

July 3, 2015

BY COURIER & RESS

Ms. Kirsten Walli  
Board Secretary  
Ontario Energy Board  
Suite 2700, 2300 Yonge Street  
Toronto, Ontario  
M4P 1E4

**RE: EB-2015-0029 – Union Gas Limited (“Union”) – 2015-2020 DSM Plan Application and Evidence - Corrected**

Dear Ms. Walli,

Please find attached corrections to Union’s application and evidence in the above case, originally filed on April 1, 2015. The corrections affect Exhibit A, Tab 3, Appendix A, Tables 4, 8, 17, 18 and 30; and Exhibit A, Tab 3, Appendix A, Attachment A which have all been black-lined.

Exhibit A, Tab 3, Appendix A, Table 4

In responding to interrogatories, Union discovered an error in the Simple Payback Analysis per Participant table. Union answered Exhibit B.T5.Union.VECC.17 based on corrected information.

Exhibit A, Tab 3, Appendix A, Table 8

In responding to interrogatories, Union discovered an error in the 2016 Program Administrator Cost table. Union answered Exhibit B.T8.Union.GEC.43 based on corrected information.

Exhibit A, Tab 3, Appendix A, Tables 17 and 18

In responding to interrogatories, Union discovered minor errors in the Commercial/Industrial Total Resource Cost and Program Administrator Cost tables due to a copy and paste error. Union answered Exhibit B.T8.Union.GEC.53 based on corrected information.

Exhibit A, Tab 3, Appendix A, Table 30

In responding to interrogatories, Union discovered a cell referencing error for the Low Income total annual gas savings (m<sup>3</sup>) in 2017 and 2018. The cell referencing error does not affect total cumulative natural gas savings. Union answered Exhibit B.T5.Union.GEC.57 based on corrected information.

Exhibit A, Tab 3, Appendix A, Attachment A

In responding to interrogatories, Union discovered it had not filed the most recent version of Exhibit A, Tab 3, Appendix A, Attachment A. Union provided the corrected Attachment A at Exhibit B.T5.Union.APPrO.2.

If you have any questions with respect to this submission please contact me at 519-436-5334.

Yours truly,

*[Original Signed by]*

Vanessa Innis  
Manager, Regulatory Initiatives

Encl.

cc: Lawrie Gluck, Board Staff  
Alex Smith, Torys  
All Intervenors (EB-2015-0029)

April 1, 2015

Ms. Kirsten Walli  
Board Secretary  
Ontario Energy Board  
2300 Yonge Street, 27<sup>th</sup> Floor  
Toronto, ON M4P 1E4

Dear Ms. Walli:

**RE: EB-2015-0029 – Union Gas Limited – 2015-2020 DSM Plan**

On December 22, 2014, the Ontario Energy Board (the “Board”) issued its final 2015 to 2020 Report on the DSM Framework for Natural Gas Distributors (the “Framework”) and the Filing Guidelines to the DSM Framework (“the Guidelines”). These documents were developed to guide the utilities in the preparation of their 2015-2020 DSM Plans.

In the Framework, the Board states its expectation is for the utilities to file their plans by April 1, 2015. Enclosed is Union’s proposed 2015-2020 DSM Plan. In developing its Plan, Union has balanced meeting the needs of customers; fulfilling the Board’s request to enable and incorporate the key priorities and guiding principles outlined in the Framework; responding to input received from stakeholders; and adhering to a reasonable total cost impact for customers as guided by the Board.

Also in the Framework, the Board states its expectation to hold a joint Union and Enbridge hearing with respect to approval of certain aspects of the utilities’ multi-year DSM plans. With the joint nature of the hearing, Union anticipates the scope of the hearing will be large. To help plan workload over the months to come, Union requests that the Board outline the timing for each of the procedural steps up to and including the hearing within its first Procedural Order following the Notice period.

Union requires a timely Board Decision on the Plan prior to 2016 to prevent market disruption and establish the required contracting commitments to ensure program continuity in the market. Union requests that the Board take this into account when setting its procedural timeline.

If you have any questions with respect to this submission please contact me at (519) 436-5334.

Yours truly,

*[original signed by]*

Vanessa Innis

Manager, Regulatory Initiatives

c.c.: EB-2014-0134 Participants  
Alexander Smith, Torys  
Takis Plagiannakos, OEB



**ONTARIO ENERGY BOARD**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c.15 (Schedule. B);

**AND IN THE MATTER OF** an Application by Union Gas Limited pursuant to Section 36(1) of the *Ontario Energy Board Act, 1998*, for an Order or Orders approving the 2015 to 2020 Demand Side Management Plan.

**APPLICATION**

1. Union Gas Limited (“Union”) is a business corporation, incorporated under the laws of Ontario, with its head office in the Municipality of Chatham-Kent.
2. Union conducts an integrated natural gas utility business that combines the operations of selling, distributing, transmitting and storing gas within the meaning of the Ontario Energy Board Act, 1998 (the “Act”).
3. On December 22, 2014, the Ontario Energy Board (the “OEB” or the “Board”) issued the Demand Side Management (“DSM”) Framework and Guidelines for Natural Gas Utilities. The Board noted the natural gas utilities were expected to develop their DSM plans in accordance with the DSM Framework and Guidelines, and to submit those plans to the Board for approval.
4. Accordingly, Union hereby applies to the Board pursuant to Section 36 of the Ontario Energy Board Act for an Order or Orders effective January 1, 2015 approving Union’s DSM Plan for the years 2015-2020.

5. Union further applies to the Board for the following:
  - (a) Approval of DSM budgets and associated calculation methodology for the years 2015 - 2020;
  - (b) Approval of the Program scorecard targets and associated target adjustment methodology for the years 2015- 2020;
  - (c) Approval of the DSM Incentive amounts and associated calculation methodology for the years 2015-2020;
  - (d) Approval of the Resource Acquisition Programs budget and incentive mechanism related thereto;
  - (e) Approval of the Market Transformation Program, budget and incentive mechanism related thereto;
  - (f) Approval of the Low-income Program, budget and incentive mechanism related thereto;
  - (g) Approval of the Large Volume Rate T2/Rate 100 Program and budget;
  - (h) Approval of the Performance-Based Scorecard;
  - (i) Approval of the Stakeholder Terms of Reference;
  - (j) Approval of the Evaluation Plans;
  - (k) Approval to continue the Board approved Lost Revenue Adjustment Mechanism variance account, DSM variance account and DSM incentive deferral account; and,
  - (l) Approval to build 100% of the target DSM Incentive into rates beginning in 2016.
  
6. Union also applies to the Board for an interim order if a Board Decision cannot be released by November 15, 2015 for the 2015 to 2020 DSM Plan. Union requires a Decision on the Plan from the Board prior to 2016 to prevent market disruption and establish the required contracting commitments to ensure program continuity in the market.

7. Union also applies to the OEB for such interim order or orders approving the above as may from time to time appear appropriate or necessary.
8. Union further applies to the Board for all necessary orders and directions concerning pre-hearing and hearing procedures for the determination of this application.
9. This application is supported by written evidence. This evidence may be amended from time to time as required by the OEB, or as circumstances may require.
10. The persons affected by this application are the customers resident or located in the municipalities, police villages and First Nations reserves served by Union, together with those to whom Union sells gas, or on whose behalf Union distributes, transmits or stores gas. It is impractical to set out in this application the names and addresses of such persons because they are too numerous.
11. The address of service for Union is:

Union Gas Limited  
P.O. Box 2001  
50 Keil Drive North  
Chatham, Ontario  
N7M 5M1

Attention: Vanessa Innis  
Manager, Regulatory Initiatives  
Telephone: (519) 436-5334  
Fax: (519) 436-4641

- and -

Torys LLP  
Suite 3000, Maritime Life Tower  
P.O. Box 270  
Toronto-Dominion Centre  
Toronto, Ontario  
M5K 1N2

Attention: Alexander Smith

Telephone: (416) 865-8142

Fax: (416) 865-7380

DATED: April 1, 2015

UNION GAS LIMITED

*[Original signed by]*

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Vanessa Innis  
Manager, Regulatory Initiatives

**UNION GAS LIMITED**

**OVERVIEW OF UNION’S PROPOSED 2015 – 2020 DSM PLAN**

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**1.0 Overview**

In 2013, the Government of Ontario issued its updated Long-Term Energy Plan which placed a strong focus on increasing energy conservation efforts throughout the province and incorporating the policy of Conservation First into planning processes. On March 31, 2014, the Minister of Energy issued a Directive (the “Conservation Directive”) to the Ontario Energy Board (the “Board”) that among other things required the Board to establish a new Demand Side Management (“DSM”) policy framework.

The Board issued its final 2015 to 2020 Report on the DSM Framework for Natural Gas Distributors (the “Framework”) and the Filing Guidelines to the DSM Framework (“the Guidelines”) on December 22, 2014 (EB-2014-0134). These documents were developed to guide the utilities in the preparation of their 2015-2020 DSM Plans.

Union Gas Limited (“Union”) has organized its 2015-2020 DSM Plan as follows:

- Tab 1: Overview of Union’s Proposed 2015-2020 DSM Plan
- Tab 2: Union’s Proposed 2015 DSM Plan
- Tab 3: Union’s Proposed 2016-2020 DSM Plan

## 2.0 Introduction

Union has prepared its DSM Plan (the “Plan”) for the six year period of 2015 – 2020 in accordance with the Framework and Guidelines. The following summarizes the key elements of Exhibit A:

- Incorporates the Board’s guiding principles and key priorities;
- Was informed by stakeholder consultation;
- Includes a roll-over of the 2014 Plan parameters to 2015 per the Board’s direction;
- Budget spending rises from \$34 million in 2015 to \$59.5 million by 2020 (excluding inflation), including approximately \$6 million for a new tracking and reporting system;
- Volumetric savings over the term of the plan are 8 billion lifetime cubic meters of natural gas<sup>1</sup>;
- Achieves \$1 billion in net total resource cost (“TRC”) benefits<sup>2</sup>;
- Union’s shareholder incentive cap will be \$11 million in 2015 and \$10.45 million annually commencing in 2016;
- Union’s shareholder incentive at 100% target will be included in rates beginning in 2016;
- Contains new program offerings for all customers beyond 2015 including; Residential, Low Income, Commercial, Industrial and Large Volume; and,
- Includes a commitment to coordinating with electricity Conservation Demand Management (“CDM”) per the Board’s direction.

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<sup>1</sup> Savings assume Union achieves the cumulative 2015 m<sup>3</sup> target as estimated based on the pre-audit and pre-verification Resource Acquisition, Low Income and Large Volume Scorecards as outlined in Union’s 2014 Draft Demand Side Management Annual Report.

<sup>2</sup> 2015 TRC results are based on the pre-audit, pre-verification results as outlined in Union’s 2014 Draft Demand Side Management Annual Report.

1 Union is seeking approval of its 2015 Plan effective January 1, 2015 and approval of its 2016-  
2 2020 Plan effective January 1, 2016.

3  
4 As noted in Section 1.4 of the Framework, one of the Board's objectives is, "To promote energy  
5 conservation and energy efficiency in accordance with the policies of the Government of  
6 Ontario, including having regard to the consumer's economic circumstances." In developing the  
7 Plan, Union has taken a balanced approach striving to meet the needs of customers, fulfilling the  
8 Board's request to enable and incorporate the key priorities and guiding principles outlined in the  
9 Framework, responding to input received from stakeholders and adhering to a reasonable total  
10 cost impact for customers as guided by the Board in Section 4.2 of the Framework.

11  
12 In Section 15.1 of the Framework the Board outlined the following for DSM activities in 2015,  
13 "the gas utilities should roll-forward their 2014 DSM plans, including all programs and  
14 parameters (i.e., budgets, targets, incentive structure) into 2015." The Board further notes that,  
15 "The gas utilities should increase their budgets, targets and shareholder incentive amounts in the  
16 same manner as they have done throughout the current DSM Framework (i.e., 2013 updates to  
17 2014 should now apply as 2014 updates to 2015)."

18  
19 In accordance with Section 15.2 of the Framework, "The Board expects that the gas utilities will  
20 file complete multi-year DSM plans that provide the proposed details of their DSM activities  
21 between 2015 and 2020 on or before April 1, 2015." Exhibit A is Union's 2015-2020 DSM  
22 Plan.



**3.0 Background**

Since 1997, Union has been effectively designing and delivering DSM Programs that have resulted in significant energy savings for customers. This positions Union well to respond to the Ministry of Energy's "Conservation First" Policy and to continue to build a culture of conservation in Ontario. Conservation will play an important role in meeting the province's energy needs while providing significant benefits for Ontario residents and businesses.

Since 1997, Union's DSM Programs have helped save an estimated \$2.6 billion in total resource costs and 7.5 billion cubic metres of natural gas. That translates to reducing carbon dioxide emissions by 14 million metric tonnes and avoiding CO<sub>2</sub> emissions equivalent to removing 2.5 million cars from Ontario's roads for a year.

While delivering these savings to Ontario consumers, Union has built the internal expertise required to design and deliver leading DSM Programs and has been a trusted source of energy information and assistance for customers. Union will continue to play an integral role in meeting the conservation objectives of the Ontario Government by delivering natural gas savings to customers through a robust portfolio of DSM Programs.

Union's approach to the 2015-2020 DSM Plan is to continue to deliver its existing portfolio of successful programs to Residential, Low Income, Commercial and Industrial customers and to implement new programs and initiatives based on the key priorities and guiding principles outlined by the Board in the Framework and Guidelines.

**4.0 Response to Guiding Principles**

In Section 2.0 of the Guidelines the Board requested that the gas utilities, "...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." Union has addressed the Board's guiding principles throughout the multi-year Plan as follows:

1. *Invest in DSM where the cost is equal to or lower than capital investments and/or the purchase of natural gas*

Union will perform a study commencing in 2015 to determine the potential effects DSM can have on deferring, postponing or reducing future capital investments. Union's preliminary proposed approach is outlined at Exhibit A, Tab 1, Appendix D.

2. *Achieve all cost-effective DSM that results in a reasonable rate impact*

In Section 4.2 of the Framework the Board states that it is, "...of the view that a bill impact of \$2.00/month for a typical Residential customer...provides a reasonable guideline for the gas utilities to prepare their DSM plans." The Board further states in Section 4.2 that, "The gas utilities should ensure that overall cost increases to all other rate classes are generally proportional with the guidance outlined relative to Residential customers...".

When developing Union's DSM Offerings and accompanying budget requirements, Union balanced the need to comply with the reasonable rate impact to all rate classes outlined by the Board (as stated above) and the need to achieve all cost-effective savings available within program areas funded by these rate classes. The result is a balanced budget that complies with the guidance on the Residential rate class impact, and is well

1 within the rate impact guidance for all other rate classes, while still achieving an overall  
2 cost-effective portfolio. Union proposes a budget that will reach \$59.5 million in 2020  
3 (excluding inflation). Rate impacts based on the proposed 2016-2020 DSM Plan are  
4 included at Exhibit A, Tab 3, Appendix E. For Residential customers in Rate M1 the  
5 average monthly bill impact is \$1.92 per month in 2020, for Residential customers in  
6 Rate 01 the average monthly bill impact is \$2.20 per month in 2020. In accordance with  
7 the Framework, by 2020 the average Residential customer in Union's franchise will pay  
8 approximately \$2.00 per month in DSM costs.

9 3. *Where appropriate, coordinate and integrate DSM and electricity CDM efforts to achieve*  
10 *efficiencies*

11 Union has successfully worked with electric utilities to partner on conservation initiatives  
12 since 2008. Union recognizes that this is a priority for both the Board and the Ministry of  
13 Energy and has made significant efforts towards meeting this goal through participation  
14 on the Conservation First Advisory Working Group that was established to develop the  
15 new CDM Framework in 2014. Union has also had ongoing discussions with a number of  
16 electric utilities and the Independent Electricity System Operator (the "IESO") to identify  
17 additional opportunities to work together. In addition, Union is a member of the  
18 Conservation First Implementation Committee and will join the CDM Working Groups  
19 with the goal of integrating program design in the future where appropriate. Union will  
20 continue to work on addressing the barriers in the market that are impeding stronger  
21 collaboration of natural gas DSM programs and electric CDM programs. Union's  
22 approach to collaboration and integration is outlined at Exhibit A, Tab 1, Appendix C.

1       4. *Gas utilities will be able to recover costs and lost revenues from DSM programs*

2       As outlined in Section 11.2 of the Guidelines, Union will continue to use the Demand  
3       Side Management Variance Account (“DSMVA”) in 2015-2020 to track the variance  
4       between actual DSM spending by rate class versus the budgeted amount included in rates  
5       by rate class. Consistent with Section 11.3 of the Guidelines, Union will also continue to  
6       use the Lost Revenue Adjustment Mechanism Variance Account (“LRAMVA”) in 2015-  
7       2020 to track at the rate class level, the variance between the actual impact of DSM  
8       activities undertaken (lost revenues from DSM programs) and the forecasted impact  
9       included in distribution rates. Consistent with Section 11.4 of the Guidelines, Union will  
10      continue to use the DSM Incentive Deferral Account (“DSMIDA”). Beginning in 2016,  
11      Union proposes to build 100% of the DSM incentive target into rates and record the  
12      variance between the amount built into rates and the actual DSM incentive in the  
13      DSMIDA. Union’s proposal can be found at Exhibit A, Tab 3, Section 4.

14      5. *Design programs so that they achieve high customer participation levels*

15      Union’s proposed multi-year Plan strikes a balance between providing holistic offerings  
16      to customers while also providing broad access to customers to achieve high customer  
17      participation levels. Union’s Residential Behavioural offering alone will reach a  
18      significant amount of Union’s Residential customer base by targeting 23% of Union’s  
19      total Residential market. In addition, the Residential Behavioural offering has an online  
20      web portal that will be available to all Residential customers. This offering coupled with  
21      the Home Reno Rebate and Energy Saving Kit offering will strive to reach participation  
22      levels of up to 25% of Union’s Residential customer base.

1       6. *Minimize lost opportunities when implementing energy efficient upgrades*

2           The minimization of lost opportunities was considered in all Program areas when  
3           designing the proposed offerings. Union's DSM Portfolio is taking a more holistic  
4           approach to the market in all Program areas. Examples by Program area are as follows:

5           Residential Program:

- 6           ○ Union's Home Reno Rebate offering has been available to customers since 2012  
7           and is the highest contributor of lifetime natural gas savings in Union's 2015-  
8           2020 Residential Program proposal. The principal objective of this offering is to  
9           provide a holistic approach to Residential home retrofits by offering customers  
10          rebates towards their home energy audits, insulation upgrades and their  
11          heating/water heating systems. In 2016, Union is driving this objective even  
12          further by providing enhanced incentives to customers to avoid any lost  
13          opportunities in the home. Further detail on this offering is provided at Exhibit A,  
14          Tab 3, Appendix A, Section 1.0.

15          Low Income:

- 16          ○ Union's Home Weatherization Program takes a comprehensive approach to  
17          private market and social housing residential homes by providing free home  
18          energy audits and insulation upgrades to the homeowner or housing provider.  
19          Union is proposing to add a furnace incentive in 2016 to further address any lost  
20          opportunities in the home. Further detail on this offering is provided at Exhibit A,  
21          Tab 3, Appendix A, Section 1.4.

1 Commercial:

- 2 ○ Union is proposing a Direct Install Pilot for small business customers that will  
3 investigate how to take a holistic approach to these hard to reach customers.  
4 Given the barriers these customers face in entering DSM Programs, such as  
5 capital outlay, Union is researching how to properly address this customer group  
6 through the appropriate program design and delivery to ensure all opportunities  
7 are addressed when entering the business, thus decreasing any potential lost  
8 opportunities. Further detail on this offering is provided at Exhibit A, Tab 3,  
9 Appendix A, Section 1.1.

10 Industrial:

- 11 ○ Union is proposing a Strategic Energy Management offering designed to increase  
12 the adoption of an energy management system to establish a baseline for existing  
13 operations and to track performance over time for continuous improvement.  
14 Incentives are available to support the implementation of a system and for  
15 performance improvements throughout the five year term. Taking a  
16 comprehensive approach in energy management through monitoring and tracking  
17 will assist customers in identifying and prioritizing further improvements and  
18 minimizing lost opportunities. Further detail on this offering is provided at  
19 Exhibit A, Tab 3, Appendix A, Section 1.2.

20 7. *Ensure low-income programs are accessible across the province*

21 Union currently has the ability to deliver the Home Weatherization and Affordable  
22 Housing Conservation offerings province wide. For Home Weatherization, Union aims to

1 get a minimum of ten applications within a small rural area before deploying a delivery  
2 agent. Over the course of the Plan, Union will continue to develop its market channels to  
3 more proactively promote and respond to customers residing in remote locations. Union  
4 is also broadening its reach to low income customers through the launch of an Aboriginal  
5 Conservation offering as described at Exhibit A, Tab 3, Appendix A, Section 1.4.

6 *8. Programs should be designed to pursue long-term energy savings*

7 Union's proposed DSM offerings are designed to focus on the pursuit of long-term  
8 energy savings with measures that have long measure lives and would be very  
9 challenging to remove or replace. More than 98% of the measures proposed in Union's  
10 offerings have a measure life of 10 years or more. In addition, lifetime cubic metres of  
11 natural gas savings represent the largest portion of the scorecards proposed in Exhibit A,  
12 Tab 3, Section 3.

13 *9. Shareholder incentives will be commensurate with performance and efficient use of funds*

14 Union has allocated the shareholder incentive across scorecards based on the percentage  
15 of the total proposed budget spend and allocated the largest proportion to metrics that  
16 achieve significant lifetime natural gas savings as outlined by the Board in Section 5 of  
17 the Framework. The targets and accompanying budgets within the 2015-2020 Plan will  
18 produce substantial savings for customers and will be required to be delivered using  
19 funding in an efficient manner. Union's scorecard proposals are outlined at Exhibit A,  
20 Tab 2, Section 3 for 2015 and Exhibit A, Tab 3, Section 3 for 2016-2020.

1        *10. Ensure DSM is considered in gas utility infrastructure planning at the regional and local*  
2        *levels*

3        Union will examine how DSM could be considered in gas utility infrastructure planning.

4        This will be identified as part of the study Union will commence in 2015 to determine the  
5        potential effects DSM can have on deferring, postponing or reducing future capital  
6        investments. Union's preliminary approach is outlined at Exhibit A, Tab 1, Appendix D.

7  
8        **5.0      Response to Key Priorities**

9        In Section 6.2 of the Framework, the Board outlines the expectation that the multi-year plans,  
10        "...enable the delivery of results in the areas which have been identified as key priorities in the  
11        Long Term Energy Plan, Conservation Directive and by the Board".

12  
13        Union's 2015-2020 Plan will enable the delivery of results in areas identified as key priorities as  
14        follows:

15        *a) Implement DSM programs that can help reduce and/or defer future infrastructure*  
16        *investments*

17        As outlined in guiding principle number one and number ten above, Union will perform a  
18        study commencing in 2015 to determine the potential effects DSM can have on deferring,  
19        postponing or reducing future capital investments.

20        *b) Develop new and innovative programs, including flexibility to allow for on-bill financing*  
21        *options*

22        Union has proposed many new and innovative programs in its Plan, including:



- 1           • A Behavioural Offering for Residential customers (Exhibit A, Tab 3, Appendix
- 2           A, Section 1.0);
- 3           • An Aboriginal Conservation Offering (Exhibit A, Tab 3, Appendix A, Section
- 4           1.4);
- 5           • Furnace End-of-Life Upgrade Offering for Low Income customers (Exhibit A,
- 6           Tab 3, Appendix A, Section 1.4);
- 7           • Direct Install Pilot for Small Business customers (Exhibit A, Tab 3, Appendix A,
- 8           Section 1.1);
- 9           • Strategic Energy Management for Industrial customers (Exhibit A, Tab 3,
- 10          Appendix A, Section 1.2); and,
- 11          • Best practices training and technical expertise for Large Volume customers
- 12          (Exhibit A, Tab 3, Appendix A, Section 1.3).

13

14          Although Union is not proposing to offer on-bill financing based on customer feedback

15          as outlined at Exhibit A, Tab 1, Appendix B, Union will investigate how to facilitate

16          financing options for customers through partnership and education efforts.

17

18          *c) Increase collaboration and integration of natural gas DSM programs and electricity*

19          *CDM programs*

20          Union has been actively engaged with the IESO and electric LDCs to continue to

21          progress on collaboration and integration of DSM and CDM Programs. Union's

22          approach to collaboration and integration is outlined at Exhibit A, Tab 1, Appendix C.

1        *d) Expand the delivery of Low-income offerings across the province*

2            As outlined in guiding principle seven above, Union will continue to offer Low Income  
3            Programs across the province in 2015-2020.

4        *e) Implement DSM programs that are evidence-based and rely on detailed customer data,*  
5        *including*

6            *i. Provide a greater level of customer-specific educational information and data to*  
7            *help customers use natural gas more efficiently;*

8            Union is proposing a Behavioural Offering that will educate and empower  
9            Residential customers to actively monitor and manage their gas usage by  
10           providing customized reports using their specific household data and comparing  
11           their usage to similar homes (Exhibit A, Tab 3, Appendix A, Section 1.0).

12  
13           Union is also proposing a Performance-Based Scorecard that will measure  
14           offerings that are evidence based and rely on detailed customer data including  
15           Strategic Energy Management and RunSmart (Exhibit A, Tab 3, Appendix A,  
16           Section 1.2). In addition, Union will participate in a Performance-Based  
17           Conservation Pilot, in collaboration with the IESO and Enbridge to determine the  
18           potential to expand this program more broadly in the future.

19  
20           Union will also continue to work with the Ministry of Energy on the development  
21           and launch of the Green Button initiative for natural gas customers in Ontario  
22           (Exhibit A, Tab 2, Section 12.4).

1           ii.   *Benchmark energy usage to enable detailed data analysis and comparison of*  
2               *usage with other similar customers and pre/post program participation;*  
3           Union's Low Income and Performance-Based Programs will incorporate  
4           benchmarking activities in the upfront engagement with customers to assist them  
5           in making informed decisions around their efficiency upgrades (Exhibit A, Tab 3,  
6           Appendix A, Sections 1.4 and 1.2).

7       f)   *Ensure that programs take a holistic-approach and identify and target all energy savings*  
8           *opportunities throughout a customer's home or business*

9           Union takes a holistic approach in all Program areas, including offerings such as: Home  
10          Reno Rebate, Home Weatherization, Aboriginal Conservation, Direct Install Pilot and  
11          Strategic Energy Management.

## 12   **6.0   Customer Needs**

13   Union recognizes that future success with DSM Program offerings requires an understanding of  
14   the market and a focus on meeting customer needs. Over the years, Union has consistently  
15   reached out to customers to get their perspective on the barriers to adopting energy efficiency  
16   improvements and what is meaningful to them in their pursuit of energy savings. Union heard the  
17   following from customers:

- 18       •   Awareness of the potential to save energy remains a key barrier to customer participation  
19           in DSM Programs. In the Residential market, many customers have no plans to make  
20           their home more energy efficient, believing instead that their homes are already energy  
21           efficient. In the general service Commercial/Industrial market more than half of Union's

1 customers are unaware of Union's DSM Program Offerings. These indicators suggest  
2 that Union can play an important role as a source of information on the potential to make  
3 energy efficiency improvements and how customers can save energy. New offerings such  
4 as Residential Behavioural will play a critical role in addressing this barrier.

- 5 • The primary benefit or motivator to undertaking energy efficiency investments is the  
6 ability to achieve energy savings, yet many customers are uncertain about the potential  
7 benefit that can be realized. In both Residential and Commercial/Industrial markets,  
8 Union has heard that a valued element of any DSM Program Offering is the ability to  
9 provide confidence that the estimated energy savings will be realized. Union is  
10 addressing this barrier in offerings such as Residential Behavioral, Strategic Energy  
11 Management and RunSmart where savings will be measured at the meter.
- 12 • Cost and limited resources continue to be a key barrier to customers undertaking energy  
13 efficiency improvements. As such, customer incentives are a critical feature to overcome  
14 the cost barrier in investing in deep measures for both Residential and  
15 Commercial/Industrial general service customers. Union has heard that many of these  
16 customers consider the rebates and/or incentives offered in a DSM Program to be the  
17 most valuable program feature. Union is addressing the cost and limited resources barrier  
18 in offerings such as Home Reno Rebate and Commercial/Industrial Custom and  
19 Prescriptive by enhancing the incentives for customers.

## **7.0 Stakeholder Consultation**

Over the course of developing its 2015-2020 Plan, Union consulted with stakeholders, including intervenors, customers, the IESO, electric utilities, Enbridge and service providers. Union consults regularly with stakeholders to gain their insights and to refine Union's DSM Programs in response to the changing needs of the market and customers.

In advance of the release of the final Framework and Guidelines, Union met with stakeholders to proactively engage in discussions around the 2015-2020 Plan. Details on the stakeholder sessions can be found at Exhibit A, Tab 2, Appendix A and Exhibit A, Tab 3, Appendix B.

After the final Framework and Guidelines were released on December 22, 2014, Union held four DSM Consultative sessions with stakeholders to further engage them in the Plan development process. Union received valuable feedback from stakeholders at all of the sessions and Union took the feedback into consideration when developing and finalizing the Plan. A summary of the changes Union incorporated in the Plan based on stakeholder feedback can be found at Exhibit A, Tab 2, Appendix A, p. 51 and Exhibit A, Tab 3, Appendix B, pp. 238-240.

### Consultative Session 1 - January 14, 2015

Union met with stakeholders to review the approach to the 2015 DSM Plan based on the direction from the Board to, "...roll-forward their 2014 DSM plans, including all programs and parameters (i.e., budgets, targets, incentive structure) into 2015" (Section 15.1 of the Framework). At the Consultative, Union reviewed scorecards, targets, and budgets for the 2015

1 Plan and feedback was received on all items. Materials from the session including the meeting  
2 invitation, the attendance list and the presentation can be found in Exhibit A, Tab 2, Appendix A.

3  
4 Consultative Session 2 – February 18, 2015

5 Union met with stakeholders to review the following items regarding the Plan: proposed  
6 stakeholder process up to the filing of the Plan; changes to the 2015 Plan based on feedback from  
7 stakeholders at the Consultative Session 1 held on January 14, 2015; 2016-2020 directional  
8 Program proposals for Residential, Low Income, Commercial/Industrial Prescriptive and Market  
9 Transformation; and proposed scorecard metrics for those Program areas. Materials from the  
10 session including the meeting invitation, the attendance list and the presentation can be found at  
11 Exhibit A, Tab 3, Appendix B.

12  
13 Consultative Session 3 – March 4, 2015

14 Union met with stakeholders to review the following items regarding the Plan: proposed  
15 stakeholdering process up to the filing of the Plan; changes to the 2016-2020 directional Program  
16 proposals for Residential, Low Income, Commercial/Industrial Prescriptive and Market  
17 Transformation based on feedback from stakeholders at the Consultative Session 2 held on  
18 February 18, 2015; 2016-2020 directional Program proposal for Commercial/Industrial Custom  
19 and Large Volume; 2016-2020 Resource Acquisition and Low Income Scorecards; budgets and  
20 shareholder incentive (considered feedback from February 18 session); overall rate impact  
21 assessment; DSM/CDM Collaboration; DSM and Infrastructure Planning; and DSM Tracking

1 and Reporting Requirements. Materials from the session including the meeting invitation, the  
2 attendance list and the presentation can be found at Exhibit A, Tab 3, Appendix B.

3  
4 Consultative Session 4 – March 11, 2015

5 Union met with stakeholders to review the following items regarding the Plan: 2016-2020  
6 Program proposal updates for all markets; the overall Portfolio budget; 2016-2020 Scorecards  
7 with proposed metrics and formulas; the proposed allocation of shareholder incentive across  
8 scorecards; and the allocation of budget across rate classes. Materials from the session including  
9 the meeting invitation, the attendance list and the presentation can be found at Exhibit A, Tab 3,  
10 Appendix B.

11  
12 **8.0 Proposed Treatment of Rate T1 Customers**

13 In the Framework, the Board proposes that the Large Volume rate classes for Union be defined  
14 as Rate T1, Rate T2 and Rate 100. Beginning in 2016, Union is proposing to offer Rate T1  
15 customers Commercial/Industrial Programs within the Resource Acquisition Scorecard rather  
16 than the Large Volume Program given the significant differences between Rate T1 and Rate T2  
17 in terms of daily contracted demand and annual consumption.

18  
19 In its 2013 Cost of Service Decision (EB-2011-0210), the Board approved the split of Rate T1  
20 into a new Rate T1 rate class and a new Rate T2 rate class, effective January 1, 2013. Prior to the  
21 Board's Decision Union filed its 2013-2014 Large Volume DSM Plan, which was premised on  
22 Rate T1 before the split of the rate class. While the new Rate T1 remained in the Large Volume

Scorecard, the rate class was treated differently than Rate T2 and Rate 100. Specifically, the Programs offered to Rate T1 customers were consistent with the Commercial/Industrial Custom offering on the Resource Acquisition Scorecard. Rate T1 customers are similar in composition to customers in Union's Rate M4 and Rate M7 rate classes and Enbridge's Rate 100 rate class, none of which are defined as Large Volume in the Framework. Please see Exhibit A, Tab 3, Section 12.1 for Union's proposed treatment of Rate T1 customers.

#### **9.0 Migration of Rate M4/M5/M7 Customers**

In its EB-2011-0210 Decision, the Board approved Union's proposed Rate M4, Rate M5 and Rate M7 rate class eligibility changes effective January 1, 2014. As a result of this change, 22 Rate M4 and Rate M5 customers in Union's 2013 Board-approved forecast were required to move to Rate M7 effective January 1, 2014. Union's ratemaking process during Incentive Regulation Mechanism ("IRM") does not recognize the annual volumes associated with the transition of 22 customers from Rate M4 and Rate M5 to Rate M7, while Union's proposed 2016-2020 DSM budget reflects the current number of customers in all three rate classes. Due to Rate M7 rate class eligibility changes, the DSM costs in proportion to the current approved bill in Rate M7 are approximately two times greater than Rate M4 and three times greater than Rate M5. To address the discrepancy between the proportion of DSM costs in Rate M7 compared to Rate M4 and M5, Union proposes to pool the proposed DSM costs for these three rate classes and reallocate the costs in proportion to 2015 approved volumes. Union's approach is discussed in more detail at Exhibit A, Tab 3, Section 13.



## **10.0 Evaluation Governance**

In Section 7.2 of the Framework, the Board concludes that, "...it is in the best position to coordinate the evaluation process throughout the DSM framework period (i.e., 2015 to 2020)". Union supports the Board's coordination of the evaluation and audit process. Union expects this change will improve the process by providing for regulatory efficiency and ensuring timelines are met while giving the Board and stakeholders confidence in the accuracy of results. During the plan period of 2015-2020, Union proposes that evaluation and audit be coordinated by the Board through two separate processes for evaluation and audit:

1. Evaluation will be guided by a common Evaluation Advisory Forum ("EAF") involving the Board, Union, Enbridge, and stakeholders.
2. The Audit will be guided by a separate Audit Committees ("AC") for Union.

Union's proposed approach is discussed in more detail at Exhibit A, Tab 2, Section 9.

## **11.0 Tracking and Reporting System Requirements**

The information technology architecture behind Union's current DSM tracking and reporting systems was originally designed in 2000 to support the reporting requirements over a decade ago. Several upgrades were made over the last ten years to accommodate the requirements of the previous two DSM Frameworks. The new DSM Framework for 2015-2020 has additional data reporting requirements that can no longer be supported by the architecture of Union's existing DSM tracking and reporting systems.

Union conducted a preliminary review of both the current state of the DSM systems and the future requirements to enable compliance with the new DSM framework. The review included identification and prioritization of DSM data requirements during the six year framework. Union's proposal for a new DSM tracking and reporting system is included at Exhibit A, Tab 2, Section 12.2.

