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December 1, 2004

VIA FACSIMILE & COURIER

Mr. John Zych
Board Secretary
Ontario Energy Board
2300 Yonge St, Suite 2601
Toronto, ON M4P 1E4

Dear Mr. Zych:

Board File No. RP-2004-0196
Smart Meters Initiative
Submissions on Draft Implementation Plan

Please find 9 hard copies and an electronic copy in PDF of the Submissions of Energy Probe Research Foundation with respect to the Draft Smart Meter Implementation Plan, as described in the Ontario Energy Board letter of November 9, 2004.

Should you require additional information, please do not hesitate to contact me.

Sincerely,

David S. MacIntosh

cc Tom Adams

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Ontario Energy Board – Smart Meters Initiative
RP-2004-0196

Energy Probe Research Foundation
Submission on Draft Implementation Plan

1 December 2004

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Submission on
Ontario Energy Board
Draft Smart Meter Implementation Plan

Introduction

Energy Probe participated in the OEB Smart Metering Planning and Strategy Working Group. Our comments on the Draft Smart Meter Implementation Plan (the “Report”) address: an overview of general comments; capital costs; prudence review; depreciation; cost allocation; rate design; stranded cost; rate mitigation; and minimum technical requirements.

The draft plan proposes and discusses different options for smart meter cost recovery. In evaluating recovery options, the Board considered four principles:

- Cost recovery mechanisms should be reasonable and timely;
- Allocation of costs should be fair and related to benefits;
- Recovery should promote economic efficiency, where possible; and
- Recovery should be consistent among distributors

Consistent with these principles, Energy Probe’s comments provide recommendations supporting widespread, cost effective and customer friendly meter modernization in Ontario.

Overview

Energy Probe finds much to praise in the Report.

For example, the section on exceptions (Section 2.5.6) identifies the reality that in some applications, smart meters cannot be justified on cost grounds.

The Report recognizes that, given available technology, bidirectional communication through the meter should not be a minimum technology requirement. This flexibility is likely to help keep the cost per customer down. Energy Probe notes that there are a host of communications approaches that can provide information on market conditions to ordinary customers without sending pricing data to meters.

On commodity rates, the Report recognizes that price must reflect the real cost of electricity (p. 32). The Report anticipates the introduction of time-of-use rates with critical peak pricing under the Regulated Price Plan. Energy Probe trusts that in the near future, prices can move even closer to actual.

The Report recommends recovering the cost of smart meters from users, an approach Energy Probe supports. LDCs would have the authority to select technologies that best suit their local circumstances while being encouraged to coordinate with other LDCs. Consumers would have reasonably timely access to their own consumption information through their LDC or retailer.

The Report highlights the difficulty in identifying appropriate time-of-use delivery rates. Energy Probe believes that to the extent possible, delivery rates to end-use customers should be designed to pass through transmission costs imposed on LDCs in a manner that minimizes potential recovery imbalances for the LDCs.

The draft report raises some concerns for Energy Probe.

To provide comparison information to help customers understand their usage and the effectiveness of any conservation initiatives they might have adopted, the Report recommends “For energy usage comparison purposes, 13 months of on-line data must be available to the customer.” (See Section 4.5) Unfortunately, weather effects are likely to drown out most conservation results, thereby limiting the value of the comparator information.

To overcome weather bias and to help motivate consumers, Energy Probe prefers a system where each customer’s usage information is compared to that of nearby customers of a similar type. Under Energy Probe’s proposed alternative, the customer receives a ratio showing their own usage compared to the average of their neighbours during the same time period. This approach would eliminate weather effects and highlight the results of any conservation undertaken by the consumer.

The Report demands that, “If the IMO calls a critical peak period because the Province’s energy system is expected to be near capacity, the notification must go out no less than 24 hours before the critical period begins.” The Report assumes that unfavourable surprises will not happen within the 24-hour period prior to the operating moment. A preferred approach would be to require the IMO or its operational equivalent to provide as much notice as possible of impending shortage events.

