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Ontario Energy Board

Ontario

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Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)

December 22, 2014

- Early Replacement – a measure category where operable equipment is replaced by a higher efficiency alternative (also referred to as advancement)
- Natural Replacement – a measure category where the equipment is replaced on failure
- New Construction – efficiency measures in new construction or major renovations, whose baseline would be the relevant code
- Retrofit – a measure category that includes the addition of an efficiency measure to an existing facility such as insulation or control gaps (for example: to close hot air leaks through cracks and other gaps)

The evaluation of the achieved results for the purpose of determining the lost revenue adjustment mechanism ("LRAM") amounts and the shareholder incentive amounts should be based on the best available information which, in this case, refers to the updated input assumptions resulting from the evaluation and audit process of the same program year. For example, the LRAM and shareholder incentive amounts for the 2015 program year should be based on the updated input assumptions resulting from the evaluation and audit of the 2015 results. The updates to the input assumptions resulting from the evaluation and audit of the 2015 results would likely be completed in the second half of 2016.

Where feasible and economically practical, the preference to determine LRAM and shareholder incentive amounts should be to use measured actual results, instead of input assumptions. For example, it may be feasible and economically practical to measure the natural gas savings of weatherization programs based on the results of the pre- and post-energy audits conducted by certified energy auditors on a custom basis, as opposed to input assumptions associated with the individual measures installed.

9.0 COST-EFFECTIVENESS SCREENING

The purpose of screening natural gas DSM programs is to determine whether or not they should be considered any further for inclusion in the DSM portfolio. An appropriate screening test will include both utility system benefits and costs, and participant benefits and costs. Some programs, such as market transformation and pilot programs are not typically amenable to a mechanistic screening approach and, as set out in sections 6.5 and 6.2 respectively, should be reviewed on a case-by-case basis instead. Among the programs amenable to a mechanistic screening approach, the natural gas utilities may only apply for approval of programs that are cost effective as determined by the particular screening test.

1.0 INTRODUCTION

The Filing Guidelines to the Demand Side Management ("DSM") Framework for natural gas distributors (the "DSM Guidelines") is a companion document to the DSM Framework for Natural Gas Distributors (2015-2020) (the "DSM framework"). The DSM Guidelines are intended to provide a common understanding of the key elements related to DSM activities and outline the specific information the Board expects the natural gas utilities to take into consideration when developing their DSM Plans and filing applications. The sections below build on the direction provided in the DSM framework and provide further details related to the sections discussed in the DSM framework.

2.0 GUIDING PRINCIPLES

The Board has outlined a set of guiding principles in Section 2 of the DSM framework. The gas utilities are expected to address the guiding principles in the design of their DSM plans. The gas utilities should include a section in their multi-year DSM plan applications which discusses how they have incorporated the Board's guiding principles throughout the multi-year plan.

3.0 DSM TARGETS

Section 3.0 of the DSM framework discusses the Board's direction to the gas utilities regarding DSM Targets. In addition to the guidance provided in the framework, the gas utilities can include targets for important program elements such as:

- the number of low-income participants enrolled in a DSM program,
- the number of houses or businesses who have installed at least one energy efficient technology that will produce long-term natural gas savings,
- the number of participants enrolled in natural gas DSM programs that have been coordinated and/or integrated with electricity conservation and demand management ("CDM") programs, or
- the number of customers that have participated in a new program that has been identified as a key priority by the Board.

7.2.3 Persistence

Persistence of DSM savings can take into account how long a DSM measure is kept in place relative to its useful life, the net impact of the DSM measure relative to the base case scenario, and the impact of technical degradation. For example, if an energy efficient measure with a useful life of 15 years is removed after only two years, most of the savings expected to result from that installation will not materialize. As for technical degradation, it refers to the potential for the DSM measure's performance to decrease as it gets closer to the end of its useful life (e.g., the achieved efficiency level of a natural gas furnace may decrease as it ages).

Another aspect that can be considered as part of the persistence factor is whether a program participant would have implemented the DSM measure on its own in the future (e.g., in two years), but their implementation date was accelerated by the program offering. In this case, the savings resulting from the DSM program would only accrue for up to the period by which the adoption was accelerated (e.g., two years), instead of the entire useful life of the measure.

Another important consideration in assessing the persistence of savings is the potential changes in usage pattern. For example, large custom commercial and industrial DSM projects with expected useful life of 20 years or more may not fully materialize if the business benefiting from the custom measure operates at lower levels or closes down its processes within that time period.

