

## 2014 OEB Gas DSM Framework Issue Paper:

# Measuring Program Performance

### Current Ontario Framework

In June 2011, the Ontario Energy Board (OEB) issued a new set of demand-side management (DSM) guidelines for the province's two gas utilities. Among the key issues those guidelines addressed was the assessment of the actual performance of the utilities DSM programs, particularly in comparison to performance goals or metrics that would be established in the utilities' DSM plans. The same OEB guidelines allow the utilities to earn substantial financial incentives for their shareholders for meeting or exceeding their goals. Subsequent to the OEB's publication of its DSM guidelines, the utilities filed their plans. As part of those plans, the utilities included new proposals that expanded on the OEB's guidelines regarding performance measurement. Those proposals were ultimately approved by the OEB. The result is the gas DSM performance measurement framework in place in Ontario today. What follows is a summary of key elements of the current framework:

- **Evaluation plans.** The utilities are required to file plans for how they will evaluate the effectiveness of their DSM programs as part of their three-year DSM plans.
- **Evaluation budgets.** The utilities are required to identify the portion of their DSM budgets that will be spent on evaluation. For the approved 2012-2014 plans, the utilities' proposed evaluation budgets were approximately 3% of their total DSM budgets.<sup>1</sup>
- **Prescriptive savings assumptions.** Each year the utilities jointly file savings and other assumptions (e.g. measure life and incremental cost) that they expect to use when estimating the impacts of prescriptive efficiency measures. Those assumptions are based on both data collected in Ontario and on research and evaluation conducted in other jurisdictions. Prescriptive efficiency measures are typically measures for which *average* savings across an entire population of program participants can be estimated with some confidence and for which site-specific estimates of savings would be prohibitively expensive (e.g. for measures which are rebated and/or installed in substantial quantities in homes or smaller businesses). Though the OEB's 2011 guidelines make clear that the utilities must use the best available information on savings at the time that their annual savings claims are made (typically in the Spring for the previous year – see below), the filed assumptions

---

<sup>1</sup> Enbridge's ranged from 2.4% in 2012 to 2.8% in 2014 (EB-2012-0394, Exhibit B, Tab 1, Schedule 5). That was for direct costs only; it did not include costs for tracking and reporting, management of research and costs associated with stakeholder engagement. Union's was 3.2% (EB-2011-0327, Exhibit A).

serve as default assumptions in the event that no new and better information has become available.

- **Free ridership and spillover.** The savings that an efficiency measure produces in the home or business in which it is installed is commonly called its “gross savings”. In contrast, “net savings” refers to the portion of gross savings that are attributable to a utility’s efficiency program. It can adjust for the portion of savings that would have occurred anyway (e.g. because the customer would have installed the efficiency measure even without the utility rebate). Such effects are called free ridership. It can also adjust for the impacts a utility program has on the purchase and installation of efficiency measures that never get recorded by the utility (e.g. a customer is influenced by interaction with the utility to buy an efficiency measure but never claims a rebate). Such effects are called spillover effects.<sup>2</sup> The OEB requires that utilities adjust all of their savings to account for free rider effects. Though not required, it allows utilities to claim spillover effects provided that they are “supported by comprehensive and convincing empirical evidence, which clearly quantify the spillover effects that a specific program has had...”<sup>3</sup> To this point, the utilities have not made any such spillover claims. The conversion to net savings from gross savings is commonly called a “net-to-gross” (NTG) adjustment.
- **Custom Project Savings Verification (CPSV).** Every year the utilities hire engineering firms to critically review their estimates of savings for custom commercial and industrial efficiency projects. Custom projects often account for 80% or more of each utilities’ total savings estimates. This process includes both a desk review of savings calculations and on-site visits to the facilities to verify that the measures were installed, take measurements of key efficiency or other operational parameters as appropriate, and discuss the project with the business. Only a sample of projects is reviewed. The CPSV firm’s proposed changes to savings estimates for the sampled projects are then extrapolated – using what the evaluation industry calls “realization rates” – to the entire population of custom projects. This process has evolved over the years to the point where there is now in place a detailed sampling protocol (developed by an expert contractor hired by the TEC – see below) designed to provide 90% confidence that the extrapolation of savings adjustments to the

---

<sup>2</sup> Spillover can further be subdivided into three categories: (1) inside participant spillover which accounts for additional measures that a program participant installed at the same site as measures the utility rebated (or tracked and claimed as direct participant savings for other reasons); (2) outside participant spillover which accounts for saving that a program participant installs at a different site; and (3) non-participant spillover, which accounts for measures installed by customers who never directly participated in the utility’s DSM programs in a way in which the utility would immediately know that savings had occurred.