## **12.0 Characteristics of Union's Distribution System**

Under Section 14.1 of the Guidelines, the Board requested the following characteristics of Union's distribution system:

- a) Total natural gas purchases;
- b) Sales by rate class;
- c) Number of customers by rate class; and,
- d) Summaries of sales and number of customer figures for all rate classes within the various customer types (e.g. Residential, Low Income, Commercial, Industrial and Large Volume) that DSM programs will be developed for and offered to.

The information requested by the Board is below.

### **a) Total Natural Gas Purchases**

The total gas purchased for system sales customers and the quantity of gas supplied for the account of direct purchase customers in 2014 (which will be reported to the Board through the Q4 2014 Reporting and Record Keeping Requirements due April 30, 2015) is shown below.

Union does not purchase gas for direct purchase customers.

Gas Purchased for System Sales Customers:	5,219 10 <sup>6</sup> m <sup>3</sup>
---	--------------------------------------

Gas Supplied for the Account of Direct Purchase Customers:	9,971 10 <sup>6</sup> m <sup>3</sup>
--	--------------------------------------

b) and c) Sales and Number of Customers by Rate Class

Please see Exhibit A, Tab 1, Appendix A, Schedules 1 to 3. Schedule 1 provides the total throughput volume by rate class, Schedule 2 provides total gas sales revenue by rate class and Schedule 3 provides Union's number of customers by rate class as of Q4, 2014. This information will also be provided in Union's 2014 Deferral Disposition Proceeding (EB-2015-0010).

d) Sales and Number of Customers by Rate Class and Service Type

Please see Exhibit A, Tab 1, Appendix A, Schedule 4 and 5 for the total throughput volume and number of customers broken out by rate class and service type, for all rate classes for which DSM programs will be developed and to which the DSM programs will be offered.

UNION GAS LIMITED  
Throughput Volume by Service type and Rate Class  
All Customer Rate Classes  
Year Ended December 31

		Board Approved 2013					
Line No.	Volumes in 10 <sup>3</sup> m <sup>3</sup>	System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total
		(a)	(b)	(c)	(d)	(e)	(f)
	<u>General Service</u>						
1	Rate M1 Firm	2,271,443	465,977	185,421	16,702	-	2,939,543
2	Rate M2 Firm	378,137	336,728	23,220	237,485	-	975,571
3	Rate 01 Firm	641,423	233,272	-	9,727	-	884,421
4	Rate 10 Firm	155,398	82,428	-	85,062	-	322,887
5	Total General Service	3,446,401	1,118,404	208,642	348,975	-	5,122,423
	<u>Wholesale - Utility</u>						
6	Rate M9 Firm	-	-	-	60,750	-	60,750
7	Rate M10 Firm	48	-	-	141	-	189
8	Total Wholesale - Utility	48	-	-	60,891	-	60,939
	<u>Contract</u>						
9	Rate M4	16,855	-	-	387,823	-	404,678
10	Rate M7	-	-	-	147,143	-	147,143
11	Rate 20 Storage	-	-	-	-	-	-
12	Rate 20 Transportation	13,514	-	-	110,097	506,191	629,802
13	Rate 100 Storage	-	-	-	-	-	-
14	Rate 100 Transportation	-	-	-	-	1,895,488	1,895,488
15	Rate T-1 Storage	-	-	-	-	-	-
16	Rate T-1 Transportation	-	-	-	-	548,986	548,986
17	Rate T-2 Storage	-	-	-	-	-	-
18	Rate T-2 Transportation	-	-	-	-	4,880,297	4,880,297
19	Rate T-3 Storage	-	-	-	-	-	-
20	Rate T-3 Transportation	-	-	-	-	272,712	272,712
21	Rate M5	14,152	-	-	520,981	-	535,132
22	Rate 25	42,913	-	-	-	116,643	159,555
23	Rate 30	-	-	-	-	-	-
24	Total Contract	87,433	-	-	1,166,044	8,220,317	9,473,795
25	Total Throughput Volume	3,533,882	1,118,404	208,642	1,575,911	8,220,317	14,657,156

Actual 2013					
System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total
(g)	(h)	(i)	(j)	(k)	(l)
2,626,749	315,338	72,211	16,377	-	3,030,675
602,017	301,229	12,281	261,437	-	1,176,964
830,433	139,168	-	9,933	-	979,534
189,948	73,623	-	94,901	3,602	362,073
4,249,148	829,358	84,492	382,648	3,602	5,549,247
-	-	-	63,240	-	63,240
284	-	-	-	-	284
284	-	-	63,240	-	63,524
29,890	12,923	-	432,002	-	474,815
10,921	-	-	161,362	-	172,283
-	-	-	-	-	-
7,264	-	-	97,110	546,594	650,968
-	-	-	-	-	-
-	-	-	-	1,926,579	1,926,579
-	-	-	-	-	-
-	-	-	-	452,838	452,838
-	-	-	-	-	-
-	-	-	-	4,241,475	4,241,475
-	-	-	-	-	-
-	-	-	-	273,597	273,597
25,761	941	-	497,780	-	524,481
97,661	-	-	-	117,806	215,467
-	-	-	-	-	-
171,497	13,864	-	1,188,254	7,558,890	8,932,505
4,420,929	843,222	84,492	1,634,142	7,562,492	14,545,277

Actual 2014					
System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total
(m)	(n)	(o)	(p)	(q)	(r)
2,942,275	308,880	59,947	17,591	-	3,328,692
670,955	329,963	7,913	275,597	-	1,284,428
913,183	129,135	-	10,749	-	1,053,067
204,812	74,764	-	96,807	3,047	379,430
4,731,226	842,742	67,859	400,744	3,047	6,045,618
-	-	-	67,138	-	67,138
312	-	-	-	-	312
312	-	-	67,138	-	67,450
37,330	11,639	-	435,435	-	484,404
27,984	2,922	-	361,350	-	392,256
-	-	-	-	-	-
8,614	-	-	93,899	433,114	535,626
-	-	-	-	-	-
-	-	-	-	1,710,928	1,710,928
-	-	-	-	-	-
-	-	-	-	470,811	470,811
-	-	-	-	-	-
-	-	-	-	4,305,103	4,305,103
-	-	-	-	-	-
-	-	-	-	288,979	288,979
14,733	-	-	244,625	-	259,358
97,399	-	-	-	89,150	186,550
-	-	-	-	-	-
186,060	14,561	-	1,135,309	7,298,086	8,634,015
4,917,599	857,303	67,859	1,603,190	7,301,132	14,747,083

UNION GAS LIMITED  
Total Gas Sales Revenue by Service type and Rate Class  
All Customer Rate Classes  
Year Ended December 31

Line No.	Particulars (\$000's)	Board Approved 2013						Actual 2013						Actual 2014					
		System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total	System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total	System Sales	ABC-T	ABC-Unbundle	Bundled-T	T-Service	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	<u>General Service</u>																		
1	Rate M1 Firm	693,117	58,944	24,671	889	-	777,621	786,347	37,442	9,865	900	-	834,554	892,930	34,352	7,765	973	-	936,020
2	Rate M2 Firm	84,792	17,612	2,631	11,466	-	116,501	132,946	15,550	544	12,393	568	162,002	152,465	14,812	312	11,265	456	179,311
3	Rate 01 Firm	268,545	66,665	-	1,993	-	337,202	332,962	38,003	-	1,981	-	372,946	359,459	31,773	-	1,923	-	393,155
4	Rate 10 Firm	43,957	13,251	-	12,874	-	70,083	52,348	11,184	-	13,459	238	77,229	56,398	9,755	-	11,541	147	77,841
5	Total General Service	1,090,412	156,472	27,301	27,222	-	1,301,407	1,304,603	102,180	10,409	28,733	805	1,446,730	1,461,252	90,692	8,078	25,702	604	1,586,327
	<u>Wholesale - Utility</u>																		
6	Rate M9 Firm	-	-	-	727	-	727	-	-	-	744	-	744	-	-	-	780	-	780
7	Rate M10 Firm	11	-	-	7	-	18	62	-	-	-	-	62	70	-	-	-	-	70
8	Total Wholesale - Utility	11	-	-	734	-	745	62	-	-	744	-	806	70	-	-	780	-	850
	<u>Contract</u>																		
9	Rate M4	3,407	-	-	11,786	-	15,193	6,583	597	-	12,306	-	19,485	8,489	334	-	12,845	-	21,668
10	Rate M7	-	-	-	4,127	-	4,127	2,191	-	-	4,109	-	6,299	8,009	251	-	7,724	-	15,984
11	Rate 20 Storage	-	-	-	-	1,057	1,057	-	-	-	-	1,483	1,483	-	-	-	-	1,529	1,529
12	Rate 20 Transportation	3,304	-	-	10,277	10,637	24,219	1,634	-	-	8,832	10,304	20,771	2,051	-	-	7,779	10,074	19,905
13	Rate 100 Storage	-	-	-	-	166	166	-	-	-	-	168	168	-	-	-	-	154	154
14	Rate 100 Transportation	-	-	-	-	15,481	15,481	-	-	-	-	15,656	15,656	-	-	-	-	15,618	15,618
15	Rate T-1 Storage	-	-	-	-	1,400	1,400	-	-	-	-	1,412	1,412	-	-	-	-	1,521	1,521
16	Rate T-1 Transportation	-	-	-	-	9,241	9,241	-	-	-	-	8,562	8,562	-	-	-	-	8,702	8,702
17	Rate T-2 Storage	-	-	-	-	5,976	5,976	-	-	-	-	7,661	7,661	-	-	-	-	8,360	8,360
18	Rate T-2 Transportation	-	-	-	-	36,193	36,193	-	-	-	-	38,896	38,896	-	-	-	-	40,968	40,968
19	Rate T-3 Storage	-	-	-	-	1,345	1,345	-	-	-	-	1,385	1,385	-	-	-	-	1,604	1,604
20	Rate T-3 Transportation	-	-	-	-	3,054	3,054	-	-	-	-	3,072	3,072	-	-	-	-	3,111	3,111
21	Rate M5	2,801	-	-	12,913	-	15,713	5,058	32	-	12,335	-	17,424	3,174	-	-	6,832	-	10,007
22	Rate 25	10,172	-	-	-	3,273	13,445	20,777	-	-	-	3,270	24,047	21,643	-	-	-	2,801	24,443
23	Rate 30	-	-	-	-	-	-	-	-	-	-	80	80	-	-	-	-	58	58
24	Total Contract	19,684	-	-	39,102	87,824	146,610	36,243	629	-	37,581	91,950	166,402	43,367	585	-	35,181	94,501	173,633
25	Subtotal	1,110,107	156,472	27,301	67,058	87,824	1,448,762	1,340,908	102,808	10,409	67,058	92,755	1,613,938	1,504,688	91,277	8,078	61,663	95,104	1,760,810
26	LRAM						-						2,832						786
27	Average Use / Normalized Average Consumption						-						(11,481)						(2,576)
28	Parkway Obligation Rate Variance						-						-						3,585
29	Parkway West Capital Pass Through						-						-						(1,106)
30	Total Revenue					\$	<u>1,448,762</u>					\$	<u>1,605,289</u>					\$	<u>1,761,499</u>

UNION GAS LIMITED  
Total Customers by Service Type and Rate Class  
All Customer Rate Classes  
Year Ended December 31

Line No.	Particulars	Board Approved 2013						Actual 2013						Actual 2014					
		System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total	System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total	System Sales	ABC-T	ABC-Unbundled	Bundled-T	T-Service	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
<u>General Service</u>																			
1	Rate M1 Firm	837,301	157,165	72,389	902	-	1,067,757	945,122	92,119	26,110	1,048	-	1,064,399	976,089	83,200	17,858	1,142	-	1,078,289
2	Rate M2 Firm	3,172	2,594	241	771	-	6,778	3,942	1,960	59	762	-	6,723	3,937	2,177	43	783	-	6,940
3	Rate 01 Firm	242,644	80,300	-	343	-	323,287	282,559	41,913	-	585	-	325,057	295,243	35,942	-	595	-	331,780
4	Rate 10 Firm	930	845	-	289	-	2,064	1,217	494	-	300	5	2,016	1,181	539	-	294	5	2,019
5	Total General Service	1,084,047	240,904	72,630	2,305	-	1,399,886	1,232,840	136,486	26,169	2,695	5	1,398,195	1,276,450	121,858	17,901	2,814	5	1,419,028
<u>Wholesale - Utility</u>																			
6	Rate M9 Firm	-	-	-	3	-	3	-	-	-	2	-	2	-	-	-	2	-	2
7	Rate M10 Firm	1	-	-	1	-	2	2	-	-	-	-	2	2	-	-	-	-	2
8	Total Wholesale - Utility	1	-	-	4	-	5	2	-	-	2	-	4	2	-	-	2	-	4
<u>Contract</u>																			
9	Rate M4	11	-	-	104	-	115	18	5	-	126	-	149	18	5	-	131	-	154
10	Rate M7	-	-	-	4	-	4	1	-	-	3	-	4	3	1	-	24	-	28
11	Rate 20 Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Rate 20 Transportation	4	-	-	20	39	63	2	-	-	18	28	48	3	-	-	17	28	48
13	Rate 100 Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Rate 100 Transportation	-	-	-	-	17	17	-	-	-	-	14	14	-	-	-	-	11	11
15	Rate T-1 Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Rate T-1 Transportation	-	-	-	-	35	35	-	-	-	-	38	38	-	-	-	-	36	36
17	Rate T-2 Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Rate T-2 Transportation	-	-	-	-	29	29	-	-	-	-	22	22	-	-	-	-	22	22
19	Rate T-3 Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	Rate T-3 Transportation	-	-	-	-	1	1	-	-	-	-	1	1	-	-	-	-	1	1
21	Rate M5	5	-	-	139	-	144	11	-	-	100	-	111	8	1	-	73	-	82
22	Rate 25	50	-	-	-	42	92	43	-	-	-	51	94	38	-	-	-	47	85
23	Rate 30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Total Contract	70	-	-	267	163	500	75	5	-	247	154	481	70	7	-	245	145	467
25	Total Number of Customers	1,084,118	240,904	72,630	2,576	163	1,400,391	1,232,917	136,491	26,169	2,944	159	1,398,680	1,276,522	121,865	17,901	3,061	150	1,419,499

\*Customer count for storage is included within transportation

Filed: 2015-04-01

EB-2015-0029

Exhibit A

Tab 1

Appendix A

Schedule 4

UNION GAS LIMITED

Throughput Volume by Service Class and Rate Class

All Customer Rate Classes that DSM Programs will be Developed For and Offered To

Year Ended December 31, 2014

Line No.	Volumes in 10 <sup>3</sup> m <sup>3</sup>	Residential (a)	Commercial (b)	Industrial (d)	Total (f)
	<u>General Service</u>				
1	Rate M1 Firm	2,503,641	754,225	70,826	3,328,692
2	Rate M2 Firm	386	919,280	364,762	1,284,428
3	Rate 01 Firm	766,176	285,639	1,252	1,053,067
4	Rate 10 Firm		282,474	96,957	379,430
5	<b>Total General Service</b>	<b>3,270,204</b>	<b>2,241,617</b>	<b>533,797</b>	<b>6,045,618</b>
	<u>Contract</u>				
6	Rate M4		124,965	359,439	484,404
7	Rate M7		148,469	243,786	392,256
8	Rate 20			535,626	535,626
9	Rate 100		48,210	1,662,718	1,710,928
10	Rate T-1		107,399	363,412	470,811
11	Rate T-2		147,221	4,157,883	4,305,103
12	Rate M5		159,578	99,780	259,358
13	<b>Total Contract</b>	<b>-</b>	<b>735,842</b>	<b>7,422,645</b>	<b>8,158,486</b>
14	<b>Total Throughput Volume</b>	<b>3,270,204</b>	<b>2,977,459</b>	<b>7,956,441</b>	<b>14,204,104</b>

UNION GAS LIMITED

Total Customers by Service Type and Rate Class

All Customer Rate Classes that DSM Programs will be Developed For and Offered To

Year Ended December 31, 2014

Line No.	Particulars	Residential (a)	Commercial (b)	Industrial (c)	Total (d)
	<u>General Service</u>				
1	Rate M1 Firm	995,647	78,652	3,990	1,078,289
2	Rate M2 Firm	8	5,708	1,224	6,940
3	Rate 01 Firm	303,618	28,129	33	331,780
4	Rate 10 Firm		1,866	153	2,019
5	<b>Total General Service</b>	<b>1,299,273</b>	<b>114,355</b>	<b>5,400</b>	<b>1,419,028</b>
	<u>Contract</u>				
6	Rate M4		53	101	154
7	Rate M7		14	14	28
8	Rate 20		1	47	48
9	Rate 100		-	11	11
10	Rate T-1		7	29	36
11	Rate T-2		3	19	22
12	Rate M5		52	30	82
13	<b>Total Contract</b>	<b>-</b>	<b>130</b>	<b>251</b>	<b>381</b>
14	<b>Total Number of Customers</b>	<b>1,299,273</b>	<b>114,485</b>	<b>5,651</b>	<b>1,419,409</b>

\*Customer count for storage is included within transportation



**APPENDIX B: ON-BILL FINANCING**

Union has considered the flexibility given by the Board in Section 6.2 of the Framework for the “development of new and innovative programs, including flexibility to allow for on bill financing options”. On-bill financing was discussed as a potential new program idea in a consultation session with stakeholders in December 2013 as referenced at Exhibit A, Tab 3, Appendix B and the majority of participants did not support moving ahead with this new offering.

One of the guiding principles for the DSM Framework is that programs should be designed to remove barriers in the marketplace to increase program take-up<sup>1</sup>. Customer research provides important insights on the barriers to participation. Notably, customers do not cite access to financing as an obstacle to undertaking energy efficiency improvements.

High upfront costs of undertaking energy efficiency improvements are a commonly cited barrier to participating in DSM programs. While some may argue that an on-bill financing program helps to overcome upfront costs, it would only do so if the customer is willing to take on additional debt. Union’s research suggests that there is a wide array of financing options available to those customers wishing to pursue financing for energy efficiency improvements, including some borrowing vehicles which specifically target energy efficiency improvements<sup>2</sup>. In spite of the current availability of financing, the majority who have or expect to undertake

---

<sup>1</sup> EB-2014-0134 Report of the Board, December 22, 2014, page 8.

<sup>2</sup> On-Bill Financing for DSM Programs: Research Insights and Findings.

1 energy efficiency improvements in the next two years have or expect to do so from cash or  
2 savings<sup>3</sup>. Union believes that making an additional borrowing vehicle available through an on-  
3 bill financing program, with additional customer costs required to establish that vehicle, will not  
4 alter the customer's willingness to take on debt for energy efficiency improvements.

5  
6 In Union's view, overcoming the upfront cost of energy efficiency improvements is critically  
7 linked to two factors:

8 ***1. Customer incentives***

9 Union has heard that rebates and incentives are the most valued program feature by  
10 residential single family and commercial/industrial mass market customers. In contrast,  
11 access to financing options is perceived as the least valuable program feature by the  
12 majority of these customers.

13  
14 ***2. Customer understanding of the potential to save on their utility bills***

15 Lack of clarity on savings also emerges as a barrier. Union believes that program features  
16 that build customer understanding of the benefits of the investment, such as the energy  
17 assessment component of the Home Reno Rebate Offering outlined at Exhibit A, Tab 3,  
18 Appendix A, Section 1.0 will be far more effective in encouraging customers to  
19 implement efficiency upgrades than an on-bill financing offering.

---

<sup>3</sup> On-Bill Financing for DSM Programs: Research Insights and Findings.

1 In order to ensure customers have an understanding of the financing options available to them  
2 during the 2015-2020 Plan, Union intends to focus on enabling financing options through the  
3 following:

- 4 • Providing information to customers on financing options for energy efficiency upgrades,  
5 for example within a promotion on a bill insert
- 6 • Initiating dialogue with key financial institutions about how their financing offerings  
7 might be promoted from Union's programs
- 8 • Developing an online page on Union's website that provides customers with financing  
9 information and options

**APPENDIX C: CONSERVATION DEMAND MANAGEMENT (“CDM”)**

Union has been actively collaborating and partnering with electric local distribution companies (“LDCs”) on conservation initiatives since 2008. Over the next six years, Union will continue to build on this experience and work with the electric LDCs and the Independent Electricity System Operator (“IESO”) to identify opportunities to further collaborate and integrate DSM and electricity CDM programs.

Alignment of the DSM and CDM Framework terms represents an important step toward enabling future collaboration. Over the past year Union and Enbridge have been active participants on the Conservation First Advisory Working Group established by the Ontario Power Authority (as predecessor to the IESO) to establish the 2015-2020 CDM Framework in accordance with the Minister of Energy’s March 31, 2014 direction.

Union and Enbridge are also members of the newly formed Conservation First Implementation Committee established by the IESO in collaboration with electric LDCs to provide guidance to the CDM Working Groups and provide input on the management of CDM. Union and Enbridge will also be members of the CDM Working Groups which will further enable collaboration and integration as existing programs are updated and new programs are introduced. In addition, Union is participating on the CDM Achievable Potential Steering Committee that is overseeing the study that needs to be completed by June 2016. By participating in these committees, Union

1 is hoping to address some of the barriers to collaboration, including alignment of program  
2 elements.

3  
4 The electric LDCs are currently developing their six year CDM plans that need to be submitted  
5 to the IESO for approval<sup>1</sup> by May 1, 2015. In addition to the committee work, Union has met  
6 with a number of electric LDCs to discuss potential opportunities for collaboration. Union has  
7 65 electric LDCs within its franchise area, so a targeted approach will be required and need to  
8 evolve over the course of the Framework.

9  
10 Union will investigate collaborative opportunities in 2015, with the goal of incremental  
11 collaboration from 2016-2020 through:

- 12 • Actively participating on the Conservation First Implementation Committee and CDM  
13 Working Groups to seek alignment where possible on DSM and CDM programs;
- 14 • Further engaging with electric LDC's to understand their CDM Plans and interest in the  
15 collaboration opportunities Union has identified and opportunities they have identified to  
16 work together;
- 17 • Engaging with electric LDC's and IESO to discuss various pilot project opportunities  
18 which could result in coordinated and/or integrated collaborative programs. Further  
19 details are included in Exhibit A, Tab 3, Appendix A; and,

---

<sup>1</sup> IESO approval period for CDM Plans is 30 - 60 days.

- Working with Enbridge and the IESO to develop an aligned measures and assumptions list.

#### **Potential Opportunities for Collaboration**

As outlined in Section 12 of the Framework, Union has considered how elements of both existing and pilot DSM offerings could be integrated with existing electricity CDM programs.

As noted above, further discussion with the electric LDCs and the IESO will be required on collaboration opportunities.

The following outlines a preliminary summary of potential collaboration opportunities that Union has identified. Once the electric LDCs have completed their CDM Plans for 2015-2020, Union intends to have additional discussions on potential areas of collaboration.

#### **Residential**

##### Home Reno Rebate (“HRR”) Offering

- Home Reno Rebate Service Organizations could build awareness for the saveONenergy Heating and Cooling offer while in the home, and other applicable CDM offers such as coupons (i.e. via a leave-behind package).

- Union will look to investigate electric LDC interest in a gas-electric pilot that could leverage the Home Reno Rebate home energy assessment's ability to identify deep electricity savings opportunities.

#### Behavioural Offering

- Union will discuss its program with targeted electric LDCs and the residential CDM Working Group to determine potential for collaboration.

#### Energy Savings Kits ("ESK") Offering

- saveONenergy Retail Coupon offer could be bundled with ESKs and distributed by Home Reno Rebate Service Organizations.

#### Wi-Fi Thermostat - Pilot

- Potential to pursue as a collaborative pilot at the design stage to best align the DSM offer along with the provincially available offer through an electric LDC.

### **Commercial/Industrial**

#### C/I Prescriptive Offering

- Potential to incorporate gas measures with electricity savings in the CDM Retrofit Program through the prescriptive stream (locally/provincially).

#### C/I Custom Offering

- Union could promote and identify any potential electric energy efficiency opportunities, such as combined heat and power, arising with participating gas customers through customer visits, energy studies/audits, gas projects.

Direct Install (Small Business) - Pilot

- Consider a collaborative pilot to align the DSM offer with an electric LDC.

**Performance-Based**

RunSmart Offering

- Investigate a potential pilot program opportunity with an electric LDC (or a small group of electric LDCs) for a gas-electric retrocommissioning offer.

Strategic Energy Management Offering

- Potential to promote and identify any electric energy efficiency opportunities arising with participating gas customers through assessments/walkthroughs.
- Union could also offer gas energy efficiency training/support to any electric LDC funded/appointed Embedded Energy Managers. These Embedded Energy Managers could coordinate with Union's Account Managers as necessary.

Performance-Based Conservation Pilot

- Union has committed to funding and in-kind support of a Performance Based Conservation Pilot lead by the IESO and the Toronto and Region Conservation Authority.

**Large Volume**

- Union can encourage its large volume customers to contact their transmission or distribution electricity providers for any electricity energy efficiency opportunities.



**Low Income**

Home Weatherization ("HW") Offering

- Union could deliver Basic and Extended CDM measures, on behalf of partner electric LDCs, to homes receiving Union's DSM offer.
- Potential to co-brand marketing materials that highlights both the Home Weatherization Offering and the electric LDC's Home Assistance Program.
- Consider using Union's Home Weatherization Offering delivery agent to deliver Home Assistance Program in DSM weatherized homes.

Aboriginal Offering

- Union could deliver the Aboriginal Conservation Program to all eligible gas and electrically heated homes in DSM targeted reserves with residential gas service.

Furnace End-of-Life Upgrade Offering

- Union could promote this offering through social service agencies and other channels as needed to promote the saveONenergy Heating and Cooling offer at one touch-point, ensuring customers are aware of both incentive programs.

Multi-Family Offering

- Union could identify any electric energy efficiency opportunities arising with participating gas customers through customer visits, energy studies/audits, gas projects.

1    **Market Transformation**

2    *Optimum Home*

- 3        •    Union plans to engage with the CDM Working Group to identify potential programs in
- 4            anticipation of the 2017 building code change.

## **APPENDIX D: DSM AND INFRASTRUCTURE PLANNING STUDY**

### **Introduction**

In Section 13 of the Framework, the Board states that DSM should be considered by the natural gas utilities when developing infrastructure plans and that gas utilities must provide evidence in future infrastructure projects of how DSM has been considered as an alternative at the preliminary stage of project development. The Board then states that as part of each utility's multi-year DSM plan applications, each of the gas utilities "should include a preliminary scope of the study it plans to conduct and propose a preliminary transition plan that outlines how the gas utility plans to begin to include DSM as part of its future infrastructure planning efforts".

Union's preliminary study scope outlines the questions Union will study to determine the potential effects DSM can have on deferring, postponing or reducing future capital investments. It is premature for Union to propose a transition plan at this time. Union has had very preliminary discussions with Enbridge regarding DSM and infrastructure planning and intends to continue those discussions through the study process.

### **Study Scope**

There is a fundamental difference between the approach used for distribution infrastructure planning (e.g. instantaneous peak volumetric flow rate, or needle peak) and the approach used for gas supply planning (e.g. peak day). The design day demands for Union South and Union

1 North take into account existing DSM program volume reduction since the design day demands  
2 are based on the previous winter's actual daily measured volumes. Any impact of in-place DSM  
3 programs will be reflected in the actual daily measured volumes. Company forecasts which  
4 include, for example, reduction of contract rate customers' volumes due to known energy  
5 efficiency changes, are also included in the calculation of forecast design day demand.  
6

7 Based on the DSM Framework, the primary focus of this study will be on the potential impacts  
8 DSM could have on instantaneous peak hour, and hence, distribution infrastructure planning.  
9 Currently Union South and Union North distribution systems are designed to accommodate the  
10 required instantaneous peak volumetric flow rate, or needle peak. DSM programs have not been  
11 designed specifically to target reductions in the instantaneous peak volumetric requirement.  
12

13 In addition, Union plans to study how it will address the outcomes/recommendation of the ICF  
14 report regarding including an estimate of facility cost savings within Union's Avoided Costs  
15 calculation. In its report filed as Exhibit A, Tab 2, Appendix C, ICF notes "*avoided local  
16 distribution system infrastructure costs are achieved when reduced natural gas demand enables  
17 delays in the timing of new projects, or reductions in the size of these projects. The avoided  
18 transmission and distribution costs vary by utility service territory, but are typically driven by  
19 the level of gas demand in the winter heating season*" (pp.3-4). ICF recommends Union review

and consider including an estimate of facility cost savings in its Avoided Costs calculation (p. 26).<sup>1</sup>

### Issues to be Addressed Through the Study

#### i. Targeted DSM and Deferral of Infrastructure Projects

- Can targeted DSM make a significant impact on peak hour?
- What is the required load reduction that would lead to deferral of infrastructure?
- How should the potential of DSM measures that would impact peak hour be assessed
  - Can instantaneous peak load shapes be derived for efficiency measures?
  - Could sub-metering be used to confirm instantaneous peak volumetric impacts?
- Could DSM programs be designed and implemented to achieve the necessary impact?
- How would targeted DSM be integrated with Union's planning and regulatory processes?
- What is the appropriate cost effectiveness test to compare the demand and supply options for targeted areas?
- How can Union ensure the safe, reliable service to its customers both in the short and long term when using DSM measures to defer infrastructure?

#### ii. Broad-Based DSM impacts

- What information from broad-based DSM programs would be helpful to Distribution Planning? (e.g., could DSM programs track equipment upgrades by distribution district?)

---

<sup>1</sup> Union has estimated avoided T&D costs at 2% of its other avoided gas costs. Union will refine this estimate through its DSM and Infrastructure Planning Study.

1 • Could metering for DSM purposes also provide useful information for Distribution  
2 Planning?

3 • What changes would be needed to better integrate relevant broad-based DSM information  
4 into the Distribution Planning process (including studying energy efficiency  
5 measures/equipment to determine peak impact)?

6  
7 iii. Avoided Costs

8 • What value should be included in the Avoided Costs calculation to represent avoided  
9 costs for distribution infrastructure?

10

**UNION’S PROPOSED 2015 DSM PLAN**

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**APPENDICES**

Appendix A	2015 DSM Plan Stakeholder Consultation
Appendix B	2015 Avoided Costs (Natural Gas, Water and Electricity)
Appendix C	ICF Evaluation of Union's Avoided Costs
Appendix D	Proposed Evaluation and Audit Process



**1.0 Introduction**

In Section 15.1 of the Framework the Board outlined the following for DSM activities in 2015, “the gas utilities should roll-forward their 2014 DSM plans, including all programs and parameters (i.e. budgets, targets, incentive structure) into 2015.” The Board further notes that, “the gas utilities should increase their budgets, targets and shareholder incentive amounts in the same manner as they have done throughout the current DSM framework (i.e., 2013 updates to 2014 should now apply as 2014 updates to 2015).”

In addition, in Section 11.2 of the Guidelines the Board notes that incremental funding of up to 15% of the DSM budget can be used in 2015 to begin implementing the key priorities identified in the Framework during the transition to the new multi-year DSM Plans. This is in addition to the option to spend 15% above the approved annual DSM budget (also referred to as the overspend).

Union’s 2015 DSM Plan follows the Board’s direction and rolls over all elements of Union’s 2014 DSM Plan. All scorecard adjustments were rolled over using the formulas in place for 2014, with two required changes as summarized in Table 1 below.

Table 1

Scorecard Approach for 2015

<b>Scorecard</b>	<b>Approach for 2015</b>	<b>Rationale for Approach</b>
Resource Acquisition	Roll-over of 2014 scorecard metrics and formulas with the exception of the Deep Savings - Residential Metric.	The Deep Savings – Residential lower and upper band targets were changed to a -25%/+25% percentage of target achievement to better reflect a challenging upper band scenario given the 2015 target. Further details on this can be found in Exhibit A, Tab 2, Section 3.1.
Low Income	Roll-over of 2014 scorecard metrics and target structure.	Consistent with the existing scorecard structure.
Large Volume	Roll-over of 2014 scorecard metrics and formulas.	Consistent with the existing scorecard structure.
Market Transformation	Roll-over of 2014 scorecard metric for number of homes built to Optimum Home standard (>20% above Ontario Building Code 2012) by participating customers.	Market Transformation is a phased approach where the offerings focus needs to shift over time. In year four of the offering, Union heard from stakeholders that the focus should shift to the number of homes built to Optimum Home standards and Union has adjusted the targets accordingly. Further details on this can be found in Exhibit A, Tab 2, Section 3.4.

The required changes were discussed over the course of two consultations with stakeholders held on January 14, 2015 and February 18, 2015. All of the details surrounding the proposed changes to the 2015 Plan and the stakeholder consultation Union completed in support of the changes can be found at Exhibit A, Tab 2, Appendix A.

## 2.0 Budget

Union's 2015 DSM budget will be \$34.0 million which is the 2014 DSM budget adjusted for inflation as well as \$1.4 million in incremental budget to begin to address the guiding principles and key priorities outlined in the Framework. Table 2 summarizes the 2015 budget.

Table 2

2015 DSM Budget

Line No.	Calculation of 2015 Roll-Over Budget	(\$000)
1	2014 DSM Budget	32,049
2	Inflation Rate (1.68%)	538
3	Total 2015 Roll-Over Budget	<u>32,588</u>
	Calculation of Incremental Budget	
4	Achievable Potential Study	200
5	DSM and Infrastructure Planning Study	200
6	DSM Tracking and Reporting System	1,000
7	Total Incremental Budget	<u>1,400</u>
8	Total 2015 DSM Budget (line 3 + Line 7)	<u><u>33,988</u></u>

Prior to the application of inflation and the incremental budget, the Program and Portfolio budgets remain consistent with the budgets as outlined in Union's 2012-2014 DSM Plan Settlement Agreement ("EB-2011-0327 Settlement"), Section 2.1. As outlined in Section 2.3 of the EB-2011-0327 Settlement, inflation has been calculated using the Q2, 2014 four quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index ("GDP IPI") reported by Statistics Canada, which equates to 1.68%.<sup>1</sup>

<sup>1</sup> EB-2014-0271, Exhibit B. VECC.1.

1 The proposed incremental 2015 DSM budget of \$1.4 million and a description of the items the  
2 incremental budget will be spent on can be found in Table 3 below.

3 Table 3

4 2015 Incremental Budget Requirements

<b>Incremental 2015 Requirement</b>	<b>Rationale</b>	<b>Incremental Budget</b>
Achievable Potential Study	As per the Framework, Section 1, the Board identified the need to complete an Achievable Potential Study by June 1, 2016 to inform the mid-term review. Union's approach to the Achievable Potential Study is outlined at Exhibit A, Tab 2, Section 12.1.1.	\$0.20 million
DSM and Infrastructure Planning Study	As per the Framework, Section 13, the Board identified the need for the utilities to complete a study to determine the appropriate role that DSM may serve in future system planning efforts in time to inform the mid-term review. Union's approach to the DSM and Infrastructure Planning Study is outlined at Exhibit A, Tab 2, Section 12.1.2.	\$0.20 million
DSM Tracking and Reporting System Requirements	The new Framework for 2015-2020 has additional data reporting requirements that can no longer be supported by the architecture of Union's existing DSM tracking and reporting systems. Union's approach to developing a new DSM Tracking and Reporting System is outlined at Exhibit A, Tab 2, Section 12.2.	\$1.00 million

5  
6 The incremental budget requirement of \$1.4 million is in addition to the existing 15% overspend  
7 provision in place since EB-2006-0021 to allow Union to aggressively pursue programs which  
8 prove to be very successful during the program year. The 2015 DSM budget reflects the amount  
9 required for Union to deliver programs and achieve its scorecard targets. It is inappropriate to  
10 use the 15% overspend amount to conduct the incremental items, as the overspend amount is  
11 required to aggressively pursue programs which prove successful and to strive towards  
12 achievement of the Upper Band. Union's 2015 DSM Budget by program is included in Table 4.

