Smart Meter Initiative

Cost Considerations Working Group
Notes of Meeting #1 – Sep 7/04
9:00 am – 3:30 pm

Ontario Energy Board
25th Floor North Hearing Room
2300 Yonge Street

1.0 Notes of Meeting from the previous meeting were adopted.

2.0 Matters arising from the last meeting:

2.1 Level of detail required for meeting notes was discussed. It was recognized that sufficient detail must be included to permit those following discussions to understand the issues under consideration. One suggestion was to use the format adopted during the Distribution System Code study meetings. P. Faye will obtain this format and send it to group members for consideration at the next meeting. In the meantime, review of notes and comments back to the preparer by members of the committee will be relied on to strike the appropriate balance of detail.

2.2 The issue of LDC lost revenue resulting from conservation by consumers equipped with Smart metering data was discussed. This issue is part of the 2006 electricity distribution rate setting process so will not be considered further by the cost considerations study group..

3.0 Stranded Assets/Costs

3.1 Stranded assets likely to result from the introduction of Smart meters will have cost impacts on LDCs and other parties to the extent that those assets are not entirely depreciated. The following potential stranded assets/costs were identified:

3.1.1 Electromechanical/electronic meter capital (including inventory), installation and testing costs for residential and small commercial single phase customers.

3.1.2 Electronic meter capital, installation and testing costs for commercial and industrial polyphase customers will be stranded to

the extent that these installations cannot meet the objectives of the Smart metering initiative.

3.1.3 Meter reading equipment currently owned by LDCs and used by walkabout meter readers will be stranded by the AMR systems proposed to read meters remotely. Examples include Itron hand held readers and MV90 equipment to the extent that it cannot be adapted to meet Smart objectives.

3.1.4 LDC contractual obligations for meter reading services often extend over multiple years and may attract early cancellation charges as Smart meters are deployed and no longer need manual reading.

3.1.5 Meter test bench equipment for use with electromechanical/electronic meters will not be suitable for Smart meter testing. Test equipment for electronic meters may be adaptable to test Smart meters.

3.1.6 Non LDC distributors may have stranded assets. For example, apartment buildings with sub-metering systems installed to allocate the bulk metered account among individual units are unlikely to be suitable for Smart objectives. To the extent that these customers control a significant displaceable load, it may be desirable to consider assisting building owners with stranded costs to encourage installation of technology capable of meeting Smart objectives. Although not specifically part of the Smart initiative, the potential load involved is significant and warrants some consideration by the group in the next part of its deliberations to identify barriers to implementation.

3.1.7 LDC customer information systems may not be suitable for handling the increased data storage and manipulation necessary with Smart meters. Many LDCs incurred costs to modify their CIS systems in the transition to the open market and have not yet fully recovered those costs. Smart metering data may strand both the CIS systems and the unrecovered transition costs associated with them. The extent of these stranded costs may be significant depending on the functionality requirements of Smart metering.

3.1.8 Retail settlement systems were purchased by LDCs to interface with their CIS systems and calculate the net system load shape (NSLS) upon market opening in May 2002. Once all customers are equipped with Smart meters there may be no further need for NSLS thereby stranding the undepreciated system investment

unless it can be adapted for use in the Smart metering environment. The depreciation period for these systems is 5 years which would ordinarily ensure that any market transition costs incurred would be fully expensed by May of 2007. However, because these expenses have been partially or wholly held in suspense it is not clear that they will be recovered prior to implementation of smart metering requirements. To the extent that they are not recovered they will be stranded.

3.1.9 Cost stranding issues may arise in a labour relations context at LDCs as a result of Smart metering. For example, some LDCs currently read meters with in house staff and even if that function is contracted out, many still do check reads and final reads with their own staff. These functions will disappear to a large extent once remote reading is implemented. The costs associated with stranded employees can range from retraining and redeployment to termination and will depend on the terms of collective agreements for unionized workers and on statutory provisions governing dismissal of non union employees.