<sup>3</sup> Ontario Energy Board, “Demand Side Management Guidelines for Natural Gas Utilities”, EB-2008-0346, June 30, 2011.

entire population of custom projects produces a total custom project savings estimate that is within 10% of what would have been found had every one of the (typically) hundreds of custom projects been separately reviewed.

- **Annual Reports.** The utilities are required to produce reports after the conclusion of each program year which document the savings achieved, as well as performance relative to other key metrics – particularly those metrics established for the purpose of (potentially) earning shareholder incentives. The results from the CPSV reports are incorporated into the annual report.
- **Annual Audit.** Each year an auditor is hired (separately for each utility) through the Audit Committee process (see below) to independently assess the reasonableness of the Company’s claims regarding savings and other performance metrics addressed in its Annual Report. The auditor’s report – included proposed adjustments to the utility’s savings claim, its performance relative to other metrics of interest, its eligibility for shareholder incentives, its lost revenue adjustment and other factors – is required to be filed with the OEB by the end of June (i.e. within 6 months of the end of the year on which it is reporting).
- **Audit Committee (AC).** The ACs’ – which have been comprised of a utility representative and three elected stakeholder representatives – were originally created in 2000 to give stakeholders a voice in the hiring and input on the work of the independent auditors. However, their roles had gradually evolved to include providing some input on evaluation priorities, draft prescriptive measure savings characterizations and related items. With the filing of the utilities’ 2012-2014 DSM plans, that portion of their role was shifted to the TEC (see below). In addition, their approach to decision-making – particularly in the selection of the annual auditor – was changed. In the past, though there was often consensus on the selection of the auditor, the utilities always had the final say. Under the new rules, the utilities and elected stakeholder reps continue to try to reach consensus on both a bidders list and on the ultimate selection of the auditor from among the firms who bid. However, in the event that consensus is not possible, the utilities get the final say on the bidders list – provided it has at least nine qualified firms on it – and the elected stakeholder reps have the final say on the selection of the auditor. This process is also communicated to all bidders, so that they realize that they are not just answering to the utility (to ensure that their work is truly independent).
- **Technical Evaluation Committee (TEC).** The TEC is to be comprised of a representative from each utility, three elected stakeholder representatives and two independent members who would be appointed by other five utility/stakeholder members. It is charged with developing gas DSM evaluation priorities for the province; developing scopes of work for new, high-priority province-wide evaluation projects; and hiring and overseeing evaluation

contractors in the performance of that work. The TEC is designed to operate by consensus to the greatest extent possible, including in the selection of its independent members. Over the two years it has been in effect, the TEC has completed work on a sampling protocol for the CPSV process; reviewed and approved for submittal to the OEB a number of new measure savings (and other) assumptions as well as some changes to existing assumptions; and launched two major new evaluation projects – one to critically review all existing prescriptive assumptions and develop the provinces first, comprehensive, on-line Technical Reference Manual of such assumptions and another to assess free ridership and spillover for custom commercial and industrial projects. Both of the latter two evaluation projects are currently underway and expected to be completed in late 2014 or early 2015.

### **Comparison of Current Ontario Framework to Industry Best Practices**

What follows is a brief assessment of how the current Ontario framework for performance measurement compares to best practices across North America. We focus particularly on the following items:

- Independence of evaluation
- Requirements for impact evaluation
- Net-to-gross (NTG) adjustments

#### *Independence of Evaluation*

It is always important that any evaluation of the impacts of DSM be independent of the entity charged with delivering energy savings and other forms of progress in markets for efficiency. It is particularly important when the entity charged with delivering results – the gas utilities in Ontario – has the ability to earn substantial financial incentives for meeting or exceeding goals – as is the case in Ontario. In the 1990s, it was standard practice to consider an evaluation to be “independent” if it was conducted by an independent third party, even if that party was chosen, managed and paid by the utility whose performance it was evaluating. However, that has changed over the past decade. Numerous jurisdictions now vest responsibility for evaluation - including setting evaluation priorities, establishing scopes of work for evaluations, selecting evaluation contractors and overseeing their work – with parties other than the utility or non-utility parties charged with delivering efficiency programs (the utility or non-utility program administrators have input into decisions, but someone else has the final say).

A variety of models for independent management of DSM evaluation are being used, with the decisions on details of the approach a function of the strength of existing institutions, capacity

constraints, historic relationships and other local factors. Some jurisdictions, such as Vermont, vest the responsibility with a government agency (e.g. the Vermont Department of Public Service). Others vest it with regulatory staff. For example, staff of the Illinois Commerce Commission have veto power over the hiring of the utilities' evaluation contractors and exercise considerable influence over the design of evaluation studies. In yet another approach, the New Jersey Board of Public Utilities chooses to contract with the Rutgers University Center for Energy, Economic and Environmental Policy to manage the state's DSM evaluation work. Another model is used in the southern New England states of Massachusetts and Connecticut. In those states, the utilities have ceded responsibility for evaluation to councils comprised of state government agencies, consumer groups and environmental advocates. Typically, those councils have their own expert consultants which they hire with funds provided by the utilities. The consultants support council stakeholders in negotiating the utilities' DSM performance goals, help the council engage the utilities on ways to improve their programs and become the staff that oversee the DSM evaluation work.

