

RP-2004-0188

Draft Report of the Conservation Working Group

September 29, 2004

Introduction

On November 25, 2003 Ontario's Energy Minister, the Honourable Dwight Duncan, announced that Ontario's electric utilities would be able to earn their full commercial return on capital, effective March 1, 2005, if they reinvest "the equivalent of one year of these monies in conservation and demand management initiatives". According to Minister Duncan, this initiative will create an initial energy conservation budget of approximately \$225 million for Ontario's electric utilities.

Moreover, in his April 15, 2004 speech to the Empire Club, Minister Duncan emphasized that Ontario's electric utilities will play a key role in promoting energy conservation:

"We believe that LDCs can and should be agents of change at the local level to promote conservation. LDCs are extremely well placed to encourage conservation and energy efficiency in the communities they serve, and we will need all their expertise, ingenuity and leadership to help build that conservation culture in Ontario."

Minister Duncan's new policy directives have created a need for swift regulatory action.

In the short-run, the Board must create a new interim regulatory framework which will ensure that Ontario's electric utilities spend their initial \$225 million conservation budget in a manner which will provide the largest practicable net bill reductions for their customers.

In the long-run, the Board must create a new sustainable regulatory framework which will compliment the role of the anticipated Conservation Bureau of the Ontario Power Authority and will ensure that the utilities conservation programmes will provide ratepayers with the largest possible bill reductions subject to the constraint that no ratepayer or class of ratepayers is subject to undue rate increases.

Moreover, to achieve the above-noted interim and long-run objectives, the Board must implement regulatory rules and procedures that minimize the regulatory costs, risks and uncertainties to Ontario's electric utilities of implementing innovative, customer-focussed and cost-effective energy conservation programmes.

As part of the OEB's RP-2004-0188 proceeding the Conservation Working Group (CWG) was created to develop pragmatic interim recommendations with respect to how the Board should respond to Minister Duncan's conservation challenge in fiscal years

2005 and 2006. The CWG's recommendations to the OEB are contained in the following three sections of this report.

1. Defining the scope of utility conservation programmes on the customers' side of the meter.
2. Protecting the ratepayer.
3. Minimizing the regulatory costs, risks and uncertainties for Ontario's electric utilities.

The CWG has also provided draft language for the Rate Handbook to enable implementation of this framework and a proposed outline for a Demand Management Handbook which would provide an ongoing mechanism for the Board to guide utility activity in this area. These are provided in appendices D and E respectively.

In undertaking these tasks the CWG has been guided by the need to identify matters that require inclusion in the rate handbook at the outset. However, the CWG has recognized that the Board and stakeholders cannot evaluate the merit of proposals for the handbook in the absence of an understanding of the overall Demand Management regulatory framework that the handbook is intended to compliment. The CWG has attempted to provide a proposal in that regard and in particular has worked to provide a practical framework that can be implemented with relative ease for the Board, the utilities and intervenors. Further, the CWG has recognized the fact that utilities are being encouraged to commence conservation spending prior to 2006 and accordingly, the CWG has proposed rules for 2005 that will both enable cost effective spending in 2005 and that will enable a smooth transition to the 2006 rate handbook rules. (These proposals assume that the Minister would approve, pursuant to section 79.6 of the Ontario Energy Board Act, 1998 such changes.) Finally, we have sought to develop a framework that anticipates the likely role of the Conservation Bureau of the OPA.

Defining the Scope of Utility-Sponsored Conservation Programmes on the Customers' Side of the Meter

There are two broad categories of energy conservation initiatives that can be pursued by Ontario's electric utilities:

1. internal conservation programmes to increase the energy efficiency of their distribution systems (e.g., installation of more efficient transformers to reduce distribution line losses); and
2. external conservation programmes to reduce the energy used by their customers (e.g., programmes that increase the efficiency of energy consumption and/or production on the customers' side of the meter).

Ontario's electric utilities should implement both internal and customer side of the meter energy conservation programmes. However, this report will only make recommendations

with respect to the regulation of utility-sponsored conservation programmes on the customers' side of the meter.¹²

Scope of Customer Side of the Meter Conservation Programmes

Ontario's electric utilities should promote energy conservation programmes, on the customers' side of the meter, that:

1. reduce the demand for grid electricity (kW and kVa), particularly system peak coincident demand, while reducing or not increasing the amount of energy (kWh) used; and/or
2. reduce the amount of energy (kWh) that is used to meet a customers' energy service needs (e.g., a warm house, a cold beer).