Table 4

2015 DSM Plan Budget

<b>Program Budget</b>	
<b>Resource Acquisition</b>	
<i>Residential Incentives/Promotion</i>	\$ 2,567
<i>Residential Administration</i>	\$ 576
<i>Residential Evaluation</i>	\$ 20
<b>Total Residential Program</b>	<b>\$ 3,163</b>
<i>Commercial/Industrial Incentives/Promotion</i>	\$ 8,118
<i>Commercial/Industrial Administration</i>	\$ 2,682
<i>Commercial/Industrial Evaluation</i>	\$ 60
<b>Total Commercial/Industrial Program</b>	<b>\$ 10,859</b>
<b>Total Resource Acquisition Programs</b>	<b>\$ 14,022</b>
<b>Large Volume T1/T2/R100</b>	
<i>Large Volume T1/T2/R100 Incentives/Promotion</i>	\$ 3,587
<i>Large Volume T1/T2/R100 Administration</i>	\$ 907
<i>Large Volume T1/T2/R100 Evaluation</i>	\$ 40
<b>Total Large Volume T1/T2/R100 Program</b>	<b>\$ 4,534</b>
<b>Low-Income</b>	
<i>Low-Income Incentives/Promotion</i>	\$ 5,827
<i>Low-Income Administration</i>	\$ 972
<i>Low-Income Evaluation</i>	\$ 40
<b>Low-Income Program</b>	<b>\$ 6,839</b>
<b>Market Transformation</b>	
<i>Optimum Home Incentives/Promotion</i>	\$ 1,185
<i>Optimum Home Administration</i>	\$ 194
<b>Optimum Home Program</b>	<b>\$ 1,379</b>
<b>Programs Sub-total</b>	<b>\$ 26,773</b>
<b>Portfolio Budget</b>	
Research	\$ 766
Evaluation	\$ 969
Administration	\$ 1,582
<b>DSM Budget Subtotal Pre-Inflation</b>	<b>\$ 30,091</b>
Cumulative Inflation @1.68%	\$ 2,497
<b>DSM Budget Subtotal</b>	<b>\$ 32,588</b>
<b>Incremental Budget Requirements</b>	
Achievable Potential Study	\$ 200
Future Infrastructure Planning Study	\$ 200
DSM Tracking and Reporting System Upgrades	\$ 1,000
<b>Total DSM Budget Post-Inflation</b>	<b>\$ 33,988</b>

1 The 2015 DSM budget is allocated to individual rate classes based on the methodology outlined  
2 in Union's 2012-2014 DSM Plan<sup>2</sup>. The incremental DSM budget requirements cannot be  
3 assigned to individual rate classes and will be treated similar to Portfolio level costs which are  
4 allocated across all rate classes based on their percentage allocation of program costs. For  
5 example, if 10% of the 2015 program budget is assigned to Residential, then 10% of the  
6 incremental budget will be allocated to this customer class. The Low Income program budget  
7 will continue to be funded by all rate classes based on Union's 2015 distribution revenue as per  
8 Union's 2015 Rates Application (EB-2014-0271). Table 5 provides the allocation of the 2015  
9 DSM budget (including incremental budget requirements) by rate class.

10

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<sup>2</sup> EB-2011-0327, Exhibit A, Section 2.1.

Table 5

Calculation of 2015 DSM Budget with Proposed Incremental Budget  
Allocation by Rate Class

Line No.	Particulars (\$000s)	EB-2014-0271 Approved 2015 DSM Budget (1) (a)	2015 Incremental Budget Requirements (b)	2015 Proposed DSM Budget (c) = (a + b)
	<u>Union North</u>			
1	Rate 01	3,843	129	3,973
2	Rate 10	1,222	54	1,276
3	Rate 20	1,004	55	1,058
4	Rate 100	1,852	63	1,914
5	Total Union North	<u>7,920</u>	<u>300</u>	<u>8,221</u>
	<u>Union South</u>			
6	Rate M1	10,763	487	11,250
7	Rate M2	4,012	201	4,213
8	Rate M4	1,655	104	1,759
9	Rate M5A	2,763	71	2,834
10	Rate M7	933	69	1,002
11	Rate T1	1,855	44	1,899
12	Rate T2	2,687	124	2,811
13	Total Union South	<u>24,668</u>	<u>1,100</u>	<u>25,767</u>
14	Total Union (line 5 + line 13)	<u>32,588</u>	<u>1,400</u>	<u>33,988</u>

Notes:

(1) EB-2014-0271, Working Papers, Schedule 11.

As outlined in Section 15 of the Framework, Union can re-allocate funds between programs up to a maximum of 30% of the approved annual DSM budget. In addition, consistent with the EB-2011-0327 Settlement, Union will continue to adhere to the following budget provisions for 2015:

- 1       • Union, at its sole discretion, will be allowed to transfer a maximum of \$0.5 million of the  
2       program budget allocated to Rate T1, Rate T2 or Rate 100 to Rate T1, Rate T2 or Rate  
3       100 respectively (exclusive of the 15% allowable overspend).
- 4       • Union will not transfer budget from any other part of the overall DSM budget into Rate  
5       T1, Rate T2 or Rate 100.
- 6       • Union will monitor and limit shifts in the Resource Acquisition budget to an increase of  
7       100% of the amount allocated to the participating rate classes. For further information  
8       on the aforementioned budget provision, please refer to EB-2011-0327 Settlement, page  
9       22.

10   Union anticipates that it will exceed the 100% increase in the amount allocated to Rate M7 in  
11   2015. This is due to the Rate M4, Rate M5 and Rate M7 rate class eligibility changes which are  
12   discussed at Exhibit A, Tab 3, Section 13.

### 14   **3.0   Targets**

15   Consistent with the Board's direction, Union has maintained its balanced scorecard approach in  
16   establishing targets for its 2015 DSM programs. The four proposed scorecards for 2015 continue  
17   to be Resource Acquisition, Large Volume, Low Income and Market Transformation. The  
18   Resource Acquisition Scorecard consists of the Residential and Commercial/Industrial programs.  
19   Further details of the individual offerings can be found in Union's 2012-2014 Plan,<sup>3</sup> Union's

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<sup>3</sup> EB-2011-0327 – Union Gas Limited – 2012-2014 Demand Side Management Plan, September 23, 2011.



2012-2014 DSM Plan Settlement,<sup>4</sup> and Union's 2013-2014 Large Volume Plan<sup>5</sup>. The following sections provide further detail on the proposed scorecards.

### 3.1. Resource Acquisition Scorecard

The Resource Acquisition Scorecard consists of three metrics: Cumulative Natural Gas Savings (m<sup>3</sup>), Deep Savings – Residential (Homes) and Deep Savings – Commercial/Industrial (% of baseline consumption). These metrics were guided by the Board's objectives in the 2012-2014 DSM Guidelines including the maximization of cost-effective natural gas savings and the pursuit of deep energy savings.

Union's initial proposal, based on the direction received in the Framework, was to roll-forward the 2014 Resource Acquisition scorecard. Table 6 shows the 2014 Deep Savings – Residential (Homes) metric, as agreed to in the EB-2011-0327 Settlement, including the formulas used to set the Lower and Upper Band targets.

Table 6

2014 Deep Savings – Residential Metric

2014 Deep Savings - Residential (Homes) Approach			
Metric	Metric Target Levels		
	Lower Band	Target	Upper Band
Deep Savings - Residential (Homes)	2014 Target minus 50 homes	2013 Actuals times 1.25	2014 Target plus 50 homes

<sup>4</sup> EB-2011-0327 – Union Gas Limited Settlement Agreement, January 31, 2012.

<sup>5</sup> 2013-2014 DSM Plan for Large Volume Customers.

Based on feedback received by stakeholders at Union's January 14, 2015 DSM Consultative session, Union has revised the Lower and Upper Band target setting methodology for the Deep Savings – Residential (Homes) metric. The revised methodology recognizes that the Deep Savings Residential (Homes) targets have increased to the point where the +/- 50 homes does not have the same effect on the Lower and Upper Band. The 2015 metric has been revised to set the Lower Band to 75% of the Target and the Upper Band to 125% of the Target. This has been reflected in the 2015 Resource Acquisition Scorecard outlined in Table 7 below.

Table 7

2015 Resource Acquisition Scorecard

2015 Resource Acquisition Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings m <sup>3</sup>	75% of Target	2014 Post-Audit Scorecard Cost Effectiveness (m <sup>3</sup> per Promotion and Incentive Dollar Spent) times \$10.684M times 1.02	125% of Target	90%
Deep Savings - Residential (Homes)	75% of Target	2014 Actual times 1.25	125% of Target	5%
Deep Savings - Commercial/Industrial (% of baseline consumption)	The higher of: i) 2014 Actual ii) 4.5%	The higher of: i) 2014 Actual + 1% ii) 5.5%	The higher of: i) 2014 Actual + 2% ii) 6.5%	5%

Scorecard Metric Descriptions

***Cumulative Natural Gas Savings ( $m^3$ )***

The Cumulative Natural Gas Savings Metric measures the total natural gas saved for all Resource Acquisition programs (Residential and Commercial/Industrial) delivered for the term of their measure life, net of adjustment factors (such as free ridership, spillover and persistence). For 2015, the Cumulative Natural Gas Savings target will be determined by multiplying the 2014 post-audit scorecard cost-effectiveness (cumulative  $m^3$  per promotion and incentive dollar spent) by \$10.684 million (the 2015 Resource Acquisition promotion and incentive budget prior to the application of inflation). The result is further multiplied by 1.02, ensuring a 2% increase in targets from the previous year, which produces the final 2015 Cumulative Natural Gas Savings target. The Lower Band will be 75% of the target and the Upper Band will be 125% of the target. By using a formulaic approach, the targets will be adjusted based on the prior year's performance.<sup>6</sup>

***Deep Savings – Residential (Homes)***

The Deep Savings – Residential (Homes) Metric measures participants in the Home Reno Rebate Offering that achieve a minimum gas savings of 11,000 cumulative  $m^3$  (based on HOT2000 software used in EnerGuide mode), and implement a minimum of two major measures in their

---

<sup>6</sup> For illustrative purposes, if Union's 2014 post audit achievement is 875,000,000  $m^3$  while spending \$10.9 million (promotion and incentive spend) to achieve those results, the cost-effectiveness would be 80.3  $m^3$  per dollar spent. To calculate the 2015 Target, the 2014 post audit cost effectiveness (80.3  $m^3$ /\$) will be multiplied by the 2015 Resource Acquisition promotion and incentive budget (\$10.684 million) and 1.02 to equal a target of 875,083,703  $m^3$ . The Lower Band will be 656,312,777  $m^3$  (75% of 875,083,703  $m^3$ ) and the Upper Band will be 1,093,854,629  $m^3$  (125% of 875,083,703  $m^3$ ).

home as outlined in Exhibit A, Tab 3, Appendix A, Section 1.0. Furthermore, the aggregate of all the homes counted towards the Deep Savings – Residential (Homes) Metric must achieve, on average, at least a 25% reduction in their annual gas usage for space and water heating (as determined by HOT2000 software used in EnerGuide mode).

For 2015, the Deep Savings – Residential (Homes) target will be based on 2014 achievement multiplied by 1.25. The Lower Band will be 75% of the Target and the Upper Band will be 125% of the Target.<sup>7</sup>

***Deep Savings – Commercial/Industrial (%)***

The Deep Savings – Commercial/Industrial Metric measures the savings achieved from all Commercial/Industrial custom projects as a percentage of the participants' baseline consumption. This will be calculated by comparing the forecasted weather normalized annual gas savings for all Commercial/Industrial custom projects against the actual weather normalized consumption of the participants in those projects for the immediately preceding year. For any Commercial/Industrial custom project, should a prescriptive measure be installed, the savings relating to that measure will be included for the purpose of calculating the normalized annual gas savings. For 2015, the Deep Savings – Commercial/Industrial target will be based on the higher of: a) 2014 actual plus 1% or b) 5.5%. The Lower Band will be based on the higher of: a) 2014

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<sup>7</sup> For illustrative purposes, if Union's 2014 Deep Savings – Residential (Homes) achievement is 1,000 homes, then the 2015 Target will be 1,250 homes (1,000 homes times 1.25). The Lower Band will be 938 homes (75% of 1,250 homes) and the Upper Band will be 1,563 (125% of 1,250 homes).

1 actual or b) 4.5% and the Upper Band will be based on the higher of: a) 2014 actual plus 2% or  
2 b) 6.5%.<sup>8</sup>  
3

### 4 **3.2. Large Volume Scorecard**

5 The Large Volume Scorecard consists of two metrics, a Cumulative Natural Gas Savings Metric  
6 for Rate T2/Rate 100 customers and a Cumulative Natural Gas Savings Metric for Rate T1  
7 customers. These two metrics are in recognition of the 2012-2014 DSM Guidelines main  
8 principle of maximizing cost-effective natural gas savings. The scorecard metrics for Rate  
9 T2/Rate 100 customer and Rate T1 customers are split to recognize that Rate T2/Rate 100  
10 customers operate under the Direct Access budget mechanism which allows them direct access  
11 to their dedicated customer incentive budget in rates whereas Rate T1 customer will have access  
12 to an aggregated pool of customer incentive funding. The 2015 Large Volume Scorecard, which  
13 is a rollover of the formulaic adjustment of the 2014 Large Volume Scorecard approved in  
14 Union's Large Volume 2013-2014 DSM Proceeding (EB-2012-0337), is provided in Table 8.  
15  
16  
17  
18  
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<sup>8</sup> For illustrative purposes, if the total annual natural gas savings from Union's 2014 Commercial/Industrial custom projects was 400,000,000 m<sup>3</sup> and the total 2013 consumption for the Commercial/Industrial project participants was 5,318,598,501 m<sup>3</sup>, then the 2014 achievement would be 7.52%. Therefore the 2015 Target will be 8.52% (7.52% plus 1%) which is higher than 5.5%. The Lower Band will be 7.52% and the Upper Band will be 9.52%.

Table 8

2015 Large Volume Scorecard

2015 Large Volume Rate T1/Rate T2/Rate100 Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Rate T2/Rate 100 Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	Three-year rolling average (2012-2014) post-audit Rate T2/Rate 100 cost effectiveness (m <sup>3</sup> per customer incentive dollar spent) times \$2.383M	125% of Target	40%
Rate T1 Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	Three-year rolling average (2012-2014) post-audit T1 cost effectiveness (m <sup>3</sup> per customer incentive dollar spent) times \$1.104M	125% of Target	60%

Both of the Cumulative Natural Gas Savings Metrics measure the total natural gas saved for all projects delivered to Rate T1, Rate T2, and Rate 100 customers for the term of their measure life, net of adjustment factors (including, but not limited to free ridership, spillover and persistence).

For 2015, both of the Cumulative Natural Gas Savings Targets will be determined by multiplying the average 2012-2014 post-audit scorecard cost effectiveness (cumulative m<sup>3</sup> per incentive dollar spent) by the current year's customer incentive budget, prior to the application of inflation (\$2.383 million for Rate T2/Rate 100 and \$1.104 million for Rate T1). The Lower Band will be 75% of the Target and the Upper Band will be 125% of the Target. The formulaic approach for the Large Volume Scorecard approved in EB-2012-0337 uses a three year rolling average to recognize that the cost effectiveness may change considerably for the Large Volume

1 Program from year to year. The Large Volume cost effectiveness is calculated using the  
2 customer incentive as promotion costs are not tracked at a rate class level.  
3

### 4 **3.3. Low Income Scorecard**

5 Union's Low Income Scorecard contains two metrics: Cumulative Natural Gas Savings from  
6 Single Family and Cumulative Natural Gas Savings from Multi-Family Offerings. These two  
7 metrics reflect the principle in the 2012-2014 DSM Guidelines of maximizing cost-effective  
8 natural gas savings. The Cumulative Natural Gas Savings from Single Family Metric measures  
9 the total natural gas saved from the Home Weatherization Offering delivered by Union for the  
10 term of their measure life, net of adjustment factors (such as free ridership, spillover and  
11 persistence). The Cumulative Natural Gas Savings from Multi-Family Metric measures the total  
12 natural gas saved from the Affordable Housing Conservation Offering delivered by Union for the  
13 term of their measure life, net of adjustment factors (such as free ridership spillover and  
14 persistence).  
15

16 The 2015 Low Income Scorecard, which is a rollover of the 2014 Low Income Scorecard as  
17 illustrated in the EB-2011-0327 Settlement, is provided in Table 9.  
18  
19  
20  
21  
22

Table 9

2015 Low Income Scorecard

2015 Low Income Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings from Single Family (m <sup>3</sup> )	19,500,000	26,000,000	32,500,000	60%
Cumulative Natural Gas Savings from Multi-family (m <sup>3</sup> )	13,200,000	17,600,000	22,000,000	40%

**3.4. Market Transformation Scorecard**

Union will continue to deliver the Optimum Home Offering in 2015 as a Market Transformation program. The Optimum Home Offering is a three phased approach that starts with providing participating builders with consulting services from leading building science experts in phase one, allowing them to implement the learnings from phase one to build a prototype home (“Discover Home”) in phase two, and lastly, in phase three, transitioning their building practices to implement the Optimum Home process to the homes they build.

Union’s 2014 Market Transformation Scorecard reflected the Program’s objectives based on the Program approach noted above. While the 2014 Program still encouraged new participants into the Optimum Home Offering, the focus began to shift to ensuring that the program participants who were entering phase three were building their housing stock to Optimum Home standards. This was recognized by the introduction of a third scorecard metric in 2014 that measures the



percentage of homes built to Optimum Home Standard (20% above Ontario Building Code 2012 – (“OBC 2012”)), by participating builders.

Based on feedback received by stakeholders at Union’s DSM Consultative session on January 14, 2015, Union proposes to evolve the 2015 Market Transformation scorecard to reflect the objective of the Program for 2015: increase the market penetration of homes that are built to Optimum Home standards by participating builders. In anticipation of the changes to Ontario Building Code in 2017, Union will not be enrolling new participants into the program in 2015. This transition has been reflected in the Market Transformation scorecard in Table 10 below.

Table 10

2015 Market Transformation Scorecard

2015 Market Transformation Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Homes Built (>20% above OBC 2012) by Participating Builders	2014 Actual + 10%	2014 Actual + 15%	2014 Actual + 20%	100%

Union has received feedback from program participants and reviewed lessons learned and it is clear that on-going support is required for the current program participants. There are additional barriers related to energy efficient building science and materials that require Union to continue providing consulting support. Addressing these concerns will help program participants continue to refine their building process to ensure homes are built to the Optimum Home standard in an efficient and cost effective manner.

1 The Market Transformation Metric measures the percentage of homes built to a 20% higher  
2 energy efficient standard than OBC 2012 in relation to the total number of homes built in a  
3 program year by actual participating builders who remain enrolled in the program.

4  
5 In 2015, the metric target will be calculated by taking the 2014 actual metric achievement plus  
6 15%. The Lower Band and Upper Band metric targets similarly will be based on 2014 actual  
7 results plus 10% and 20% respectively.<sup>9</sup>

#### 8 9 **4.0 DSM Incentive**

10 As outlined by the Board in Section 15.1 of the Framework, Union has rolled forward the 2014  
11 shareholder incentive (“DSM Incentive”) structure for 2015. The 2015 maximum DSM  
12 Incentive will be the 2014 maximum incentive escalated for inflation. In 2015, the total  
13 maximum DSM Incentive is \$11.002 million (\$10.820 million x 1.0168).<sup>10</sup>

14  
15 Union will continue to allocate the DSM Incentive between the Resource Acquisition, Large  
16 Volume, Low Income and Market Transformation Scorecards based on their associated program  
17 budget share prior to the addition of inflation. This methodology is consistent with the 2012-

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<sup>9</sup> For illustrative purposes, if Union’s 2014 metric achievement was 10% (10% of all homes built by program participants were built to Optimum Home standards) then the 2015 Target will be 25% (10% plus 15%). The Upper Band and Lower Band Targets will be 20% and 30% respectively.

<sup>10</sup> As outlined in Section 2.3 of the EB-2011-0327 Settlement, inflation has been calculated using the Q2, 2014 four quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index (“GDP IPI”) reported by Statistics Canada, which equates to 1.68%.

2014 DSM Guidelines (“EB-2008-0346 Guidelines”). The 2015 allocation is outlined in Table 11.

Table 11  
Maximum DSM Incentive Allocated to Each Scorecard Prior to Inflation

Scorecard	Year		
	2015		
	Budget	Budget Share	Max DSM Incentive
	(\$000)	%	(\$000)
<b>Resource Acquisition</b>	14,022	52.4%	5,762
<b>Large Volume T1/T2/R100</b>	4,534	16.9%	1,863
<b>Low Income</b>	6,839	25.5%	2,810
<b>Market Transformation</b>	1,379	5.2%	567
<b>Programs Sub-Total</b>	<b>26,773</b>	<b>100.0%</b>	<b>11,002</b>

Consistent with 2014, a DSM Incentive will not be provided to any scorecard that achieves an overall weighted score of less than the Lower Band. Union will earn 40% of the maximum DSM Incentive for achieving a scorecard weighted score of 100% Target. The remaining 60% will be achieved for scorecard performance above the 100% Target score up to a scorecard weighted score of the Upper Band. The scorecard results will be linearly interpolated between the scorecard metric target levels. The DSM Incentive amount is capped at the scorecard weighted score of the Upper Band.

The DSM Incentive achieved by Union will be recorded in the DSM Incentive Deferral Account (“DSMIDA”) as per the EB-2008-0346 Guidelines Section 13.4.

**5.0 Lost Revenue Adjustment Mechanism (“LRAM”)**

Union will calculate the full year impact of its DSM programs on a monthly basis. The volumetric impacts from its DSM programs, in that month, will be multiplied by the distribution rate for each of the rate classes in which the volumetric variance occurred. The distribution rate will be based on the average yearly Quarterly Rate Adjustment Mechanism (“QRAM”). For illustrative purposes, the natural gas saving from DSM activities in January of 2015 will have 12 months of LRAM calculated based on the average QRAM rate for the rate classes that achieved the savings whereas, the natural gas savings from DSM activities in November of 2015 will have two months of LRAM calculated. The natural gas savings tracked in LRAM will be based on the best available information for input assumptions resulting from the evaluation and audit process of the program year.

**6.0 Recovery and Disposition of DSM Amounts**

**6.1. DSM Variance Account (“DSMVA”)**

Union will continue to track the variance between actual DSM spending by rate class relative to the DSM budget included in rates by rate class in the DSMVA. Union is eligible to recover up to an additional 15% above its approved DSM budget. The overspend can only be used on program expenses (i.e., promotion and incentive costs, not additional utility overheads).

Union is proposing to maintain the current overspend restrictions for the Large Volume Program for 2015. In the event Union qualifies to access the 15% allowable overspend, Union will only

1 access the overspend for Rate T1 up to a maximum of 15% of the program and portfolio budget  
2 allocated to Rate T1 (Rate T2 and Rate 100 rate classes are excluded).  
3

4 With the exception of the Low Income budget, the actual DSM spending will be allocated as  
5 follows. The DSM Program costs will be calculated by rate class based on the total actual DSM  
6 spend by rate class. The customer incentive is the only element tracked at a rate class level and it  
7 will be allocated based on the amount spent within each rate class. All other program costs not  
8 tracked at the rate class level, such as promotion and administrative costs, will be allocated by  
9 customer class (e.g. Residential, Commercial/Industrial) and assigned by rate class based on the  
10 percentage allocation of the customer incentive costs. All portfolio-level costs that cannot be  
11 attributed to an individual program, such as the support staff engaged in DSM evaluation and  
12 program tracking, will be allocated to a rate class based on the percentage allocation of the  
13 program costs by rate class.  
14

15 The variance between the Low Income DSM budget included in rates and the actual amount  
16 spent on Low Income DSM Programming will be recovered in proportion to the Board-approved  
17 2015 distribution revenue by rate class. In Union's view, continuing to allocate Low-income  
18 DSM costs to in-franchise rate classes using distribution revenue is a reasonable approach and is  
19 consistent with the 2012-2014 DSM Guidelines.

**6.2. Lost Revenue Adjustment Mechanism Variance Account (“LRAMVA”)**

Union will continue to track, at a rate class level, the actual impact of its DSM activities through the LRAMVA. Union will recover the associated lost distribution revenues by truing up the difference between the forecasted impacts included in distribution rates and the actual impacts of its DSM activities. Consistent with Union’s 2014-2018 Incentive Regulation Mechanism (“IRM”), LRAM is applicable to the contract rate classes (Rate M4, M5, M7, T1, T2, 20, 100). Union will apply annually for the disposition of the balance in the LRAMVA after the completion of the annual third party audit of its DSM programs.

**6.3. DSM Incentive Deferral Account (“DSMIDA”)**

The DSM Incentive achieved by Union will be recorded in the DSMIDA. Union will apply annually for the disposition of the balance in its DSMIDA after the completion of the annual third party audit of its DSM programs. The DSM Incentive amounts earned by Union will be allocated to rate classes in proportion of the amount actually spent on DSM activities on each rate class, as per the DSM Guidelines.

**7.0 Cost Effectiveness Screening**

For 2015, as per the direction outlined in the Framework, Union will roll-forward its 2014 approach to cost-effectiveness screening. As such, Union will employ the Total Resource Cost (“TRC”) test agreed upon in the EB-2011-0327 Settlement as the sole method of program cost-effectiveness screening. The TRC test methodology and thresholds will remain consistent with those outlined in EB-2011-0327.

**8.0 Avoided Costs**

Avoided costs represent the benefits in TRC calculations (i.e. the benefits of not having to provide an extra unit of supply of natural gas, electricity, water, heating fuel oil and/or propane) and are thus integral to Program screening.

Since 2007, Union and Enbridge have used the same methodology in calculating avoided gas costs. In late 2014, Union contracted ICF International to review Union's use of this methodology. The ICF International report, "Evaluation of Union Gas Avoided Costs", can be found at Exhibit A, Tab 2, Appendix C. The purpose of this review was to ensure that the methodology remains an accurate reflection of Union's franchise area and gas supply management policies and practices.

The review concluded that Union's use of this methodology is reasonable and appropriate. ICF's report provides four refinements to the methodology:

1. Account for avoided fuel losses across Union's system
2. Account for avoided storage costs
3. Incorporate a long term gas commodity price forecast when forecasting avoided cost estimates beyond the initial modeling period
4. Account for avoided, deferred or delayed infrastructure (T&D) costs

Union supports the findings of the report and has incorporated these refinements into a revised avoided gas cost methodology.<sup>11</sup>

For 2015, Union used its revised methodology for the calculation of avoided gas costs. The commodity portion of Union's avoided gas costs will be updated annually. Union will also discount the total avoided costs resulting over the life of each DSM measure by using its Weighted Average Cost of Capital ("WACC").

Exhibit A, Tab 2, Appendix B includes the 2015 avoided costs for natural gas, electricity and water that Union used for TRC screening in this Plan. Avoided costs used for cost-effectiveness screening in each program year will be filed annually in the Annual Report for the program year.

## **9.0 Evaluation and Audit Approach**

In Section 7.2 of the Framework, the Board concludes that, "...it is in the best position to coordinate the evaluation process throughout the DSM framework period (i.e., 2015 to 2020)". Union supports the Board's coordination of the evaluation and audit process. Union expects this change will improve the process by providing for regulatory efficiency and ensuring timelines are met while giving the Board and stakeholders confidence in the accuracy of results.

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<sup>11</sup> Union has estimated avoided T&D costs at 2% of its other avoided gas costs. Union will refine this estimate through its DSM and Infrastructure Planning Study.



Union is concerned that the current process has not provided the Board and all stakeholders with confidence in the results or provided for timeliness and regulatory efficiency. The evaluation process should be designed with a focus on evaluation expertise and accuracy, not on advocacy.

Section 7.1 of the Guidelines notes that, “The Board will set out the specific roles and responsibilities for the parties involved in the different steps of the evaluation and audit process in a future correspondence”. To be helpful, Union has outlined a recommended structure it believes would meet the objectives of the Board.

During the plan period of 2015-2020, Union proposes that the evaluation and audit be coordinated by the Board through two separate processes for evaluation and audit:

1. Evaluation will be guided by a common Evaluation Advisory Forum (“EAF”) involving the Board, Union, Enbridge, and stakeholders.
2. The Audit will be guided by a separate Audit Committee (“AC”) for Union.

In Exhibit A, Tab 2, Appendix D, Union has included a Proposed Draft Stakeholder Terms of Reference that further outlines the composition, roles and responsibilities of EAF and AC representatives as well as key deliverables from each process. A summary of changes from the 2012-2014 Stakeholder Terms of Reference to the 2015-2020 Proposed Draft Stakeholder Terms of Reference is also included in Exhibit B, Tab 2, Appendix D.

1 Evaluation Advisory Forum

2 Union proposes that the Technical Evaluation Committee (“TEC”) be replaced by an Evaluation  
3 Advisory Forum (“EAF”) that advises the Board and natural gas utilities on DSM evaluation  
4 standards and protocols that are best practices, consistent and reliable. The EAF will provide a  
5 forum where representatives can discuss evaluation projects and contribute to the development of  
6 evaluation studies. With eight representatives at the table, including experts with extensive  
7 energy evaluation, technical and/or program experience, as well as intervenor members  
8 representing the broader DSM Consultative, the EAF will ensure that all viewpoints are  
9 considered in the evaluation process.

10  
11 The EAF will advise on the following evaluation activities:

- 12 • Impact Evaluation<sup>12</sup> priority setting for the gas utilities;
- 13 • Impact Evaluation firm selection;
- 14 • Impact Evaluation methodology/scope determination; and,
- 15 • Technical Resource Manual (“TRM”) annual update and new measure additions.

16  
17 It is proposed that the EAF consists of eight members:

- 18 • Board representative - as Chair;
- 19 • Two intervenor members - elected by the DSM Consultative, to represent the interests of  
20 the broader DSM Consultative;

---

<sup>12</sup> An evaluation of the program specific, directly or indirectly induced changes (e.g. changes in energy and/or demand use) associated with an energy efficiency program.

- 1       • Two utility members – one from Union and one from Enbridge, selected by each utility;
- 2       and,
- 3       • Three independent members - with technical and/or evaluation expertise, selected by
- 4       EAF consensus.

5  
6       The Board representative will coordinate all impact evaluation through its role as EAF Chair.

7       The EAF will endeavour to reach consensus on all evaluation recommendations. Where  
8       consensus is not reached, the Board representative will lead the resolution process.

9  
10       There are currently three intervenor members on the TEC whose role is to represent the broader  
11       interests of the DSM Consultative. Union proposes to reduce the intervenor members to two to  
12       allow for the addition of a third independent member.

13  
14       The independent members are expected to provide professional evaluation and technical  
15       expertise in relation to evaluation impact studies and to the development of input assumptions,  
16       encompassing experience in residential, low income, commercial and industrial applications.

17       Independent experts were first introduced to the evaluation process as part of the 2012-2014  
18       DSM Plan. The two independent members have been actively engaged and their expertise has  
19       enhanced the evaluation process. Adding a third independent technical member to the EAF will  
20       enhance the evaluation process further by building on the expertise available to provide an  
21       independent technical perspective to the utilities.

1 Audit Committee

2 During the plan period of 2015-2020, Union proposes that it continue to have a separate Audit  
3 Committee (“AC”) that is chaired by a Board representative, with an advisory role throughout  
4 the annual third party audit process. The AC will advise on the following key audit activities:

- 5 • Selection of the independent auditor to audit the DSM Annual Report;
- 6 • Selection of the Custom Project Savings Verification (“CPSV”) firms;
- 7 • Review and input on Draft and Final CPSV Reports;
- 8 • Review and input on Draft and Final Auditor Reports;
- 9 • Filing of the AC Final Summary Report with the OEB;

10  
11 It is proposed that the AC consist of six members:

- 12 • Board representative as Chair;
- 13 • Union representative;
- 14 • Three intervenor members elected by the DSM Consultative to represent the interests of  
15 the broader DSM Consultative; and,
- 16 • Independent third party Auditor.

17  
18 The Board representative will select the auditor and coordinate the audit process. The AC will  
19 ensure the independent third party auditor completes the required audit elements outlined by the  
20 Board in Section 7.1.2 of the Guidelines. The AC will also be responsible for meeting the

1 reporting guidelines of the Board (found at Section 2.1.12 of the Natural Gas Reporting &  
2 Record Keeping Requirements Rule for Gas Utilities).

3  
4 The AC will be responsible for following a structured process that provides sufficient  
5 opportunity for input and the transparency required to instill confidence in the accuracy of  
6 audited results. The AC will endeavour to reach consensus on all recommendations and where  
7 consensus is not reached, the Board representative as Chair will lead the resolution process.

8  
9 Union's overall evaluation budget for 2015 will be \$1.13 million, which includes impact  
10 evaluation as well as the cost of funding the EAF, the AC, two DSM Consultative meetings, and  
11 the Auditor.

## 12 13 **10.0 Research**

14 Union has long recognized that Research activities are a necessary component of new Programs  
15 and offerings. Over the term of the Plan, Union will continue to investigate emerging energy  
16 efficiency technologies and new opportunities that provide an increased understanding of the  
17 market Union serves. Through these studies, the utility is able to offer customers a full suite of  
18 cost-effective programs in ever changing markets.

1 Union will continue to conduct research activities in coordination and collaboration with  
2 Enbridge over the term of the Plan resulting in more cost effective projects, reducing duplication  
3 of research efforts, and greater value to customers.

4  
5 Research ideas are generated for the Residential, Low-Income, Commercial and Industrial  
6 sectors from internal employees, Enbridge, research exchanges with other utilities outside of  
7 Ontario, industry associations and experts, customers, conferences, and trade shows etc.  
8 Research projects thoroughly investigate critical input assumptions to natural gas, electricity and  
9 water savings, costs and equipment useful life, among a variety of typical usage data for a variety  
10 of market segments. Market information, such as market barriers, market shares, and how  
11 supply chains operate, is also examined to assist Union in designing programs that are well  
12 informed and take a strategic approach to the market. Information garnered through research  
13 informs Union's program design process to overcome identified market barriers and target the  
14 appropriate customers in a manner that is economically effective. Existing programs are  
15 impacted by changes in market conditions. Market saturation, competitive alternatives,  
16 technology advances, the economy and other external forces drive the importance of research in  
17 order to adapt to shifting market conditions and continue to improve upon the diverse portfolio  
18 of programs for customers.

19  
20 Research additionally enables the utility to convert common custom DSM projects into  
21 prescriptive offerings. In such cases, research can determine common average input assumptions

1 based on typical equipment use and characteristics, as well as market data. This provides  
2 information on the ability to reach a broad base of customers, which in turn drives further  
3 participation. Increased participation is achieved through a more straightforward application  
4 process which typically results in a more streamlined process for customers and a more efficient  
5 evaluation process. A resulting benefit of research moving custom options towards more  
6 prescriptive program offerings is that it allows Union's custom project resources to focus on  
7 projects which are truly unique in nature.

8  
9 Through its research efforts, Union will continue to investigate leading front line program  
10 options for all customer segments. Over the duration of the Plan technologies under  
11 investigation will change to include new compelling energy efficient options and solutions for  
12 customers.

13  
14 In 2015, Union will focus on research to identify technology opportunities, including space  
15 heating, water heating, controls etc., that will improve overall program design for commercial,  
16 residential and low income sectors. For example, Union is currently exploring the viability of  
17 commercial market expansion of Demand Control Ventilation systems ("DCV"). The overall  
18 research budget for 2015 is \$0.766 million.