The natural gas utilities should provide a rationale for the persistence factor it has determined appropriate for each of its programs.

8.0 INPUT ASSUMPTIONS

8.1 Annual Process to Update Input Assumptions

Various assumptions are used at different stages of the multi-year DSM Plans. Assumptions such as operating characteristics and associated units of resource savings for a list of DSM technologies and measures are referred to as "input assumptions". What follows is a discussion about the specific components of the input assumptions. Gas utilities analyze the prospective programs and determine the benefits (e.g., total natural gas savings that can be achieved and the costs that can be avoided as a result of the DSM program) and compare them to the costs of delivering the program, including administration, marketing and education costs.

As part of the previous DSM framework, the Technical Evaluation Committee ("TEC") was established, comprised of representatives from the gas utilities, key stakeholders and independent experts, to develop a standard set of engineering assumptions related to the energy savings of different technologies and pieces of equipment, to be included in the master list of assumptions (the Technical Reference Manual ("TRM")), which is used by the gas utilities when designing and screening DSM programs. The TEC's role also includes administering any updates to the TRM on an annual basis to ensure that the standard set of energy efficient measures and assumptions reflect the best information available. The TRM is expected to be completed by the TEC by the middle of next year (i.e., 2015).

As discussed in the DSM framework at Section 8.2, the Board will coordinate the process to annually update the input assumptions for the new DSM framework. The Board's role with respect to coordinating any updates to the standard list of input assumptions would be complementary and related to its role in leading the evaluation process, also discussed in the DSM framework. The input assumptions will be updated regularly to reflect the relevant findings in the evaluation process. The Board's process will seek appropriate input, considerations and expertise from key stakeholders to inform future updates to the input assumptions.

8.2 Input Assumptions

Input assumptions will continue to cover a range of typical DSM activities, measures and technologies in residential and commercial applications. If applicable and practical, input assumptions for DSM activities, measures, and technologies for industrial applications could also be added. Input assumptions should generally be the same for each gas utility's DSM plan. On an exception basis, and to the extent required and supported, different input assumptions for the natural gas utilities may be provided to account for differences in their franchise areas. Estimated savings and costs of DSM programs will be defined relative to a frame of reference or "base case" that specify what would happen in the absence of the DSM program. At a minimum, the base case technology will be equal to, or more efficient than, the technology benchmarks mandated in energy efficiency standards, as updated from time to time. For example, in the case of a DSM program consisting of a residential programmable thermostat, the base technology may be a manual thermostat. For a program consisting of installing a high efficiency furnace, the base case equipment may be a furnace that meets the currently mandated efficiency standard. In practice, specifying savings relative to a frame of reference can be characterized by four general decision types:

- Early Replacement – a measure category where operable equipment is replaced by a higher efficiency alternative (also referred to as advancement)
- Natural Replacement – a measure category where the equipment is replaced on failure
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The Board has determined that the natural gas utilities should screen prospective DSM programs using the Total Resource Cost-Plus ("TRC-Plus") test. The TRC-Plus test measures the benefits and costs of DSM programs for as long as those benefits and costs persist and applies a 15% non-energy benefit adder. Under this test, benefits are driven by avoided resource costs, which are based on the marginal costs avoided by not producing and delivering the next unit of natural gas to the customer. Those marginal costs avoided include the natural gas commodity costs (both system and customer) and transmission and distribution system costs (e.g., pipes, storage, etc.). The marginal costs also include the benefits of other resources saved through the DSM program, such as electricity, water, propane and heating fuel oil, as applicable. TRC-Plus test calculations are detailed in Section 9.1.3 below.

The natural gas utilities should also use the Program Administrator Cost ("PAC") test as a secondary reference tool to help prioritize programs that deliver the most cost-effective results. The PAC test measures the utility's avoided costs and the costs of DSM programs experienced by the utility system. Under this test, benefits are driven by avoided utility costs, including avoided energy costs, capacity costs, transmission and distribution costs and any other avoided costs incurred by the utility to provide its customers with natural gas services. The costs included in the PAC test calculation include all expenditures by the utility to administer DSM programs (i.e., costs to design, plan, administer, deliver, monitor and evaluate). The utilities should identify the programs that pass the TRC-Plus test but fail the PAC test and discuss the reasons the programs are still appropriate. PAC test calculations are detailed in Section 9.1.4 below.