The anticipated cost per customer may prove to be too optimistic. The expected monthly cost in the report is \$3-\$4. As discussed below, Energy Probe believes that this monthly cost estimate will be too low. The Report wisely recommends that the estimated monthly cost be used only for illustrative purposes. The remainder of these comments focus primarily on cost issues.

The general approach Energy Probe recommends to cost recovery is to rely on cost based rates applying ex post prudence review where the Board takes into consideration quantitative comparisons of the costs and effectiveness of all of the LDC implementation programs.

Smart Meters Capital Costs

According to the Chart Notes for Table 2 – Smart Metering Costs (page 71, appendices Smart Meter Implementation Plan), meters for residential and small single phase general service customers can vary upwards from about \$70 for a basic electronic meter with a communication device to \$125 for a more functionally capable meter with some time-of-use or interval storage capability.

Energy Probe is aware of a residential smart meter recently installed by Halton Hills Hydro where the utility charged the customer \$450 for the meter alone and also charges a meter reading cost of \$20 per month. We recognize that a mass rollout should be able to substantially cut these costs but suggest that the cost per customer may exceed the monthly costs identified in the Report.

It appears that the estimated upfront and infrastructure costs to meet requirements such as automated meter reading systems, data storage systems, upgraded and complex billing engines, and various interfaces necessary to integrate the smart metering system with existing LDC systems are in the cost order of \$125 per customer.

As a reference, note that in the Recovery of the Regulatory Assets proceeding the mean transition cost claimed by the LDCs related to market opening in 2002 was \$40.70 per customer.¹ This cost related primarily to changes to LDC CIS systems to comply with the original market-opening requirement. The scope of the original market opening requirements was much smaller than the scope of the meter modernization program.

For market opening in 2002 limited communications upgrades were required whereas AMR will require extensive communications capacity. Only one LDC in Ontario required middleware Work Flow Integration System (WFIS), whereas with smart metering it appears that additional LDCs may require costly WFIS software additions.

Facilitating Prudence Review of Smart Metering Costs

The Board should establish a cost reporting and monitoring system to facilitate the later evaluation of cost prudence. The draft report recommends that this system needs to be developed as part of the 2006 Electricity Distribution Rate process but provides little substantive guidance on the point. Energy Probe has some specific recommendations.

- LDCs implementing Smart Metering should be required to track detailed information with respect to the incurred costs.
- LDCs should be required to maintain records of their business plans. In the RRA process, the Board was presented with evidence from London Hydro that it developed and implemented a detailed business plan yet the plan was never written down.

According to Smart Meter Implementation Timeline (Figure 2), Procurement/Development Plans (incl. Business Cases) are to be submitted to the proposed Implementation Authority in November 2005. The Timeline then shows LDC Plans being approved by the Implementation Authority the following month in December

¹ RP-2004-0117, RP-2004-0118, RP-2004-0100, RP-2004-0069, RP-2004-0064, Exhibit M/T2/S4 Energy Probe's reply to Hydro One Interrogatory #4.

2005. Since there are likely to be over 80 separate plans and associated business cases, Energy Probe concludes that the proposed schedule contemplates cannot

receive more than cursory review by the Implementation Authority. There will be little or nothing by way of opportunity for plan amendment. It is clear that the Timeline does not contemplate substantive prudence review by the Implementation Authority prior to implementation. However, nowhere else on the Timeline in the Report can we identify where prudence review is contemplated.

Energy Probe recommends that the final report on the Smart Meter Implementation Plan should provide guidelines on Prudence Review. It would be particularly helpful if the Board could provide its outlook on the role of customers and consumer representatives in this review and the anticipated extent of any public process. We suggest that the LDCs should be required to file their implementation plans and also present an independent generated assessment of the plan results and implementation costs realized. Prudence review should take into consideration quantitative comparisons of the performance of the LDCs.

Depreciation Treatment for Smart Metering Assets

The cost analysis reflected in the Report assumes a relatively long 15-year depreciation period for all the capital cost, a significant portion of which is likely to be communication and computer systems.

Energy Probe suggests that pending future decisions of the Board, computer equipment and software may be appropriately amortized over a period of five to seven years. The communications systems required may require separate treatment but depreciation over 15 years seems unlikely to be appropriate. If more rapid depreciation is applied to a substantial portion of new assets, this would represent a higher burden on customers than estimated in the draft implementation plan.