There are four broad categories of energy conservation programmes that can satisfy these criteria, namely:

1. Programmes that increase the efficiency of an electric end-use (e.g., a new ENERGY STAR refrigerator uses 50% less electricity than a 10 year-old model; electric heat pumps use two-thirds less electricity for space heating than electric baseboards).
2. Shifting electricity consumption from peak to off-peak periods (e.g., load controls for electric water heaters; shifting an industrial end-user's production process from a peak to an off-peak period).
3. Switching from electricity to alternative fuels, such as natural gas or solar energy to meet a customer's energy service need (e.g., hot water, cooling) at a lower cost.
4. Switching from grid-supplied electricity to self-generation to meet a customer's energy service need at a lower cost.

Protecting the Ratepayer

The CWG recommends the following five-prong strategy to ensure that the utilities' conservation programmes provide the largest possible net bill reductions for their customers subject to the constraint that no customer or customer class is subject to an undue rate increase.

1. Remove the existing disincentive in rate regulation to implement cost-effective conservation programmes.

¹ The Conservation Working Group is unclear as to whether Minister Duncan's initial \$225 million conservation budget is limited to financing programmes on the customers' side of the meter or if it can also be used to finance internal energy efficiency improvements. The Working Group is also unclear as to whether the \$225 million budget is limited to operating costs or if it can also finance capital expenditures. The CWG's implicit assumption is that the vast majority of utility expenditures to promote conservation on the customers' side of the meter will be operating costs as is the case with respect to Enbridge Gas Distribution's and Union Gas' conservation programmes.

² The Rate Design Sub-group has been charged with consideration of incentives for LDC line loss reduction.

2. Promote transparency.
3. Link the utilities' profits to their success at reducing their customers' bills.
4. Measure rate impacts.
5. Appoint an Independent Auditor and a Multi-Stakeholder Audit Advisory Committee

Removing the status quo disincentive to implement cost-effective conservation programmes

The Board's status quo ratemaking principles link the electric utilities' distribution revenues and profits to their distribution volumes (kW and kWh). The higher are their distribution volumes, the higher are their profits. Conversely each kWh saved reduces a utility's profits. As a consequence, under the status quo rules, it is not in the utilities' financial self-interest to spend their initial \$225 million conservation budget in a manner which will provide the maximum possible electricity and bill savings for their customers.

To remove this disincentive the electric utilities should be allowed to recover the lost distribution revenues plus carrying costs that they experience as a result of their energy conservation programmes via a Lost Revenue Adjustment Mechanism (LRAM).

In fiscal 2005 a utility's lost distribution revenues, for each rate class, should be calculated by multiplying the incremental reduction in its kWh and kW volumes, as a result of its conservation programmes, by its distribution charges per kWh and/or kW.

Each utility should be allowed to apply to the OEB to recover its fiscal 2005 lost distribution revenues plus carrying costs in a subsequent rate period.

In fiscal 2006 it is expected that the utilities' rates will be a function of their 2006 load forecasts net of their forecast energy conservation savings. As a consequence, to ensure that the utilities will not be penalized (rewarded) for exceeding (falling short of) their conservation targets, the utilities lost/excess distribution revenues must be a function of the *variance* between the utilities' forecast and actual incremental kWh or kW savings multiplied by their distribution charges.

For example, for a residential customer class, with no demand charge, the lost/excess revenues will be a function of:

(Actual incremental kWh savings – forecast incremental kWh savings) x distribution charge per kWh.

In fiscal 2006 if the actual kWh savings are greater than forecast, the utility should be *allowed* to recover its lost revenues plus carrying charges from its customers in a subsequent rate year. Conversely, if the actual kWh savings are less than forecast, the utility should be *obliged* to return its excess revenues plus carrying charges to its

customers in a subsequent rate period if their fiscal 2006 load forecast was adjusted to include the projected impact of their fiscal 2006 conservation programmes.

Please see Appendix A for more details on the Lost Revenue Adjustment Mechanism (LRAM).

Promoting Transparency

While the creation of a LRAM will eliminate the financial penalty for implementing successful conservation programmes, it will not provide an incentive for the utilities to spend their conservation budgets in a manner which will provide the largest possible bill reductions for their customers.

As a first step towards motivating the utilities to develop high-value conservation programmes, the OEB should publish the following post-audit statistics for each utility :

- Annual kWh and peak kW saved;
- Annual kWh and peak kW saved as a percentage of the utility's total kWh delivered and peak demand respectively, broken-out according to major customer classes (e.g., residential, commercial/institutional, industrial);
- Conservation spending; and
- Conservation spending per kWh and kW saved, broken-out according to major customer classes (e.g., residential, commercial/institutional, industrial).

This process will provide greater transparency and motivate the utilities to pursue best practices since no utility will want to have results that are significantly below average.

