficiency programs.

As the metering directive envisions deployment of smart metering systems to all customers, and therefore sets a foundation for rolled in payment and cost recovery, it is not clear whether separate customer payments would be appropriate, at least for systems meeting the core functionality and capability

requirements. It may be that customers who want to receive a meter ahead of schedule to which they are assigned, or who want to receive a system with additional capabilities could be charged for the additional cost of such.

DRAM believes strongly that demand response and energy efficiency are complementary and intertwined. Together they form the twin pillars of demand side management (DSM). Energy efficiency has been defined as long-term demand response in some arenas in the U.S. Demand response has been shown to not only shift usage away from peak periods but to also result in an overall “energy conservation effect”. Moreover, smart meters provide end users with information that users need and want to be able to better manage their energy use; these meters help address the long-standing challenges of “how can you manage what you cannot measure”. Thus, DRAM believes that smart meters should be eligible for energy conservation funds, including those available to distributors in the third tranche. It may be that not all of the costs of such meters should be eligible, given that much functionality is gained outside of the area of energy efficiency, but to rule out such technology from such funding would not be appropriate.

Additional Information

In the Staff Discussion Paper, the work of the State of Victoria in Australia is cited as a reference point which can be informative to the process underway in Ontario. DRAM wishes to also introduce the work of the State of California in the U.S. as another reference point which may be appropriate for informational purposes in the OEB process. California has underway, and is much of the way through, a process aimed at enabling all users in the state with smart meters and demand response capabilities. Interested parties may obtain further information about the California proceeding by accessing the following link <http://www.cpuc.ca.gov/proceedings/R0206001.htm#decisions> on the California Public Utilities Commission Web Site. (Note: The part of the proceeding most

applicable to metering is that dealing with Advanced Metering Infrastructure or AMI). DRAM is prepared to introduce and discuss additional information about the AMI component of the California proceeding during the next stage of the OEB process to the extent that the OEB believes it would be appropriate to do so.

Summary

DRAM believes that the Smart Metering Directive can be implemented in a cost effective manner and on the timetable desired by the Province. DRAM believes that the OEB is for the most part already on the right track in how to achieve both objectives based on its discussion paper. DRAM looks forward to being a part of the OEB process subsequent to this submittal of comments and to being of assistance to the OEB in development of a more detailed metering requirement and implementation plan.

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These comments are respectfully submitted this thirteenth day of August, 2004

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