## 19 **11.0 Stakeholder Engagement**

20 Union developed its 2015 DSM Plan in accordance with the Board's direction as outlined in the  
21 Framework. On January 14, 2015 Union held a full day DSM Consultative meeting on its 2015

1 DSM Plan approach. Union reviewed individual programs, scorecard and budgets at the session.  
2 The purpose of the meeting was to receive feedback from stakeholders on Union's 2015 Plan  
3 approach. Feedback was taken into consideration and resulted in revisions to Union's 2015 Plan.  
4 A summary of the revisions were presented to stakeholders on February 18, 2015 and have been  
5 reflected in Union's 2015 DSM Plan. A summary of the changes to Union's 2015 DSM Plan can  
6 be found at Exhibit A, Tab 2, Appendix A.  
7

## 8 **12.0 Additional Planned Activities**

### 9 **12.1. Studies**

#### 10 ***12.1.1. Achievable Potential Study***

11 As outlined in Section 1.3 of the Framework, a study of achievable potential for natural gas  
12 efficiency in Ontario must be completed by June 1, 2016 to inform the mid-term review. The  
13 Board also notes that, "more details on the scope, timing and nature of the mid-term review will  
14 be provided at a later date".  
15

16 Achievable potential studies are extensive in nature and designed to estimate the amount of  
17 energy efficiency improvement that can reasonably be achieved over the course of the study  
18 period. In order to complete a comprehensive study by the required date, work on the study will  
19 begin in 2015. Union has estimated the cost of the study to be \$0.45 million over two years and  
20 has included the cost in its proposed budgets for 2015 (\$0.2 million) and 2016 (\$0.25 million).  
21



1           ***12.1.2. DSM and Infrastructure Planning***

2       Union will perform a study commencing in 2015 to determine the potential effects DSM can  
3       have on deferring, postponing or reducing future capital investments. Union's preliminary  
4       proposed approach is outlined at Exhibit A, Tab 1, Appendix D.

5  
6           **12.2.       DSM Tracking and Reporting System Upgrades**

7       The information technology architecture behind Union's current DSM system was designed in  
8       2000 and 2005 respectively to support the needs of DSM reporting at that time. Several  
9       upgrades to Union's DSM systems were made over the last ten years to accommodate the revised  
10       DSM reporting and processing requirements of the previous two DSM Frameworks.

11  
12       The 2015-2020 DSM Framework includes new data reporting and processing requirements that  
13       can no longer be met by the architecture of the existing DSM systems. Union has conducted a  
14       preliminary review of both the current state of the DSM systems and the future requirements to  
15       meet the needs of the new DSM framework. The review process included identification and  
16       prioritization of DSM data requirements during the six year framework.

17  
18       Future needs include the following functionality:

- 19           •   Packaged Customer Relationship Management ("CRM") tool to manage DSM related  
20               contacts, customer activities, leads and opportunities;

- 1       • Core DSM tracking system to replace the existing systems. The primary functionality is
- 2       to support all of the key DSM processes, including the ability to interface with Union's
- 3       billing systems and financial software; and,
- 4       • Analytics and reporting to support the new DSM framework requirements.

5

6       This project will replace the aging applications with current technology to meet the new DSM

7       reporting requirements, maintain data integrity, utilize resources more efficiently and provide

8       flexibility for future needs.

9

10      The preliminary review has provided a high-level estimate of \$6 million to perform the necessary

11      system changes. This is reflected in the DSM budget submission as \$1 million in 2015 and \$5

12      million in 2016. Any variance between the budget and actual cost will be captured in the

13      DSMVA and subject to a full prudence review on disposition.

14

15      In addition, initial discussions with Enbridge are underway to determine if there are potential

16      synergies in the replacement of the utilities' existing systems.

17

18      **12.3.       Collaboration**

19      Union is committed to meeting the Board's objective of increasing DSM and CDM collaboration

20      opportunities through the coordination and integration of program offerings. Union will

investigate collaborative opportunities in 2015, with the goal of incremental collaboration from 2016-2020 through:

- Actively participating on the Conservation First Implementation Committee and CDM Working Groups to seek alignment where possible on DSM and CDM programs.
- Further engaging with electric LDCs to understand their CDM Plans and interest in the collaboration opportunities Union has identified and opportunities they have identified to work together.
- Engaging with electric LDCs and IESO to discuss various pilot project opportunities which could result in coordinated and/or integrated collaborative programs. Further details are included at Exhibit A, Tab 3, Appendix A.
- Working with Enbridge and the IESO to develop an aligned measures and assumptions list.

Further details on Union's overall CDM and DSM collaboration approach can be found at Exhibit A, Tab 1, Appendix C.

#### **12.4. Green Button Initiative**

In 2015 Union will be working with the Ministry of Energy and Enbridge to support the Green Button initiative for natural gas customers in Ontario. The Green Button initiative gives customers access to their energy data that can then be used in mobile and web based applications to analyse their energy use and increase their energy literacy. Green Button also provides

1 customers with their consumption information in a standard format that is used in other  
2 jurisdictions to allow for easier comparison and reporting.

3

4 The Ministry of Energy expects to establish a Natural Gas Green Button Working Group in the  
5 Spring of 2015 to determine the scope and steps required to implement this initiative in Ontario.  
6 Union will be a part of the working group and will fund this work through the DSM research  
7 budget in 2015. The estimated cost is \$0.1 million.

## APPENDIX A: 2015 DSM CONSULTATIVE MEETINGS

### Union's Stakeholder Invite List<sup>1</sup>

	Organization	Representative
1	Association of Power Producers ("APPrO")	David Butters
2	APPrO	John Wolnik
3	Building Owners and Managers of Ontario ("BOMA")	Thomas Brett
4	BOMA	Marion Fraser
5	BOMA	Chris Conway
6	Consumers Council of Canada ("CCC")	Julie Girvan
7	City of Kitchener	Jaya Chatterjee
8	Canadian Manufacturers and Exporters ("CME")	Paul Clipsham
9	CME	Nancy Coulas
10	CME	Peter Thompson
11	CME	Vince DeRose
12	Direct Energy	Ric Forster
13	Energy Probe	Norman Rubin
14	Energy Probe	David MacIntosh
15	EnerQuality	Corey McBurney
16	Enbridge Gas Distribution ("EGD")	Fiona Oliver-Glasford
17	EGD	Ravi Sigurdson
18	Environmental Defence	Murray Klippenstein
19	Environmental Defence	Kent Elson
20	Environmental Defence	Jack Gibbons
21	Federation of Rental-housing Providers of Ontario ("FRPO")	Dwayne Quinn
22	Green Energy Coalition ("GEC")	David Poch
23	GEC	Kai Millyard
24	GEC	Chris Neme
25	Heating, Refrigeration and Air Conditioning Institute of Canada ("HRAI")	Martin Luymes
26	Hydro One	Ian Malpass
27	Industrial Gas Users Association ("IGUA")	Dr. Shahrzad Rahbar
28	IGUA	Ian Mondrow
29	IGUA	Mark Crane
30	Just Energy Ontario	Nola Ruzycki
31	Low Income Energy Network ("LIEN")	J. Abouchar
32	LIEN	Matt Gardiner
33	LIEN	Judy Simon
34	London Property Management Association ("LPMA")	Randy Aiken
35	Ministry of Energy	Grant Cockburn
36	Ministry of Energy	Malena Mendez
37	Natural Resource Gas Limited	Jack Howley
38	Ontario Energy Board ("OEB") Staff	Josh Wasyluk
39	OEB Staff	Takis Plagiannakos
40	OEB Staff	Michael Bell
41	Ontario Power Authority ("OPA")	Miriam Heinz
42	School Energy Coalition ("SEC")	W. McNally
43	SEC	Jay Shepherd
44	Toronto and Region Conservation Authority	Ian Jarvis
45	TransCanada Energy ("TCE")	Brian Kelly
46	Vulnerable Energy Consumers Coalition ("VECC")	Michael Buonaguro
47	VECC	Roger Higgin
48	VECC	Shelley Grice

<sup>1</sup> Invite list is accurate as of March 2015, consultation invites may not match invite list due to adjustments made, adding or removing representatives as requested by stakeholders.

**Attendees (January 14th, 2015 – DSM Consultative Meeting)**

	<b>Organization</b>	<b>Representative</b>	<b>In Person/Dial-in</b>
1	APPrO	John Wolnik	In person
2	BOMA	Marion Fraser	In person
3	CCC	Julie Girvan	In person
4	CME	Vince DeRose	Dial-in
5	Enbridge Gas Distribution	Brandon Ott	In person
6	Enbridge Gas Distribution	Fiona Oliver-Glasford	In person
7	Enbridge Gas Distribution	Ravi Sigurdson	In person
8	Energy Probe	Norman Rubin	In person
9	Environmental Defense	Jack Gibbons	In person
10	FRPO	Dwayne Quinn	Dial-in
11	GEC	Kai Millyard	In person
12	HRAI	Martin Luymes	In person
13	IGUA	Mark Crane	In person
14	Just Energy Ontario	Nola Ruzycki	In person
15	LIEN	Matt Gardiner	In person
16	LPMA	Randy Aiken	Dial-in
17	Ministry of Energy	Grant Cockburn	In person
18	Natural Resource Gas Limited	Brian Lippold	Dial-in
19	OEB Staff	Michael Bell	In person
20	OEB Staff	Takis Plagiannakos	In person
21	OPA	Phillip Chisulo	In person
22	SEC	Jay Shepherd	In person
23	Energy Probe	Roger Higgin	In person
24	Toronto and Region Conservation Authority	Ian Jarvis	In person
25	VECC	Shelly Grice	In person

---

**From:** Moore, Alison [<mailto:AMoore@uniongas.com>]  
**Sent:** November-25-14 3:47 PM  
**To:** [john.beauchamp@nortonrose.com](mailto:john.beauchamp@nortonrose.com); [David.Butters@appro.org](mailto:David.Butters@appro.org); [jwolnik@elenchus.ca](mailto:jwolnik@elenchus.ca); [tbrett@foglers.com](mailto:tbrett@foglers.com); [Marion.Fraser@rogers.com](mailto:Marion.Fraser@rogers.com); [cconway@bomatoronto.org](mailto:cconway@bomatoronto.org); [jgirvan@uniserve.com](mailto:jgirvan@uniserve.com); [paul.clipsham@cme-mec.ca](mailto:paul.clipsham@cme-mec.ca); [nancy.coulas@cme-mec.ca](mailto:nancy.coulas@cme-mec.ca); Thompson, Peter C. P.; DeRose, Vincent J.; [Normrubin.energyprobe@gmail.com](mailto:Normrubin.energyprobe@gmail.com); [DavidMacIntosh@nextcity.com](mailto:DavidMacIntosh@nextcity.com); [Corey@enerquality.ca](mailto:Corey@enerquality.ca); [drquinn@rogers.com](mailto:drquinn@rogers.com); [dpoch@eelaw.ca](mailto:dpoch@eelaw.ca); [kai@web.ca](mailto:kai@web.ca); [cneme@energyfuturesgroup.com](mailto:cneme@energyfuturesgroup.com); [regulatory@HydroOne.com](mailto:regulatory@HydroOne.com); [srahbar@igua.ca](mailto:srahbar@igua.ca); [ian.mondrow@gowlings.com](mailto:ian.mondrow@gowlings.com); [Paul.Seaman@gowlings.com](mailto:Paul.Seaman@gowlings.com); [jim.gruenbauer@kitchener.ca](mailto:jim.gruenbauer@kitchener.ca); [jabouchar@willmsshier.com](mailto:jabouchar@willmsshier.com); [mgardner@willmsshier.com](mailto:mgardner@willmsshier.com); [jsimon@elenchus.ca](mailto:jsimon@elenchus.ca); [randy.aiken@sympatico.ca](mailto:randy.aiken@sympatico.ca); [Miriam.Heinz@powerauthority.on.ca](mailto:Miriam.Heinz@powerauthority.on.ca); [murray.klippenstein@klippensteins.ca](mailto:murray.klippenstein@klippensteins.ca); [kent.elson@klippensteins.ca](mailto:kent.elson@klippensteins.ca); [jack@cleanairalliance.org](mailto:jack@cleanairalliance.org); [wmcnally@opsba.org](mailto:wmcnally@opsba.org); [jay.shepherd@canadianenergylawyers.com](mailto:jay.shepherd@canadianenergylawyers.com); [mrbrb@mrbrb-law.com](mailto:mrbrb@mrbrb-law.com); [spainc@rogers.com](mailto:spainc@rogers.com); [shelley.grice@rogers.com](mailto:shelley.grice@rogers.com); [ric.forster@directenergy.com](mailto:ric.forster@directenergy.com); [howley@nrgas.on.ca](mailto:howley@nrgas.on.ca); [ian.jarvis@enerlife.com](mailto:ian.jarvis@enerlife.com); [brian\\_kelly@transcanada.com](mailto:brian_kelly@transcanada.com); [TCE\\_Regulatory@transcanada.com](mailto:TCE_Regulatory@transcanada.com); [josh.wasylyk@ontarioenergyboard.ca](mailto:josh.wasylyk@ontarioenergyboard.ca); [takis.plagiannakos@ontarioenergyboard.ca](mailto:takis.plagiannakos@ontarioenergyboard.ca); [michael.bell@ontarioenergyboard.ca](mailto:michael.bell@ontarioenergyboard.ca); [nruzycki@justenergy.com](mailto:nruzycki@justenergy.com); [mluymes@hrai.ca](mailto:mluymes@hrai.ca); [Fiona.OliverGlasford@enbridge.com](mailto:Fiona.OliverGlasford@enbridge.com)  
**Cc:** Lynch, Tracy; Dawodu, Ayo  
**Subject:** Union Gas DSM Consultation Meeting - CHANGE IN DATE TO WED JANUARY 14 2015

Good afternoon,

As we anticipate Board direction for 2015 and beyond will be released in December, Union is moving its Consultative meeting from December to January. This will allow for an informed discussion on Union's approach for 2015 within the context of the Board's direction.

The updated meeting logistics are provided:

<b>DATE:</b>	Wednesday, January 14 <sup>th</sup> , 2015
<b>LOCATION:</b>	Ontario Energy Board, 2300 Yonge St. Toronto, 25th Floor, West Hearing Room
<b>TIME:</b>	12:00 p.m. – 5:00 p.m. ( <i>lunch will be provided</i> )

Please RSVP to Ayo Dawodu by December 10<sup>th</sup> at [ADawodu@uniongas.com](mailto:ADawodu@uniongas.com) indicating your availability and whether you, or a delegate on behalf of your organization, plan to attend in person or remotely. Remote access will be provided as required.

We hope you will be available to join us and look forward to engaging in a productive discussion.

Cheers,  
Alison.

---

**From:** Moore, Alison

**Sent:** November-10-14 11:33 AM

**To:** 'john.beauchamp@nortonrose.com'; 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energypower@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'Paul.Seaman@gowlings.com'; 'jim.gruenbauer@kitchener.ca'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nruzycki@justenergy.com'; 'mluymes@hrai.ca'; 'Fiona.OliverGlasford@enbridge.com'

**Cc:** Lynch, Tracy; Dawodu, Ayo

**Subject:** SAVE THE DATE: December 1, 2014 - Union Gas DSM Consultation Meeting

Good Morning,

Union Gas invites you to join us on December 1, 2014 for a DSM Consultative meeting. The meeting will be held in Toronto - agenda and logistics to follow.

Please RSVP to Ayo Dawodu by November 17<sup>th</sup> at [ADawodu@uniongas.com](mailto:ADawodu@uniongas.com) indicating your availability and whether you, or a delegate on behalf of your organization, plan to attend in person or remotely. Where applicable please advise us of any dietary restrictions/allergies with your response.

We value your perspective on our DSM programs and activities, and will reimburse stakeholder organizations for the cost of their participation in this consultation.

Thank you, we look forward to your engagement in this meeting.

Cheers,  
Alison.

---

**Alison Moore**

Manager, DSM Strategy

Union Gas Limited | A Spectra Energy Company

777 Bay Street, Suite 2901 | Toronto, ON M5G 2C8

Tel: (416) 496-5289 | Cell: (416) 994-4576 | Fax: (416) 496-5331

Email: [amoore@uniongas.com](mailto:amoore@uniongas.com) | [www.uniongas.com](http://www.uniongas.com)

cid:image001.jpg@01CF0BBA.EA7C48F0





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**From:** Moore, Alison

**Sent:** January-08-15 6:34 PM

**To:** [john.beauchamp@nortonrose.com](mailto:john.beauchamp@nortonrose.com); [David.Butters@appro.org](mailto:David.Butters@appro.org); [jwolnik@elenchus.ca](mailto:jwolnik@elenchus.ca); [tbrett@foglers.com](mailto:tbrett@foglers.com); [Marion.Fraser@rogers.com](mailto:Marion.Fraser@rogers.com); [cconway@bomatoronto.org](mailto:cconway@bomatoronto.org); [jgirvan@uniserve.com](mailto:jgirvan@uniserve.com); [paul.clipsham@cme-mec.ca](mailto:paul.clipsham@cme-mec.ca); [nancy.coulas@cme-mec.ca](mailto:nancy.coulas@cme-mec.ca); [pthompson@blg.com](mailto:pthompson@blg.com); [vderose@blg.com](mailto:vderose@blg.com); [Normrubin.energyprobe@gmail.com](mailto:Normrubin.energyprobe@gmail.com); [DavidMacIntosh@nextcity.com](mailto:DavidMacIntosh@nextcity.com); [Corey@enerquality.ca](mailto:Corey@enerquality.ca); [drquinn@rogers.com](mailto:drquinn@rogers.com); [dpoch@eelaw.ca](mailto:dpoch@eelaw.ca); [kai@web.ca](mailto:kai@web.ca); [cneme@energyfuturesgroup.com](mailto:cneme@energyfuturesgroup.com); [regulatory@HydroOne.com](mailto:regulatory@HydroOne.com); [srahbar@igua.ca](mailto:srahbar@igua.ca); [ian.mondrow@gowlings.com](mailto:ian.mondrow@gowlings.com); [Paul.Seaman@gowlings.com](mailto:Paul.Seaman@gowlings.com); [jim.gruenbauer@kitchener.ca](mailto:jim.gruenbauer@kitchener.ca); [jabouchar@willmsshier.com](mailto:jabouchar@willmsshier.com); [mgardner@willmsshier.com](mailto:mgardner@willmsshier.com); [jsimon@elenchus.ca](mailto:jsimon@elenchus.ca); [randy.aiken@sympatico.ca](mailto:randy.aiken@sympatico.ca); [Miriam.Heinz@powerauthority.on.ca](mailto:Miriam.Heinz@powerauthority.on.ca); [murray.klippenstein@klippensteins.ca](mailto:murray.klippenstein@klippensteins.ca); [kent.elson@klippensteins.ca](mailto:kent.elson@klippensteins.ca); [jack@cleanairalliance.org](mailto:jack@cleanairalliance.org); [wmcnally@opsba.org](mailto:wmcnally@opsba.org); [jay.shepherd@canadianenergylawyers.com](mailto:jay.shepherd@canadianenergylawyers.com); [mrb@mrb-law.com](mailto:mrb@mrb-law.com); [spainc@rogers.com](mailto:spainc@rogers.com); [shelley.grice@rogers.com](mailto:shelley.grice@rogers.com); [ric.forster@directenergy.com](mailto:ric.forster@directenergy.com); [howley@nrgas.on.ca](mailto:howley@nrgas.on.ca); [ian.jarvis@enerlife.com](mailto:ian.jarvis@enerlife.com); [brian\\_kelly@transcanada.com](mailto:brian_kelly@transcanada.com); [TCE\\_Regulatory@transcanada.com](mailto:TCE_Regulatory@transcanada.com); [josh.wasylyk@ontarioenergyboard.ca](mailto:josh.wasylyk@ontarioenergyboard.ca); [takis.plagiannakos@ontarioenergyboard.ca](mailto:takis.plagiannakos@ontarioenergyboard.ca); [michael.bell@ontarioenergyboard.ca](mailto:michael.bell@ontarioenergyboard.ca); [nruzycki@justenergy.com](mailto:nruzycki@justenergy.com); [mluymes@hrai.ca](mailto:mluymes@hrai.ca);

**Cc:** Lynch, Tracy; Dawodu, Ayo

**Subject:** Union Gas DSM Consultation Meeting - WEDNESDAY JANUARY 14, 2015

Good afternoon,

Please find attached the agenda for Union's DSM Consultative meeting next week. Union will be reviewing our DSM approach for 2015 at this session.

If you have not done so already please RSVP to Ayo Dawodu at [ADawodu@uniongas.com](mailto:ADawodu@uniongas.com) indicating your availability and whether you, or a delegate on behalf of your organization, are available to attend in person or remotely. Remote access will be provided if required.

**DATE:** Wednesday, January 14<sup>th</sup> 2015  
**LOCATION:** Ontario Energy Board, 2300 Yonge St. Toronto, 25th Floor, West Hearing Room  
**START TIME:** 12:00 p.m. (*lunch will be provided*)

We hope you will be available to join us and look forward to engaging in a productive discussion.

Cheers,  
Alison.

---

**Alison Moore**

Manager, DSM Strategy  
Union Gas Limited | A Spectra Energy Company

## Union Gas DSM Consultative Meeting

---

**Date:** January 14, 2015

**Location:** Ontario Energy Board, 2300 Yonge Street Toronto  
25th Floor, West Hearing Room

Start / Time Allotment		Item	Discussion Lead
12:00	:30	Lunch	
12:30	:15	Opening Remarks	Tracy Lynch
12:45	:90	<b>2015 DSM Program Approach</b> <ul style="list-style-type: none"> <li>Residential</li> <li>Commercial / Industrial</li> <li>Low-Income</li> </ul>	Ehsan Dibaji
2:15	:15	Break	
2:30	:60	<b>2015 DSM Program Approach</b> <ul style="list-style-type: none"> <li>Large Volume</li> <li>Market Transformation</li> <li>Budget and Shareholder Incentive Summary</li> </ul> <b>Next Steps</b>	Ehsan Dibaji
3:30	:30	2015 Avoided Costs	Eric Buan
4:00	:15	Closing Remarks	Tracy Lynch
		Adjourn	



**uniongas**

A Spectra Energy Company

# DSM Consultative Meeting

*January 14, 2015*

# Purpose and Agenda

## Purpose:

Receive feedback from Stakeholders on Union's approach as it pertains to the Final DSM Framework and Guidelines in the context of 2015

## Agenda:

- 2015 DSM Direction
- Program Discussions
  - Resource Acquisition
  - Low Income
  - Large Volume
  - Market Transformation
- 2015 Studies
- Budget and Shareholder Incentive Summary
- Next Steps
- 2015 Avoided Costs Update

# 2015 Direction

## Final DSM Framework Direction:

- Gas Utilities should roll-forward their 2014 DSM Plans, including all programs and parameters (i.e., budget, targets, incentive structure) into 2015
- Gas Utilities may increase overall spending by up to 15% to address the principles and key priorities outlined in the DSM Framework



# Key Priorities for 2015-2020

- Ensure programs take a holistic approach throughout a customer's home or business
- Implement DSM programs that are evidence based and rely on customer specific data
- Expand the delivery of low-income offerings across the province
- Implement programs that reduce and/or defer future infrastructure investments
- Increase collaboration and integration of CDM/DSM
- Develop new and innovative programs, including flexibility to allow for on-bill financing options



**uniongas**

A Spectra Energy Company

## Resource Acquisition – 2015 Approach

---

*Residential Program*

*Commercial/Industrial Program*





# Residential Program

- Provide a cost-effective residential program that provides broad access and holistic, long-term savings
- Continue to shift focus from ESK to Home Reno Rebate
- Lay the groundwork for behavioural natural gas management tools

## ENERGY SAVINGS KIT



## HOME RENO REBATE



## BEHAVIOURAL





# Energy Savings Kit & Home Reno Rebate

- Continuation of shift in program focus to Home Reno Rebate
- Maintain ESKs at a reduced level

Energy Saving Kits	
DESCRIPTION	<ul style="list-style-type: none"><li>• Energy efficient showerhead, faucet aerators, Teflon tape, pipe insulation, p-stat coupon</li></ul>
MARKET APPROACH	<ul style="list-style-type: none"><li>• Online and door-to-door delivery channels only</li></ul>
	<ul style="list-style-type: none"><li>• Decrease number of kits delivered</li></ul>

## Home Reno Rebate

- Space Heating
- Water Heating
- Insulation
- Air Sealing

---

- Homeowner completes pre- and post- energy assessments and installs at least two deep measures

---

- Increase number of homes as per 25% target adjustment rollover

Year	2012	2013	2014	2015 Target
Homes	73	203	997	1,246



# Residential Savings

- Base case for furnace to code, effective useful life of 20 years
- Eligibility Criteria
  - Maintain 25% average savings and 2 major measure requirements for deep savings
  - Eliminate the per home savings threshold of 11,000 cumulative m3

## Impact on Residential Program Savings

Home Type	2014 Percentage of Homes Treated	2014 Avg. Gross Savings per Home (Lm3)	2015 Avg. Gross Savings per Home (Lm3)	% of Homes below 11,000 m3 threshold
Homes – Furnace	54%	27,968	18,956	23%
Homes – No Furnace	46%	40,679	31,892	0%
Weighted Avg. / Home	--	33,858	24,951	

Item	2014 Draft Results	2015	2015 Notes
ESK Cumulative m3	31 M m3	9 M m3	15,000 ESKs
Home Reno Rebate Cumulative m3	27 M m3	26 M m3	1,246 Homes * 21,208 Lm3 (net savings)



# New Offering - Behavioural Platform

- Educates and empowers customers to actively monitor and manage gas usage
- Provides targeted, customized information to customers based on internal and third-party data
- Lead generation channel for other offerings
- Reflects desire for more information on how to conserve energy from Union Gas

## Description

- Comparative reports with suggested energy saving actions
- Online energy portal

## Target Market

- Highest natural gas consuming customers (eg. >2,400m<sup>3</sup>/year)

## Market Approach

- Energy use reports mailed four times during the fall/winter

## Measurement & Tracking

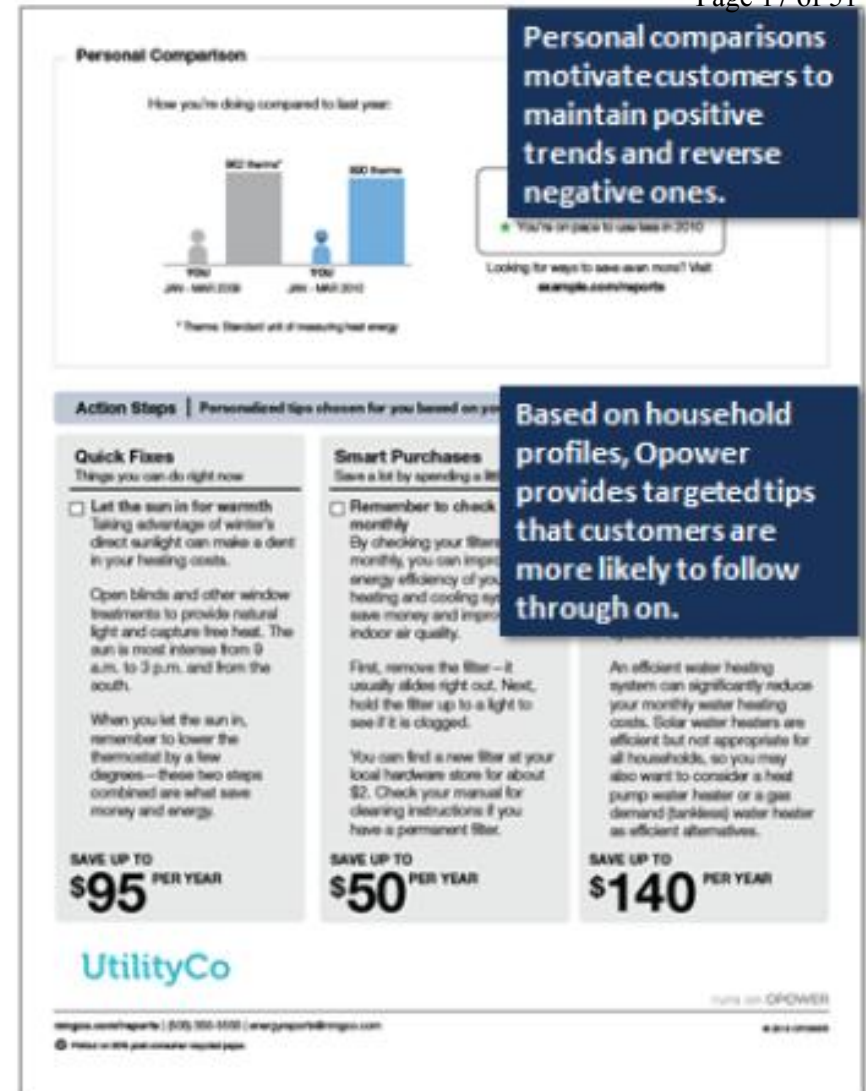
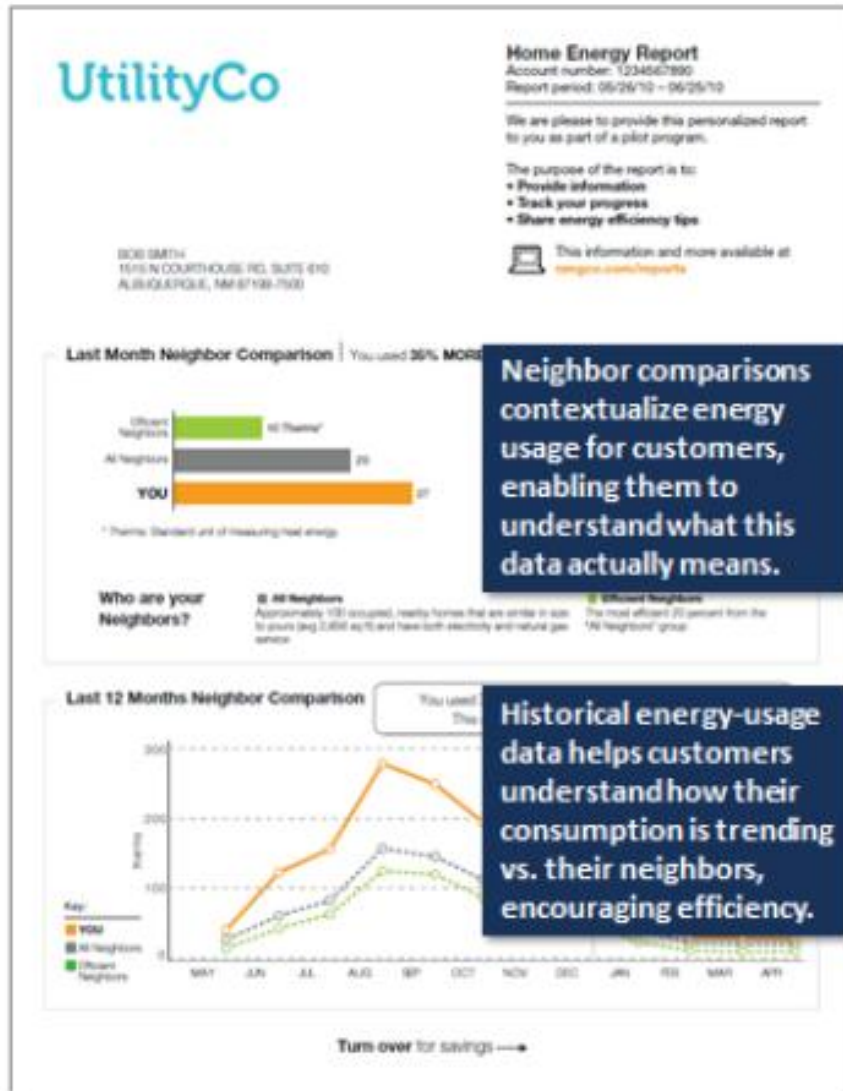
- No savings claimed in 2015
- Savings in 2016 + measured by comparing actual usage of treatment and control group

## Key Call Outs

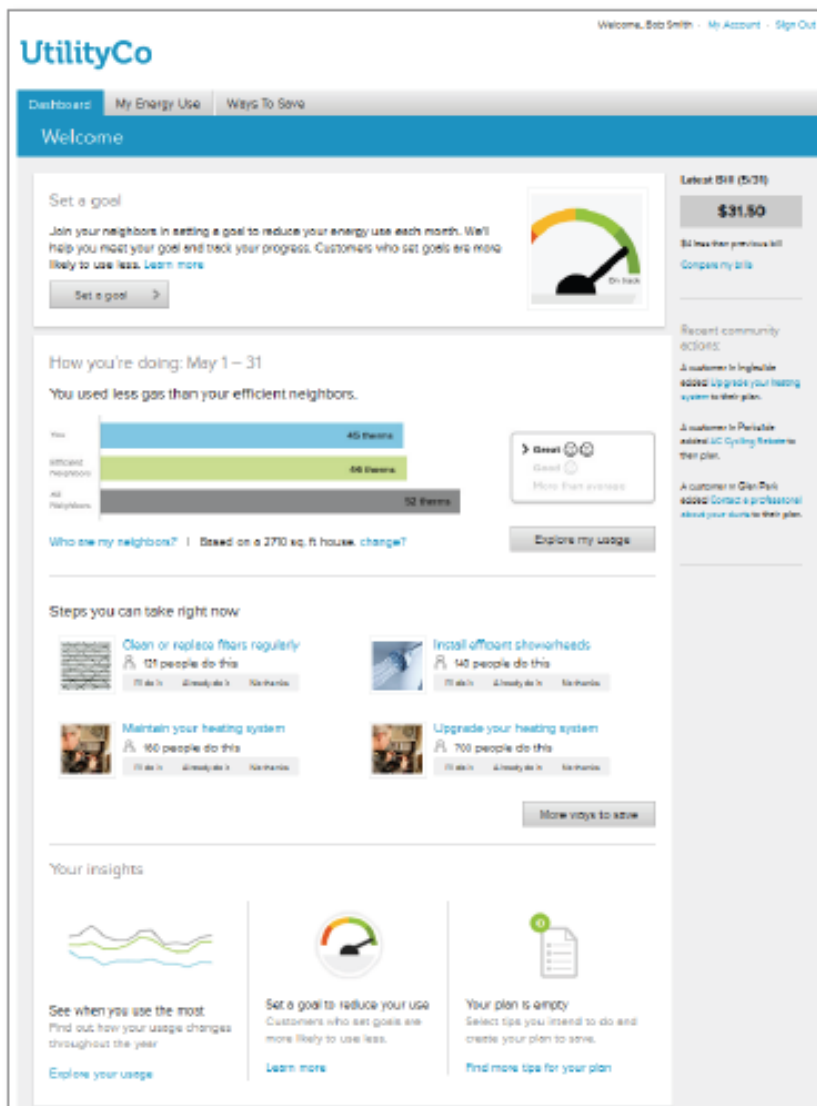
- Evidence based offering that quantifies savings at the meter
- EM&V utilizing a treatment vs. control group
- Reports target customers with the greatest potential for savings
- Online energy portal to reach all residential customers
- 2015 start-up to fully integrate with systems



# Sample Home Energy Report



# Sample Online Energy Portal



## System Integration

- Integrate into MyAccount, Union's online account management system

## MPAC Data

- Size and vintage of home data to ensure meaningful comparisons for customers and relevant suggestions



# Commercial/Industrial Program

- Continue to generate long-term energy savings in the C/I market
- Maintain focus on prescriptive measures and custom applications

## PRESCRIPTIVE OFFERING



## CUSTOM OFFERING





# Prescriptive & Custom Offerings

- Generate long-term energy savings in the C/I market through prescriptive, quasi-prescriptive, and custom energy conservation measures
- Broad reaching program that covers all sectors in the C/I market

	Prescriptive/Quasi-Prescriptive	Custom
DESCRIPTION	<ul style="list-style-type: none"> <li>• Pre-determined incentives for energy efficient technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Offering covers opportunities outside the scope of the approved prescriptive and/or quasi-prescriptive measures.</li> </ul>
MARKET APPROACH	<ul style="list-style-type: none"> <li>• Account Managers</li> <li>• Mass market techniques</li> <li>• Channel partners including HVAC contractors, distributors, manufacturers</li> </ul>	<ul style="list-style-type: none"> <li>• Account Managers</li> <li>• Project Manager technical support</li> <li>• Trade allies, engineering &amp; consulting firms</li> <li>• Savings confirmed on project-by-project basis based on the parameters for each project, e.g.:                             <ul style="list-style-type: none"> <li>• Robust engineering analysis</li> <li>• CUSUM (where applicable)</li> </ul> </li> </ul>