Linking the Utilities' Profits to the Bill Reductions They Create for Their Customers

Ontario's electric utilities have many competing objectives. In particular, under the OEB's status quo ratemaking rules, the LDCs can increase their profits by increasing their delivery volumes and/or by reducing their delivery costs. As a consequence, the development of leading-edge, innovative and aggressive energy conservation programmes will not be a priority for the utilities' boards of directors or senior management if the promotion of conservation is merely a cost-centre, not a profit-centre. However, as the OEB's experience with Enbridge Gas Distribution has demonstrated, a well designed conservation incentive can lead to a dramatic improvement in utility performance. For example, from 1995 to 1998 Enbridge had no incentive to aggressively and cost-effectively promote energy conservation and, not surprisingly, it failed to achieve its annual conservation targets by 19% to 70%. In order to encourage improved performance, the Board established a shareholder conservation incentive commencing in 1999. After the incentive was established, Enbridge exceeded its annual conservation targets by 21% to 67% from 1999 to 2001.

Unlike Enbridge, Union Gas does not have a shareholder conservation incentive. As a consequence, the positive impact of a shareholder conservation incentive can also be seen by comparing Enbridge's and Union's forecast energy savings for 2004. Despite the fact that Union Gas is Ontario's largest natural gas utility, in terms of throughput volumes, its energy efficiency targets for 2004 are dramatically lower than those of Enbridge. Specifically, the forecast energy cost savings for Union's 2004 conservation programmes are 56% less than those of Enbridge (\$79.4 million for Union versus \$180.4 million for Enbridge).

Public opinion polling has revealed that Ontario voters strongly support linking the electric utilities' profits to the bill reductions that their conservation programmes achieve for their customers. According to a 1,000 person poll conducted by Oraclepoll Research Limited in the City of Toronto in December 2001, 79% of the respondents believe that the Ontario Energy Board should provide Toronto Hydro with financial incentives for promoting energy efficiency amongst its customers.³

According to a 1,000 person province-wide poll conducted in April 2004, 75% of the respondents agreed that the Ontario Energy Board should make the promotion of energy conservation a profitable course of action for Hydro One and Ontario's municipal electric utilities.⁴

At its July 2004 Council Meeting the City of Toronto passed a resolution asking the Minister of Energy to: "instruct the Ontario Energy Board to link the profits of Ontario's electric utilities (for example Toronto Hydro) to their success at reducing their customers' bills by promoting energy conservation and efficiency".⁵

A well-designed conservation shareholder incentive can simultaneously lower customers' bills and increase shareholder profits.

Therefore to help ensure that the utilities' conservation programmes will provide the largest possible net bill reductions for their customers, the OEB should permit each Ontario electric utility to apply, in fiscal 2005 and/or 2006, at its sole discretion, for a Shared Savings Mechanism (SSM) profit bonus that is equal to a small fraction (5%) of the net incremental customer bill savings that were created by its conservation programmes.

For purposes of calculating the SSM reward the bill savings should be measured by the Total Resource Cost (TRC) Test. The TRC test enables utilities to select programs that are cost-effective and to select among various cost-effective options. For more information on the TRC Test, please see Appendix B.

³ Oraclepoll Research Limited, *Environmental Issues in the City of Toronto*, Prepared for Ontario Clean Air Alliance (December 2001).

⁴ Oraclepoll Research Limited, *Air Quality Issues in Ontario: Survey Report*, Prepared for Ontario Clean Air Alliance (April 2004).

⁵ Letter to Premier Dalton McGuinty from Ulli Watkiss, City Clerk, City of Toronto, August 4, 2004.

Ratepayer Impact Measure (RIM) Test

The Ratepayer Impact Measure (RIM) Test measures the impact of an energy conservation programme on the utility's rates. Since conservation programmes reduce both the utility's revenue requirements and its number of kWh sold, it is possible for conservation programmes to raise a utility's rates even though its revenue requirement has decreased. Accordingly, the RIM test is not a pass/fail test. Rather, it is a means to evaluate the extent of rate impact.

The RIM Test has an important role to play in the development of a balanced portfolio of energy conservation programmes. First, at the programme design and development stage, the RIM Test, along with the TRC Test, can be used by a utility to rank competing energy conservation programmes in terms of their bill reductions per dollar of rate impact. That is, the RIM Test can help a utility develop a portfolio of energy conservation programmes which will provide the largest possible bill reductions for any given level of rate impact (e.g., a one-half of 1% increase in rates). Second, the RIM Test can be used to ensure that the overall rate impact of a utility's aggregate portfolio of energy conservation programmes is not undue.

Therefore, the Board should require all utilities that apply for an SSM reward to also file RIM Test analyses for each of their conservation programmes and for their annual portfolio of conservation programmes. Please see Appendix C for more information on the RIM Test.

Appointing an Independent Auditor and a Multi-Stakeholder Audit Advisory Committee

To protect ratepayer interests the OEB should retain an independent, expert auditor to audit the electric utilities' LRAM and SSM claims.

