August 16, 2004

BY FAX & COURIER

Mr. Peter O'Dell
Assistant Board Secretary
Ontario Energy Board
2300 Yonge St, Suite 2601
Toronto, Ontario
M4P 1E4

Dear Mr. O'Dell:

Board File No. RP-2004-0196
Implementing Smart Electricity Meters in Ontario

Please find enclosed 5 hard copies and a PDF version of Energy Probe's comments on the Board Staff Discussion Paper *Implementation Plan for Smart Meters in Ontario*.

Should you require any clarification or further information, please do not hesitate to contact us by fax, telephone or email.

Yours truly,

David S. MacIntosh

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

Submissions from Energy Probe Research Foundation
(Energy Probe)

2004 August 16

Energy Probe's History of Involvement in Energy Utility Metering

Energy Probe has a long history of involvement in energy utility metering issues. Energy Probe's involvement includes recommending gas meter upgrades in the context of gas LDC rate hearings before the OEB in the early 1990s, filing evidence in an OEB rates proceeding on meter reading costs[1], contributing to the Ontario Market Design Committee's analysis of metering issues during the period 1997-1998, commissioning a expert review published in 2002 of metering options for small electricity consumers in Ontario[2], participation in Measurement Canada electricity metering reviews, a presentation to the Market Surveillance Panel and the Market Monitoring Unit of the IMO, and discussions with the Ontario Ministry of Energy staff and OEB staff related to upgrading meters to respond to consumer needs in Ontario's previously liberalizing electricity market.

Background of the OEB Review

By Order in Council dated June 23, 2004, the Government of Ontario established targets for the installation of 800,000 smart electricity meters by December 31, 2007 and installation of smart meters for all Ontario customers by December 31, 2010.

In the Order in Council, the Minister stated, "… it was desirable, through the installation of smart meters, to manage demand for electricity in Ontario in order to make more efficient use of the current supply of electricity and to reduce the province's reliance on external sources".

As well, the OEB expressed its own concerns regarding the growing gap between electricity demand and supply:

> Supply is falling behind demand. Ontario is facing tight supply conditions that are expected to continue past 2007.
>
> and

[1] *Comparative Review of Meter Reading Costs*. Thomas Adams, 1996 April 1, Pre-filed Testimony on Behalf of Energy Probe, Presented to the Ontario Energy Board Regarding E.B.R.O. 492
[2] *Electricity Metering Options for Ordinary Consumers in Competitive Electricity Markets*. Tom Adams and Allen Standbury. April 2002, www.energyprobe.org.

> By reducing consumption and using electricity more efficiently, the province can reduce the rate at which demand is growing.[3]

In the *Implementation Plan for Smart Meters in Ontario* report, the OEB identified the objective of the policy to install 800,000 smart meters by December 31, 2007 is to help consumers control their electricity bills though conservation and demand response.

The initial objective for installing smart meters seems to be directed at reducing demand to cope with anticipated tight supply conditions in 2007 and beyond.

As the Board Staff quoted, on Page 3 in the *Implementation Plan for Smart Meters in Ontario* report, from the *Report of the Board to the Minister: Demand-side Management and Demand Response in the Ontario Electricity Sector*: "…three conditions are needed to make consumers change the amount or timing of their consumption:

- a price that changes over time in response to demand and supply forces;
- the ability of consumers to see and respond to a price signal; and
- measurement of the response so that consumers get credit for their action."

At the same time, the Board is in the process of developing a Regulated Price Plan for residential and small business consumers without retail supply contracts. This plan is expected to be in place by May 2005 and according to the Board's view, a regulated price plan will:

- reflect the true cost of electricity;
- be stable
- be supportive of demand-response and conservation;
- not be a barrier to investment.

In addition, the *Implementation Plan for Smart Meters in Ontario* report pointed out the multiple benefits that advanced metering technologies can bring to customers, the system, the market, generators, retailers and distributors.

According to the Board's report, "the primary objective of the Government on smart meters is to give consumers more control over the energy part of their electricity bill. Smart meters technology enables consumers to pay the actual price for the electricity at the time that they actually use it".