# Resource Acquisition Scorecard

2015 Resource Acquisition Scorecard				
Metrics	Metric Target Levels			Weight
	Lower Band	Target	Upper Band	
<b><i>Cumulative Natural Gas Savings m3</i></b>	75% of Target	2014 Post-Audit Scorecard Cost Effectiveness (m3 per Promo and Incentive) times \$10.684 times 1.02	125% of Target	90%
<b><i>Deep Savings - Residential (Homes)</i></b>	2015 Target minus 50 homes	2014 Actuals times 1.25	2015 Target plus 50 homes	5%
<b><i>Deep Savings - Commercial/Industrial</i></b>	The higher of: i) 2014 Actual ii) 4.5%	The higher of: i) 2014 Actual + 1% ii) 5.5%	The higher of: i) 2014 Actual + 2% ii) 6.5%	5%

## Key Call Outs

- Scorecard roll over as per the Final DSM Framework
- Remove 11,000 m3 Home Reno Rebate eligibility criteria

# 2015 Resource Acquisition Budget

Resource Acquisition Budget (\$ 000)				
Budget Item	2014 Plan	2015 Plan	15% Incremental Budget	2015 Total
Residential	\$3,163	\$3,163	\$4,090	\$7,253
Promotion/Incentive	\$2,567	\$2,567	\$4,000	\$6,567
Administration	\$576	\$576	\$90	\$666
Evaluation	\$20	\$20	\$0	\$20
Commercial/Industrial	\$10,859	\$10,859	---	\$10,859
Promotion/Incentive	\$8,118	\$8,118	---	\$8,118
Administration	\$2,682	\$2,682	---	\$2,682
Evaluation	\$60	\$60	---	\$60
Cumulative Inflation	\$913	\$1,164	---	\$1,164
<b>Total</b>	<b>\$14,935</b>	<b>\$15,186</b>	<b>\$4,090</b>	<b>\$19,276</b>



# Change to Rate Class Eligibility Thresholds

- Effective January 1, 2014 maximum contracted demand for Rate M4 and Rate M5 changed from 140,870 m<sup>3</sup>/day to 60,000 m<sup>3</sup>/day
- Customers with contracted demand greater than 60,000 m<sup>3</sup>/day migrated to Rate M7

## Key Call Outs

- Due to the rate class eligibility threshold change customers in Rate M4, M5 migrated into Rate M7 rate class
- The 2015 DSM allocation built into rates was based on 2014 allocation plus inflation
- The change in customer rate class mix will result in an increase above 100% of the DSM budget amount allocated to the M7 Rate Class
- The 2015 DSMVA balance will be addressed in the 2015 Deferral Disposition proceeding



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## Low Income – 2015 Approach

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*Single Family and Multi-family Offerings*



# Low Income

- Continue addressing the specific energy conservation challenges and barriers faced by Low-income customers
- Provide program access to incremental target market to ensure comprehensive Low-income program

**Single Family Offering  
(HWP)**



**Multi Family Offering  
(AHCP)**



**Market Rate Multi Family  
Eligibility**



# Home Weatherization Program

## Affordable Housing Conservation Program



Filed: 2015-04-01  
EB-2015-0029  
Exhibit A  
A Spectra Energy Company  
Tab 2

Appendix A  
Page 26 of 51

- Single and Multi Family offerings ensure broad program access for low-income energy consumers
- Offering directly pursues long-term energy savings through thermal envelope improvements and a mix of prescriptive, quasi-prescriptive and custom offerings

DESCRIPTION

### HWP – Single Family

- Free home energy audit and thermal envelope upgrades including:
  - Insulation, air sealing measures and basic measures

MARKET APPROACH

- Delivered through 3rd party delivery agents
- Increasing focus on the private market

- Increasing focus on H&S – e.g. Carbon Monoxide Detectors
- Expand geographical reach to rural communities
- Implement new market channels and partnership models

### AHCP – Multi Family

- Offering provides incentives for prescriptive and custom applications as well as building assessments to help identify opportunities

- Delivered through UG Account Managers
- Increased focus on non-profits/co-op housing providers

- Implement new market approach strategy and marketing toolkit (messaging/channels)



# New: Market Rate Multi Family Eligibility

- Broaden accessibility of Multi Family offering to privately owned buildings with a high percentage of Low Income tenants
- Offering addresses barriers of this market segment to achieve long-term energy savings

## Description

- Consistent measures and incentives as AHCP offering
- Tenant Education & Awareness component

## Target Market

- Privately owned buildings with high percentage of Low Income tenants

## Market Approach

- Demonstration program in 2015
- UG sales team to target and deliver

## Measurement & Tracking

- Consistent with AHCP

## Key Call Outs

- Union committed to assessing offering Low-income programming to the Market Rate segment
- Consensus reached with the LI Consultative that Union will offer LI programming to the Market Rate segment
  - Union convened a Low-income Market Rate Multi-Family working group which met throughout 2013/2014 to discuss the market barriers, program design, market approach and timing for this offering

# 2015 Low Income Scorecard



2015 Low Income Scorecard				
Metrics	Metric Target Levels			Weight
	Lower Band	Target	Upper Band	
<i>Cumulative Natural Gas Savings from Single Family (m3)</i>	19,500,000	26,000,000	32,500,000	60%
<i>Cumulative Natural Gas Savings from Multi-Family (m3)</i>	13,200,000	17,600,000	22,000,000	40%

## Key Call Outs

- Scorecard roll over as per the Final DSM Framework



# 2015 Low Income Budget

Low Income (\$ 000)			
Budget Item	2014 Plan	2015 Plan	Variance
Single Family Promotion/Incentive	\$3,883	\$3,883	---
Multi-Family Promotion/Incentive	\$1,944	\$1,944	---
Administration	\$972	\$972	---
Evaluation	\$40	\$40	---
Cumulative Inflation	\$445	\$570	\$125
<b>Total</b>	<b>\$7,284</b>	<b>\$7,409</b>	<b>\$125</b>

## Key Call Outs

- Consistent budget



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## Large Volume – 2015 Approach

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# Large Volume

- Continue supporting Union's largest customers by providing technical assistance and financial incentives
- Maintain Direct Access budget mechanism for Rate T2/Rate 100 customers
- Consistent budget and target approach

## EQUIPMENT and O&M



## STUDIES



## ENERGY MANAGEMENT





# Large Volume Rate T1, Rate T2, Rate 100

- Generate long term cost effective savings
- Continue to support the continuous improvement approach (Plan/Do/Check/Act) to active energy management

## Large Volume Program

DESCRIPTION

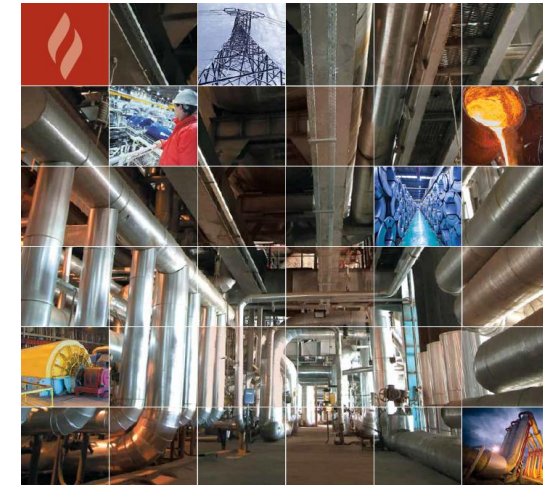
- Training and technical assistance
- Support for engineering feasibility and process improvement studies to identify and quantify potential energy saving opportunities
- Financial incentives to support the installation of new equipment, processes and operation and maintenance practices
- Support installation of energy meters, monitoring , management systems

MARKET  
APPROACH

- Account Manager and Project Manager delivery via established long-term business relationships

DIRECT  
ACCESS

- Direct Access funding mechanism for Rate T2/100 customers providing dedicated first access to customer incentive budget funded by the customer



2014 ENERGY EFFICIENCY INCENTIVES  
**LARGE VOLUME  
DIRECT ACCESS PROGRAM**  
for Rate T2 and Rate 100 Customers

[uniongas.com/business](http://uniongas.com/business)



# 2015 Large Volume Scorecard

2015 Large Volume Rate T1/T2/100 Scorecard				
Metrics	Metric Target Levels			Weight
	Lower Band	Target	Upper Band	
<i>Rate T2 / Rate 100 Cumulative Natural Gas Savings (m<sup>3</sup>)</i>	75% of Target	2012-2014 Average Post-Audit T2/100 Cost Effectiveness (m3 per Incentive) times \$2.383 million	125% of Target	40%
<i>Rate T1 Cumulative Natural Gas Savings (m<sup>3</sup>)</i>	75% of Target	2012-2014 Average Post-Audit T1 Cost Effectiveness (m3 per Incentive) times \$1.104 million	125% of Target	60%

## Key Call Outs

- Scorecard roll over as per the Final DSM Framework

# 2015 Large Volume Budget

Large Volume (\$ 000)			
Budget Item	2014 Plan	2015 Plan	Variance
Large Volume Rate T1/T2/100			
Promotion/Incentive	\$3,587	\$3,587	---
Administration	\$907	\$907	---
Evaluation	\$40	\$40	---
Cumulative Inflation	\$295	\$376	\$81
<b>Total</b>	<b>\$4,829</b>	<b>\$4,910</b>	<b>\$81</b>

## Key Call Outs

- Consistent budget considerations as 2012 – 2014
  - No budget transfers into program
  - \$500K transfer limit between rate classes
  - 15% Overspend for Rate T1 only



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# Market Transformation – 2015 Approach

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*Residential Optimum Home*



# Market Transformation

- Supporting the Residential New Construction market by enabling energy efficient building practices
- Support smaller tier builders to disseminate efficient practices

## PHASE 1 – DISCOVER

## PHASE TWO – IMPLEMENT

## PHASE THREE - SUSTAIN





- Continue to support enrolled builders towards building housing stock 20% above current OBC 2012
- Ensure enrolled builders increase percentage of high efficient homes

## Description

- Holistic three phase consulting process ensuring each builders receives tailored advice
- Participants receive 30 days of consulting, training, and financial incentives

## Target Market

- Top 50 builders in UG franchise

## Market Approach

- Program delivered through 3<sup>rd</sup> party and Account Managers

## Key Lessons Learned

- Targeting the Top 50 builders does not provide participation opportunities across franchise area
- To help stimulate the spillover effect of Optimum Home, Union offered Workshops available to all builders
  - The workshops had low participation
  - The builder community is saturated with workshops
- Planning streamlined builder engagement process
  - Builders face common issues thus allowing Union to focus the consulting efforts to address main barriers

# Optimum Home 2

- Share building practices and proven approach to building 20% above OBC 2012 with mid-tier builders
- Disseminate lessons learned through streamlined offering

## Description

- Participants receive 14 days of consulting in condensed 2 year timeframe
- Engagement with busy, geographically dispersed mid-tier builders

## Target Market

- Builders who construct more than 10 homes per year

## Market Approach

- Program delivered through 3<sup>rd</sup> party and Account Managers

## Key Call Outs

- Engaging the mid-tier builders provides an opportunity to engage in various regions in Union's franchise area
- Workshops discontinued going forward
- Condensed consulting services that will focus on the key lessons learned working with builders during the 2012-2014 program term
- Harder to reach this market but once they are engaged working with the owner/operator may create efficiencies
- Moving from a three phased to a two phased model in order to advance the market ahead of the next code change



# 2015 Market Transformation Scorecard

- The scorecard reflects the evolution of Union's Market Transformation program

2015 Market Transformation Scorecard					
Metrics		Metric Target Levels			Weight
		Lower Band	Target	Upper Band	
OH 1	<b>Homes Built (&gt;20% above OBC 2012) by Participating Builders</b>	2014 Actuals +3%	2014 Actuals +6%	2014 Actuals +9%	40%
OH 2	<b>New Participating Builders</b>	4	8	15	40%
	<b>Prototype Homes Built</b>	20% of Incremental Participants	30% of Incremental Participants	40% of Incremental Participants	20%

## OH1 Call Outs

- Maintain homes built metric
- Continue year over year increase in percent of homes built 20% above OBC 2012 by participating builders

## OH2 Call Outs

- Incremental participant targets for mid-tier builder
- % Prototype homes built metric in year one reflects condensed timeline of offering

# 2015 Market Transformation Budget

Market Transformation (\$ 000)			
Budget Item	2014 Plan	2015 Plan	Variance
Optimum Home			
Promotion/Incentive	\$1,187	\$1,187	---
Administration	\$195	\$195	---
Evaluation	--	--	--
Cumulative Inflation	\$87	\$115	\$27
<b>Total</b>	<b>\$1,469</b>	<b>\$1,497</b>	<b>\$27</b>



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## Studies Required

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*Systems Planning, Achievable Potential*



DSM Framework /Guidelines Direction

BUDGET

## Role of DSM in Systems Planning

- The study will determine the appropriate role DSM may serve in future system planning efforts
- Completed as soon as possible and no later than in time to inform the mid-term review of the DSM framework
- The multi-year DSM Plan will include a preliminary project scope and a preliminary transition plan outlining how DSM will be included in future infrastructure planning efforts

\$200K (initial estimate for 2015)

## Achievable Potential Study

- Mid-term review to be informed by an achievable potential study
- The study is to be completed by June 1<sup>st</sup>, 2016.
- Details on the scope, timing and nature of the study will be provided at a later date

\$250K (initial estimate for 2015)

# 2015 Plan Budget

	2014 Budget Plan (\$000)	2015 Budget Plan (\$000)
<b>Programs</b>		
Residential	\$3,163	\$3,163
Commercial/Industrial	\$10,859	\$10,859
Large Volume	\$4,534	\$4,534
Low Income	\$6,839	\$6,839
Market Transformation	\$1,379	\$1,379
<b>Program Sub-Total</b>	<b>\$26,774</b>	<b>\$26,774</b>
<b>Portfolio Budget</b>		
Research	\$766	\$766
Evaluation	\$969	\$969
Administration	\$1,582	\$1,582
<b>Cumulative Inflation</b>	<b>\$1,959</b>	<b>\$2,497</b>
<b>Total DSM Budget</b>	<b>\$32,050</b>	<b>\$32,588</b>

## Key Call Outs

- 2015 DSM Budget is a 2014 roll over as per the Final DSM Framework
  - Budget increased due to inflation

# 2015 Incremental Budget

Key DSM Priorities	2015 Incremental Initiatives	Budget (\$000)
Holistic Approach	Home Reno Rebate	\$700
Evidence Based/Customer Specific Data	Behavioural	\$3,300
Expand Low-Income	Low-income Market Rate Eligibility	--
Reduce/Defer Infrastructure Investments	DSM in Systems Planning Study	\$200
Requirement of Framework	Achievable Potential Study	\$250
Other	Additional Transition Elements	\$438
<b>Total</b>		<b>\$4,888</b>

## Key Call Outs

- 2015 Incremental 15% budget for Key Priority items = \$4.888 M
- Portion of budget has not been earmarked - available for additional transitional elements as required





# 2015 Shareholder Incentive

DSM Shareholder Incentive					
Scorecard	Percent Allocation (%)	2014 (\$000)		2015 (\$000)	
		Target	Maximum	Target	Maximum
Resource Acquisition	52%	\$2,267	\$5,667	\$2,305	\$5,762
Low-Income	26%	\$1,105	\$2,764	\$1,124	\$2,810
Large Volume	17%	\$733	\$1,832	\$745	\$1,863
Market Transformation	5%	\$223	\$557	\$227	\$567
<b>Total</b>	<b>100%</b>	<b>\$4,328</b>	<b>\$10,820</b>	<b>\$4,401</b>	<b>\$11,002</b>

## Key Call Outs

- Consistent allocation with 2014
- Increased by 1.68% inflation as per Final DSM Framework



# Next Steps

- 2015 Next Steps

- Currently assessing additional *Key Priority* items, including activities that would be required in 2015 to prepare for the 2016-2020 term
- Upon further direction from the Board on the Achievable Potential Study, Union will engage stakeholders in the process
- Working through preliminary stages of the Systems Planning project including establishing scope of the study, Union will engage stakeholders in the process

- 2016 - 2020 Next Steps

- Program assessments in response to Final DSM Framework and Guidelines
- Stakeholder sessions to be held with Union's consultative to discuss the various sector programs



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# Summary of ICF International Report: Evaluation of Union Gas Avoided Costs

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*Eric Buan*

*DSM Audit Lead*

# ICF Report Scope

1. Review of avoided gas cost concepts and practices for natural gas utilities
2. Review existing Union Gas avoided gas cost methodology
3. Review of existing avoided gas cost load segments
4. Develop recommendations for improving existing avoided gas cost methodology



# ICF Report Findings

- Current methodology is reasonable and appropriate
- Four recommendations were offered
  1. Account for avoided fuel losses
  2. Account for avoided storage costs
  3. Incorporate long term gas commodity price forecast
  4. Account for avoided facility infrastructure (distribution system) costs
- Union has adopted recommendations 1 – 3 for the 2015 Avoided Costs
  - Will assess potential avoided infrastructure costs through the study assessing future system planning efforts



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Q&A

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Recognized by:



## Appendix A: Incorporating Stakeholder Feedback into Union's 2015 DSM Plan

Union met with stakeholders on January 14, 2015 to share Union's approach for the DSM Plan as it pertains to the 2015 year. The following is a summary of the changes incorporated into Union's 2015 DSM Plan based on comments and feedback received. While the summary does not reflect stakeholder consensus, it demonstrates the changes Union made to take stakeholder feedback into account.

Item	Union's Original Proposal	Stakeholder Comments and Feedback <sup>1</sup>	Changes Incorporated to Union's DSM Plan
<b>Residential – Metric for Deep Savings – Residential (Homes)</b>	<p>Consistent with the direction given in the DSM Framework, Union rolled forward the Deep Savings – Residential (Homes) target setting methodology:</p> <p>Lower Band – Target minus 50 homes  Target - 2014 actuals times 1.25  Upper Band – Target plus 50 homes</p>	<p>Stakeholders commented that the current target setting formula was effective when the Home Reno Rebate program achievements were much lower than 2014's achievement levels.</p>	<p>Union investigated the effect of the lower and upper band target formula on the 2013 achievement approximating a +/-25% variance on the target. Therefore, the lower band and upper band target is revised based on +/- 25% of the Target:</p> <p>Lower Band – 75% of Target  Target - 2014 actuals times 1.25  Upper Band – 125% of Target</p> <p>The revision results in an upper band target of +300 homes instead of the previous methodology of +50 homes.</p>
<b>Market Transformation – Optimum Home</b>	<p>Union proposed an evolution of the current Optimum Home program to target the next tier of residential builder. The current version of Optimum Home targeted the top 50 builders in Union's franchise area. The proposal was to continue supporting the top 50 builders currently enrolled in the program but also offer streamlined program to builders who construct more than 10 homes per year.</p>	<p>Stakeholders expressed concerns with shifting our focus away from the top 50 builders by targeting a smaller tier of builders. The program's focus should be ensuring the top builders are building a greater portion of their housing stock to 20% above OBC 2012.</p>	<p>Union has revised the Market Transformation scorecard to focus solely on increasing the market penetration of homes built to 20% above code by participating builders.</p>

<sup>1</sup> List is not inclusive of all comments and feedback provided during the Consultation

## APPENDIX B: AVOIDED COSTS (NATURAL GAS, WATER AND ELECTRICITY)

Inflation Factor	1.68%
Discount Rate	7.90%

Gas Avoided Costs						
	Residential/Commercial				Industrial	
	Baseload (m <sup>3</sup> )		Weather Sensitive (m <sup>3</sup> )			
	Rate	NPV	Rate	NPV	Rate	NPV
2015	0.21378	0.21378	0.22071	0.22071	0.20537	0.20537
2016	0.19684	0.39620	0.20449	0.41024	0.20114	0.39179
2017	0.19620	0.56473	0.20266	0.58431	0.19798	0.56184
2018	0.20730	0.72974	0.21387	0.75455	0.20911	0.72830
2019	0.23174	0.90071	0.23841	0.93044	0.23358	0.90063
2020	0.25035	1.07188	0.25714	1.10626	0.25222	1.07308
2021	0.24863	1.22944	0.25553	1.26819	0.25053	1.23184
2022	0.25157	1.37718	0.25859	1.42005	0.25350	1.38072
2023	0.26925	1.52373	0.27639	1.57049	0.27122	1.52834
2024	0.25862	1.65419	0.26588	1.70461	0.26063	1.65981
2025	0.27435	1.78244	0.28173	1.83632	0.27639	1.78902
2026	0.27612	1.90208	0.28363	1.95921	0.27819	1.90956
2027	0.29855	2.02196	0.30618	2.08215	0.30065	2.03028
2028	0.30166	2.13423	0.30941	2.19730	0.30380	2.14334
2029	0.32465	2.24620	0.33253	2.31199	0.32682	2.25606
2030	0.32743	2.35086	0.33545	2.41922	0.32964	2.36143
2031	0.33257	2.44938	0.34072	2.52016	0.33482	2.46062
2032	0.33925	2.54253	0.34755	2.61558	0.34154	2.55440
2033	0.35307	2.63237	0.36150	2.70757	0.35540	2.64483
2034	0.36264	2.71789	0.37122	2.79511	0.36501	2.73091
2035	0.37758	2.80041	0.38630	2.87954	0.37998	2.81396
2036	0.38851	2.87911	0.39738	2.96003	0.39096	2.89315
2037	0.39977	2.95416	0.40878	3.03677	0.40225	2.96866
2038	0.41135	3.02573	0.42052	3.10993	0.41388	3.04067
2039	0.42328	3.09398	0.43260	3.17969	0.42585	3.10934
2040	0.43556	3.15907	0.44503	3.24619	0.43817	3.17482
2041	0.44820	3.22114	0.45783	3.30960	0.45086	3.23726
2042	0.46121	3.28034	0.47101	3.37006	0.46392	3.29681
2043	0.47461	3.33680	0.48457	3.42770	0.47736	3.35359
2044	0.48840	3.39065	0.49853	3.48267	0.49120	3.40775

Water and Electricity Avoided Costs			
Residential/Commercial/Industrial			
Water (m <sup>3</sup> )		Electricity (kWh)	
Rate	NPV	Rate	NPV
2.27294	2.27294	0.11280	0.11280
2.31113	4.41486	0.11470	0.21910
2.34996	6.43331	0.11663	0.31928
2.38944	8.33540	0.11859	0.41368
2.42958	10.12784	0.12058	0.50263
2.47039	11.81695	0.12260	0.58646
2.51190	13.40870	0.12466	0.66546
2.55410	14.90868	0.12676	0.73990
2.59701	16.32220	0.12889	0.81005
2.64064	17.65424	0.13105	0.87616
2.68500	18.90949	0.13325	0.93846
2.73011	20.09237	0.13549	0.99716
2.77597	21.20707	0.13777	1.05248
2.82261	22.25751	0.14008	1.10462
2.87003	23.24740	0.14244	1.15374
2.91825	24.18023	0.14483	1.20004
2.96727	25.05928	0.14726	1.24367
3.01712	25.88766	0.14974	1.28478
3.06781	26.66828	0.15225	1.32352
3.11935	27.40391	0.15481	1.36003
3.17175	28.09713	0.15741	1.39443
3.22504	28.75038	0.16006	1.42685
3.27922	29.36598	0.16274	1.45740
3.33431	29.94610	0.16548	1.48619
3.39033	30.49277	0.16826	1.51332
3.44728	31.00793	0.17109	1.53889
3.50520	31.49339	0.17396	1.56298
3.56409	31.95087	0.17688	1.58569
3.62396	32.38197	0.17985	1.60708
3.68485	32.78823	0.18287	1.62724





# Evaluation of Union Gas Avoided Costs

Prepared for: Union Gas Limited

By: ICF International

Principal Authors:  
Michael Sloan  
Bryan Flannigan  
Peter Narbaitz

December 18, 2014

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## 1) Introduction

Union Gas engaged ICF to evaluate the existing methodology used by Union Gas to estimate the avoided costs used to evaluate Union Gas DSM programs, and to develop and implement a more comprehensive approach to determining Union Gas avoided costs. ICF conducted the assessment of Union Gas avoided costs in four steps. Each step is summarized below:

### 1. Review of Avoided Cost Concepts and Practices for Natural Gas Utilities

ICF conducted a literature review of DSM programs and avoided cost methodologies prepared by other natural gas distribution companies. The literature review was intended to provide a reasonable representation of the published information available, in order to ensure that the ICF approach to avoided cost estimation is consistent with current industry practices. The literature review is not intended to be comprehensive. The results of the literature review are summarized in Section 2 of this report.

### 2. Review existing Union Gas Avoided Cost Methodology

ICF completed a detailed review of the existing Union Gas Avoided Cost methodology. The ICF review included a review of the Union Gas Sendout analysis currently used to generate avoided gas costs, to determine if the existing approach appropriately estimates the gas cost savings associated with DSM programs, and to identify any areas in the existing avoided cost methodology that need to be extended or revised in order to be consistent with OEB guidelines on avoided cost calculations. The results of the existing methodology review are summarized in Section 3 of this report.

### 3. Review of existing Union DSM Program Impacts (Peak Day, Winter, Annual)

ICF worked with Union Gas DSM staff to evaluate the estimated impacts of the Union Gas DSM programs on Peak Day, Winter, and Annual demand. This started with a review of the existing DSM evaluation reports used by Union Gas when assessing DSM programs, and also considered Union Gas DSM plans and avoided cost methodology. The results of the review of existing DSM program impacts are summarized in Section 4 of this report.

### 4. Develop Recommendations for improving the Existing Avoided Gas Cost Methodology Used by Union Gas

ICF used the results of our review of the existing Union Gas methodology to make recommendations to improve the current methodology. We then estimated the impact of these recommendations on the Union Gas avoided cost estimates. The recommendations made by ICF can be found in Section 5 of this report.

## 2) Review of Avoided Cost Concepts and Practices for Natural Gas Utilities

ICF set out to conduct a literature review of avoided costs prepared by other natural gas distribution companies as part of their DSM planning process. The literature review is intended to be representative of the published information available, in order to ensure that the ICF approach to avoided cost estimation is consistent with current industry practices. The literature is not intended to be comprehensive.

It should also be noted that the first review presented in this study is lengthier than the others, because the level of detail available for this calculation methodology was much greater. The difference in level of rigor between certain utilities methodologies for cost-effectiveness calculations was significant.

### 2.1 Avoided Cost Concepts for Natural Gas Distribution Companies

Avoided costs are one of the key components of the cost-effectiveness tests that are widely used to evaluate energy efficiency investments. Cost-effectiveness represents whether an investment's benefits exceed its cost. Avoided costs are one of the main benefits considered in these tests. However, the other types of costs and benefits that are included in this comparison can vary. Different cost-effectiveness tests are also used in different jurisdictions. Additionally, in most cases the 'standard' tests are modified to account for the jurisdiction's desired avoided costs (Home Performance Coalition, 2014).

This testing, and hence the avoided cost component, are critical to the justification of public funding to support energy efficiency programs. These avoided costs will be used by utilities in their Demand Side Management (DSM) plans or their Integrated Resource Plans (IRP), as required by regulators, but are not typically used by the utilities for any other purposes (other than justifying energy efficiency measure cost-effectiveness).

### 2.2 Typical Components of Avoided Gas Costs

The following categories of avoided costs are the most commonly considered benefits for natural gas DSM programs:

- Commodity Costs
- Capacity Costs (Pipelines and Storage)
- Distribution System Costs (Transmission and Distribution System)
- Market Price Suppression Effects (DRIPE)
- Non-Energy Benefits

Additionally, the avoided costs above will be impacted by how the calculation methodology accounts for seasonal fluctuations in natural gas demand and how it differentiates between customer types. These avoided cost components are further discussed below.

## 2.2.1 Commodity Costs

Avoided commodity costs represent the value of the resources conserved by efficiency measures, and are typically a major driver of the total avoided costs. This represents what it costs the utility to buy the natural gas, but does not yet account for other components of energy cost, such as transportation. Losses such as from compression, the amount of fuel used by compressors to move the natural gas through pipelines, can also be included as part of commodity costs. These are typically variable costs, where cost savings are proportional to natural gas savings. Commodity costs also can include avoided costs from the conservation of other resources, such as electricity, water, or other fuels, which are typically accounted for separately from natural gas.

Methodologies with very different levels of complexity are used by gas distributors to forecast commodity prices for avoided costs, which may rely on internal econometric models or the work of external consultants. Typically, for near-term analysis there is market data available, and the commodity costs can be based on forward and futures market data, which are publicly available and transparent to all stakeholders. However, for long-term analysis there is no market data available, and the avoided natural gas costs rely on public or private price forecasts.

## 2.2.2 Capacity Costs (Pipelines and Storage)

Avoided capacity costs represent the value that comes from lower pipeline transportation and gas storage requirements. Whether a natural gas distributor relies on its own pipelines and storage capacity, or is contracting this capacity, reduced natural gas volumes can also reduce some of these capacity costs. Storage is relied upon to build up additional natural gas supply through-out the year in order to meet the increased demands during the peak-heating winter months. Elements of these costs can be both fixed and variable, which dictates how they can be included in avoided costs for a specific utility, based on their gas supply infrastructure and contracts.

More specifically, the capacity costs that can be avoided depend on the characteristics of a gas distributor's existing gas supply portfolio, and the opportunities to add or reduce capacity in response to changes in demand. While all gas supply resources are avoidable over the long run, distributors may have their own existing pipelines or hold multiyear contracts that commit them to pay for a fixed pipeline or storage service for a minimum period of time. In such situations, the fixed cost of the capacity cannot be avoided until the end of the contract term, when the distributor typically has an option to renew or terminate the service (Synapse Energy Economics Inc., 2013).

Additionally, the avoided capacity costs to meet natural gas loads depend on the season. Northern pipeline systems are designed to meet winter peak demand, so avoided costs are higher in winter than in the summer (ICF Consulting, 2005). A unit of gas conserved in the winter may allow the distributor to plan their capacity for a lower maximum demand, but a unit of gas conserved in the summer will not conserve storage or peaking supply, and may not conserve pipeline costs where the line is underused.

## 2.2.3 Distribution System Costs (Transmission and Distribution System)

This portion of the overall cost of gas represents the cost of delivering the gas on the LDC's distribution system, and is sometimes referred to as the "retail margin" (Synapse Energy

Economics Inc., 2013). Avoided local distribution system infrastructure costs are achieved when reduced natural gas demand enables delays in the timing of new projects, or reductions in the size of these projects. The avoided transmission and distribution costs vary by utility service territory, but are typically driven by the level of gas demand in the winter heating season (National Action Plan for Energy Efficiency, 2008).

## 2.2.4 Market Price Suppression Effects (DRIPE)

Market price suppression effects represent a potential decrease in natural gas prices resulting from efficiency programs reducing the total demand for natural gas. Also known as the Demand-Reduction-Induced Price Effect (DRIPE), this is a measure of the value of efficiency measures in terms of the reductions in the wholesale market prices of gas seen by all customers (Synapse Energy Economics Inc., 2013). A reduction in the quantity of gas used in one region will reduce the overall demand for gas and therefore reduce the market price for gas supply in all regions supplied by the same natural gas producers. DRIPE will have little impact on the market price of energy, but very small impacts on market prices can result in large absolute dollar amounts when applied to all energy being purchased in the market.

DRIPE can be more significant in isolated markets, as it depends on the supply and demand situation of a specific region, and supply-constrained regions are more vulnerable to spikes in natural gas prices. For example in a region like New England, where natural gas shortages drive up prices during the winter, DRIPE impacts would be important to quantify.

## 2.2.5 Non-Energy Benefits

Conservation measures often have additional benefits beyond energy savings, potentially including improved comfort, health, convenience, aesthetics (National Action Plan for Energy Efficiency, 2008) and carbon emission reductions. The appropriateness of inclusion of non-energy benefits in the avoided costs typically would be based on policy decisions at the provincial level.

## 2.2.6 Differentiated Customer Costs

While not a type of avoided cost on its own, it is important to note how the other cost categories are typically broken down to account for different customer types. Costs are typically established separately for residential, commercial, and industrial customers, since these sectors can have different load profiles. Avoided costs can also be calculated separately for different types of natural gas end-uses, as the load profiles for different types of equipment can also vary significantly. End-uses will typically be grouped according to whether their gas demand is relatively constant through-out the year (eg. non-heating loads) or if demand changes through-out the year (eg. heating loads).

## 2.2.7 Seasonal Price Adjustments

As mentioned in several of the preceding sections, seasonal variations in natural gas use have a large impact on delivered gas costs. In northern regions where gas is used as a heating fuel, gas distributors need to have supply plans in place to meet the significant demand increases of this winter peak demand. This uneven demand results in uneven capacity and distribution costs, based on each individual gas distributor's supply arrangements. The variation in gas demand throughout a year can be represented by a load curve.

## 2.3 Comparison of Utility Avoided Gas Cost Practices

The components of avoided cost calculations used by the utilities considered in this literature review are summarized in Exhibit 1. These five utilities are discussed in greater detail in the following sub-sections.

**Exhibit 1: Components Included by Various Utilities in Avoided Cost Calculations**

Cost Component	Connecticut Natural Gas	National Grid	Puget Sound Energy	Xcel Energy	NW Natural
Commodities	Yes	Yes	Yes	Yes	Yes
Differentiated Customers	Yes	Yes	Yes	-	Yes
Seasonal Price Adjustments	Yes	Yes	Yes	-	Yes
Capacity (Pipeline and Storage)	Yes	Yes	Yes	Yes	Yes
Transmission and Distribution System	Yes	Yes	Yes	Yes	Yes
Wholesale Market Price Suppression Effects (DRIPE)	Yes <sup>1</sup>	Yes	-	-	-
Non-Energy Benefits	-	Yes	-	-	Yes

### 2.3.1 Connecticut Natural Gas (Connecticut)

Natural gas DSM activities in Connecticut began with the 2007 passage of the Electric and Energy Efficiency Act, requiring utilities to submit integrated resource plans (ACEEE, 2014). This act requires resource needs to first be met through “all available energy efficiency resources that are cost-effective, reliable and feasible” (ACEEE, 2014).

In Connecticut, the cost-effectiveness testing for natural gas conservation measures appears to be simpler than for electrical conservation measures. This observation is based on the number of components included in the avoided cost calculations outlined in the 2013 – 2015 Electric and Natural Gas Conservation and Load Management Plan (Connecticut Natural Gas Corporation, 2012), which was filed jointly by the Connecticut Natural Gas Corporation and several other utilities. For example, the electrical cost-effectiveness tests factor in DRIPE impacts that reduce wholesale electricity costs, but DRIPE impacts are not mentioned for natural gas. Additionally, water, other fossil fuels, and maintenance cost savings are also included in cost effectiveness tests for electrical measures.

The natural gas cost-effectiveness screening considers the avoided cost of natural gas, as well as water savings for certain residential sector measures. This avoided cost of natural gas is calculated based on monthly load shapes and includes both avoided fixed costs (cash pipeline demand charges) and variable costs (gas commodity costs, cash pipeline usage charges and

<sup>1</sup> Regulatory documents make no mention of the inclusion of Natural Gas DRIPE, however these impacts seem to be built into the numbers calculated by consultants.