The OEB should also establish an Audit Advisory Committee consisting of one representative from each of the following constituencies: a) residential, commercial and institutional customers; b) large industrial customers; c) environmental groups; and d) the Electric Distributors Association.

The costs for the independent auditor and the advisory committee should be assessed against all electric utilities and recovered in their rates.

The Audit Advisory Committee should: i) provide advice to the OEB with respect to the selection of the independent auditor and other audit-related issues; and ii) provide advice to the independent auditor.

The OEB may choose to conduct spot audits. Audit reports should be made publicly available.

The principles and the terms of reference for the audits should be established and standardized to the greatest extent possible at the beginning of the process, i.e., before

programme delivery begins, to avoid after-the-fact dispute over the auditor's role and findings, and to ensure a timely and streamlined audit process. Stakeholder input should be considered in the establishment of the audit principles and terms of reference.

The OEB should determine an appropriate process for appeals of the Auditor's findings (e.g., written hearing, leave required, constrained oral hearing or generic proceeding) depending on the materiality, the nature and the frequency of such appeals and the Board's resources.

Each year the utilities should be responsible for delivering a conservation report to the OEB for review by the independent Auditor. The preparation of this report can be done in house or contracted out by the utility. Where one conservation portfolio manager acts for several utilities a joint evaluation can be provided. Evaluation reports should be available to the public with suitable excision to protect customer confidentiality.

The evaluation report will include the following statistics:

- Annual kWh and peak kW saved;
- Annual kWh and peak kW saved, as a percentage of the utility's total kWh delivered and peak demand respectively, broken-out according to major customer classes (e.g., residential, commercial/institutional, industrial);
- Conservation expenditures; and
- Conservation expenditures per total kWh delivered, broken-out by major customer classes.

The evaluation reports of utilities that are seeking an SSM reward will also include the following statistics:

- Net present value of TRC benefits;
- Net present value of TRC benefits per total kWh delivered, broken-out according to major customer categories; and
- Net present value of RIM impacts.

Additionally, the evaluation reports for utilities that are seeking an SSM reward will also include for each conservation programme:

- Target market;
- Number of participants;
- Dollars spent per participant;
- Electricity savings (kWh and kW) achieved.
- RIM Test inputs and results for each programme
- TRC Test inputs and results for each program

To promote transparency the OEB should issue an annual report which contains the aggregated information with respect to each of Ontario's electric utilities, as adjusted by

the independent auditor's findings. Detailed program level information should be available to other utilities and the public via a web based posting.

Minimizing Regulatory Costs, Risks and Uncertainties for Ontario's Electric Utilities

Annual Pre-Approval of Input Assumptions

The calculation of the energy and bill savings associated with utility-sponsored conservation programmes depends on many input assumptions (e.g., avoided costs, kWh, kw and kVa savings per measure, measure life, free-rider rates). As a result, a retroactive, post-audit, adjustment of some or all of these assumptions by the independent auditor and/or the OEB could jeopardize the ability of an electric utility to recover its conservation expenditures and/or its expected LRAM and SSM claims. By minimizing regulatory risk and uncertainty the OEB can eliminate a serious disincentive to the implementation of innovative and aggressive conservation programmes by Ontario's electric utilities. The OEB has already recognized this need by enabling preliminary approvals in its August 30th Information Bulletin For Electricity Distributors.

Therefore it is recommended that each electric utility should be permitted to seek annual pre-approval of its proposed input assumptions for its conservation programmes from the OEB. Furthermore, it is recommended that the OEB seek the advice of its independent auditor and the audit advisory committee before it issues pre-approved input values. In this manner it is expected that the burden on the Board and its staff can be lessened while transparency and accountability to stakeholder groups can be enhanced.

The pre-approved values should be used for calculating the utilities' LRAM and/or SSM claims unless the audit reveals a very significant variance between the pre-approved and actual values that would lead to a significant hardship on the utility or ratepayers if utilized for account clearance. As a result, in the absence of a significant variance between the pre-approved and actual value of one of its input assumptions, the only variable factor in determining a utility's LRAM and/or SSM claim will be its actual number of programme participants. This approach should significantly reduce the contentiousness of the audit process.

If the OEB's audit reveals a discrepancy between a pre-approved and actual input value, the actual value should be used as a basis for future pre-approved values.

The use of a web-based bulletin board is recommended to allow utilities to base program design on inputs that the committee has reviewed and the Board has approved for other utilities and thereby reduce redundant review.

A top priority for the OEB should be to issue pre-approved default interim values for the avoided costs of electricity generation, transmission and distribution since these values are a prerequisite for calculating the benefits side of the TRC Test. The CWG believes that, in the near future, one or more of Ontario's electric utilities will have avoided cost

estimates which could be submitted for pre-approval that will be suitable for widespread application.