Cost Allocation

The draft report raises the question as to whether costs involved in the smart metering project should be recovered through all the customers within a class or only from customers with smart meters.

The draft report distinguishes two general types of expenses involved in the smart metering project. One general type of expense relates to capital and operation expenses dedicated to the use of individual customers. Examples of these dedicated use facilities include the customer's meter, any single-use communication equipment associated with the meter, and meter maintenance and verification. The other general type of expense relates to shared costs or joint use facilities. Examples of these include CIS and bulk communication capacity.

To the extent practical, these general types of expenses should be tracked and recovered separately.

With respect to dedicated use facilities, Energy Probe recommends that customers not pay for smart metering until their old meter is replaced. We disagree with the recommendation in the Report that would prohibit customers from having the option of paying upfront capital costs in a lump sum once their meter is replaced (p. 37). Many of the LDCs are recovering a weighted average cost of capital grossed up for PILs of almost 12%. Compare this with 5 year GIC rates available to retail investors in the range of 3%. On top of this, households pay utility bills with after tax dollars whereas for many, interest earnings are taxable, thereby making the net gain on the GIC even less.

It is clear that the cost of capital embedded in LDC rates substantially exceeds the opportunity-lending rate for many consumers. Since some customers may find direct ownership a lower cost option than paying uncompetitive utility costs for capital, consumers should have the opportunity to invest directly in their own service and bypass a portion of the utility's service. Direct meter ownership should be allowed.

With respect to joint use facilities, we agree with the Report that it would be unfair to burden early smart meter customers with all the upfront system costs. Thus, LDCs should be allowed to start recovering upfront costs from the beginning of the meter deployment process from all customers who will ultimately receive smart meters.

With respect to cost associated with joint use facilities, cost recovery should reflect consideration of both costs and benefits. Since almost all metering costs are fixed costs, from a cost approach point of view, shared customer costs should be allocated among customer classes on basis of customer numbers. However, from a benefit perspective, customers who receive higher benefits as a result of using smart meters should contribute more to the smart metering cost.

Taking into account available allocators (number of customers, consumption, distribution revenues) consumption is the one that may better reflect benefits. In allocating shared smart metering cost on a consumption basis, it is assumed that the benefit a customer class receives is directly related to its energy consumption; accordingly, customer classes with higher consumption should contribute more to pay smart meter costs. Allocating shared smart metering costs based on distribution cost is an intermediate stance between using the number of customers and energy consumption. Energy Probe advocates allocating shared smart metering cost based on distribution revenues.

Rate Design

In Appendix C-4, the Report discussed fixed or volumetric rate designs for cost recovery.

Assuming costs are allocated to customer classes, the fixed approach could be implemented in the monthly connection charge.

On the other hand, recovering costs on volumetric basis would necessitate consideration of consumption and potentially also coincidental or non-coincidental demand. The draft plan points out that recovering cost on peak demand basis allows the alignment of cost recovery with DR (directive) objectives of shifting the demand peak.

Energy Probe suggests that allocating cost on the basis of demand would give rise to substantial difficulties. Demand information would be required but, at least until 2007, detailed demand records will not be available for small customers. Thus, this option seems unworkable.

In addition, adopting a smart metering cost recovery methodology based on shifting load incentives would introduce more complexity in elaborating forecast. Cost recovery, and therefore earnings for LDCs, could become more risky.

We believe that the main objective in setting a cost allocation methodology is to identify a fair mechanism that allows LDCs to recover costs incurred throughout the smart metering project from different customer classes. We do not advocate that the smart metering cost allocation methodology be set for the purpose of shifting load. From our perspective, hourly price signal is an appropriate and powerful tool to shift load for peak.

Taking into consideration all of these factors, the rate design Energy Probe recommends for the recovery of metering costs is cost recovery in the monthly customer charge.

Stranded Cost

Energy Probe agrees with the Report that stranded costs could be managed by transferring them out of ratebase and into regulatory assets (page 39, Draft Smart Meter Implementation Plan). We also agree that stranded cost should be separated by customer classes and recovered accordingly.