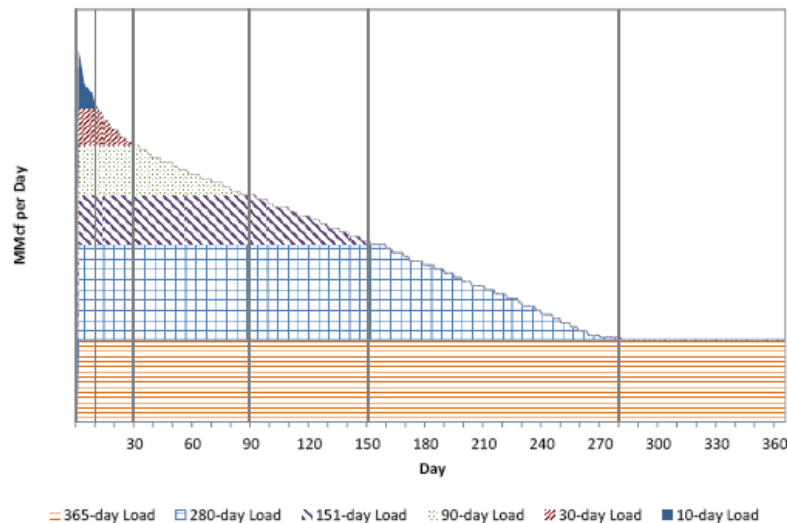
adjustments for fuel and losses in pipeline transportation and storage of gas) (Connecticut Natural Gas Corporation, 2012).

The calculations described above to determine avoided cost of natural gas are conducted by consultants and extracted by the utilities from the resulting regional avoided energy cost study. Program administrators throughout the New England region join together in the Avoided Energy Supply Costs (AESC) Study Group, which in turn sponsors a study to establish avoided costs suitable for each of its members. This report is updated every other year, and the latest version was completed in 2013 by Synapse Energy Economics, Inc. (Synapse Energy Economics Inc., 2013b).

Components of these avoided calculations are expanded upon in Exhibit 2, based on the methodology descriptions from the 2013 avoided cost report (Synapse Energy Economics Inc., 2013b).

**Exhibit 2: Details on Connecticut Natural Gas Avoided Cost Calculations**

Cost Component	Connecticut Natural Gas Corporation
Commodities	<p>The wholesale natural gas commodity prices used for the base case come from a custom forecast developed by Synapse. The forecast uses annual Henry Hub natural gas prices for short term projections. For the medium-term of the study period the forecast is based on futures prices from NYMEX. A long-term forecast from the Energy Information Administration (EIA) is used for the bulk of the study period, extrapolated for the remaining years not covered by the EIA. The major difficulty cited by Synapse in developing their Base Case forecast is selecting an appropriate long-term forecast and determining what adjustments to this forecast are required. Synapse currently uses an EIA forecast with three major adjustments (Synapse Energy Economics Inc., 2013).</p> <p>The marginal gas supply resource, for each of the load segments described below, is determined by matching the available gas supply resources to the gas distributors' firm requirements to minimize the total avoidable gas supply cost. This optimization is done annually through 2020 using a linear programming spreadsheet model.</p>
Differentiated Customers	<p>Gas consumption is grouped into several categories, to account for differences in usage and cost patterns. The first group is natural gas use by very large end users, which are primarily electricity generating stations, but also include large users in other sectors. The second group are retail customers in the residential, commercial, and industrial (RC&amp;I) sectors.</p>
Seasonal Price Adjustments	<p>In this study, the variation in daily gas requirements over the course of a year is described by a load duration curve. The residential, commercial, and industrial load shapes are generated by dividing the annual gas requirement into six load segments presented in Exhibit 3, with different costs calculated for each segment (level of peak). DSM program impacts are correlated to the different load segments based on breakdowns of the percentage of the end-use category's annual consumption that is consumed in each load segment. For example Connecticut's 3 different residential avoided cost categories would each have their own load profiles. The residential non-heating energy consumption is considered to be 100% in the 'Annual Baseload' segment, the residential heating consumption is distributed between the 5 non-baseload segments, and the residential water heating is distributed between all 6 load segments.</p> <p><b>Exhibit 3: Natural Gas Demand Load Segments (Synapse Energy Economics Inc., 2013)</b></p>



Capacity  
(Pipeline and  
Storage)

The determination of avoidable capacity costs is performed by reviewing the most recent integrated resource plans of each distributor under consideration. Current gas supply resources were then classified into categories based on the different pipelines and storage contracts, and the fixed and variable costs associated with each gas supply category were identified. The cost of building new, incrementally priced gas transmission capacity into the New England market was factored into the AESC 2013 avoided cost analysis by including three new gas supply resources in the list of options available to distributors.

Transmission  
and  
Distribution  
System

The Synapse avoided cost methodology accounts for the avoidable distribution costs through what is referred to as the avoidable LDC margin, which is applicable from the citygate to the burner tip. The change in cost of distribution incurred as demand for gas increases or decreases is tracked separately for different load and customer types. For seasonal loads more of the embedded cost is avoidable than for steady base loads, and the avoidable costs are estimated as a percent of the embedded costs. In AESC 2013 the embedded cost is measured as the difference between the city-gate price of gas and the price charged each of the different retail customer types.

Exhibit 4 is taken from the Synapse report on avoided costs for New England, and shows the estimates used for avoided LDC margins in the categories that make up this region. Avoided costs are later presented with and without this impact, as some LDCs assume they will not avoid any distribution costs due to reductions in gas use from efficiency measures. Note that these avoided cost results are driven by a National Grid study on LDC marginal costs, which is the source of the percentages at the top of Exhibit 4.

**Exhibit 4: Estimated Avoidable LDC Margins (Synapse Energy Economics Inc., 2013)**

	Total LDC Retail Margin & CG Price (a) (2013\$/MMBtu)	Avoidable LDC Margin (a) (2013\$/MMBtu)		
Type of End Use		Non-heating (High Load Factor)	Heating (Low Load Factor)	All
Avoidable Margin (percent) (b)				
Residential		8.0%	21.0%	20.4%
Commercial & Industrial		15.0%	28.0%	24.0%
All Retail				22.0%

**Southern New England (c)**

Average City Gate Price	8.706			
Residential	7.466	0.60	1.57	1.52
Commercial & Industrial (e)	4.164	0.62	1.17	1.00
All Retail (f)	5.775			1.27

**Northern New England (d)**

Average City Gate Price	9.977			
Residential	6.324	0.51	1.33	1.29
Commercial & Industrial (e)	3.051	0.46	0.85	0.73
All Retail (f)	3.549			0.78

**Vermont**

Average City Gate Price	9.616			
Residential	7.782	0.62	1.63	1.59
Commercial & Industrial (e)	0.970	0.15	0.27	0.23
All Retail (f)	3.427			0.75

(a) Average of Margins among states for 2007 - 2011 weighted by the delivered volumes in each state.  
 (b) Based on LDC marginal cost studies from National Grid (MA).  
 (c) Southern New England is Massachusetts, Connecticut, and Rhode Island.  
 (d) Northern New England is New Hampshire and Maine.  
 (e) An average of the margins weighted by the commercial and industrial use delivered volumes.  
 (f) An average of residential, commercial and industrial margins weighted by associated volumes.

Source: EIA website data sources

#### Wholesale Market Price Suppression Effects

Built into consultant avoided cost projections.<sup>2</sup>

#### Non-Energy Benefits

In addition to avoided natural gas costs associated with natural gas savings, certain residential sector measures also save water. These measures are limited to the residential sector and include low flow showerheads and aerators. The avoided water savings is calculated and used for the Total Resource Cost test only. The value of water savings is approximately 1.0 cents per gallon and was estimated using Tighe and Bond water and sewer costs for Hartford.

#### Sources

Data in this table extracted and/or adapted from 2013 Synapse report (Synapse Energy Economics Inc., 2013).

### 2.3.2 National Grid (Massachusetts)

National Grid is a large investor-owned utility with both electricity and natural gas distribution operations in the Northeast United States. Here we will focus on National Grid's gas distribution operations in Massachusetts, where it operates through a number of subsidiaries, such as Boston Gas and the Colonial Gas Company. Along with most of the investor owned utilities in Massachusetts, National Grid's DSM efforts are coordinated through a collaborative program called GasNetworks (ICF Consulting, 2005).

<sup>2</sup> Regulatory documents make no mention of the inclusion of Natural Gas DRIPE, however they may inadvertently be using consultant generated avoided costs which include these effects.

Massachusetts is a leading state with a long, successful record of implementing energy efficiency programs for all customer sectors, and was ranked #1 in the State Scorecard Ranking produced by the American Council for an Energy-Efficient Economy (ACEEE, 2014). The state's Green Communities Act requires gas utilities to make acquiring all cost-effective energy efficiency a higher priority than using other resources, and the second round of 3-year plans produced under this Act include the most ambitious energy savings targets in the U.S. (ACEEE, 2014).

Utilities in Massachusetts rely on cost effectiveness tests for which resource and non-resource benefits are expected to be determined through EM&V and approved by the Department of Public Utilities (ACEEE, 2014). For the non-resource avoided costs, the 2013-2015 Massachusetts statewide efficiency plan (Mass Save, 2012) relied upon non-energy benefit estimates from a 2011 study (Tetra Tech, 2011).

National Grid is a member of the same AESC Study Group discussed for Connecticut Natural Gas, so avoided energy gas costs are taken directly from the consultant report on this topic. This avoided cost study is updated every other year, and is sponsored by all of the gas and electric program administrators in New England because the markets for electricity and natural gas are regional markets (National Grid, 2012). Components of these avoided calculations are expanded upon in Exhibit 5.

**Exhibit 5: Details on National Grid Avoided Cost Calculations**

Cost Component	National Grid
Commodities	<i>Same methodology as for Connecticut, with Massachusetts specific inputs.</i>
Differentiated Customers	<i>Same methodology as for Connecticut, with Massachusetts specific inputs.</i>
Seasonal Price Adjustments	<i>Same methodology as for Connecticut, with Massachusetts specific inputs.</i>
Capacity (Pipeline and Storage)	<i>Same methodology as for Connecticut, with Massachusetts specific inputs.</i>
Transmission and Distribution System	<i>Same methodology as for Connecticut, with Massachusetts specific inputs.</i>
Wholesale Market Price Suppression Effects (DRIPE)	The DRIPE impacts used in this study were based on the EIA's most recent set of sensitivity analyses in the 2012 Annual Energy Outlook. Scenarios that were considered to represent changing natural gas demand without affecting the gas supply curve were assessed to establish the differences in consumption and Henry Hub prices between the scenario and the Reference Case in 2020. This relationship was found to be very linear, and DRIPE percentages were based on this data.
Non-Energy Benefits	Non-energy benefits for utilities and participants (equipment, comfort, health & safety, etc.) are included.
Sources	Data in this table extracted and/or adapter from 2013 Synapse report (Synapse Energy Economics Inc., 2013) and from another 2013 report by Synapse (Synapse Energy Economics Inc., 2013b).

### 2.3.3 Puget Sound Energy (Washington)

Washington State's private and public utilities have long records of offering customer energy efficiency programs, supported by regional conservation organizations. It is part of the four-state region served by the Bonneville Power Authority and the Northwest Power and Conservation Council, and it incorporates energy efficiency as a resource for planning and investment decisions. Utilities like Puget Sound Energy (PSE) are required to model energy efficiency as a resource along with supply-side resources within their integrated resource plans, so that the plan they identify has a "mix of energy supply resources and conservation that will meet current and future needs at the lowest reasonable cost to the utility and its ratepayers." (ACEEE, 2014)

The regulator for utilities in Washington has addressed the impact lower natural gas prices are having on the cost-effectiveness of gas DSM portfolios. The regulator issued a policy statement allowing natural gas utilities to request to use different cost effectiveness tests where there are significant non-energy benefits that are known but unquantified, to avoid tests being biased against conservation (ACEEE, 2014).

Components of these avoided calculations are expanded upon in Exhibit 6.

**Exhibit 6: Details on Puget Sound Energy Avoided Cost Calculations**

Cost Component	Puget Sound Energy (PSE)
Commodities	<p>To calculate the weighted average annual market price over the next 20 years PSE multiplied the estimated average monthly natural gas prices and the monthly gas load shapes from its latest IRP. PSE then used an inflation rate of 2.5% to estimate a weighted average annual market price of natural gas for an additional 10 years.</p> <p>Along with the base commodity costs, PSE also factors in a pipeline reimbursement rate which covers the amount of fuel used by compressors to move the natural gas. This reimbursement rate varies every 6 months, but is generally in the 2-3% range.</p>
Differentiated Customers	<p>Avoided costs are calculated for six end-uses, which are representative of the measures offered through the energy efficiency programs.</p>
Seasonal Price Adjustments	<p>Calculations of avoided costs account for changing energy savings and energy costs through-out the year by using load factors. To calculate the percentage of savings which occur during peak system periods, PSE estimates a load factor, based on the average daily load divided by the load on the peak day. These were calculated based on the IRP forecasts for gas sendouts. The inverse of that load factor, which provides a percent of the average daily load which occurs on a peak day, is multiplied by the average daily load to obtain peak demand savings.</p>
Capacity (Pipeline and Storage)	<p>PSE accounts for avoided capacity costs from peak demand reductions, as it contracts external pipeline capacity to supply the peak demands it cannot meet internally, and a smaller amount of capacity can be purchased for the following year if peak demand is reduced. To calculate the avoided cost of pipeline demand charges, PSE multiplies the yearly pipeline demand charge by the measure savings which occur on peak. To calculate these peak savings, PSE uses average end use loads and load factors, developed separately for weather sensitive and non-weather sensitive end uses.</p> <p>PSE also accounts for an 'avoided pipeline variable transportation charge', which represents the operation and maintenance costs on the pipeline. These costs are</p>



	considered to only depend on the volume of gas, and do not change based on peak periods or end-uses.
Transmission and Distribution System	When peak demand increases, pipelines need to be reinforced to support the additional flow of natural gas. PSE includes a 'deferred distribution capacity cost' to account for the value of deferring pipeline reinforcement costs through efficiency measures. The reinforcement costs on a pipeline are calculated as a one-time cost and the costs are simply postponed (not necessarily avoided), so the yearly avoided costs of pipeline distribution capacity costs are represented as an avoided payment, or the yearly value of a levelized cost.
Wholesale Market Price Suppression Effects (DRIPE)	-
Non-Energy Benefits	-
Sources	Information in this table was adapted from a 2012 publication by the utility on their avoided cost calculations (Puget Sound Energy, 2012).

### 2.3.4 Xcel Energy (Colorado)

Energy efficiency is not included within the state commission's definition of a supply-side resource for utilities. However, the commission does seem to be requiring utilities to include approved DSM plans in their planning processes (ACEEE, 2014). There is also a house bill requiring the public utilities to include the possible impacts of future greenhouse gas regulation on electricity prices when evaluating utility resource plans. While Xcel Energy's DSM plan mentioned the inclusion of carbon prices, it left their value set at \$0 (Xcel Energy, 2013). Xcel Energy uses a simple avoided cost methodology, as highlighted by the relatively brief contents of Exhibit 7, which correspond to the few components listed in the methodology document.

Exhibit 7: Details on Xcel Energy Avoided Cost Calculations

Cost Component	Xcel Energy
Commodities	Xcel Energy's gas price forecast is based on a market snapshot for short-term prices and a quantitative average of projections from well-known forecasting services for the long-term forecast prices. The source for this is listed as 'Public Service Gas Resource Planning', and the forecast provides \$/Dth (dekatherm) values for the next 20 years.
Differentiated Customers	-
Seasonal Price Adjustments	-
Capacity (Pipeline and Storage)	To estimate capacity savings Xcel Energy uses 'Annual Avoided Reservation Costs', which represent the Peak Day gas savings and are estimated as 1% of annual gas savings. For the 2014 to 2033 period the annual avoided reservation cost was estimated to be \$56.37/Dth, and was used to determine the cost of service to transport incremental gas supplies to the metropolitan Denver area. Xcel Energy uses the CIG firm transportation rate to estimate this cost.





Transmission and Distribution System	Xcel Energy accounts for variable O&M costs avoided through a reduction in gas usage based on a fixed value provided by the company's Pricing and Planning department. For the 2014 to 2033 period this avoided O&M cost is \$0.05/Dth.
Wholesale Market Price Suppression Effects	-
Non-Energy Benefits	-
Sources	Information in this table was adapted from Xcel Energy's 2014 Demand Management Plan (Xcel Energy, 2013).

### 2.3.5 NW Natural (Oregon)

NW Natural is one of three natural gas suppliers in the state of Oregon (Oregon Department of Energy, 2014). Oregon is considered a leading state for energy efficiency and as far back as 1989 has required its utilities to consider energy efficiency as a resource when developing Integrated Resource Plans (ACEEE, 2014). Most DSM programs in the state are administered by a nonprofit organization called the Energy Trust of Oregon (ETO), including those for NW Natural (NW Natural, 2014). For energy efficiency purposes, NW Natural operates with a business model that decouples rates from use-per-customer (ACEEE, 2014).

The 2014 reporting requirements laid out by the ETO for utilities in Oregon alter the cost-effectiveness testing parameters such that they can account for many non-energy benefits (ACEEE, 2014). While exceptions had already existed for certain measures such as 'low income' programs, the new guidelines allow for exceptions to the cost-effectiveness requirements if one of the following conditions is met (ACEEE, 2014) :

- Produce significant non-quantifiable non-energy benefits
- Will lead to market transformation and reduced costs
- Are needed for consistency with other DSM programs in the region
- Will help to increase participation in a cost-effective program
- Cannot be changed frequently, and will be cost-effective during the period the program is offered
- Are included in a pilot or research project
- Are required by law or are consistent with Commission policy or direction

Avoided cost components of these cost effectiveness calculations are expanded upon in Exhibit 8. NW Natural uses the SENDOUT® supply planning model to estimate avoided gas costs.

#### Exhibit 8: Details on NW Natural Avoided Cost Calculations

Cost Component	NW Natural
Commodities	NW Natural reviews several public and proprietary price forecasts to develop gas price forecasts (Base Case, High Price, and Low Price) that represent reasonable ranges of future prices for the basins from which the company purchases gas supplies. This review also factors in price forecasts developed by IHS CERA for NW Natural, which estimate the effects of different combinations of potential regional pipelines and LNG export facilities.
Differentiated Customers	NW Natural calculates avoided costs separately for 12 load centers (regions), based on their specific usage patterns, weather, rates of customer growth, resource availability, and location within the supply and distribution system.



Seasonal Price Adjustments	<p>Avoided costs are presented separately for each month, capturing higher avoided costs in peak winter heating months. A customer forecast establishes how the customer base and associated peak demands change. While the planning process aims to meet a certain number of heating degree day requirements, based on both average historical weather patterns and exceptional emergency peaking events.</p>
Capacity (Pipeline and Storage)	<p>Capacity costs considered by NW Natural include gas storage carrying costs for inventory and variable transmission costs. NW Natural's IRP model quantifies current resources (gas supply contracts, pipeline transportation contracts, storage resources, and other supply resources such as customers with recallable/interruptible supply arrangements), as well as potential changes in the existing resource portfolio (new capacity projects and contracts up for renewal). These avoided costs will be dependent on how the resource portfolio can be optimized.</p>
Transmission and Distribution System	<p>NW Natural's avoided cost calculations include peak related on-system transmission costs.</p> <p>NW Natural's core system demand typically has a morning peaking period between 7 and 8 am. The peak hour demand for these customers can be as much as 50 percent greater than the hourly average of the daily demand. Due to the importance of responding to hourly peaking in the distribution system, NW Natural typically plans for distribution system capacity requirements based on peak hour demand.</p> <p>This planning process requires forecasting local growth in design day peak demand, determining potential distribution system constraints, analyzing potential solutions, and assessing the costs of each potential solution. NW Natural uses computer simulation modeling to assist with validating the need for and timing of specific system expansion, reinforcement, or replacement projects. Projects indicated by this modeling as being required in the near-term (within one to two years) are highly likely to be built in order to meet specified customer delivery requirements. However, projects indicated as being required in the mid-term (three to five years) may potentially be deferred as a result of adjustments to the level of forecasted growth and the geographic location of new customers.</p>
Wholesale Market Price Suppression Effects	-
Non-Energy Benefits	<p>NW Natural's avoided costs include a 10% conservation adder to account for the unquantifiable benefits of DSM, as suggested by the Northwest Power and Conservation Council (NWPPCC). Avoided costs for different scenarios are calculated normally, and as a last step the avoided costs are increased by an additional 10%.</p> <p>Additionally, NW Natural relies in part on some consultant studies to develop their avoided cost commodity price scenarios. The Henry Hub natural gas spot price forecasts in one such study have an embedded projected carbon cost. As a result, the Base Case natural gas price forecast used by NW Natural includes a carbon price beginning in 2021.</p>
Sources	<p>Information in this table was adapted from NW Natural's 2014 Integrated Resource Plan (NW Natural, 2014) and their 2013 IRP (NW Natural, 2013).</p>



## 2.3.6 Ontario Energy Board Avoided Cost Requirements

An excerpt from the Ontario Energy Board's 2012-2014 DSM filing guidelines is presented below (Ontario Energy Board, 2011). This document provides guidance to Union Gas on how avoided costs are expected to be calculated.

### Ontario Energy Board DSM Filing Guidelines for Natural Gas Avoided Costs (DSM Framework EB-2008-0346)

#### 6.2 Avoided Costs

As described earlier, assumptions relating to the societal benefit of not having to provide an extra unit of supply of natural gas, or other resources (e.g., electricity, heating fuel oil, propane or water) are referred to as "avoided costs".

Avoided costs should be based on long-term estimates and include:

- Avoided supply-side costs, such as capital, operating and commodity costs.
  - Commodity costs include those for natural gas and, if applicable, for other resources such as electricity, water, heating fuel oil and propane.
- Avoided demand-side costs, such as the impact on customer equipment and operating costs.
- The following avoided upstream costs directly incurred by the natural gas utility: storage costs, transportation tolls and demand charges.
  - For simplicity, other avoided upstream costs (such as avoided costs of upstream pipeline companies and natural gas producers) should be excluded from the avoided cost calculations.

Each natural gas utility should calculate all avoided costs to reflect their specific cost structure as well as the characteristics of their franchise area. In order to ensure consistency, the natural gas utilities should use a common methodology to determine their utility specific avoided costs. The natural gas utilities should also coordinate the timing for selecting commodity costs so that they are comparable.<sup>15</sup>

The estimation of natural gas avoided costs should consider whether different estimates are warranted for each customer class, sector (e.g., residential, commercial, and industrial), and/or the load characteristics (e.g., baseload versus weather sensitive).

In determining their utility specific avoided costs, the natural gas utilities should consider, among other information available, the avoided costs used by the OPA to assess the cost effectiveness of electricity CDM programs.<sup>16</sup>

<sup>15</sup> Commodity costs include those for natural gas and, if applicable, for other resources such as electricity, water, heating fuel oil and propane.

<sup>16</sup> The avoided cost assumptions currently used by the OPA are provided in the OPA Conservation and Demand Management Cost Effectiveness Guide, dated October 15, 2010.

### **6.2.1 Updating of Avoided Costs**

The natural gas utilities should submit avoided costs for approval as part of their multi-year DSM plan, with the commodity costs to be updated annually (i.e., for natural gas and, if applicable, for other resources such as electricity, water, heating fuel oil and propane) but all other avoided costs (e.g., avoided distribution system costs such as pipes, storage, etc.) to remain fixed for the duration of the plan. As avoided costs should be based on long-term projections, it is expected that updating the remaining component of the avoided costs (i.e., other than the commodity costs) on a multi-year cycle should not cause benefits to be significantly under or overstated.

If an extension to the term of the plan is considered, as discussed in section 2, an updating of all the avoided costs should also be considered.

### **6.2.2 Discount Rate**

For the purpose of the TRC test, the total avoided costs resulting over the life of the DSM measures need to be discounted to a present value. The natural gas utilities should continue using a discount rate that is equal to their Board approved weighted average cost of capital ("WACC").

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### 3) Review of Union Gas Avoided Cost Methodology

The ICF review of the Union Gas Avoided Cost Methodology was based on a review of the Union Gas avoided cost methodology, discussions with Union Gas DSM staff, review of Union Gas DSM reports filed with the OEB and review of the OEB guidelines on avoided costs. The Ontario Energy Board Guidelines to the Ontario Natural Gas Distribution Companies with respect to the avoided cost filings are shown in the text box starting on page 14 of this report.

#### 3.1 Overview of Union Gas System

Union Gas Distribution delivers about 500 Bcf of natural gas to about 1.4 million residential, commercial and industrial customers in more than 400 communities in Ontario (Union Gas Limited, 2013).

The Union Gas distribution system is integrated with a major storage and transmission system that serves in-franchise customers as well as markets outside of the Union Gas Distribution service territory. The Union Gas storage and transmission assets include about 166 Bcf of underground natural gas storage at the Dawn Hub, as well as the Dawn to Parkway transmission system ("Dawn Parkway System") which is a major natural gas transmission asset that connects the Dawn Hub to consuming markets in Ontario, Quebec and the U.S. Northeast.

**Exhibit 9: Union Gas Service Area (Union Gas Limited, 2013)**



The Union Gas system consists of two generally distinct distribution systems. Customers in the Southern Ontario region in the area from Windsor through Parkway account for about 75 percent of Union's distribution system volumes. The gas supply for these customers is sourced from a variety of locations, including the WCSB, the U.S. Gulf Coast, the U.S. Midcontinent and Rocky Mountains, and the U.S. Appalachian Basin. Union also purchases a portion of the gas supply needed to serve customers in the Southern end of their system at Dawn.

The remaining distribution customers are located in Northern Ontario and are served from the TransCanada Ontario Mainline, primarily relying on natural gas purchased from Alberta.

Both systems rely on Union natural gas storage at Dawn to support peak period loads. The use of storage allows Union to purchase gas on a year round basis in order to minimize gas purchase costs and reduce the amount of pipeline capacity held to meet peak period demands.

The majority of Union South customers located east of Dawn rely on transmission capacity on the Dawn Parkway System to meet distribution requirements. Union also uses its Dawn Parkway System (and also TransCanada services from Parkway) to ship natural gas from Dawn to Union North.

### 3.2 Union Gas Avoided Cost Methodology

Union Gas uses the SENDOUT® supply planning model to estimate avoided gas costs. The SENDOUT® model is an industry standard natural gas supply portfolio model, and is widely used in supply planning and avoided cost estimation throughout the natural gas industry.

The SENDOUT model as used by Union Gas calculates the incremental cost of serving natural gas load, including, commodity costs, variable storage costs, including injection and withdrawal costs, and storage fuel costs, and variable transmission pipeline costs, including fuel costs.

In the simplest of terms, Union uses the SENDOUT model to determine total gas supply costs required to meet the Union Gas forecast of natural gas demand under two different demand scenarios. The two demand scenarios include:

- 1) The Union Gas Base Case forecast of natural gas demand, which considers the impacts of a portfolio of DSM programs.
- 2) A forecast of natural gas demand excluding the impacts of a portfolio of DSM programs.

Union then uses the difference in supply costs between the two scenarios to estimate avoided gas supply costs.

Union runs different "No DSM" scenarios that change the portfolio of DSM programs removed from the demand forecast in order to estimate avoided gas costs for DSM programs targeting different types of load.

The difference between the total supply costs with and without the DSM program impacts are used to calculate the total avoided cost associated with the change in demand caused by the specific set of DSM programs being evaluated. For example, removing the impacts of a specific set of DSM programs may increase demand by 50,000  $10^3 \text{ M}^3$  and increase supply costs by \$10,000,000. In this case, the avoided cost would be \$0.20 per  $\text{M}^3$ .

### 3.3 Components of Avoided Cost Considered in the Union Gas SENDOUT Analysis

The key elements of avoided costs included in the SENDOUT analysis include:

- Natural Gas Commodity Prices
- Pipeline Capacity Requirements and Costs
- Seasonal Storage Requirements

Each of these components is described below:

#### 3.3.1 Natural gas commodity prices

Commodity costs represent the largest component of the avoided cost for most natural gas distribution companies, including Union Gas. Commodity costs differ based on the source of the natural gas purchases that would be avoided by the impacts of the DSM program. The commodity cost savings included in the Union Gas avoided costs are determined as part of the SENDOUT model analysis.

Union uses a forecast of monthly commodity prices for each potential supply source as an input to the SENDOUT model analysis. The SENDOUT model chooses the least cost mix of commodity purchases, consistent with pipeline capacity constraints when determining the optimal supply mix for each demand scenario. The reduction in demand associated with DSM programs leads to a reduction in purchases of the most expensive source of incremental supply. For the Union Northern Service territory, this is generally purchases at Empress. For the Southern service territory, this is generally citygate purchases at Dawn.

#### 3.3.2 Pipeline Capacity Requirements

The pipeline capacity held by Union Gas for each year of the DSM plan is determined by the underlying contracted upstream transportation portfolio in place at the time of the creation of the DSM avoided cost plan and is an input into the SENDOUT model analysis used to estimate overall avoided costs.

Changes in the pipeline capacity portfolio consider the contract expiration schedule on existing pipeline capacity contracts, costs of different supply options, and location of the DSM demand impacts. Generally, the reduction in demand associated with DSM program impacts in the Union North leads to a reduction in the amount of TransCanada Mainline capacity from Empress, while reduction in demand associated with DSM program impacts in the Union southern service territory does not lead to changes in the pipeline portfolio.

Union's analysis of pipeline portfolio requirements currently leads to the conclusion that the changes in demand in the Southern service territory associated with the DSM programs lead to a reduction in citygate purchases at Dawn, rather than a reduction in pipeline capacity under contract into the Union Gas System.

A full review of the Union Gas pipeline planning process was beyond the scope of this engagement. However, we note that there likely would be no significant differences in the

overall avoided cost estimate if the portfolio planning process determined that a change in pipeline portfolio might be appropriate due to the impacts of the DSM programs. A reduction in pipeline capacity into any supply market would lead to an increase in average commodity prices, offsetting much of the cost savings associated with holding less pipeline capacity.

### 3.3.3 Seasonal Storage Requirements

Union Gas has 100 PJs of storage capacity owned by Union Gas and located in the Dawn area reserved to serve in-franchise demand requirements. While baseload residential and commercial DSM programs and industrial DSM programs will not impact the amount of storage that needs to be held by Union to serve in-franchise load, the weather sensitive DSM programs targeted at the residential and commercial sectors can have a relatively significant impact on the required levels of storage capacity.

Based on current Union Gas load calculations, a DSM program targeting weather sensitive load will reduce the need for storage capacity by about 3 GJ's for every 10 GJ of demand reduction.

The current avoided cost calculations include an evaluation of the impact of the DSM programs on the amount of Union Gas storage capacity required to meet the needs of Union system customers. However, the value of the impact on storage requirements has not been added into the storage requirements.

At an estimated storage cost of \$0.19 per GJ (Union Gas Limited, 2013) each GJ reduction in demand attributed to a weather sensitive DSM program would save \$0.06 per GJ, or \$0.0016 per M3. This represents about 0.7% of the total estimated avoided cost for a weather sensitive DSM program.

## 3.4 Distribution System Costs

In most utilities, reductions in gas supply portfolio costs account for the significant majority of costs avoided by the utility DSM programs. However, utilities may also be able to avoid investments in new distribution facilities, and are likely to avoid some variable cost components including fuel and gas losses associated with gas distribution activities due to DSM programs.

### 3.4.1 Avoidable Facility Costs

Facility costs are the capital and financing costs planned for future transmission and distribution system expansion or reinforcement where demand is forecasted to grow over time beyond current system capacity thresholds. These facility projects are associated with a specific geographical part of the distribution system infrastructure, and, due to the transaction cost of individual projects, typically include expansion beyond short-term demand increase requirements to also account for longer-term system planning needs.

As a result, reductions in future facility costs can reasonably contribute to the overall Avoided Cost calculation when these facility expansion or reinforcement projects can be delayed, reduced in size (and therefore in overall capital cost), or eliminated entirely as a result of planned DSM activities taking place in those areas affected by the facility project. To the degree that they can be reasonably quantified, incremental operating and maintenance costs associated with the capital improvement projects can also be included in this component of the avoided costs.



The literature review suggested that several utilities included in the review do include a “deferred distribution capacity cost” in their avoided costs methodology, and that these costs are determined based on the very specific and unique capital project requirements of the individual utilities’ system and geographic load-growth forecasts.

At this time, Union Gas does not include the effects of deferred/reduced system capacity projects in the avoided costs calculation methodology.

A detailed investigation of future capital projects and their potential avoidance or delay as a result of DSM for the Union Gas system was beyond the scope of this study. Union has informed ICF that these avoided costs will be explored through its IRP study.

We verified the literature to determine if a range could be determined for contribution of the deferred capacity cost component to avoided cost based on the information available for other utilities. Such a range was not readily apparent from the literature review.

### 3.4.2 Variable Distribution System Costs

The current Union Gas avoided cost calculation methodology does not consider any variable costs within the distribution system. While we would expect the distribution system costs that vary with volume to be relatively minor, natural gas variable distribution system costs typically include distribution system fuel usage and gas losses, and other distribution system costs that are considered to vary with volume.

In its 2013 rate filing, Union reported an unaccounted for gas percentage of 0.153% of in-franchise system throughput (Union Gas Limited, 2013). While this represents a very small percentage of total costs, it is an avoidable cost that is easily accounted for in the Avoided Cost estimation process and ICF is recommending that it be included.

While there may be additional distribution system costs that would be avoided based on the decline in volumes associated with the DSM programs, most of the variable distribution costs are driven by the number of customers and miles of distribution system, rather than throughput, hence would not be included in the avoided costs. Estimating these avoided costs with any degree of precision would require a significant amount of effort and is beyond the scope of this engagement. In ICF’s view, a more detailed assessment of these costs is not necessary.

## 3.5 Analysis Time Frame and Discount Rate

Union Gas extends the estimates of avoided costs for 30 years in order to capture the long term impacts of the DSM programs. The first three years of the long term avoided cost estimate are estimated using the analysis described above. For the remaining 27 years, Union currently escalates the third year avoided cost estimates at the rate of inflation.

For each year throughout the 30 year impact time frame, Union provides a cumulative avoided cost estimate for the program. The cumulative avoided costs for each program load segment are estimated using a discount rate that is equal to the Board approved weighted average cost of capital, consistent with OEB guidance.

## 4) Review of DSM Program Impacts and Load Segments Considered

Union Gas estimates avoided costs for three different types of DSM programs, differentiating between customer type and targeted load segment. Avoided costs are also calculated separately for Union's Southern and Northern service territories, in the following three categories:

1. Programs impacting residential and commercial baseload demand, including programs targeting water heating and cooking applications.
2. Programs impacting residential and commercial weather sensitive demand, including programs targeting space heating demand.
3. Programs impacting industrial baseload demand.

To assess the relationship between DSM Program Impacts and Load Segments, ICF compared the net annual gas saving results from Union's 2013 DSM programs, as presented in Exhibit 10. This table first indicates the absolute savings and percentage of total annual DSM savings for each program type. Also shown is the portion of annual DSM savings that are categorized as weather sensitive (winter peak) and as baseload.

**Exhibit 10: Comparison of Union Gas 2013 Annual Savings (Union Gas Limited, 2014)**

Program	2013 Program Savings (m <sup>3</sup> )	Program's Portion of Total Savings	Peak Period Savings	
			Baseload	Weather Sensitive
Residential	3,162,690	2%	84%	16%
Low-Income	2,551,934	1%	5%	95%
Commercial	20,191,911	11%	27%	73%
Industrial	31,641,520	18%	99%	1%
Large Industrial	122,418,509	68%	100%	0%
<b>Total</b>	<b>179,966,564</b>	<b>100%</b>	<b>90%</b>	<b>10%</b>

Although results may vary from year to year, this table provides an understanding of the relative importance of different load segments. This information shows that industrial programs make up the majority of Union's DSM savings, at nearly 86% of overall savings. The above table also indicates that low-income programs typically have the highest proportion of weather sensitive savings (HVAC measures), followed by commercial programs and residential programs. This suggests that if weather sensitive avoided costs are significantly higher than baseload avoided costs, low-income, commercial, and residential programs will stand to benefit most from a cost-effectiveness point of view.