The Board noted that smart meter is beneficial for the system and the market because it enables to decrease Ontario's overall peak and enhance load factor.

Retailers also benefit from smart meters because they can structure an offer to a consumer based on an actual consumption profile.

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[3] "Report of the Board to the Minister: Demand-side Management and Demand Response in the Ontario Electricity Sector", Ontario Energy Board, March 2004. p.1.

As identified in Energy Probe's 2002 study on interval metering, there could be many benefits for routine LDC operations and therefore indirect benefits for customers including improved theft and tamper detection, account automation leading to fewer customer disputes, fewer estimated bills, better data for designing and managing transformers, and more timely reads on customer change.

Energy Probe's Recommendations

1. Quantified Cost-effectiveness Analysis

Energy Probe has considered the overall lack financial details in the *Implementation Plan for Smart Meters in Ontario* report on costs, on cost implications, and most seriously, on cost benefit analysis. Based on that report, Energy Probe has not been able to construct a rational answer to the obvious question – Why would the Ontario Government commence a program that may result in $1 billion, including both capital and maintenance costs, prior to investing a relatively modest sum -- perhaps less than $500,000 -- to develop alternative business plans and review the results?

Already the Toronto press is quoting Energy Minister Dwight Duncan as saying that "Ontario is looking for a way to provide four million consumers with free smart meters to help them minimize the rate increases inevitable as worldwide costs of energy rise, …"[4]. The public is focused on a government initiative reported to have as its objective saving customers money. Details will surely be asked of government regarding the results of testing the theory that smart meters will lower electricity demands at peak periods and overall electricity costs.

Metering policy must be focused on providing net benefits to customers, not simply changing metering technology for its own sake. To help direct future effort in metering upgrading and pursuant to the seventh bullet of paragraph 2 of the Minister's Directive, Energy Probe recommends that the OEB sponsor cost-effectiveness analysis of all the smart metering options under consideration and subject this analysis to review by electric LDCs, consumers, and other stakeholders. Cost-effectiveness analysis is necessary to prioritize and effectively manage metering investments and associated changes in business and regulatory practices. The Board Staff discussion paper does not address cost-effectiveness analysis.

Calculating the main benefit of smart meters for customers, which is individual consumer energy bill savings, ideally would be based on estimating the quantum and timing of customer energy savings multiplied by the price of electricity at these times. Both electricity prices and the price-elasticity of demand for electricity for customer groups identified for particular meter options are required to determine possible customer response to prices. Uncertainty in price forecasts and elasticity coefficients should be recognized and quantified as much as possible.

[4] Meter, meter on the wall, new and smarter planned for fall, The Globe and Mail, August 10, 2004.

Smart metering options are best considered in the context of the global policy design for the electricity sector. The Minister's Directive indicates that the Board should consider "critical peak pricing" and "foreseeable electricity price structures". Energy Probe emphasizes that investments in smart meters are only economically justified as a means to assist customers in managing electricity price volatility. Energy Probe recommends that both historical market-based prices and price forecasts be used to estimate benefits.

In determining the effectiveness of the smart metering plan, Energy Probe would like to emphasize that the choice of market arrangements in the future by which energy prices flow from generators through LDCs to consumers is relevant. An effective customer price response requires that wholesale market volatility be reflected in retail markets. Energy Probe considers that market arrangements must include an active spot market for an effective customer price response and arrangements based on long-term contracts could limit this response.

Given Ontario's overall supply/demand outlook as described in the IMO's most recent 10 year forecast, predicting the timing and extent of future shortage periods will be inherently difficult. Attempts to develop rate schedules months or even a year or more in advance of actual usage risks introducing inefficiency in price signals, inefficiency which may sub-optimally encourage timely conservation. Given the problem of predicting shortages in constrained supply conditions and the Directive's emphasis on ensuring that Ontairo's future meters will be capable of responding to foreseeable electricity price structures, Energy Probe therefore recommends that a minimum capability of hourly usage measurement be established.