The draft mentions two alternatives for recovering Stranded Costs. The first alternative proposes that recovery can begin with the smart meter deployment as a uniform charge to all customers in each distributor rate class for administrative convenience and consistent treatment of all customers. Alternatively, it can be staged to coincide with the point at which a customer actually receives a smart meter, if causality governs when cost recovery begins.

With respect to these two alternatives, Energy Probe considers that is inappropriate for customers to be required to pay for their own dedicated assets that actually are in use as if these assets were stranded. Stranded cost recovery should begin upon asset retirement.

Energy Probe has considered the proposal in the draft for recovery of stranded assets over a period of 15 years and finds the period too long. The allowed weighted cost of capital is so high that customers would pay substantial carrying costs over a 15-year

recovery period. Intergenerational equity problems would be exacerbated. The estimated total amount indicated in a previous draft of the plan was \$473 million, an amount somewhat smaller than the total regulatory assets associated with market opening yet those costs will be recovered over 4 years. Energy Probe recommends recovery over a period of six years.

Rate Mitigation

The first priority in rate mitigation is to ensure that the costs being imposed on consumers of monopoly services are just and reasonable. Energy Probe is concerned that given current technology, for some small volume customers, the costs of smart meters may exceed the benefits. Assuming the monthly costs for residential smart metering service in the Report are correct and assuming a stranded cost charge of \$1/month, a customer with a monthly usage of 400 kWh might face an overall bill impact of over 10%.

The opportunity to learn from the experience of meeting the requirements for 800,000 meter upgrades by 2007 may provide additional information to guide meter replacements for other, smaller volume consumers after 2007.

Energy Probe believes that metering costs are an accepted part of utility rates, and our proposals for rate implementation and stranded cost recovery reflect mitigation considerations and therefore no further rate mitigation specific to smart metering is required.

Rate mitigation should not be implemented on an item-by-item basis, but should be considered in relation to overall bill impacts where all bill determinates are considered. At this time, it is difficult to speculate what demand side management charges, debt reduction tax increases, other electricity tax increases, and commodity rate increases may be happening coincident with smart metering costs arriving on the customer's bill.

Minimum Requirements

Regarding minimum requirement, the Minister's Directive stated that the mandatory technical requirements to be identified by the Board's plan must be adaptable or suitable for seasonal and time-of-use commodity rates, critical peak pricing, and other foreseeable electricity rate structures. This technical flexibility may impose some extra costs but Energy Probe believes that these costs are very likely to be justified.

Following the lead of the Minister's Directive, when defining minimum technical requirements, the Draft Smart Meter Implementation Plan mentioned that the system must be able to provide hourly consumption data from every meter connected. The draft also indicates that distributor may, at their option, compress hourly data into time (TOU) and critical peak pricing (CPP) formats. Energy Probe is concerned that if compressed data are used, the underlying architecture must be flexible enough that movement toward real time pricing is not impeded by massive reengineering expenses in the future.

One solution could be a two-way communication link between the communication module and the collection computer allowing reconfiguration of the meter unit to comply with any changes in TOU and/or CPP periods. (Report, page 43). If compression is used, LDCs should bear an onus to provide a business case explaining why compressed information is used and demonstrating the flexibility to upgrade to uncompressed service.

With respect to customer information requirements, the draft also mentioned “the ability to see their consumption by hourly intervals is expected to provide customer with necessary information” and “providing this information in a manner that reflects their usage in specific rate periods is also expected to be of value and importance in assisting the customer to control consumption” (page 45).

The information provided by LDCs to customers should accommodate hourly information on consumption and prices as well. The minimum requirement should contemplate the possibility of customers paying electricity on hourly spot market price basis although in the immediate future, that pricing system will not be applied to all customers.

Conclusion

Meter modernization is a major undertaking that will impose significant new costs on Ontario consumers. These costs must be tested for prudence in a fair and transparent process. Collection of the costs from consumers must likewise be undertaken in a fashion that is fair and efficient. Flexibility in terms of technology and in terms of learning from early experience to refine future implementation will be required.