To be sure, over the past 14 years the OEB has made significant strides in making gas DSM evaluation more independent as well. This began in 2000 with the requirement of annual independent audits of utility savings claims and the creation of audit committees to oversee those audits. However, until recently, the auditors were still ultimately under the control of the utilities. The utilities had the final say in who to hire. They also typically had much more interaction with the auditor, with audit committees being briefed much less frequently regarding key audit questions, likely leading to greater utility influence on the audit outcomes. In addition, the utilities retained complete control over decisions on how to spend evaluation budgets, the crafting of scopes of work for evaluation studies, the selection of evaluation contractors and the oversight of their work. The only check on that control was having the auditors review the resulting reports. A significant additional improvement was made a couple of years ago when the TEC was created – giving stakeholders an equal voice in establishing evaluation priorities, hiring of evaluation contractors and overseeing the work of those contractors – and the changing of the rules for hiring of auditors – giving stakeholders final say in who to hire (keeping in mind that the utilities had final say in developing the bidders' list) in the event a hiring consensus decision (with the utility) was not possible. In addition, the audit committee members are also now invited to participate in all substantive discussions with the auditor.

Despite this significant progress, one substantial conflict with the concept of evaluation independence remains. Specifically, the utilities still have complete control over the hiring and oversight of the CPSV firms charged with evaluating the reasonableness of the companies'

custom commercial and industrial efficiency projects – projects that typically produce the lion’s share (often 80% or more) of their savings. To be sure, stakeholders – through the TEC – have input on the scope of work for the CPSV firms. As recently as this current year (e.g. the 2013 Enbridge audit), they also have received increased (relative to past years) ability to review and provide feedback on both the draft and final work products of the CPSV firms (in the previous year, stakeholder members of the AC were only able to review the final CPSV reports). The CPSV firms’ work is also reviewed and critiqued by the annual auditor. However, the CPSV firms still know that they are hired and managed exclusively by the utilities. Their budgets are also set by the utilities.

Thus, one important process modification the OEB should make in its next gas DSM guidelines is to make the hiring and oversight of the work of the CPSV firms independent of the utilities. Perhaps the most logical way to do that within the existing Ontario evaluation structure – which appears to be functioning reasonably well otherwise – would be to have the Audit Committees hire the auditor earlier (i.e. late summer or early fall of the year whose results they will audit) and have the auditor hire and oversee the work of the CPSV firms. This would not require a significant increase in the work load of the auditor because they already do intensive reviews of the CPSV firms’ work. Indeed, it might even reduce some aspects of the auditors’ work load because they could shape the CPSV work at the outset, rather than trying to fix problems they find after the work has been completed. This approach should address the concerns about the thoroughness and independence of the custom commercial and industrial savings estimates that were recently raised before the OEB in proceedings regarding both Union’s and Enbridge’s 2012 shareholder incentive claims.

#### *Requirements for impact evaluation*

In most jurisdictions where there is substantial investment in DSM, there is an expectation – and often even a regulatory requirement – that all “resource acquisition” programs of any appreciable size will be subjected to a regular cycle of impact evaluations (typically ranging from annually to every three years, depending on the size of the program, expected variability of savings, cost of evaluation and other factors). Such evaluations are commonly used to update deemed savings values and/or to directly adjust utility estimates of program savings (as well as to inform future program design).

Historically, there has been less impact evaluation of the Ontario gas utilities’ DSM programs than of comparable programs in other leading jurisdictions. Most of the impact evaluation that has taken place in Ontario has taken the form of either verification studies to determine whether measures were actually installed and stayed installed or, more recently, independent

engineering assessments of the reasonableness of the companies' custom C&I project savings estimates. There has been very little direct measurement of actual savings – either for the purposes of adjusting deemed savings values for individual measures, for developing revised baseline assumptions for key technologies or for adjusting program-level savings estimates. To be sure, there have been exceptions. Enbridge's measurement of pre- and post-installation gas consumption to estimate the impacts of retrofitting low flow showerheads is a good example. However, such work has been the exception rather than the rule. There are some signs of improvement in recent years. For example, following a recommendation from a recent Enbridge auditor,<sup>4</sup> the recent CPSV terms of reference require on-site measurements whenever possible to augment "desk reviews" of custom project savings calculations. However, much needs to be done to "catch up" to the level of measurement that is performed in other jurisdictions.