A second area of concern will be the significant increase in metering technicians required for the 2005 to 2010 installation period. These individuals will not be needed after the smart conversion is complete and, even if some can be redeployed to OM&A work, the bulk of that is reverification activity which will not start until at least 2013 (assuming a 6 year reseal period).

3.1.10 Electronic business transactions (EBT) hubs may be stranded if they are not capable of handling the increased data flow from all customers being interval customers.

3.1.11 Interval meters currently deployed may not meet the functionality requirements of smart metering and may require some upgrading to equip them for bidirectional communication. To the extent that they are not modifiable, interval meters may become stranded.

4.0 Cost Recovery

Recovery of stranded costs was discussed in the context timing, allocation and mechanism

4.1 Timing of cost recovery is important because, depending on the extent of stranded costs, there can be significant impacts on customers, LDCs and policy making. The factors that need consideration are:

4.1.1 Effect on rates – if the costs to be recovered are large and the time period of recovery brief then the effect on rates can be significant. Even if the effect is not great by itself, it can, in combination with other initiatives, result in a large overall rate increase. On the other hand, rate shock would emphasize the urgency of reducing demand and would therefore support the objectives behind introducing smart metering. Rate shock may also affect acceptable recovery time periods differently for different customer classes.

4.1.2 Fairness to LDCs – Distributors need to recover stranded costs as soon after implementation of smart meters as possible to avoid undesirable retroactive rate increases. The complication of other initiatives also resulting in rate increases should not delay LDC stranded cost recovery.

4.1.3 Accounting and Tax restrictions – depending on how LDCs record stranded assets there may be unintended effects on PILs that could impact the stranded debt retirement program underway already. For example, if stranded costs are taken as a charge against income then this will lower the PILs payable in any given year. If the costs are to be amortized, it will be necessary to decide on a period and on what happens if costs competing for recovery cumulatively exceed rate increase caps proposed for the 2006 EDR. The same issues arise should the solution be to sequester all stranded assets in a separate class and permit accelerated depreciation timed to eliminate them by the end of the smart meter deployment in 2010. These issues should be brought to the attention of the 2006 EDR working groups in order that they are considered in that rate setting process.

4.1.4 Avoid intergenerational cost transfer – having existing customers pay for the stranded costs would avoid imposing these costs on future generations of electricity customers who are likely to face their own unique set of costs.

4.1.5 Consistency among LDCs - the recovery time period should be uniform among distributors to minimize regulatory administration and to avoid circumstances in which electricity consumers migrating between LDCs could pay more than their fair share.

4.1.6 No differentiation by type of cost – all stranded costs should be recovered as a bundle rather than separating into different streams and applying different recovery periods.

4.1.7 A review process may be necessary to avoid over or under recovery. This will depend on the mechanism used for recovery. For example, if a fixed charge is used to recover costs then over/under recovery is probably not an issue because variability in the number of customers charged is not likely to be great. However, if the charge is volumetric then consumption volatility can be expected to have a greater effect.

4.2 Allocation Issues

Stranded cost allocation decisions need to consider the following factors:

4.2.1 What parties should contribute to cost recovery? Electricity consumers are the most obvious group to settle stranded costs on but they are not necessarily the sole or even the most significant beneficiaries of Smart metering. A report by the Canadian Energy Efficiency Alliance[1] attributes the benefits of interval metering to a broad range of market participants:

- Customers benefit by being able to adjust consumption during high price hours of the day thereby saving money on electricity costs
- Retailers benefit by having the opportunity to create products and services targeted at helping consumer's mitigate their exposure to volatile prices and/or control loads during high price periods
- LDCs benefit by improved load factors on their system as customers spread their demand across a greater portion of the day. Improved usage of distribution capacity decreases the need to build additional capacity resulting in both capital, maintenance and line loss cost savings to the LDC. A similar argument applies to the Transmission system
- Regulator benefits result from improved ability to meet legislated objectives of facilitating competition, promoting economic efficiency and facilitating energy efficiency
- The IMO benefits by having improved ability to manage demand through DSM initiatives that rely on consumer knowledge of load and pricing information
- The Market itself benefits by having better information available on which participants can make rational decisions

However, only the first three of these groups have any actual money with which to pay for stranded costs. The IMO and the OEB are not revenue generators and have to pass on their own costs ultimately to consumers. Customers, LDCs, Transmitters

[1] *The Consumer Benefits of Interval Metering*, Canadian Energy Efficiency Alliance, November 2002

and retailers all have money of their own though so may be expected to share in the allocation.