For a prospective program to be deemed cost-effective, it must achieve a screening threshold benefit/cost ratio of 1.0 or greater. This shows that the benefits of the program are equal to or greater than the costs of the program. To recognize that low-income natural gas DSM programs may result in important benefits not captured by the TRC-Plus test, these programs should continue to be screened using a lower threshold value of 0.70. Low-income programs that fail to meet a TRC-Plus cost-benefit ratio of 0.7 can still be applied for by the gas utility. The Board will decide on these programs based on their merit.

The costs considered in the TRC-Plus test are the Net Equipment and Program Costs associated with delivering the DSM program to the market place.

9.1.1 Net Equipment Costs

Net Equipment Costs relate to the costs of the more efficient equipment relative to the base case scenario. They include capital, cost of removal less salvage value (e.g., in the case of a replacement), installation, operating and maintenance ("O&M"), and/or fuel costs (e.g., electricity) associated with the more efficient equipment. As the TRC-Plus test assesses the benefits and costs of DSM programs from the perspective of the utility and participant, it is does not differentiate between who (natural gas utility, customer, or third party) pays the cost of the equipment.

Net Equipment Costs can be either the cost difference between the more efficient equipment and a base measure (or the incremental cost) or the full cost of the more efficient equipment. When the investment decision is a replacement, the Net Equipment Costs will typically be incremental. For example, if a DSM program results in a high efficiency natural gas furnace being purchased instead of a standard model, the Net Equipment Costs would be incremental: they would be the cost differential between the two options. In contrast, retrofit and discretionary investments are typically associated with the full cost of the equipment. For example, if a DSM program results in a retrofit to improve the energy efficiency of an industrial process and, in the absence of such DSM program, the status quo would have been maintained, then the Net Equipment Costs will be the full cost of the equipment. As these examples illustrate, Net Equipment Costs depend not only on the equipment costs but also on the costs that would have been incurred under the base case (i.e., in the absence of the DSM program).

A third type of equipment cost is the cost of the equipment that is assigned to a project when a replacement decision is done early, or advanced, because of a natural gas utility's DSM programming efforts. Early replacements occur when an older, but still working lower efficiency technology, is replaced with a more efficient piece of equipment. In these cases, the natural gas utilities should adjust both the equipment life and the project cost to reflect the advancement. This adjustment is akin to a net present value estimate.

O&M costs associated with the more efficient equipment are often not incremental (i.e., they would have been incurred under the base case anyway). However, there are some exceptions where the incremental O&M costs are significant and these should be appropriately accounted for in the Net Equipment Costs. As a general rule, cost differential from the base case should be considered as part of the Net Equipment Costs for as long as they persist.

Free ridership and spillover effects, if applicable, should also be taken into account when calculating the Net Equipment Costs. A free rider is a "program participant who would have installed a measure on his or her own initiative even without the program."[9] In contrast, spillover effects refer to customers that adopt energy efficiency measures because they are influenced by a utility's program-related information and marketing efforts, but do not actually participate in the program. Net Equipment Costs associated with free riders are excluded from the TRC test.[10] However, as discussed in the section 3.2.2, all Program Costs associated with free riders should be included in the TRC analysis.

Spillover effects are essentially the mirror image of free ridership. Net Equipment Costs associated with spillover effects are included in the TRC-Plus test.[11] However, as discussed below in section 9.1.2, there are no Program Costs associated with spillover effects.

Information sources for equipment costs vary. For residential equipment, retail store prices are appropriate sources of information for many technologies including appliances and "do-it-yourself" water heater or thermal envelope upgrades. It is common practice to specify an average price based on a sample of retail prices. For utility direct/install programs, it is appropriate to use the cost to the utility of bulk purchase of the equipment. For commercial and industrial equipment, cost data can be more complicated to acquire due to limited access and confidentiality concerns. For larger "custom" projects, invoices or purchase orders may be necessary to support the cost estimate. Net Equipment Cost estimates should be based on the best available information known to the natural gas utilities at the relevant time.

9.1.2 Program Costs

For the purpose of the TRC-Plus test, the Program Costs relate to DSM program include the following components:

i) Development and Start-up;
ii) Promotion;
iii) Delivery;
iv) Evaluation, Measurement and Verification ("EM&V") and Monitoring; and
v) Administration.

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[9] Violette, Daniel M. (1995) *Evaluation, Verification, and Performance Measurement of Energy Efficiency Programs.* Report prepared for the International Energy Agency.
[10] Eto, J, (1998) *Guidelines for assessing the Value and Cost-effectiveness of Regional Market Transformation Initiatives.* Northeast Energy Efficiency Partnership, Inc.
[11] Ibid.