In the future, the OEB may be able to delegate the pre-approval of some or all of the input assumptions to the Conservation Bureau of the proposed Ontario Power Authority. However, it is essential that the OEB perform this function, at least on an interim basis, to reduce regulatory risk and uncertainty for Ontario's electric utilities. Further, the Conservation Bureau is expected to focus on province-wide programs and the need for a mechanism for utility-specific program approval will persist.

Conservation Budget

On November 25, 2003 Ontario's Energy Minister, the Honourable Dwight Duncan, announced that Ontario's electric utilities would be able to earn their full commercial return on capital, effective March 1, 2005, if they reinvest "the equivalent of one year of these monies in conservation and demand management initiatives". According to Minister Duncan, this initiative will create an *initial* energy conservation budget of approximately \$225 million for Ontario's electric utilities. This is equivalent to an average conservation budget of approximately 0.2 cents per kWh multiplied by Ontario's total end-use electricity consumption. However, the CWG understands that there is a significant variation, amongst Ontario's utilities, with respect to the magnitude of the conservation budget added. As a consequence, some utilities may exhaust their third tranche conservation spending before the end of fiscal year 2006. Furthermore some (e.g., not-for-profit) electric utilities do not have a third tranche energy conservation budget. Clearly, it would not be appropriate for the OEB to require an electric utility to scale back its conservation efforts in the middle of fiscal year 2006 simply because it had exhausted its third tranche funding. Similarly, it would not be appropriate to deny not-for-profit utilities an energy conservation budget. Thus, there is a need for a simple regulatory mechanism which will permit a uniform level of energy conservation spending by Ontario's electric utilities throughout fiscal years 2005 and 2006.

Therefore, it is recommended that the OEB give all of Ontario's electric utilities blanket approval, in 2005 and 2006, to collect up to 0.2 cents per kWh per year for each kWh that they deliver (inclusive of third tranche revenues) to finance their energy conservation programmes. Utilities that plan to exceed that level of spending should be permitted to apply to the Board to justify higher levels.

The variance between annual conservation revenues and expenditures, in excess of the third tranche revenues and expenditures, should be recorded in a conservation expenditures variance account (CEVA). If annual revenues exceed annual expenditures, the excess revenues plus carrying charges should be returned to the ratepayers in a subsequent year. That is, the Board should not permit the utilities to increase their returns on equity by under-spending their conservation budgets.

Annual Clearance of Variance Accounts

To minimize the utilities' exposure to regulatory risk and to smooth rate impacts, LDCs should be permitted to clear all their conservation variance accounts (e.g., LRAM, SSM, CEVA) plus carrying charges in the subsequent rate year subject to any post-audit true-ups.

Spending Guidelines

To further reduce the utilities' regulatory risk and to ensure a consistent province-wide regulatory framework for conservation spending, the CWG recommends that the OEB issue the following spending guidelines.

1. The Board should encourage the utilities to develop a diversified portfolio of conservation programmes to minimize cross-subsidization. A portfolio which will permit all of utility customers to participate in at least one conservation programme during the next three to five years is recommended. Moreover, the utilities should begin to offer specific programs tailored to low income needs, beginning in 2005 or 2006 to enable low income customers to share in the benefits of conservation as quickly as possible.
2. To the fullest extent possible a utility's conservation expenditures per customer class (i.e., residential, commercial/institutional, industrial) should be equal to its conservation revenues per customer class. That is, industrial consumers should not subsidize residential conservation programmes and vice versa.
3. In order to maximize ratepayer benefits and avoid duplication of effort, the utilities should be encouraged to co-operate, where appropriate, with each other, the proposed Ontario Power Authority and Ontario's gas utilities to develop cost-effective conservation programmes.
4. The Board should also encourage the utilities to contract out some or all of their conservation programme design, delivery and evaluation if this option will lead to reduced costs or higher value-added.
5. To minimize customer costs and better address the Government's conservation goals utilities should place special emphasis on lost opportunity rather than discretionary retrofit situations.

Appendix A: LRAM

Interim 2005 Lost Revenue Adjustment Mechanism (LRAM)

To ensure that the electric utilities will not be penalized for implementing effective conservation programmes, they should be allowed to recover, in their fiscal 2006 rates, the lost distribution revenues plus carrying costs that they experience between March 1, 2005 and February 28, 2006 inclusive as a result of their energy conservation programmes.

A utility's lost distribution revenues, for each rate class, should be calculated by multiplying the incremental reduction in its kWh and kW volumes, as a result of its conservation programmes, by its distribution charges per kWh and kW.