4.2.2 The customer allocation may recognize that different customer classes have different stranded costs associated with them. Residential and small volume commercial customers, for example, have most of the single phase electromechanical/electronic meters that will be stranded so might be expected to pay for those stranded costs. By contrast, some large customers already have interval meters that might be adaptable to meet smart metering objectives so the stranded cost associated with them might be lower. If costs are recovered on the basis of LDC rate setting principles then allocation of stranded assets might be differentiated on the basis of customer class.

4.2.3 Because all customers contribute to the peak demand that drives the need for new generating capacity and all customers benefit from avoiding the costs of new generating capacity costs the argument can be made that all should bear some part of the stranded cost associated with achieving avoidance. From this point of view, interval metered customers might be expected to contribute more than just the stranded costs associated with their customer class.

4.2.4 When a customer begins to contribute his share of the stranded cost needs to be considered. Cost recovery could simply be uniform across customers regardless of when each receives a smart meter. This is the simplest allocation to administer but it would not recognize that those with smart metering have greater opportunities to mitigate their electricity costs because of the better consumption information that will be available to them. Customers without smart meters will be doubly penalized in a sense because they will be exposed to the NSLS billing model regardless of what action they personally take to shift load and they will also be expected to contribute to stranded costs notwithstanding that they have not yet caused any. The amount of penalty can be reduced depending on the actual mechanism chosen for recovery. A fixed charge per customer, for example, would avoid over or under charging any particular customer because it could be implemented only when a customer receives his smart meter. In that way customers who are converted early in the process will retire their obligation sooner than those converted later. However, since the charge would have to be associated with the installation, this would mean some customers migrating between utilities might be faced with paying stranded costs twice. Whatever allocation process is chosen, some tradeoffs will be

necessary and some customers will end up paying more than their fair share of stranded costs.

4.3 Recovery Mechanisms

4.3.1 Flat Rate by customer class would set a fixed amount of stranded cost that each customer in the class would be responsible for. This could be related to the actual stranded cost of the class or it could incorporate an element of consumption to recognize that not all customers contribute equally to the problem of inadequate peaking capacity. For example, if residential customers account for 40% of the peak load in the province then they might be assigned a similar share of the stranded costs. Large and small commercial and industrial customers might be similarly differentiated based on some calculation of their contribution to peak load. The advantages of a fixed or flat rate are that it is easily administered, it is certain and non bypassable (unless the customer exits the system entirely), recovery can be tailored by time payment plans to suit the ability of customers to pay and it can help minimize the potential for over or under recovery that may occur with other recovery methods. Disadvantages are that a fixed fee does not have a direct effect on consumption so would not encourage DSM/DR objectives, it does not recognize lower use customers unless the fee is calculated with that consideration in mind and it does not address ability to pay if that is a factor that should be taken into account. The latter disadvantage could be addressed by a tiered approach to constructing flat rates. For example, a lower rate might apply for some base consumption and higher flat rate apply for consumption above a threshold.

4.3.2 Volumetric recovery by customer class would recover costs on a consumption and/or demand basis. Historically demand charges have only been possible for those customers fitted with meters that can measure it. With the advent of smart meters though, all customers may be subject to demand type charges. The advantage of applying a demand component to this cost recovery method is that those who are unable or unwilling to shift load to off peak periods could be penalized for their greater contribution to the problem of inadequate peaking capacity. This would be consistent with DSM/DR objectives but it would mean that recovery could only commence after a customer had received a smart meter. There would also be an education issue in that residential and small commercial customers could not be expected to understand the distinction between demand and consumption charges since they have never been exposed to them.