Estimating the costs of smart meter options should focus on life cycle analysis. As recognized in the Board Staff discussion paper, capital costs are just the beginning of the metering cost experience. For example, smart meters are much more sensitive than conventional watt-hour meters to disturbances and Measurement Canada meter verification requirements for electronic meters are more extensive and costly than those that apply to watt-hour meters. Current Measurement Canada policy requires that 100% of all electronic meters be verified every six years. Replacement and testing costs are the same as for electromechanical meters, but the increase in sample size and recall frequency means that the cost of reverification may be up to 128 times that of electromechanical meters.[5] [6]

Meter data communication could be a significant cost item, depending on the technology used. In costing communication options, not only must capital and routine operations costs be considered but also breakdown-related costs. If telephone-based systems are considered, accommodations should be made for customers without home phones, a situation becoming more common with the expansion of cellular services. For other types of communication systems, it may be necessary to consider whether access to existing

[5] *Electricity Metering Options for Ordinary Consumers in Competitive Electricity Markets*. Tom Adams and Allen Standbury. April 2002, www.energyprobe.org.
[6] *Industry Initiative: Electricity Measurement Accuracy Program (E-MAP)*, prepared by the CEA Task Group on Metering and Regulations, Canadian Electricity Association (CEA), July 2001, www.canalect.ca.

monopoly systems, such as utility poles, needs to be tariffed, which appears to be under consideration in RP 2003-0249.

2. Cost Recovery and Ownership

The current policy under the Distribution System Code is for consumers to pay the full incremental cost of installing and supporting interval meters, but ownership resides with the distributor. There is a need to separate the costs associated with individual meters from the costs associated with establishing the meter data gathering networks. Energy Probe recommends that metering costs be unbundled to facilitate the development of a market for some metering services, perhaps through retailers or meter data management agent service providers. Energy Probe agrees with the Board that meter contestability may be desirable in Ontario to help achieve smart meter targets.

In respect to the cost categories identified by the Board in the Chapter 4 of the *Implementation Plan for Smart Meters in Ontario*, it is desirable to identify what categories are one-time related to acquisition and installation and those incurred throughout the time (maintenance, manipulation) related to the use. Energy Probe suggests the possibility of separating all costs related to acquisition and provision from those related to use, allowing customers choices for purchase (distributor, retailer or other) and installation. In this case either the provider or the customer could retain ownership.

Services related to the use of the meters should be separated from purchase and ownership. The owner of the meters could be different from the provider of other services like maintenance or data management, or communication. In order to avoid possible disputes, the OEB should set guidelines on the conditions of service and on rights related to ownership, and on some specifications for standard conditions between the owner and the provider of other services. One example of a standard condition would be rules to allow retailers to remotely activate control of pre-determined loads at time of high system price or high system load.

As for rate design, metering and related costs should be recovered in a fixed customer-related charge.

3. Distribution Time-of-Use Rates

The OEB Staff report requests input on the issue of non-commodity distribution time-of-use rates.

Energy Probe recommends that the OEB maintain its long-standing commitment to cost-based rates for regulated monopoly services. A substantial fraction of distribution costs are fixed, unrelated to customer usage patterns, and are therefore best suited for an average approach. The main distribution costs that may be suitable for a marginal approach to cost recovery through time-of-use rate recovery are costs related to

distribution capacity and extra congestion-related coincident peak charges that might be added to the rates for specified customers in distribution zones characterized by constrained distribution capacity. As recognized in Section 3.2.3 of the Board Staff paper, congestion costs are now spread across the entire market without any locational differentiation. This inefficiency can be corrected through locationally differentiated prices. Energy Probe strongly supports rates for both transmission and distribution that are cost-based and also reflect locational cost factors where these can be identified.

4. Meter Upgrading as DSM

Energy Probe strongly supports paying for meter upgrades with funds earmarked for DSM. The combination of efficient, demand-responsive prices for electricity, and possibly also transmission and distribution services, combined with appropriate metering technology would be an excellent contribution to improving energy conservation.