For example, for a residential programme, the annual savings associated with a conservation programme should equal the number of participants, net of free-riders, times the average kWh saving per participant. (Free-riders are programme participants that would have undertaken the conservation measure in the absence of the utility conservation programme.) For example, assuming 12 participants and 2 free-riders and a saving per participant of 20 kWh per year; the annual incremental savings would be 200 kWh per year. [(12 participants – 2 free-riders) x 20 kWh per year per participant].

If all the participants implemented the energy conservation measure on March 1, 2005, the utility's fiscal 2005 lost revenues would be 200 kwh multiplied by its distribution charge, say 1 cent per kWh. That is, \$2.00. However, if the conservation programme's 12 participants joined at one month intervals during the year, the utility's kWh savings and lost revenues during F2005 would be 100 kWh and \$1.00 respectively. For simplicity, an assumption of an average of 6 months should be utilized. In the example this would yield an LRAM of \$1.00.

For mass market conservation programmes (e.g., residential), it will usually be appropriate to use an estimate of the average kWh saving per participant. However, for custom conservation programmes that are designed for specific large volume customers, a customer specific kWh saving estimate will be needed.

When a conservation programme is jointly delivered by an electric utility and one or more partner organizations (e.g., NRCan, a natural gas utility), it will be necessary to calculate the incremental kWh saving and lost revenues that are due the electric utility's participation in the programme. If the programme would not have gone ahead, in the utility's franchise area, without the utility's participation, the incremental savings due to the utility's participation are equal to 100% of the programme's total savings.

On the other hand, if the programme would have proceeded without the utility's participation, the utility's lost revenues will be a function of: a) the incremental number of participants, net of free riders; and/or b) the incremental savings per participant as a result of the utility's participation. For example, assume without the utility's participation the programme would have 50 participants and a saving of 100 kWh per participant. If the utility's participation simply increased the programme's number of participants to 75, the incremental savings as a result of the utility's participation would be 2500 kWh (25 participants x 100 kWh per participant). On the other hand, if the utility's participation increased the number of participants by 25 and increased the average savings per participant by 30 kWh; the incremental savings as a result of the utility's participation would be 4750 kWh [(25 new participants x 130 kWh per participant) + (50 original participants x 30 kWh incremental saving per participant)].⁶

⁶ In this numerical example we have implicitly assumed that there are no free-riders.

2006 LRAM

The 2006 LRAM should be calculated in the same fashion as the 2005 LRAM but be limited to any variance between the total level of DSM achieved and that captured in the 2006 load forecast.

Appendix B: Total Resource Cost (TRC) Test

The TRC Test recognizes that customers do not purchase electricity as a distinct consumer good. Rather, they purchase electricity to fulfill their need for energy services such as heating, lighting and cooking. This test evaluates the impact of energy conservation programmes on the total customer bill for energy services, including participants and non-participants.

The cost side of the TRC Test includes the utility's overhead programme administration cost (OH) as well as the incremental total hardware cost (TH) of buying the actual conservation measures, regardless of who pays this cost. Transfer payments, such as any incentive or rebate, from the utility to the participant are not included because their net effect on participants and non-participants is zero. The benefits side of the TRC Test consists of the net present value of avoided supply-side costs (AC), namely, generation, transmission and distribution. The TRC is net of free riders. The formula is:

$$\text{TRC} = \text{AC} - \text{OC} - \text{TH}.$$

For the definitive description and review of the TRC Test, see: *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects* (October 2001).

Electronic spreadsheet models of the TRC Test are available from:

Appendix C: The Ratepayer Impact Measure (RIM) Test

The Ratepayer Impact Measure (RIM) Test is designed to measure the impact of an energy conservation programme on a utility's rates. Energy conservation programmes reduce both the utility's revenue requirements and the number of kWh sold. Hence, it is possible for a utility's rates to increase even though its revenue requirement has decreased.

The cost components of the RIM Test are the utility's overhead cost (OC), any incentive (I) or rebate the utility transfers to the participants, any direct expenditure by the utility to purchase or install conservation equipment or hardware (UH) and the utility's lost revenue (LR). Lost revenue is defined as the amount of utility revenue the utility loses due to the reduction in kWh sold to the customers who install conservation measures (i.e.,

prior to reimbursement through the LRAM). The utility's avoided costs (AC) constitutes the benefit side of the equation.

The formula is:

$$\text{RIM} = \text{AC} - \text{OC} - \text{I} - \text{UH} - \text{LR}.$$

In this context, it is important to note that cost-effective conservation programmes can easily fail the RIM Test since the utility's fixed costs are spread over a smaller kWh sales volume.

Nevertheless, the RIM Test is useful to: a) ensure that a utility's portfolio of energy conservation programmes do not impose an undue rate increase on an individual or class of customers; and b) determine which energy conservation programmes provide the biggest bill reductions per dollar of rate increase.

For the definitive description and review of the RIM Test, see: *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects* (October 2001).