Other advantages of a volumetric recovery model is that it has an inherent fairness in that those who draw the most benefit from the system might be expected to pay the greatest share of the costs. At least for consumption charges, it will be relatively easy for LDC billing systems to include an adder to existing rates but this might not be the case for demand charges where they have not previously been required. It might also be problematic to apply the adder to some customers who have received a smart meter and not to others who are still on the old meter. More investigation of LDC billing systems would be prudent before mandating a demand charge on all customer accounts or deciding that customers will only begin paying their share of the stranded costs upon receiving a smart meter.

Disadvantages of volumetric charges include the requirement to track recovery against estimated quantities and to true up periodically to account for over and under distributions. It also is subject to bypass by those with self generation facilities unless regulations are introduced similar to those governing the DRC that require payment regardless.

4.3.3 Transferring the cost to OEFC for inclusion in the stranded debt and recovery by way of the DRC is an option that would avoid some of the disadvantages in the previous two. This alternative would take advantage of an established cost recovery infrastructure that might lower administrative costs. For example, the cost of securitizing the stranded asset cost at the provincial level would probably be less than the average cost of capital that an LDC must bear to finance the stranded cost over its recovery lifetime. Disadvantages are that the recovery period might be extended and there might be adverse provincial credit rating effects if the stranded debt level were increased in this way. There might also be cross subsidization issues if stranded costs are pooled provincially. This could occur if the stranded cost per customer varies widely between utilities so that high cost utility customers end up being subsidized by lower cost ones by virtue of a uniform DRC rate.

4.3.4 DSM funds might be applied to reduce the amount of the stranded cost. This would lessen the burden to customers but might be illusory if that same source was earmarked for defraying the cost of smart meter installations.

4.3.5 Grants from the federal government might be requested to defray some of the stranding expenses on the basis that reduced demand

will assist in eliminating coal fired generation which will in turn help meet Kyoto targets for greenhouse gas emissions.

5.0 Regulatory Changes Required

5.1 The Retail Settlement Code (RSC) sections 5.1 and 5.2 currently requires that all missing interval meter readings must be dealt with in order to validate the NSLS computation. As the population of smart meters increases during the implementation phase, the number of missing readings will also multiply beyond an LDC's ability to deal with them. A change to the RSC will be needed to recognize and accommodate this problem.

5.2 Accelerated depreciation for stranded assets is one means of dealing with the undepreciated capital cost on LDC's books. An adjustment to the rate setting guidelines on depreciation will be needed if this idea is adopted.

5.3 Unrecovered costs in LDC market transition accounts need to be disposed of before imposing new costs associated with stranded metering. Consideration should be given to accelerating recovery of those costs.

5.4 Carrying costs of stranded metering assets needs to be addressed in the rate setting process.

5.5 Rules governing bypass of stranded cost recovery needed to be created.

6.0 Stranded Cost Minimization strategies

6.1 Lumpiness in future reverification and compliance sampling workload could be mitigated by closer matching of the implementation period to the reseal period. This would entail stretching the implementation phase out to six or possibly ten years depending on what initial reverification period eventually applies to smart meters and would not achieve the Minister's objective of full implementation by 2010.

Another strategy would be to sample early in order to level the workload into six or ten years whichever applies. The smart meter implementation plan will have an impact on this issue. If, for example, the conversion is done throughout the province on pro rata basis then the lumpiness referred to above will not be as severe as it would be if smart meters are deployed preferentially among utilities.

6.2 Stranding of hard assets like electromechanical/electronic meters can be mitigated by keeping the meter and adding a module to make it perform

the functionality required. This might not meet the longer term objectives of flexibility required of the smart metering system and it might also be uneconomic if the meters cannot be retrofitted and tested in place.

6.3 Redeployment of stranded meter assets to other jurisdictions might be possible and to the extent that they attract some payment part of the stranded cost could be mitigated.

7.0 Action Items

Action Item	Action By
Arrange for presentation by Olameter on back Office requirements of smart metering systems	Paul Ferguson
Report on Arizona experience with stranded costs	Julie Girvan
Send DSC issue analysis tool to group	Peter Faye