The key takeaway from Exhibit 10 is that Union's DSM savings are mainly from industrial projects, which are considered baseload savings. This suggests that peak demand periods may be less of an issue for Union than many other gas distributors, whose portfolios may supply a larger portion of residential and commercial customers.



In addition to a lower proportion of weather sensitive savings (less savings during peak periods), the difference between baseload and weather sensitive avoided costs seem relatively low for Union Gas (peaks have less severe impacts). To illustrate this, a historical sample of Union's avoided costs is presented in Exhibit 11. This table has been modified to show the difference between avoided costs in the baseload and weather sensitive categories.

**Exhibit 11: Excerpt of Union Gas 2013 Avoided Costs**

Gas Avoided Costs					Difference Between Weather Periods	
	Residential and Commercial					
	Baseload (\$/m <sup>3</sup> )		Weather Sensitive (\$/m3)		(%)	
	Rate	NPV	Rate	NPV	Rate	NPV
1	0.2050	0.2050	0.2029	0.2029	-1.0%	-1.0%
2	0.2103	0.3999	0.2139	0.4011	1.7%	0.3%
3	0.2149	0.5845	0.2187	0.5890	1.8%	0.8%
4	0.2197	0.7594	0.2235	0.7669	1.7%	1.0%
5	0.2246	0.9251	0.2285	0.9355	1.7%	1.1%
6	0.2296	1.0821	0.2336	1.0952	1.7%	1.2%
7	0.2347	1.2308	0.2388	1.2465	1.7%	1.3%
8	0.2399	1.3717	0.2441	1.3898	1.7%	1.3%
9	0.2452	1.5051	0.2495	1.5256	1.7%	1.4%
10	0.2507	1.6316	0.2550	1.6542	1.7%	1.4%
11	0.2562	1.7514	0.2607	1.7761	1.7%	1.4%
12	0.2619	1.8648	0.2665	1.8916	1.7%	1.4%
13	0.2677	1.9723	0.2724	2.0009	1.7%	1.4%
14	0.2737	2.0742	0.2784	2.1045	1.7%	1.5%
15	0.2797	2.1707	0.2846	2.2027	1.7%	1.5%

While Union's avoided cost tables normally include 30 lines, this table is enough to capture the key trend: a difference of only 1.7% between baseload and weather sensitive avoided costs for residential and commercial gas supply.<sup>3</sup> The key reasons for this are considered to be Union's extensive in-franchise storage capacity, as well their existing pipeline capacity, which is able to meet all peak season requirements.

By contrast the 2013 avoided costs presented for Vermont in Exhibit 12, show a difference of 13.7% between avoided costs for heating and non-heating loads.<sup>4</sup> While conditions in Vermont are likely quite different than those for Union, this difference reflects Union's ratio being on the low end of the spectrum.

**Exhibit 12: Avoided Cost of Natural Gas Delivered to Retail Customers by End Use for Vermont (VT) Assuming No Avoidable Retail Margin (2013\$/MMBtu) (Synapse Energy Economics Inc., 2013)**

<sup>3</sup> By the 30<sup>th</sup> year the differences have only changed slightly, at 1.7% and 1.6%.

<sup>4</sup> This study considers also considers water heating to be seasonal to a large degree, so this avoided cost is not used for our comparison.

Year	RESIDENTIAL				COMMERCIAL & INDUSTRIAL			ALL RETAIL END USES
	Non Heating	Hot Water	Heating	All	Non Heating	Heating	All	
2013	4.97	5.48	5.65	5.51	5.16	5.49	5.35	5.44
2014	5.06	5.57	5.73	5.60	5.25	5.57	5.43	5.52
2015	5.13	5.72	5.92	5.76	5.35	5.73	5.56	5.67
2016	5.19	5.79	5.99	5.83	5.41	5.80	5.63	5.74
2017	5.49	6.09	6.29	6.13	5.71	6.10	5.93	6.04
2018	5.23	5.77	5.95	5.81	5.43	5.78	5.63	5.73
2019	6.03	6.65	6.85	6.69	6.26	6.65	6.48	6.59
2020	6.31	6.91	7.10	6.94	6.53	6.91	6.74	6.85
2021	6.49	7.11	7.32	7.15	6.72	7.12	6.95	7.06
2022	6.75	7.36	7.56	7.40	6.98	7.36	7.19	7.30
2023	6.92	7.52	7.71	7.55	7.14	7.52	7.35	7.46
2024	7.06	7.68	7.88	7.72	7.29	7.68	7.51	7.62
2025	7.24	7.86	8.05	7.89	7.47	7.86	7.69	7.80
2026	7.41	8.02	8.22	8.06	7.64	8.03	7.86	7.97
2027	7.56	8.17	8.37	8.21	7.79	8.17	8.00	8.11

## 4.1 Load Segments in Union Gas Calculation Methodology

Union's DSM avoided cost model relies on several custom inputs. One of these inputs outlines the difference in monthly gas supply requirements between the DSM and no-DSM scenarios. To develop the model inputs, Union's DSM strategy and evaluation department provides total DSM volumes and monthly DSM volumes (Union Gas Limited, 2014). These volumes are provided for six different categories, which are compared in Exhibit 13.

Exhibit 13: Breakdown of Annual DSM Savings by Month and Program Type (Union Gas Limited, 2014)

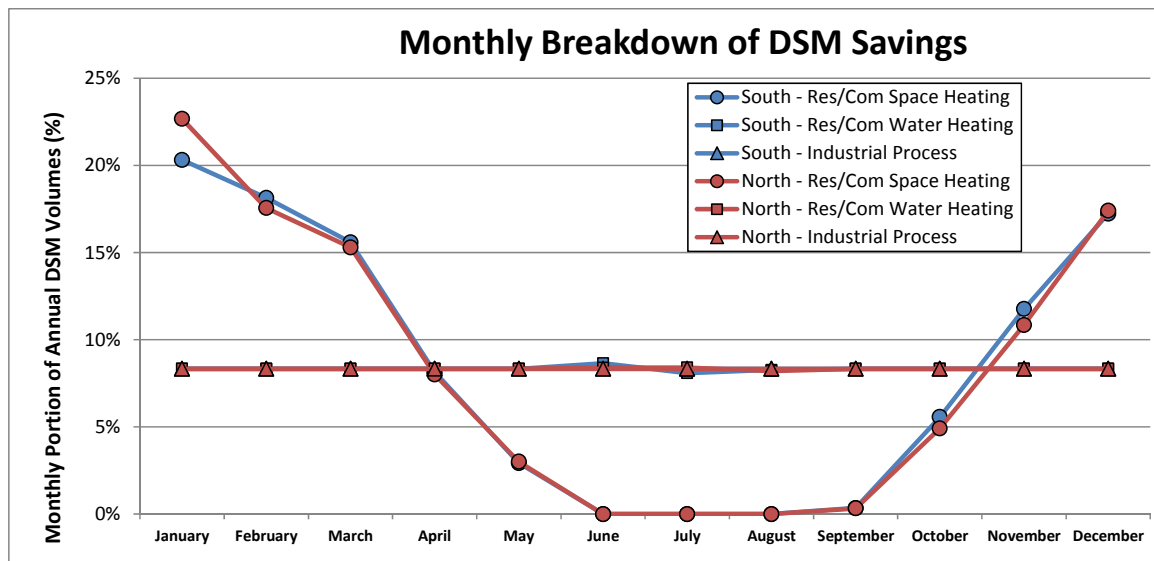


Exhibit 13 highlights that space heating savings fluctuate significantly over the course of the year, while water heating and industrial savings do not fluctuate significantly throughout the year.

The load decrement used to generate the non-DSM scenario is based on anticipated monthly DSM volumes adjusted to account for the percentage of industrial demand by month and the percentage of system demand by month. This is used to estimate storage requirements and peak days, which in turn will be input into the avoided cost model. Given the availability of Union

Gas storage, the differences in avoided costs that would result from changes in load decrements would have only minor impacts on the resulting avoided costs, and no additional assessment of the load decrements was considered necessary or useful.

## 4.2 Categorization of Union Gas Avoided Costs

The three categories outlined at the beginning of this section are considered to be sufficient for Union's current purposes.

ICF does not see the value in creating new categories of avoided costs simply for the sake of matching other utilities, for example by separating residential and commercial savings. In other words, Union's calculation methodology assumes that one m<sup>3</sup> of natural gas heating reduction for residential customers has the same cost impact as one for commercial customers. All DSM measures in Union's portfolio are labeled as either baseload, weather sensitive, or industrial baseload, so that they correspond with one of the three categories from this analysis.

## 5) Recommendations for Union Gas Avoided Cost Methodology

Estimating avoided costs requires a judgment call balancing the complexity of the analysis and the precision of the results. At one end of the spectrum, some utilities simply use the natural gas commodity price forecast as a proxy for avoided costs, potentially including a small adder to account for other avoidable costs. At the other end of the spectrum, utilities have conducted detailed line by line audits of their cost of service to allocate costs between avoidable and non-avoidable costs.

In ICF's experience, the more detailed approaches to avoided cost estimation do not generally result in a significant improvement in the avoided cost estimation, and any changes in reported avoided costs remain within the margin of forecasting error for DSM program impacts and for the critical components of avoided cost including commodity costs. More detailed approaches are appropriate in capacity constrained markets where avoided gas cost savings might include significant reductions in facilities investments.

Based on our review of the Union Gas avoided cost calculation, we conclude that the level of complexity undertaken by Union Gas in their avoided cost methodology is appropriate for its market. Hence, ICF recommends a continuation of the basic approach to estimating avoided costs. The combined SENDOUT/supply planning approach currently used by Union Gas to estimate most of the components of avoided cost represents a reasonable balance between complexity and accuracy.

However, we make two major recommendations with respect to the implementation of avoided costs.

- 1) The most significant recommendation is with respect to commodity price escalation rates beyond the initial DSM plan period, which should be revised to reflect a more representative long term natural gas commodity price forecast.
- 2) In addition, the current methodology ignores certain types of costs that we believe would be avoided and should be included in the avoided cost estimates. These include storage capacity costs, avoidable facility investments, including investments in the Dawn-Parkway system used for in-franchise customer service, and reduction in fuel use and gas losses associated with the reduction in demand ascribed to the DSM programs. When considered individually, the avoidable costs per M3 from each of these components may be considered de minimus. However, in aggregate, these components add up to a sufficient cost to be worth including in the avoided cost analysis.

Each of these areas is described in more detail below.

### 5.1 Long Term Commodity Price Forecast

After the first three years of the analysis, the current avoided cost methodology inflates natural gas commodity prices at the rate of inflation, rather than based on realistic expectations concerning future natural gas prices. As a result, Union is using a forecast of natural gas commodity prices that is flat in real terms for 27 of the 30 years of the avoided cost estimates. While using a forecast of gas commodity prices increases uncertainty into the analysis, the

current market consensus is that commodity prices will rise at a rate somewhat faster than inflation for the foreseeable future. Hence the current constant price approach to estimating commodity prices tends to be lower than conventional market wisdom would suggest.

ICF recommends the incorporation of a long term market forecast for natural gas commodity prices into the escalation rate used to extend the avoided cost estimates for the final 27 years of program impacts. The impact of escalating commodity prices will depend on the life of the program impacts, and on the specific long term price forecast used. However, using an escalation factor based on ICF's base case forecast of Dawn prices for the Southern section of the Union Gas service territory, and AECO prices for the Northern section of the Union Gas service territory, instead of the constant price escalation used in the current methodology would increase the magnitude of avoided costs associated with a DSM program .

## 5.2 Facility, Storage, and In-Franchise Fuel Loss Costs

The current Union Gas avoided cost methodology does not explicitly include estimates for avoidable facility, storage costs, and in-franchise fuel losses. While the costs of these elements individually are minor, in aggregate they are sufficient to warrant inclusion in the avoided cost estimates.

Each of these cost elements are described below:

- 1) **Avoided Facility Costs:** The current avoided cost estimates do not address potential avoided facility costs within the Union Gas service territory. A comprehensive evaluation of avoided facilities costs is beyond the scope of this engagement. However, ICF would recommend consideration of including an estimate of facility cost savings to be determined by Union Gas after further review. Union will be examining this as part of the IRP study.
- 2) **Avoided Storage Costs:** The current avoided cost calculations include an evaluation of the impact of the DSM programs on the amount of Union Gas storage capacity required to meet the needs of Union system customers. The value of the impact on storage requirements has not been added into the storage requirements. Avoided storage costs are applicable only to DSM programs impacting weather sensitive loads. Baseload impacts will have no noticeable impact on storage capacity requirements.

Based on current Union Gas load calculations, a DSM program targeting weather sensitive load will reduce the need for storage capacity by about 3 GJ's for every 10 GJ of demand reduction. At a storage cost of \$0.19 per GJ, each GJ reduction in demand attributed to a weather sensitive DSM program would save \$0.06 per GJ, or \$0.0016 per M3.<sup>5</sup>

- 3) **Fuel Use and Losses:** The current Union Gas avoided cost methodology does not account for fuel use and losses inside of the Union Gas system. Based on a review of Union Gas cost of service (Union Gas Limited, 2013), these losses typically account for about 0.153 percent of the total natural gas throughput on the system, or less than \$0.01

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<sup>5</sup> Based on Union Gas storage impact assessment provided to ICF as part of our review of the existing avoided cost calculation.

per GJ. While the impact on avoided costs of this component is negligible, the costs are conceptually relevant, easily estimated, and should be included in the avoided cost calculations.

ICF recommends that the DSM program impact estimates used in the SENDOUT model be increased by the estimate of the in-system fuel use and loss when determining the change in supply costs used to determine avoided costs.

### 5.3 Other Potential Changes to Avoided Cost Calculations

In our review of the avoided cost methodologies in other jurisdictions, ICF identified several categories where other utilities considered in their estimates of avoided costs, but are beyond the scope of the existing OEB mandate on avoided costs. These factors are included in other utilities' avoided costs for a variety of reasons, not all of which apply to Union Gas. ICF is not recommending the inclusion of these factors in the Union Gas avoided cost.

#### 5.3.1 Commodity Price Reduction (DRIPE)

In New England, natural gas utility avoided costs often include a significant cost component associated with a decrease in the regional price of natural gas resulting from the decline in demand attributed to the DSM programs. This component of avoided cost is particularly relevant in markets that are capacity constrained and subject to large increases in gas prices during high demand periods. In these regions, the reduction in demand associated with DSM programs can be a significant percentage of the regional market, and can lead to avoidance or delay of major new infrastructure projects, leading to significant savings. In New England, estimates of 2014 natural gas DRIPE benefits for avoided costs range from \$0.039/MMBtu in Connecticut to \$0.003/MMBtu in Vermont (Synapse Energy Economics Inc., 2013).

However, the magnitude of the commodity price reduction in New England is due to the relatively small size of the market and the degree of the infrastructure restraints into the market. Due to the general integration of the Dawn Market with the broader North American markets, the reduction in demand associated with DSM programs in the Union Gas service territory is not expected to have a significant impact on regional natural gas prices.

#### 5.3.2 Non-Energy Benefits

Conservation measures can have additional benefits beyond energy savings, potentially including improved comfort, health, convenience, aesthetics (National Action Plan for Energy Efficiency, 2008), and carbon emission reductions. The appropriateness of inclusion of non-energy benefits in the avoided costs typically would be based on policy decisions at the provincial level.

## 6) Impact of ICF Recommendations on Union Gas Avoided Cost Estimates

Based on our review of the Union Gas avoided cost methodology, ICF is not recommending any major changes to the current Union Gas approach. The SENDOUT based modeling approach provides an appropriate analytical base for the process, without overly complicating the analysis. The degree of program and load disaggregation is reasonable given the Union Gas system and the targeting of the DSM programs.

The time frame of the analysis is appropriate given OEB guidance and the structure of the Union Gas DSM planning process. Detailed estimate of avoided cost for each year of the DSM plan, with annual values projected out 30 years to account for long term DSM program savings impacts represents a reasonable balance between complexity and precision.

However, as noted in our recommendations, ICF suggests several refinements to the calculation of avoided costs. These include:

- Incorporating a long term commodity price forecast into the avoided cost estimates beyond the final year of the DSM plan.
- Accounting for avoidable storage costs.
- Accounting for avoidable fuel losses.
- Accounting for avoided facility infrastructure costs.

Of these four adjustments, the most important in terms of the impact on the avoided cost estimates is the incorporation of a long term commodity price forecast.

For illustrative purposes, ICF has calculated the impact of these factors on the Union Gas Avoided Costs, with the exception of avoided facility infrastructure costs<sup>6</sup>. We started with the Union Avoided Costs for weather sensitive load based on 2013 Union Gas program results. To determine the impact of using a long term gas price forecast on Union avoided costs, we used the ICF Base Case North American natural gas price forecast from the October 2014 edition of the ICF Strategic. We weighted the forecast to account for 80 percent of commodity purchases at the Dawn Citygate, with the remaining 20 percent based on an AECO price to reflect the supply sources for the Southern and Northern sections of the Union Gas system.

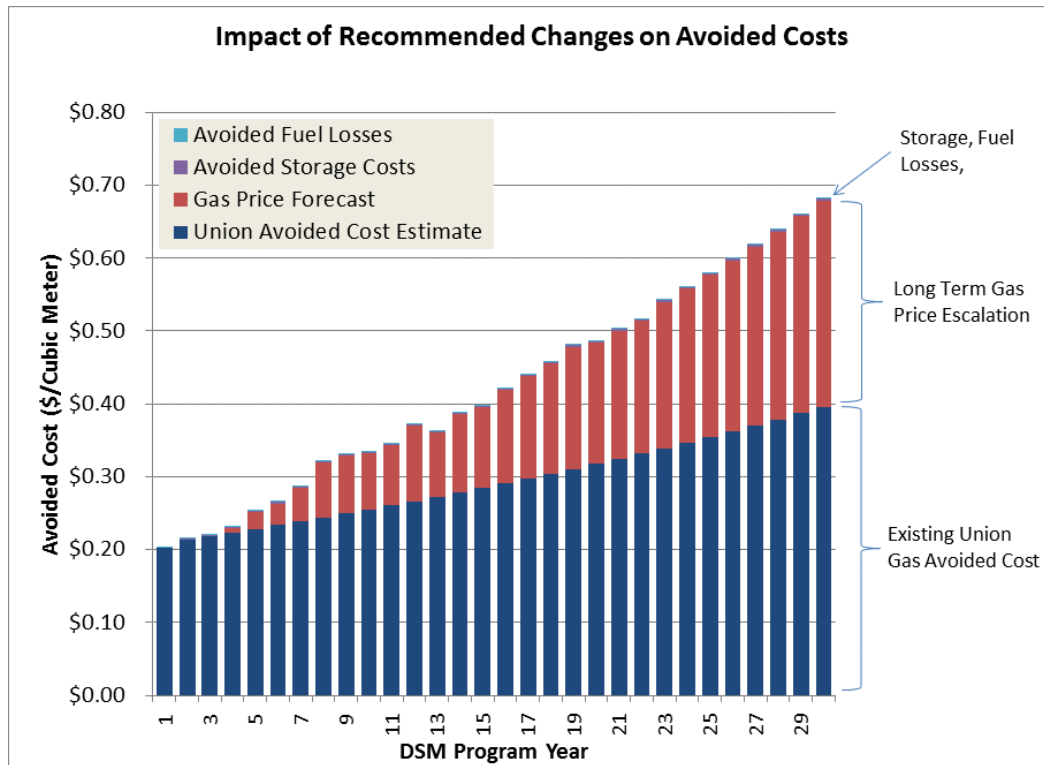
Incorporation of the ICF forecast increases the 30 year discounted avoided cost estimate from \$3.18 per cubic meter to \$4.03 per cubic meter. The remaining two adjustments (avoidable storage costs and avoidable fuel losses) have only a modest impact on the 30 year discounted avoided cost estimate. Combined, these two components of avoided cost increase the 30-year discounted avoided cost from \$4.03 per cubic meter to \$4.05 per cubic meter.

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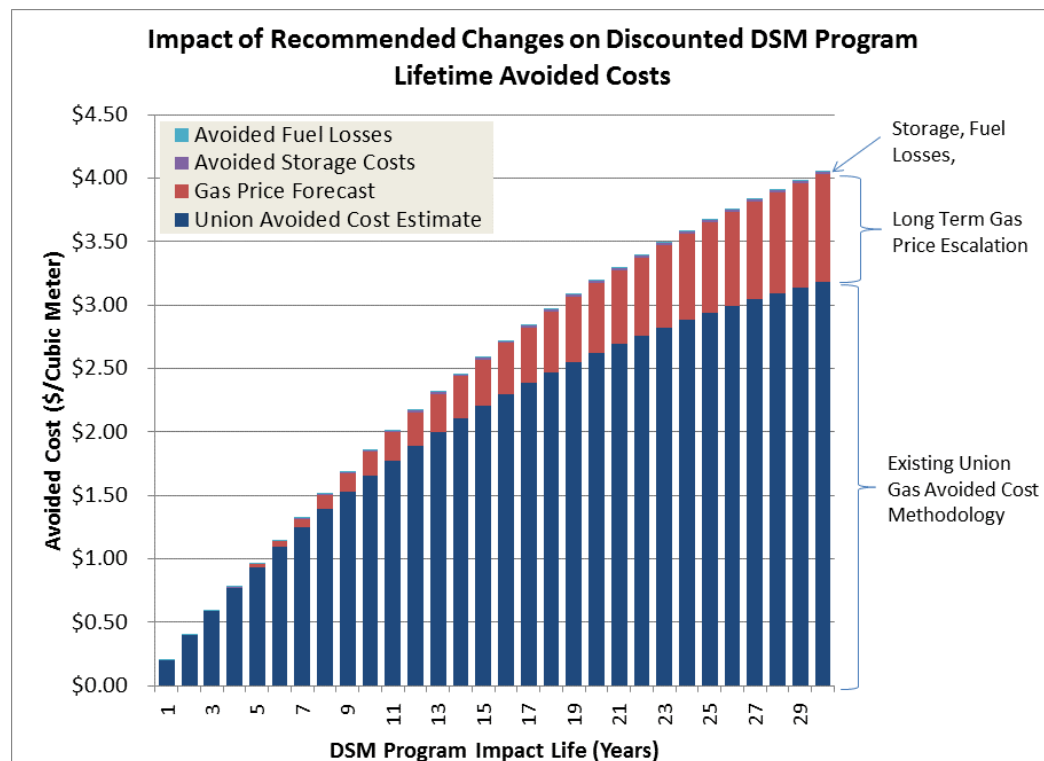
<sup>6</sup> Avoided facility infrastructure costs were not included because a proxy suitable for estimating these avoided costs for Union was not found. Union will establish these costs as part of the IRP process.



**Exhibit 14: Impact of Recommended Changes on Annual Avoided Costs**



**Exhibit 15: Impact of Recommended Changes on Discounted Lifetime Avoided Costs**





## References

- ACEEE. (2014). *State Energy Efficiency Policy Database*. Retrieved September 2014, from Massachusetts Utilities Summary: <http://database.aceee.org/state/massachusetts>
- ACEEE. (2014). *State Energy Efficiency Policy Database*. Retrieved September 2014, from Connecticut Utilities Summary: <http://database.aceee.org/state/connecticut>
- ACEEE. (2014). *State Energy Efficiency Policy Database*. Retrieved September 2014, from Washington Utilities Summary: <http://database.aceee.org/state/washington>
- ACEEE. (2014). *State Energy Efficiency Policy Database*. Retrieved September 2014, from Colorado Utilities Summary: <http://database.aceee.org/state/colorado>
- ACEEE. (2014). *State Energy Efficiency Policy Database*. Retrieved October 2014, from Oregon Utilities Summary: <http://database.aceee.org/state/oregon>
- Concentric Energy Advisors. (2010). *Review of Demand Side Management (DSM) Framework for Natural Gas Distributors*. Marlborough: Prepared for the Ontario Energy Board.
- Connecticut Natural Gas Corporation. (2012). *2013 - 2015 Electric and Natural Gas Conservation and Load Management Plan*.
- Home Performance Coalition. (2014). *The Resource Value Framework: Reforming Energy Efficiency Cost-Effectiveness Screening*.
- ICF Consulting. (2005). *Avoided Energy Supply Costs in New England*. Prepared for: Avoided-Energy-Supply-Component (AESC) Study Group.
- Mass Save. (2012). *2013-2015 Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan*.
- National Action Plan for Energy Efficiency. (2008). *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*.
- National Grid. (2012). *Rhode Island Energy Efficiency Program Plan for 2013*. Settlement of the Parties.
- NW Natural. (2013). *2013 Integrated Resource Plan*. (Docket No. UG-120417).
- NW Natural. (2014). *2014 Integrated Resource Plan*. (Dockets No. LC-60 and UG-131473).
- Ontario Energy Board. (2011). *Demand Side Management Guidelines for Natural Gas Utilities*. EB-2008-0346.
- Oregon Department of Energy. (2014). *Energy Suppliers in Oregon*. Retrieved October 2014, from <http://www.oregon.gov/ENERGY/Pages/Power.aspx>
- Puget Sound Energy. (2012). *Avoided Cost Calculations of Natural Gas Energy Efficiency Programs*.

Synapse Energy Economics Inc. (2013). *Avoided Energy Supply Costs in New England: 2013 Report*. Cambridge.

Synapse Energy Economics Inc. (2013b). *Energy Efficiency Cost-Effectiveness Screening in the Northeast and Mid-Atlantic States*. Prepared for the Regional EM&V Forum (Northeast Energy Efficiency Partnerships).

Tetra Tech. (2011). *Massachusetts Special and Cross-Sector Studies Area, Residential and Low-Income Non-Energy Impacts (NEI) Evaluation*. Prepared by: NMR Group Inc. Madison: Prepared for: Massachusetts Program Administrators.

Union Gas Limited. (2011). *Proposed 2012-2014 DSM Plan*. (Document: EB-2011-0327).

Union Gas Limited. (2013). *Rebasing Application Rate Order - Appendix B. Storage Charge from Rate M1 Rate Schedule*: EB-2011-0210.

Union Gas Limited. (2013). *Rebasing Application Rate Order - Appendix B. Rate M12 Schedule C: M12-X Easterly Fuel Ratio*: EB-2011-0210.

Union Gas Limited. (2013, December 31). *Union Gas at a Glance*. Retrieved October 2014, from <https://www.uniongas.com/about-us/at-a-glance>

Union Gas Limited. (2014, October 29). 2013 DSM Program Results, taken from Union Gas email (personal communication).

Union Gas Limited. (2014). *DSM Volume Forecast 2014-2017*. (Excel File).

Xcel Energy. (2013). *2014 Demand-Side Management Plan*. Public Service Company of Colorado (Docket No. 13A-0773EG).

## **APPENDIX D: PROPOSED EVALUATION AND AUDIT PROCESS**

### **Table of Contents**

1. Comparison of TEC (2012-2014) to proposed EAF (2015-2020)
2. Comparison of Audit Committee (2012-2014) to proposal for 2015-2020
3. Proposed Draft Stakeholder Terms of Reference

**1. Comparison of TEC (2012-2014) to proposed EAF (2015-2020)**

<b>Name</b>	<b>Technical Evaluation Committee (TEC)</b>	<b>Evaluation Advisory Forum (EAF)</b>
<b>Timeframe</b>	2012 – 2014	2015 - 2020
<b>Structure</b>	<ul style="list-style-type: none"> <li>Multi-Stakeholder committee consisting of: <ul style="list-style-type: none"> <li>Union</li> <li>Enbridge</li> <li>3 Intervenors</li> <li>2 Independent members</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Multi-Stakeholder forum consisting of: <ul style="list-style-type: none"> <li>Board representative</li> <li>Union</li> <li>Enbridge</li> <li>2 Intervenors</li> <li>3 Independent members</li> </ul> </li> </ul>
<b>Meeting Chair</b>	<ul style="list-style-type: none"> <li>Utilities (rotate monthly)</li> </ul>	<ul style="list-style-type: none"> <li>Board representative</li> </ul>
<b>Term of Independent / Intervenor Reps</b>	<ul style="list-style-type: none"> <li>One year with an opportunity for reappointment. The goal is to achieve continuity in the longer term.</li> </ul>	<ul style="list-style-type: none"> <li>One year with an opportunity for reappointment. The goal is to achieve continuity in the longer term.</li> </ul>
<b>Meeting Frequency</b>	<ul style="list-style-type: none"> <li>Monthly</li> </ul>	<ul style="list-style-type: none"> <li>Monthly</li> </ul>
<b>Consensus</b>	<ul style="list-style-type: none"> <li>Consensus is reached when all parties can sign on to a recommendation or position as in a settlement agreement to a Board proceeding.</li> <li>Where consensus is not reached, parties may file their separate positions with the Board.</li> </ul>	<ul style="list-style-type: none"> <li>Consensus is reached when all parties can sign on to a recommendation or position as in a settlement agreement to a Board proceeding.</li> <li>Where consensus is not reached within 2 EAF Meetings, the Board Representative will determine and put into action the process for obtaining a Board decision and resolution.</li> </ul> <p><u>Proposed Non-Consensus EAF Resolution Process:</u></p> <ul style="list-style-type: none"> <li>Board representative coordinates the process (outlines administrative requirements and timelines).</li> <li>All EAF representatives can write submissions to the Board as part of the process coordinated by the Board Representative.</li> <li>The Intervenor representatives' submission is on behalf of the DSM Consultative.</li> <li>Board issues final decision to the EAF.</li> </ul>
<b>Accountabilities</b>	<ul style="list-style-type: none"> <li>Make recommendations to the Board on the annual Technical Reference Manual ("TRM") Update.</li> <li>Produce and maintain a prioritized annual work list (by consensus).</li> <li>Establish evaluation priorities and specify future evaluation studies.</li> <li>Review and reach consensus on the design and implementation of evaluation studies.</li> </ul>	<ul style="list-style-type: none"> <li>Make recommendations to the Board on the annual Technical Reference Manual ("TRM") Update.</li> <li>Produce and maintain a prioritized annual Impact Evaluation work list (by consensus).</li> <li>Establish Impact Evaluation priorities and specify future Impact Evaluation.</li> <li>Review and reach consensus on the design and implementation of Impact Evaluation studies.</li> </ul>
<b>Input into Impact Evaluation Scope/ Methodology</b>	<ul style="list-style-type: none"> <li>All committee members will have input into the scope and design of Impact Evaluation studies. In the case of non-consensus, the resolution process is not clear.</li> </ul>	<ul style="list-style-type: none"> <li>All forum members will have input into the scope and design of Impact Evaluation studies. In the case of non-consensus, the proposed Non-Consensus EAF Resolution Process will be followed.</li> </ul>
<b>Communication with DSM Consultative</b>	<ul style="list-style-type: none"> <li>Report back to the Intervenor members of the larger DSM Consultative in such manner as the Intervenors determine.</li> </ul>	<ul style="list-style-type: none"> <li>Intervenor members are accountable for representing the DSM Consultative as a whole, and ensuring the perspective of all Consultative members is brought to the attention of the EAF as required throughout the evaluation process.</li> <li>Report back to the Intervenor members of the DSM Consultative in such manner as the Intervenors determine effective and appropriate.</li> </ul>

**2. Comparison of Audit Committee (2012-2014) to proposal for 2015-2020**

Name	Audit Committee (AC)	
Timeframe	2012 – 2014	2015 - 2020
Structure	Multi-Stakeholder committee consisting of: <ul style="list-style-type: none"> <li>• Auditor</li> <li>• Union</li> <li>• 3 Intervenors</li> </ul>	Multi-Stakeholder committee consisting of: <ul style="list-style-type: none"> <li>• Board representative</li> <li>• Auditor</li> <li>• Union</li> <li>• 3 Intervenors</li> </ul>
Meeting Chair	Union Gas	Board Representative
Term of Intervenor Members	<ul style="list-style-type: none"> <li>• Intervenor members appointed for each year's audit process and eligible for reappointment for successive audits.</li> <li>• In the event that a member must resign, the same process will be used to nominate and appoint a replacement.</li> </ul>	<ul style="list-style-type: none"> <li>• Intervenor members appointed for each year's audit process and eligible for reappointment for successive audits.</li> <li>• In the event that a member must resign, the same process will be used to nominate and appoint a replacement.</li> </ul>
Meeting Frequency	Approximately 10-12 meetings	Approximately 10-12 meetings
Consensus	<ul style="list-style-type: none"> <li>• The AC will endeavour to reach consensus on recommendations concerning the Union's claims regarding DSM annual results. Where consensus is not reached, the Committee will outline areas of disagreement in the AC's Report to the Board.</li> </ul>	<ul style="list-style-type: none"> <li>• The AC will endeavour to reach consensus on recommendations concerning the Union's claims regarding DSM annual results. Where consensus is not reached, the Committee will outline areas of disagreement in the AC Final Summary Report to the Board.</li> </ul>
Accountabilities	<ul style="list-style-type: none"> <li>• Selection of the independent auditor to audit the DSM Annual Report;</li> <li>• Review and input on Draft and Final CPSV Reports;</li> <li>• Review and input on Draft and Final Auditor Reports;</li> <li>• Filing of the AC Final Summary Report with the Board;</li> </ul>	<ul style="list-style-type: none"> <li>• Advise the Board on the selection of the independent auditor to audit the DSM Annual Report;</li> <li>• Advise the Auditor on the selection of the Custom Project Savings Verification ("CPSV") firms;</li> <li>• Review and input on Draft and Final CPSV Reports;</li> <li>• Review and input on Draft and Final Auditor Reports;</li> <li>• Filing of the AC Final Summary Report with the Board;</li> </ul>
Communication with DSM Consultative	<ul style="list-style-type: none"> <li>• Represent the larger DSM Consultative's comments arising out of the Draft Annual Report and bring forth any issues/concerns expressed.</li> </ul>	<ul style="list-style-type: none"> <li>• Intervenor members are accountable for representing the DSM Consultative as a whole on comments arising out of the Draft DSM Annual Report, and ensuring the perspective of DSM Consultative members is brought to the attention of the AC as required throughout the audit process.</li> <li>• Report back to the Intervenor members of the DSM Consultative in such manner the Intervenors determine effective and appropriate.</li> </ul>

3. **Proposed Draft Stakeholder Terms of Reference**

**PROPOSED DRAFT TERMS OF REFERENCE**  
**ON STAKEHOLDER ENGAGEMENT**  
**2015 - 2020**

## **1. Introduction & Background**

### **i. Purpose of the Stakeholder Engagement Process**

Stakeholder engagement in Natural Gas Demand Side Management (“DSM”) addresses the needs of the Intervenor groups that represent ratepayer and environmental groups, the utilities, their customers, and the Ontario Energy Board (the “Board”). For ratepayer and environmental groups, Stakeholder engagement provides insights into the activities of the natural gas utilities and an opportunity to provide input and participate in the direction of certain of those activities. This instills confidence in the audit and evaluation processes, including the accuracy of reporting and the calculation of the DSM Variance Account (“DSMVA”), Lost Revenue Adjustment Mechanism (“LRAM”), and utility incentives. It also provides confidence that program results are calculated using sound assumptions based on best available information. For the utilities and their customers, as well as Stakeholders, the collateral benefits of Stakeholder engagement include the development and enhancement of utility DSM programs. For the Board and utilities, Stakeholder engagement results in reduced regulatory burden and reassurance that the utilities continue to deliver successful and cost effective DSM programs.

### **ii. Definitions**

For the purposes of these Terms of Reference the following definitions apply:

Intervenors: Organizations and their representatives who were participants in the Board’s EB-2014-0134 consultation on the December 22, 2014 DSM Framework and Guidelines (“Framework” and “Guidelines”) or who have been granted Intervenor status by the Board in any subsequent DSM proceeding.

DSM Consultative: Consists of representatives of Union and the group of Intervenor and Stakeholders who have agreed to participate on the Union’s DSM Consultative.

Stakeholders: Groups or individuals who have an interest in Ontario DSM matters, including Intervenor groups. Other Stakeholders who are not Intervenor groups may be customers, trade allies, delivery agents, experts and others.