Electronic spreadsheet models of the RIM Test are available from:

Appendix D – Draft Rate Handbook Provisions and rules for 2004 and 2005

DSM prior to March 2005:

2004 DSM expenditures within MARR 3rd tranche: As previously announced by the Board, and in accord with the Minister's letter of May 31st 2004, utilities may apply for clearance of amounts recorded in a previously approved deferral account to record DSM expenses up to the level equal to the outstanding balance of the third adjustment to MARR incurred up to February 28, 2005 (See the Board's process outlined in its July 16, 2004 notice and subsequent information bulletins.)

Proposal for DSM during the 2005 rate year:

(Should the Minister so approve, pursuant to section 79.6 of the Ontario Energy Board Act, 1998:)

DSM tracking and deferral accounts:

2005 DSM expenditures within MARR 3rd tranche limits: Utilities may apply to create a deferral account to record DSM expenditures up to the level equal to the outstanding balance of the third adjustment to MARR in the manner prescribed in the Board's July 16th notice and subsequent information bulletins for subsequent clearance after approval.

2005 DSM expenditures beyond MARR 3rd tranche limits: utilities may apply to record these expenditures in a deferral account in a similar fashion to those within the limits of the third tranche MARR for clearance into rates in a subsequent period after approval. Unless specifically approved by the Board in advance, the total value of expenditures eligible for recording in this account will be limited to:

(0.2 cents per kWh X total annual kWhs delivered) – (amount recorded against 3rd tranche MARR in the rate year).

2005 LRAM: Lost Revenue due to utility DSM programs may be recorded in a deferral account. The calculation of LRAM amounts shall be in accordance with the formulas prescribed in appendix XX.

2005 SSM: utilities may apply for a shared savings mechanism variance account to record 5% of the net present value of total resource cost test results due to 2005 DSM expenditures.

Proposals for DSM in the 2006 Rate Handbook:

Adjustments to the Load Forecast for 2006 DSM forecast:

For purposes of rate setting, utilities should deduct from the load forecast a forecast of load reductions for each rate class due to the utility's expected DSM programs in the rate year and due to the continuing impacts of any such DSM programs in 2004 and 2005.

Adjustments to the revenue requirement:

2006 DSM expenditures within 3rd tranche limits: DSM expenditures up to the level equal to the outstanding balance of the third adjustment to MARR should be recorded in the manner prescribed in the Board's July 16th notice and subsequent information bulletins for subsequent clearance after audit and approval. These expenditures should **not** be included in adjustments to the revenue requirement as they are to be funded by the 3rd tranche.

Forecast DSM expenditures in 2006 beyond those covered by the outstanding MARR 3rd tranche may be added to the revenue requirement.

Deferral Accounts (to track adjustments to the revenue requirement in subsequent periods due to 2006 DSM activity):

DSM variance account for 2006 DSM expenditures beyond 3rd tranche limits: these expenditures should be tracked by rate class and any variance from the level of expenditure forecast and included in the revenue requirement should be recorded in a

deferral account. The total value of expenditures eligible for recording in this account, unless approved by the Board in advance, will be limited to:

$(0.2 \text{ cents per kWh} \times \text{total annual kWhs delivered}) - (\text{amount recorded against 3}^{\text{rd}} \text{ tranche MARR in the rate year}) - (\text{amount included in 2006 revenue requirement for DSM spending beyond 3}^{\text{rd}} \text{ tranche}).$

2006 LRAM: variances in revenue due to any variance of load reductions from that forecast for 2006 DSM (due expansion or contraction of DSM program offerings or due to over or under performance of utility DSM programs) may be tracked by rate class and recorded in a deferral account. The calculation of LRAM amounts shall be in accordance with the formulas prescribed in appendix XX.

2006 SSM: Utilities may apply for a shared savings mechanism variance account to record 5% of the net present value of total resource cost test results due to non-capitalized 2006 DSM expenditures broken out by rate class.

Appendix E – Proposal for a Demand Management Handbook:

The CWG envisages the eventual publication by the OEB of a DSM handbook. This handbook would evolve and embody the DSM regulatory framework. It would be expected to change over time as the role of the OPA's Conservation Bureau evolves. The initial details of the handbook could be settled in the near future in time to provide guidance on 2005 DSM spending, clearance of the 2005 deferral accounts and screening of 2006 DSM programs. The initial DSM Handbook could set out:

1. Program eligibility examples and guidelines:

LDCs have already sought some assurance that expenditures will be eligible for subsequent clearance into rates or against the MARR 3rd tranche requirement. As program proposals and assumptions are vetted they could be recorded on an electronic bulletin board for the benefit of other utilities.

The Board may also include guidance on priorities such as low income customer programs and lost opportunity programs.

