

Executive Summary

On July 16, 2004, the Minister of Energy asked the Ontario Energy Board to develop an implementation plan to achieve the Government of Ontario's smart meter targets for electricity: 800,000 smart meters installed by December 31, 2007 and installation of smart meters for all Ontario customers by December 31, 2010. Smart meters will allow customers to manage their demand for electricity to make more efficient use of Ontario's existing supply of electricity and reduce reliance on external sources.

The Minister asked the Board to identify and review options for achieving the targets and to address several specific issues. In developing this draft implementation plan, the Board has consulted with stakeholders through two processes. In July, the Board issued a discussion paper and invited comment. In late August, the Board struck four working groups of interested and experienced stakeholders to study the options and to identify detailed implementation issues. The Board has benefited greatly from this input and has considered it carefully in developing this plan.

The Board now seeks input from interested stakeholders and the broader public on the draft implementation plan outlined in this document. The Board will then prepare a final plan to submit to the Minister for his consideration.

The smart meter initiative is both challenging and complex. Implementation will require the coordinated and committed efforts of many parties over several years. In developing the draft plan, the Board considered the technology to be used, how smart meter systems will be procured and by whom, and who should pay for the systems – as well as many detailed implementation issues. In making recommendations, the Board considered many factors, including the structure of the electricity distribution system in Ontario, the need to begin implementation promptly to meet the government's target installation dates, and the estimated overall cost of the proposed system. The more significant issues covered in the draft plan are summarized below.

Proposed smart meter system

The Board proposes a basic smart metering system in Ontario that would measure how much electricity a customer uses each hour of the day. Through wireless communication or other technologies, the data would be transferred daily to the local electricity distributor. The distributor would use that data to charge customers an energy price that varies depending on when the electricity was consumed. Customers would have access to data by telephone or Internet the following day. Distributors would transmit customer consumption data to retailers for those customers who had signed with retailers.

The proposed smart meter system would support current methods of charging larger customers. Some larger commercial and industrial customers pay delivery charges based on their maximum electricity demand or their power factor (rather than on total

consumption, which is the basis used to determine the delivery charges for residential and smaller commercial customers).

The draft plan does not mandate a specific system or a particular vendor. The type of system that is best for any distribution territory depends on many factors, particularly customer density and geographic factors. Each electricity distributor will have to determine what works best in its territory, as long as the system selected meets the minimum technical standards proposed by the Board. Given the need to move quickly, the Board is proposing that distributors must select systems from vendors with at least 10,000 meter points in operation in a smart meter system.

The basic smart meter system proposed by the Board is based on one-way communication (data transferred from the meter to the distributor). The Board considered requiring two-way communication (signals can be sent to and from the meter) but concluded that it eliminated viable systems from contention and could compromise competitive bidding. Also, the basic system proposed by the Board does not include all technical features currently available from vendors. Distributors will be permitted to select smart meter systems that have enhanced functions, such as voltage monitoring, earlier payment, load limiting and remote cut-off. Inclusion of the cost of such enhancements in distribution rates will depend on a business case acceptable to the Board.

The Board expects that retailers and other energy services companies will be prepared to offer enhanced services for a fee to those customers who desire extra functionality.

Rollout of smart meters

The draft plan proposes that all new and existing distribution customers in Ontario, including all residential and small commercial customers, have some type of smart meters. General service customers with peak electricity demand between 50 and 200 kW will get a smart meter capable of reading demand (which is required to compute demand charges applicable to those customers). General service and industrial customers with over 200 kW of peak demand (maximum electricity use at any point in the month) will get interval meters that measure consumption in 15-minute intervals.

Large customers that have peak demands over 200 kW will get new meters first. These meters can be installed quickly because the meters will be the same as the ones already installed by many industrial customers. Starting in 2006, once a distributor has selected its smart meter system, industrial and commercial customers with peak loads from 50 kW to 200 kW will receive smart meters and all new installations (such as meters in newly constructed homes) will have smart meters. In addition to these priority installations, about 12% of the existing meters in the province will need to be changed to smart meters by December 31, 2007 to meet the government's target.

The Board is encouraging distributors to carry out pilot programs during 2005 to gain useful information about the installation and operation of smart meter systems before making final decisions on the particular system that they intend to choose.

Responsibility for implementation

Three parties will have key roles in the implementation process.

Distributors

Distributors will be responsible for choosing the type of smart metering system that best suits their regional conditions and customer mix. As they are now, distributors will continue to be responsible for the installation, servicing and reading of the meter.