Part of the problem is likely to be a function of inadequate budgeting for evaluation. A rough rule of thumb is that evaluation should consume between 3% and 6% of DSM budgets.<sup>5</sup> As noted above, in their 2012-2014 DSM plan, Enbridge Gas set aside 2.4% to 2.8% of their total budget for evaluation. Union Gas set aside 3.2%. Those are respectable budget levels – at least at the lower end of the range that would be ideal. However, it is important to note that evaluation spending in prior years was substantially lower. For example, in 2011, Union Gas spent only about \$470,000 (or about 1.7%) of the approximately \$28 million that it spend on DSM.<sup>6</sup>

All of this suggests that the Board should consider the following when developing the next set of guidelines for gas DSM in the province:

- Require that all programs undergo some form of impact evaluation at least once every three years;
- Require that, in addition to key verification activities, such impact evaluations include some form of measurement – whether whole facility billing analysis, end use metering, calibrated building simulation modeling, and/or other accepted methods;

---

<sup>4</sup> Energy & Resource Solutions, "Independent Audit of Enbridge Gas Distribution 2012 DSM Program Results", Final Report, June 26, 2013 and Energy & Resource Solutions, "Independent Audit of Enbridge Gas Distribution 2011 DSM Program Results", Final Report, June 27, 2012.

<sup>5</sup> State and Local Energy Efficiency Action Network, "Energy Efficiency Program Impact Evaluation Guide", prepared by Steven R. Schiller, Schiller Consulting, Inc., December 2012, [www.seeaction.energy.gov](http://www.seeaction.energy.gov)

<sup>6</sup> Union Gas, "Final Audited Demand Side Management 2011 Annual Report", June 29, 2012.

- Require that impact assessment of the very large custom C&I programs continue to be conducted through the CPSV process, but with increased emphasis on on-site measurement;
- Require a minimum of 3% of DSM budgets continue to be set aside for evaluation, with higher amounts to be encouraged if required in the short term to address key data uncertainties;
- Push back the deadline by which annual audit reports must be filed from the end of June to at least the end of July in order to facilitate more extensive field work by CPSV firms.

### *Net to Gross Adjustments*

As noted above, the current OEB guidelines require that the utilities' gross savings be adjusted for free ridership; adjustments for spillover are permitted – with sufficient evidence – but not required. There are at least a couple of concerns with how this policy has been implemented to date.

First, there has been almost no direct evaluation of either free ridership or spillover for Ontario's gas DSM programs. As noted above, the TEC is currently managing a new study of such effects for Union's and Enbridge's custom commercial and industrial (C&I) programs. However, that study is just getting underway, so results are not likely to be available until late 2014 – more than six years after the only other study of free ridership and spillover for custom C&I programs.<sup>7</sup> Moreover, neither utility has sponsored and made public any other study of free ridership and/or spillover effects for any other market since then. Thus, most of the free ridership estimates currently being used are based on either professional judgment or studies from other jurisdictions, and most have not been changed in years. Put simply, there has been a significant under-investment in net-to-gross evaluation in the province.

Second, the approach to net-to-gross adjustments embodied in the OEB's current gas DSM guidelines leads to an inherently conservative estimate of DSM savings and cost-effectiveness. To be sure, this approach protects against utilities "chasing free riders" or attempting to claim inflated levels of spillover to meet goals, which could be a natural tendency absent such a protection, especially with the wide latitude given to the utilities to adjust the design of their programs as they see fit to meet goals<sup>8</sup> and the significant shareholder incentives at stake if those goals are met and/or exceeded. Such protection is important. However, the Board can

---

<sup>7</sup> Summit Blue Consulting, "Custom Projects Attribution Study", submitted to Union Gas and Enbridge Gas, October 31, 2008.

<sup>8</sup> This kind of flexibility is generally a "good thing" in that it allows utilities to adapt in real time to feedback from the market about which strategies to promote efficiency are working and which are not.



retain that protection while producing more balanced estimates of savings by making clear that estimates of spillover that are based on independent studies of the Ontario utilities' programs, using industry accepted methods, will be accepted. The Board can also require that spillover be assessed as part of evaluation activities whenever the incremental accuracy in net savings is commensurate with the incremental cost of the spillover assessment.

#### **Attribution and Use**

This brief has been prepared for TAF by Chris Neme, Energy Futures Group. Please treat this material as 'draft' as elements may evolve during the course of discussions and in the formulation of input to the formal OEB consultation. Please note that the views and ideas expressed in these briefs are presented by the Toronto Atmospheric Fund to support the discussion around developing a new gas DSM policy framework. We welcome your views about these or other issues related to natural gas conservation policy in Ontario.