Suggested broad categories for eligible DSM expenditures include:

Energy conservation programmes, on the customers' side of the meter, that:

- reduce the demand for grid electricity (kW and kVa), particularly system peak coincident demand, while reducing or not increasing the amount of energy (kWh) used; and/or

- reduce the amount of energy (kWh) that is used to meet a customers' energy service needs (e.g., a warm house, a cold beer).

There are four broad categories of energy conservation programmes that can satisfy these criteria, namely:

1. Programmes that increase the efficiency of an electric end-use (e.g., a new ENERGY STAR refrigerator uses 50% less electricity than a 10 year-old model; electric heat pumps use two-thirds less electricity for space heating than electric baseboards).
2. Shifting electricity consumption from peak to off-peak periods (e.g., load controls for electric water heaters; shifting an industrial end-user's production process from a peak to an off-peak period).
3. Switching from electricity to alternative fuels, such as natural gas or solar energy to meet a customer's energy service need (e.g., hot water, cooling) at a lower cost.
4. Switching from grid-supplied electricity to self-generation to meet a customer's energy service need at a lower cost.

2. Program and measure screening templates:

Standardized spreadsheets will enable application of standard cost-benefit tests and reporting, inter-utility comparisons and streamlined auditing. Such spreadsheets are commercially available or could be developed by the Board based upon the simplified spreadsheets that intervenors have developed in the context of gas DSM.

Guidelines for development of free rider estimates could be included.

3. Default avoided cost values:

It is anticipated that the Conservation Bureau will eventually generate default provincial avoided cost values that will enable the calculation of the net benefit of DSM programs. In the interim, the Board could publish default values adapted from initial utility filings. (Hydro One, Toronto Hydro and Union Gas are currently jointly developing a set of avoided costs that are expected to be available in the near future.) Subsequent refinements might include evaluation of the avoided costs applicable for power correction measures.

4. Guidelines for calculating local avoided costs:

Individual utilities may obtain added benefits from DSM due to alleviation of local constraints. This added value may not be captured in province-wide avoided costs. Examples of eligible costs could be offered to assist utilities in identifying these costs.

5. Results, calculation rules, and reporting template:

The handbook should provide a list of required statistics to be tracked and reported with formulas provided where required.

Suggested statistics should be included in an evaluation report which should be published to enable comparison and spur improved performance:

- a. Annual kWh and peak kW saved;
- b. Annual kWh and peak kW saved as a percentage of the utility's total kWh delivered and peak demand respectively, broken-out according to major customer classes (e.g., residential, commercial/institutional, industrial);
- c. Conservation spending; and
- d. Conservation spending per kWh and kW saved, broken-out according to major customer classes (e.g., residential, commercial/institutional, industrial).

The evaluation reports of utilities that are seeking an SSM reward will also include the following statistics:

- e. Net present value of TRC benefits; and
- f. Net present value of TRC benefits per total kWh delivered, broken-out according to major customer categories.
- g. RIM test results to ensure that rate impact of the portfolio is not undue

Guidelines for calculating load impacts of partial year measures (i.e. the impact in the first year) should be included. We recommend that a simplifying assumption of 6 months of effect be utilized.

Templates for calculation of TRC and RIM values should be provided.

Guidelines for avoiding inter-rate class cross subsidy. We recommend that DSM costs be allocated to the rate class enjoying the benefits.

Guidelines be provided for attribution where joint programs are conducted.

6. Audit and advisory group protocol:

To protect ratepayer interests the OEB should retain an independent, expert auditor to audit the electric utilities' LRAM and SSM claims.

The OEB should also establish an Audit Advisory Committee consisting of one representative from each of the following constituencies: a) residential, commercial and institutional customers; b) large industrial customers; c) environmental groups; and d) the Electric Distributors Association.

The costs for the independent auditor and the advisory committee should be assessed against all electric utilities and recovered in their rates.

The Audit Advisory Committee should: i) provide advice to the OEB with respect to the selection of the independent auditor and other audit-related issues; and ii) provide advice to the independent auditor.

Recommendations on information requirements and a protocol for audits should be developed by the committee and once approved by the Board provided in the handbook.

A protocol for dealing with confidential information should be included.

A mechanism for stakeholder review and comment could be provided.

The auditor and committee would also provide recommendations to the Board on pre-approval of programs and assumptions.

It is recommended that the primary focus of the audit be forward looking. Any deviations from pre-approved assumptions that come to light in the audit would inform future program planning and evaluation. Only in extreme cases, where significant lack of fairness would otherwise result, would the assumed inputs be altered to clear LRAM or SSM accounts. This approach will reduce regulatory risk and greatly simplify the work of the committee, auditor and the Board.

7. Cap on DSM spending

The Board could use any consultation process it invokes for the development of the DSM handbook to change the spending cap for future periods in light of initial experience reported.