The Board has concluded that distributors should be responsible for procurement and installation of smart meter systems because of their long-standing role in metering in Ontario, their knowledge of their customers and service territory, and the critical interface between the smart meter system and a distributor's own billing and settlement systems. The Board believes, however, that it would not be cost-effective to have approximately 90 distributors acting independently in their selection and procurement of smart meter systems. Therefore, the Board is proposing that distributors form voluntary buying groups to select and procure smart meter systems. Some distributor buying groups already exist for buying distribution equipment and other goods.

Implementation Coordinator

A single entity will be required to manage the implementation process, to monitor progress, and to coordinate the activities of distributors over several years. One of the responsibilities of this entity would be to review and approve the procurement plans of the distributor buying groups. One option that the Minister could consider is to have the Ontario Power Authority fulfill this role should Bill 100 be passed by the Legislature.

Ontario Energy Board

The Board will be responsible for setting up a regulatory framework for smart meters. That work will include: building smart meter costs in distribution rates; amending OEB codes governing metering and the activities of distributors; amending distributor license conditions; and, where appropriate, setting province-wide standards for distributor business processes, such as data presentment to customers.

Impact on customers

When a smart meter is installed, two things will change for electricity customers. They will receive timely information on consumption and the pricing plans offered by distributors will feature electricity pricing that varies by time of use.

The Board proposes that customers have daily access to their consumption data for the previous day via the Internet or telephone. Historical consumption data will also be available. Customers will have information on how much energy they consume during different hours and different days.

The Board is currently developing a regulated price plan that will be available to residential and other customers to be designated by the government. It is expected that this new plan will feature prices that vary by time of use. The combination of a smart meter and a “smart” price plan means customers will have the incentive and the ability to control their energy costs through moving usage to off-peak periods (for example, running the dishwasher at night) or lowering energy use during peak periods (such as setting the air conditioning a few degrees warmer during the afternoon). Customers will be able to do this manually, by using automatic control devices that they purchase and install themselves, or via a contract with an energy services company to control devices automatically based on price or demand level. Customers will pay according to what they use and when they use it. And those who conserve will not subsidize those who do not.

The Board’s regulated price plan may also feature special pricing for critical days when the electricity system is at capacity and wholesale commodity prices are very high. These are usually hot summer days when air conditioners are running on full or evenings during cold snaps when heaters, ovens and lights are all in use. While there are usually no more than 15 events like this each year, electricity at these times can be very expensive. The day before a critical pricing day, customers will be alerted by the broadcast media such as radio and television and Internet that prices will be high for that day. Customers with smart meters will be able to save by cutting back their use during those critical days.

Higher peak winter prices can have significant cost impacts on those customers who rely on electric heat and have limited ability to shift demand. Conservation programs may focus on support for mitigating technologies like thermal storage, heat pumps or conversion to natural gas heating.

Larger commercial and industrial customers that have not signed with retailers currently pay the hourly wholesale spot price for their electricity. Because they do not have interval meters, they are charged based on a system-wide load profile, which may have little resemblance to their actual hourly consumption. Once these customers receive smart meters, they will pay the hourly price on their actual hourly consumption.

Cost

The draft plan proposes that the capital and operating costs of the smart meter system be included a distributor's delivery rates that are charged to all customers in a particular rate class, whether or not they have a smart meter. In addition, it proposes that the costs related to old meters and other distributor assets that are made obsolete by the introduction of smart meters continue to be included in distribution charges.

It is proposed that costs be included in the distribution rate as soon as a distributor starts to install smart meters. Because it will take several years to complete the installation of smart meters in a distributor's territory, the impact on customer bills will be small initially. It will rise as the implementation program progresses. Based on cost estimates prepared by working groups for the basic smart meter system being proposed, the incremental monthly cost for a typical residential customer by 2010 (when full implementation is complete) may be between \$3 and \$4 a month to cover capital costs and net operating costs. The total capital cost through to 2010 for the proposed system (meter, communications, installation and distributor system changes) is estimated at \$1.07 billion. The net increase in annual operating cost for the province is estimated to be \$50 million.

The cost estimates in the preceding paragraph, and in the draft report, are for illustration only. The Board sets electricity distribution rates through transparent public processes and has not yet set any rates that include the cost of smart meters.

Comments

Nine (9) copies of written comments on this draft implementation plan should be sent by November 26, 2004, referring to RP-2004-0196, to:

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And an electronic copy in PDF format to:
BoardSec@oeb.gov.on.ca

Individuals may file a single copy of their comments.