### **iii. Objective of Terms of Reference**

The purpose of the Stakeholder Terms of Reference is to clarify and define the roles and responsibilities of Intervenor groups, other Stakeholders, Union, and the Board with respect to participating in the DSM Stakeholder engagement processes proposed in this document. These include processes relating to program design, DSM measure input assumptions, Impact Evaluation studies, and the audit of DSM program annual results. These Terms of Reference and the consensus approach outlined herein are expected to lead to greater objectivity on DSM technical standards and improved efficiency and effectiveness of Stakeholder engagement through the period of the 2015 - 2020 Multi-Year Plans of Enbridge and Union.

**iv. Background to Terms of Reference**

As noted in Section 14.0 of the Framework, the Board's role will be increased in the 2015 – 2020 Plan period, primarily with respect to oversight related to the evaluation and audit process in addition to annual updates to the input assumptions list. The Board continues to see the direct involvement of all key Stakeholders, notably the gas utilities and Intervenors with the required expertise. Union has developed a Proposed Draft Terms of Reference for Stakeholder Engagement in order to illustrate the evolution of the evaluation and audit processes. Union is submitting the Proposed Draft Terms of Reference to the Board as part of its DSM Plan for 2015-2020.

In developing the Proposed Draft Terms of Reference for 2015 - 2020, Union used the existing Stakeholder Terms of Reference as the basis for development. The existing Terms of Reference was developed in consultation with Intervenors. Utilities held several negotiation sessions, first with an Intervenor nominated Working Group followed by two days of negotiation sessions with the broader DSM Consultative members.

In addition to two plenary DSM Consultative meetings each year, the Terms of Reference provide for collaborative involvement between utilities and Stakeholders in:

- Development and update of input assumptions;
- Impact Evaluation priorities;
- Impact Evaluation methodology/scope and execution on projects;
- The Audit of DSM annual results; and
- Development of new program ideas.

**2. Models for Intervenor and Stakeholder Engagement in Union's DSM Activities**

The model proposed through this Terms of Reference document involves:

- A minimum of two plenary DSM Consultative meetings each year;
- An Evaluation Advisory Forum ("EAF") chaired by a Board representative, and a Technical Reference Manual ("TRM") to document measure assumptions;
- An Audit Committee ("AC") specific to Union chaired by a Board representative;
- Separate consultation in relation to Low Income Programs with Intervenors and Stakeholders; and
- Provision for other consultation initiatives relating to program ideas for other program types.

The proposed model offers several benefits:

- The division of functions will streamline both the process to update input assumptions and the audit process.



- The primary responsibility for critical review of Impact Evaluation studies and input assumptions will rest with the EAF, thus streamlining the DSM audit process.
- The EAF will establish a common natural gas DSM evaluation forum that will facilitate collaboration on Impact Evaluation studies, and harmonization of DSM programs across Union and Enbridge.
- The development of a common TRM represents best practice in DSM administration.
- The audit process will provide sufficient opportunity for input, and the transparency required to instill confidence in the accuracy of audited results.

In addition, the proposed models align with the two Board processes of

- Disposition of DSM Deferral Accounts; and
- Annual filing of Updated Input Assumptions.

### **3. Principles for Intervenor and Stakeholder Engagement for Union**

The following principles will guide Intervenor and Stakeholder engagement activities.

#### Roles and Accountability

Union is responsible and accountable to the Board for all its DSM activities. The Board is responsible for approving DSM programs and related matters.

#### General

- Stakeholder engagement activities are undertaken to inform all parties on DSM program activities, to obtain each party's perspectives on Union's proposed program activities, and to establish alignment among parties on Union's annual results.
- Intervenors and Union, when involved in Stakeholder engagement processes should work in a constructive manner to improve the design, development and implementation of DSM programs in a timely fashion.
- Union, Intervenors, and the Board will ensure that representatives of the AC and EAF have timely and complete access to all information necessary to carry out their functions.
- All processes that involve Impact Evaluation studies, input assumptions, or audit of results shall be characterized by independence and transparency.

## Consensus

- Unless otherwise stated, achievement of consensus is an objective but not a requirement of the audit and evaluation processes outlined in this Terms of Reference.
- Consensus is reached when all parties (minus the Board representative as Chair) can sign on to a recommendation or position as in a settlement agreement to a Board proceeding.
  - Where consensus is not reached within two EAF Meetings, the Board Representative will determine and put into action the process for obtaining a Board decision and resolution.
  - Non-Consensus EAF Resolution Process:
    - Board Representative coordinates the process (outlines administrative requirements and timelines).
    - All EAF representatives can write submissions to the Board as part of the process coordinated by the Board Representative.
    - The Intervenor representatives' submission is on behalf of the DSM Consultative.
    - Board issues final decision to the EAF.

## Conduct of Representatives on AC and EAF

- At the beginning of the 2015 to 2020 plan period, the AC and EAF will separately establish a set of business conduct rules that will be used as guidance to ensure constructive operation and execution on deliverables. For example the business conduct rules could cover items such as meeting participation or providing substitute participants, providing documentation with appropriate lead times, and participation in a constructive manner to support positive outcomes. Annually, the AC and EAF will respectively assess the reasonableness of the business conduct rules and make adjustments where applicable.

## AC and EAF Meetings

- In order to meet Board deadlines or defined work schedules, where scheduling does not permit full attendance at AC or EAF meetings, the AC and EAF will convene meetings based on quorum, where quorum is defined for the AC as the Board representative, Union plus one Intervenor and for the EAF as the Board representative, two utilities, one Intervenor and two independent representatives. For the purposes of achieving a quorum, participation by conference call, video link, or other electronic format is acceptable.

1 Confidentiality

- 2
- 3 • Non-disclosure agreements must be signed by representatives when dealing with draft
  - 4 reports and study working documents and other documents as referenced by the AC and
  - 5 EAF (refer to Attachment A to the Stakeholder Terms of Reference below).
  - 6 • If any confidential information could potentially give the recipient an unfair business
  - 7 advantage in competing for work from the utilities, the utilities will “flag” such concerns
  - 8 in advance of providing the information and the potential recipient will have to choose to
  - 9 either: (1) not review the confidential information and remove himself / herself from the
  - 10 portion of the engagement process related to the confidential item; or (2) accept and
  - 11 review the confidential information but commit to not pursuing the work opportunity.

12 Conflict of Interest

- 13
- 14 • In the case of a conflict of interest arising, it is the participant’s responsibility to declare
  - 15 the conflict to the AC or EAF as early as possible.

16

17 **4. DSM Consultative Meetings**

18

19 Union will hold a minimum of two plenary meetings of its DSM Consultative in each calendar

20 year and all Intervenor participants in the Board’s consultation on the development of the

21 Framework and the most recent or current DSM proceeding will be invited to the DSM

22 Consultative meetings.

23

24 The subject of the meetings may include:

- 25
- 26 • Reviewing annual DSM results;
  - 27 • Selecting any subcommittee that may be part of the processes described in this
  - 28 Agreement (the EAF and the two ACs); and
  - 29 • Providing advice on the development and operation of the Union’s DSM Plan as well as
  - 30 on the design and development of new programs.

31

32 **5. Evaluation Advisory Forum Terms of Reference**

33

34 There will be one EAF for both natural gas utilities which will act as an independent body.

35

36

37 **i. Goal**

38

39 The goal of the EAF is to advise the Board and natural gas utilities in Ontario on DSM

40 evaluation standards and protocols that are best practice, consistent and reliable. The EAF will

1 serve as a key advisor and play a critical role in encouraging communication and Stakeholder  
2 engagement by creating a forum where representatives can discuss evaluation projects and  
3 deliver results.

4  
5 **ii. Scope of Work**

- 6  
7 • The EAF will make recommendations to the Board on the annual TRM Update.  
8 • The EAF has accountability to:  
9     ○ Produce and maintain a prioritized annual Impact Evaluation work list (by  
10     consensus)  
11     ○ Establish Impact Evaluation priorities and specify future Impact Evaluation  
12     studies to be undertaken – execution of all work defined by the EAF is subject to  
13     the utilities' resource constraints (such as funding, personnel resources, time  
14     limitations); and  
15     ○ Review and reach consensus on the design and implementation of Impact  
16     Evaluation studies to be carried out including determination of whether the work  
17     is done by utility staff or third party evaluation consultants.

18 **iii. Composition and Selection**

19  
20 The EAF shall consist of eight representatives:

- 21  
22 • Board representative as Chair, self selected by the Board.  
23 • Two Intervenor representatives selected by Intervenor in accordance with the following  
24 process:  
25     1. Members of the DSM Consultative nominate individuals to stand on the EAF;  
26     2. Each member of the DSM Consultative votes for the two members they would  
27     like on the EAF;  
28     3. The members with the highest number of votes are selected to the EAF;  
29     4. Intervenor selected may also sit on the AC for continuity;  
30 • Two utility representatives - one from Union and one from Enbridge, self selected by  
31 each utility. (Other representatives from the utilities may attend EAF meetings but are not  
32 voting representatives); and  
33 • Three independent representatives with evaluation and/or technical expertise, selected  
34 from the public, to add independence and objective perspective to the EAF. Selection is  
35 by consensus among utility and Intervenor representatives or no one is appointed  
36 and the forum does not become established until a consensus is achieved.

37 The structure of the EAF is to be similar to a corporate Board of Directors which has  
38 representation from shareholders, management, and independent members.  
39

1 The independent representatives are expected to provide professional expertise in relation to  
2 evaluation and to the development of input assumptions, encompassing experience in residential,  
3 low income, commercial and industrial applications such as energy efficiency in low rise  
4 buildings, commercial buildings, industrial processes, market transformation, and so on.

5  
6 **iv. Term**

7  
8 For the first year of the EAF, independent representatives and Intervenor representatives will be  
9 appointed for one year with an opportunity for reappointment. The goal is to achieve continuity  
10 in the longer term.

11  
12 **v. Process**

- 13
- 14 • It is anticipated that approximately twelve monthly meetings (half to a full day each) will  
15 be held annually.
  - 16 • Any member may call for a meeting on reasonable notice and bring items forward for  
17 discussion by the EAF. The Board representative shall be responsible for scheduling  
18 meetings.
  - 19 • Regarding confidentiality: EAF representatives will be expected to review Final  
20 Evaluation Reports and to review draft reports and other study work products as  
21 determined by the Forum's workplan. Regarding evaluation studies, Final Reports will  
22 not be considered confidential unless necessary to prevent disclosure of sensitive  
23 customer data (including data that could be potentially linked to individual customers  
24 even if the customers' names are redacted). Draft reports and study work products will  
25 initially be considered confidential unless otherwise determined by the Board in a  
26 proceeding and will be available on signing the Declaration and Undertaking attached as  
27 Attachment A.
  - 28 • The EAF will endeavour to reach consensus on its recommendations. Where consensus is  
29 not reached within two EAF Meetings, the Board representative will determine and put  
30 into action the process for obtaining a Board decision and resolution, as outlined in  
31 Section 3 above.
  - 32 • The Board representative determines who will Project Manage Impact Evaluation studies  
33 prioritized by the EAF.
- 34

35 **vi. Outputs / Deliverables**

36  
37 Technical Reference Manual

- 38
- 39 • The TRM will be common to both Union and Enbridge and will document efficiency  
40 measure savings assumptions (and/or formulae) and all other assumptions (other than

1 avoided costs) necessary for cost-effectiveness screening and program metrics. Input  
2 assumptions and formulae may be unique for each utility.

- 3 • The TRM may also include such other reference material as the EAF deems appropriate.
- 4 • The EAF will produce an annual Update to the TRM for the two utilities to file with the  
5 Board as per the Guidelines. This submission may be on a consensus or non-consensus  
6 basis.
- 7 • The EAF will also provide consensus recommendations to the Board throughout the year  
8 regarding TRM updates (e.g. new program input assumptions, free ridership rates).
- 9

#### 10 **vii. Timing and Interface with the Audit**

11  
12 In accordance with Section 8.0 of the Guidelines, the Board will coordinate the process to  
13 annually update the input assumptions during the 2015–2020 Plan timeframe. As Chair of the  
14 EAF, the Board will determine the appropriate process for the annual update recommendation to  
15 be filed with the Board.

16  
17 The filing of the annual TRM Update submission will occur as soon as practical after the  
18 completion of the annual audit process. The EAF will provide the latest Board approved TRM  
19 and any TRM recommendations from the EAF to the Auditor for the purpose of the audit. Unless  
20 the Auditor brings forward new information with evidence, the updated TRM as approved by the  
21 Board, along with any EAF recommendations will be considered best available information at  
22 the time of the audit.

#### 23 **viii. Fee Guidelines**

24  
25  
26 Intervenor and independent representatives serving on the EAF will invoice the utilities for  
27 meeting attendance and preparation up to the appropriate rate established by the OEB. The  
28 invoices will document activities and Intervenor and independent representative time, and the  
29 cost will be equally shared between the two utilities. It is expected that the level of commitment  
30 for participation in this process will be on the order of 150 hours for each Intervenor or  
31 independent representative. In the event additional hours are required, the EAF can re-visit the  
32 forum's budget requirements.

#### 33 **ix. Roles and Responsibilities**

##### 34 Ontario Energy Board

35  
36 In addition to participating in the forum, the Board will:

- 37 • Designate a representative to chair the EAF meetings;
- 38 • Oversee and coordinate the implementation of Impact Evaluation studies;
- 39
- 40

- Review recommendations relating to the annual filing of the Update to Input Assumptions; and
- Where consensus is not reached within two EAF Meetings, the Board representative will determine and put into action the process for obtaining a Board decision and resolution, as outlined in Section 3 above.

#### Intervenor Representatives

In addition to participating in the forum, the Intervenor representatives will:

- Be accountable for representing the DSM Consultative as a whole, and ensuring the perspective of DSM Consultative members is brought to the attention of the EAF as required throughout the evaluation process; and,
- Report back to the Intervenor members of the DSM Consultative in such manner as the Intervenor determine effective and appropriate.

#### Utilities

In addition to participating in the forum, the utilities will:

- Support the reasonable costs claims advanced by EAF representatives;
- Support all costs associated with the implementation of all Impact Evaluation studies;
- Bring draft Impact Evaluation methodologies/scopes to the forum for review and oversee the implementation of Impact Evaluation studies as defined by the Board representative Chair; and
- Submit to the Board the annual application for the TRM Update as soon as practical after the audit's completion. The TRM Update will identify all changes to existing assumptions, all new assumptions and make clear whether any of the changes and additions were not the product of forum consensus.

#### Independent Representatives – Evaluation & Technical

The independent representatives will:

- Provide professional evaluation and technical expertise in relation to Impact Evaluation studies, the development of input assumptions and other DSM related technical matters brought before the EAF;
- Review the methodology/scope and implementation of evaluation studies to be carried out by the EAF; and
- Be responsible for completing identified work as defined by the Board representative.

**6. Audit Committee Terms of Reference**

Union will have its own Audit Committee.

**i. Goal**

The goal of the AC is to ensure that there is, each year, an effective and thorough audit of the Union's DSM results.

**ii. Scope of Work**

- The AC will establish, as part of the 2015 audit, the standard scope of the annual audit for the term 2015-2020 ("goals" versus "tasks").
- The standard scope will be used for the 2015-2020 term as part of the RFP and the AC may alter the scope annually based on consensus. The AC will provide the auditor with input and guidance (such as scope of work, review work plan/draft report and provide advice and direction).
- The AC will provide a recommendation to the Board on the selection of the Auditor as outlined in the Auditor Selection Process (Section 6.v).
- The AC will provide a recommendation to the Auditor on the selection of the CPSV firms as outlined in the CPSV Firm Selection Process (Section 6.vi).
- The AC will make recommendations based on the Audit Report regarding Union's claims regarding DSM results and DSMVA, LRAM, DSM Incentive and any target adjustments through the AC Final Summary Report submitted to the Board.

**iii. Composition and Selection**

Union's AC shall consist of six members:

- Board representative, self selected by the Board, who will serve as Chair of the AC.
- Independent third party Auditor recommended by the AC and hired by the Board.
- Three Intervenor members selected by in accordance with the following process:
  1. Members of the DSM Consultative nominate individuals to stand on the AC;
  2. Each member of the DSM Consultative votes for the two members they would like on the AC;
  3. The members with the highest number of votes are selected to the AC;
  4. Intervenors selected may also sit on the EAF for continuity;
- One representative from Union, self selected by Union. Other representatives from the Union may attend AC meetings from time to time but are not voting AC members.



1 **iv. Term**

2  
3 Intervenor members will be appointed for each year's audit process, and are eligible for  
4 reappointment for successive audits. In the event that a member must resign, the same process  
5 will be used to nominate and appoint a replacement.  
6

7 **v. Auditor Selection Process:**

- 8  
9
  - 10 • Union will issue and maintain an ongoing RFQ to qualify audit firms to their pre-approval list.
  - 11 • Union and Intervenors will seek consensus to identify a pre-approved list (from the RFQ)  
12 of a minimum of six audit firms for a consensus shortlist of three firms recommended to  
13 the Board representative for final selection and contracting.
    - 14 ○ Where consensus on a firm for the pre-approved list is not achieved, the Board  
15 representative decides the firms on the pre-approved list, while ensuring that the  
16 minimum number of firms is still obtained.
    - 17 ○ By consensus of the AC, the minimum number of six audit firms for bidding on  
18 the annual audit can be reduced.
  - 19 • The Board will issue an RFP to hire an auditor, with the RFP being distributed to all of  
20 the firms on the pre-approved list. The RFP will make clear the criteria that will be used  
21 to select a winning bidder and that the selection involves a committee of Intervenors and  
22 Union. The standard set of selection criteria (categories, descriptions, and relative  
23 importance) for auditor selection will be established prior to the RFQ process for the  
24 audit.
  - 25 • Union and Intervenors will seek consensus on a shortlist of three firms recommended to  
26 the Board representative for final selection and contracting.

27  
28 **vi. Custom Project Savings Verification ("CPSV") Selection Process:**

- 29  
30
  - 31 • Union will issue and maintain an ongoing RFQ to qualify CPSV firms to their pre-approval list.
  - 32 • Union and Intervenors will seek consensus to identify a pre-approved list (from the RFQ)  
33 of a minimum of 3 CPSV firms recommended to the Board Representative Chair for final  
34 selection and contracting.
    - 35 ○ Where consensus on a firm for the pre-approved list is not achieved, the Board  
36 representative decides the CPSV firms on the pre-approved list, while ensuring  
37 that the minimum number of CPSV firms is still obtained.
    - 38 ○ By consensus of the AC, the minimum number of three CPSV firms for bidding  
39 on the Custom Projects Savings Verification can be reduced.
    - 40 ○ The Auditor will use the Terms of Reference for CPSV as established by the EAF  
41 to issue an RFP to hire the CPSV firms, with the RFP being distributed to all of  
42 the firms on the pre-approved list. The RFP will make clear the criteria that will

1 be used to select a winning bidder. The standard set of selection criteria  
2 (categories, descriptions, and relative importance) for CPSV firm selection will be  
3 established prior to the RFQ process for the 2015 audit.

4 **vii. Process:**

- 5
- 6 • The Board representative will act as Chair of the AC and coordinate and facilitate the
- 7 meetings.
- 8 • Union will administer the audit contract and hold the auditor accountable to the terms of
- 9 the contract.
- 10 • Union will administer the CPSV contract and hold the CPSV firm(s) accountable to the
- 11 terms of the contract.
- 12 • All communications are transparent to all AC members (exceptions will be identified by
- 13 the AC at the beginning of the annual audit).
- 14 • The Board representative, Auditor, Union, and Intervenors will work to ensure that the
- 15 original scope of the audit is maintained with no allowance for “scope creep”.
- 16 • The auditor will receive guidance and direction from the AC (e.g. on the scope of work,
- 17 draft work plans, and draft work products). However, the Auditor’s report and effort will
- 18 be independent of Board, Union or Intervenor control or influence. (The AC cannot, for
- 19 example, instruct the auditor on “how” to engage in their work, such as tools to use,
- 20 methodology, processes used in the audit, how the auditor conducts the work and forms
- 21 their opinion) and the Final Audit Report must be filed with the Board without
- 22 adjustment. For greater certainty, Union and the Intervenors may, at AC meetings,
- 23 provide comments to the Auditor on drafts of the report, which the Auditor is free to
- 24 accept or reject, but the Final Audit Report must represent the independent professional
- 25 opinion of the Auditor.
- 26 • Any member of the AC may call for a meeting on reasonable notice. It is the role of the
- 27 Board representative to provide administrative support in the scheduling of all meetings.
- 28 • Meetings will be held from September through June, including possible joint meetings of
- 29 Union’s and Enbridge’s ACs , when necessary. It is expected that 10 meetings will
- 30 normally be sufficient.
- 31 • The AC will endeavour to reach consensus on recommendations concerning the Union’s
- 32 claims regarding DSM annual results. Where consensus is not reached, the Committee
- 33 will outline areas of disagreement in the AC Final Summary Report to the Board.
- 34 • Consistent with the principle of transparency, all verification reports, evaluation reports,
- 35 summary spreadsheets, and other materials made available to the Auditor, will be
- 36 available on request, for review by all Committee members (with Union defined
- 37 redaction of information to maintain privacy considerations) and on signing the
- 38 Declaration and Undertaking attached as Attachment “A”.
- 39
- 40

**viii. Outputs / Deliverables**

Throughout the Audit Process, the AC will deliver:

- A recommended shortlist of three audit firms to the Board for final Auditor selection;
- A recommended shortlist of three CPSV firms to the Auditor for final CPSV firm selection;
- Comments on the Draft and Final CPSV Reports;
- Comments on the Draft and Final Audit Reports; and
- An AC Final Summary Report.

Union will file with the Board the:

- Final Auditor's Report, having been reviewed by the Audit Committee, by June 30 as required by Section 2.1.12 of the Board's Natural Gas Reporting and Record Keeping Requirements Rules for Gas Utilities.

Union will also file the following reports by July 31 with the Board:

- The AC Final Summary Report, and
- The updated Final Annual DSM Report.

**ix. Fee Guidelines**

Intervenor members will invoice Union for time spent on Committee matters including meeting attendance and preparation up to the appropriate rate established by the Board. The invoice will document activities. It is expected that the level of commitment for participation in this process will normally not exceed 60 hours per year for each Intervenor member. In the event additional hours are required, the Committee can revisit the Committee's budget requirements.

**x. Roles and Responsibilities**

The Ontario Energy Board

The role of the Board is to:

- Designate a representative to act as Chair of the AC;
- Determine final selection of the Auditor based on the AC's recommendation;
- Review recommendations relating to the AC Final Summary Report and Union's application for clearance of DSM Deferral accounts; and
- Where a consensus on the AC Final Summary Report is not achieved, the Board will resolve any disputes by way of Board Decision at its discretion.

1 Intervenors

2  
3 In addition to participation on the AC, the Intervenor members of the Committee will:

- 4  
5 • Be accountable for representing the DSM Consultative as a whole on comments arising  
6 out of the Draft DSM Annual Report, and ensure the perspective of DSM Consultative  
7 members is brought to the attention of the AC as required throughout the audit process;  
8 • Report back to the Intervenor members of the DSM Consultative in such manner as the  
9 Intervenors determine effective and appropriate;  
10 • Provide input on the Auditor and CPSV firm selection;  
11 • Review and submit to the Auditor comments on the Union's draft Annual Report; and  
12 • Work collaboratively with the AC to reach consensus on the AC's recommendations to  
13 the Board in the AC Final Summary Report.

14 Union

15  
16 In addition to participating on the Committee, Union will:

- 17  
18 • Provide the Draft Annual Report to the DSM Consultative and to Committee members;  
19 • Respond to issues that arise out of the audit process;  
20 • Provide input on the Auditor and CPSV firm selection;  
21 • Update the DSM Annual Report after the audit has been completed;  
22 • Support all costs associated with the Auditor and the Audit through the DSM evaluation  
23 budget;  
24 • Support the reasonable cost claims advanced by Committee members; and  
25 • File with the Board the Audit Report, the Final DSM Annual Report and the AC Final  
26 Summary Report, noting in the process if any elements of the Final DSM Annual Report  
27 and the AC Final Summary Report do not represent the consensus of the AC.

28 The Auditors

29  
30 The Auditors shall, at a minimum:

- 31  
32 • Determine final selection of the CPSV firms based on the AC's recommendation;  
33 • Provide an audit opinion on the DSMVA, LRAM and utility performance incentive  
34 amounts proposed by Union and any amendment thereto;  
35 • Confirm any target adjustments have been correctly calculated and applied;  
36 • Identify any input assumptions that either warrant further research or that should be  
37 updated with new best available information;  
38 • Review the reasonableness of any verification work that has been undertaken to inform  
39 Union's results; and  
40 • Recommend any forward-looking evaluation work to be considered.

1 **7. Program Consultation**

2  
3 Union will undertake consultation initiatives.

4  
5 **i. Objective**

6  
7 The objective of Stakeholder engagement in DSM programs is to enhance the development of  
8 effective and innovative DSM programs. Union will establish DSM programs through individual  
9 consultation processes engaging Intervenors and Stakeholders.

10  
11 **ii. Scope of Program Consultation**

12  
13 Union commits to holding at least two plenary consultations with Intervenors each year.  
14 In addition, Union commits to holding two full day meetings a year for consultation on Low  
15 Income programs (one in the first quarter and one in the fall). The meetings will be structured to  
16 allow for plenary discussion as well as breakout sessions to discuss matters specific to Union.  
17 The meetings will include Intervenor representatives as well as other Stakeholders. The overall  
18 focus of the meetings will be on program design and implementation rather than program status  
19 and regulatory matters. The objectives of the consultation sessions are:

- 20  
21
  - For Intervenors and other Stakeholders to provide their perspective on the delivery of
  - 22 current programs;
  - 23 • To learn from Intervenor groups and Stakeholders how they can support Union in
  - 24 achieving the targets for Low Income DSM Programs; and
  - 25 • To discuss ideas presented by Intervenors and Stakeholders for new / improved Low
  - 26 Income DSM Programs.

27 Union will consult with representatives of LIEN and VECC regarding the agendas and invitation  
28 lists for the Low Income sessions.

29  
30 Union may also, at its discretion, consult with Intervenors and Stakeholders on program design  
31 and implementation relating to other program types in their DSM portfolios.  
32

**Attachment "A"**

IN THE MATTER OF THE Ontario Energy Board Act 1998, 1998,  
s. 15 (Schedule B);

AND IN THE MATTER OF an Application or Applications by  
Union Gas Limited ("Union") for an Order or Orders granting  
approval of initiatives and amounts related to Union's Demand Side  
Management Activities ("DSM") and all related and associated DSM  
Consultative and Evaluation and Audit Committees

DECLARATION AND UNDERTAKING TO UNION

I, , am counsel of record or a consultant for . In the event  
that I serve on Union's DSM Consultative or Audit Committee, or on the Evaluation Advisory  
Forum (singularly or collectively the "Committee"), I agree to be bound by the Declaration and  
Undertaking.

DECLARATION

I declare that:

1. I have read the Rules of Practice and Procedure of the Ontario Energy Board (the "Board").
2. I am not a director or employee of a party to any Board proceeding for which I act or of any  
other person known by me to be a party in any Board proceeding.
3. I understand that this Declaration and Undertaking applies to all information that has not  
already been made public and in respect of which Union makes a written claim of  
confidentiality that I receive in a Committee process and any subsequent Board proceeding  
dealing with the subject matter of the Committee process ("Confidential Information"). It is  
the intention of the undersigned and Union that this Declaration and Undertaking apply to all  
of the undersigned's future participation or service on any Committee.
4. I understand that this Declaration and Undertaking is being made to Union at this time.

In the event that, in the course of a subsequent Board proceeding dealing with the subject matter  
of a Committee process, the Board determines that any Confidential Information held by me

1 under this Declaration and Undertaking:

2  
3 a) shall be considered to be confidential under the Board's Practice Direction on  
4 Confidential Filings, and I file a Declaration and Undertaking pursuant to that Practice  
5 Direction, or

6  
7 b) shall not be considered by the Board to be confidential and is to be placed on the public  
8 record;

9 this Declaration and Undertaking shall thereafter be null and void with respect to that  
10 Confidential Information.

11  
12 **UNDERTAKING**

13 I undertake that:

- 14  
15 1. I will use Confidential Information exclusively for duties performed in respect of each  
16 Committee process and any subsequent Board proceeding dealing with the subject matter of  
17 that Committee process.  
18  
19 2. I will not divulge Confidential Information except to a person granted access by Union to  
20 such Confidential Information.  
21  
22 3. I will not reproduce, in any manner, Confidential Information without the prior written  
23 approval of Union. For this purpose, reproducing Confidential Information includes scanning  
24 paper copies of Confidential Information, copying the Confidential Information onto a  
25 diskette or other machine-readable media and saving the Confidential Information onto a  
26 computer system. I understand that I may reproduce a hard copy of electronic data received  
27 solely for internal purposes, and I undertake to destroy such copies in accordance with this  
28 Declaration and Undertaking. For clarity, this prohibition does not preclude the forwarding of  
29 electronic Confidential Information material received from one computer to another for the  
30 personal use of the undersigned.  
31  
32 4. I will protect Confidential Information from unauthorized access.  
33  
34 5. I will not use Confidential Information in any commercial application or for any monetary or  
35 personal benefit, with the exception of remuneration for my participation on any Committee.  
36  
37 6. I will, promptly following the end of each Committee process or the end of any subsequent  
38 Board proceeding dealing with the subject matter of a Committee process, whichever shall be  
39 later, or within 10 days after the end of my participation in a Committee process or any

1 subsequent Board proceeding dealing with the subject matter of the Committee process:

2  
3 a) return to Union, all documents and materials in all media containing Confidential  
4 Information, including notes, charts, memoranda, transcripts and submissions based on  
5 such Confidential Information; or

6  
7 b) destroy such documents and materials and file with Union a certification of destruction in  
8 the form prescribed by the Board pertaining to the destroyed documents and materials.

9 For this purpose, the end of any subsequent Board proceeding is the date on which the period  
10 for filing a review or appeal of the Board's final order in that proceeding expires or, if a  
11 review or appeal is filed, upon issuance of a final decision on the review or appeal from which  
12 no further review or appeal can or has been taken.

13  
14 In respect of those Intervenors that serve on the same Committee for more than one term, the  
15 obligation to destroy Confidential Information arises as of the date of the Intervenor's  
16 retirement from the Committee.

17  
18 7. I will inform Union immediately of any changes in the facts referred to in this  
19 Declaration and Undertaking.

20  
21  
22 Dated at Toronto, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

23  
24  
25 Signature: \_\_\_\_\_

26  
27 Name:

28  
29 Company/Firm:

30  
31 Address:

32  
33 Telephone:

34  
35 Email:

36



## **UNION’S PROPOSED 2016-2020 DSM PLAN**

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1     **1.0     Introduction**

2     Union's 2016-2020 DSM Plan represents an increased commitment and enhanced focus on  
3     promoting energy efficiency to create a culture of conservation in Ontario. The new Framework  
4     includes a significant increase in the budget allowing for the introduction of a number of new  
5     and expanded program offerings.

6  
7     In developing this plan, Union considered the Board's guiding principles and key priorities,  
8     stakeholder feedback and insight from customers. Support for Union's 2016-2020 DSM Plan is  
9     outlined below.

10    **2.0     Budgets**

11    In Section 4.2 of the Framework the Board noted that the maximum budget guideline for Union  
12    is \$59.6 million, which represents a significant increase in spending over Union's budget  
13    guidance of \$30 million (excluding inflation) in the 2012-2014 DSM Guidelines. Union  
14    welcomes the opportunity to broaden the scope of DSM offerings under the new allowable  
15    budget spend to further address efficiency opportunities within Union's franchise area.

16  
17    In developing the proposed annual budgets for 2016-2020, Union adhered to the budget guidance  
18    provided by the Board. In Section 4.2 of the Framework the Board states that, "the gas utilities'  
19    annual DSM budgets should be guided by the simple principle that DSM costs (inclusive of both  
20    DSM budget amounts and shareholder incentive amounts) for a typical residential customer of

1 each gas utility should be no greater than approximately \$2.00/month.” Further to this, the Board  
2 stated that, “the budget guidance for the new multi-year DSM plans is in the order of double the  
3 cost impacts to residential customers from the 2012 to 2014 DSM period”. In addition, the Board  
4 stated that, “the gas utilities should ensure the overall cost increases to all other rate classes are  
5 generally proportional with the guidance outlined relative to residential customers”. Exhibit A,  
6 Tab 3, Section 13 outlines the total cost annually based on the proposed budget increases and  
7 projected budget allocation among rate classes.

8  
9 Within the proposed annual budgets, Union has addressed the Board’s guiding principles and key  
10 priorities. Some examples of this are illustrated in the Table 1 below.

Table 1

Budget Requirements to Address Guiding Principles and Key Priorities

<b>Guiding Principles</b>	<b>Union's Response to Guiding Principles</b>
Where appropriate, coordinate and integrate DSM and electricity CDM efforts to achieve efficiencies.	Union is proposing an annual pilot budget in part to facilitate pilots in collaboration with electric LDCs. The goal of these pilots is to inform potential coordinated offerings in market.
Minimize lost opportunities when implementing energy efficient upgrades.	Union is allocating a significant portion of the Program budgets to offerings that take a more holistic approach and therefore minimizes lost opportunities in its design. These offerings include; Home Reno Rebate, Home Weatherization, Aboriginal Conservation, Direct Install Pilot, Strategic Energy Management.
<b>Key Priorities</b>	<b>Union's Response to Key Priorities</b>
Expand the delivery of Low Income offerings across the province	Union has prioritized the need to expand the delivery of low-income offerings across the province and has allocated budget to support Northern expansion accordingly.
Implement DSM programs that can help reduce and/or defer future infrastructure investment	Union has allocated budget to study the potential effects DSM can have on deferring, postponing or reducing future capital investments.
Implement DSM programs that are evidence-based and rely on detailed customer data	Union's Residential program is expanding to include innovative broad based offerings such as a Residential Behavioural offering that will require a significant budget to support 300,000 target customers. Union is also introducing a Performance-Based Conservation Program consisting of Strategic Energy Management and RunSmart, which quantify savings at the meter.

Further details on how Union has addressed the guiding principles and key priorities can be found at Exhibit A, Tab 1, Sections 4 and 5. Table 2 below summarizes the budget allocations across programs and portfolio level activities for each year from 2016-2020.

**Table 2**  
**2016-2020 DSM Plan Budget**

	Year				
	2016 (\$000)	2017 (\$000)	2018 (\$000)	2019 (\$000)	2020 (\$000)
<b>Program Budget</b>					
<b>Resource Acquisition</b>					
Residential Development and Start-up	\$ 1,850	\$ -	\$ -	\$ -	\$ -
Residential Incentives/Promotion	\$ 8,745	\$ 13,569	\$ 15,916	\$ 15,916	\$ 15,916
Residential Evaluation	\$ 559	\$ 709	\$ 859	\$ 859	\$ 859
Residential Administration	\$ 991	\$ 1,071	\$ 1,071	\$ 1,071	\$ 1,071
Total Residential Program	\$ 12,145	\$ 15,349	\$ 17,845	\$ 17,845	\$ 17,845
Commercial/Industrial Incentives/Promotion	\$ 14,562	\$ 14,571	\$ 15,293	\$ 14,957	\$ 14,957
Commercial/Industrial Evaluation	\$ 189	\$ 189	\$ 189	\$ 189	\$ 189
Commercial/Industrial Administration	\$ 3,929	\$ 4,076	\$ 4,076	\$ 4,076	\$ 4,076
Total Commercial/Industrial Program	\$ 18,680	\$ 18,836	\$ 19,558	\$ 19,222	\$ 19,222
Total Resource Acquisition Programs	\$ 30,825	\$ 34,185	\$ 37,404	\$ 37,067	\$ 37,067
<b>Performance-Based</b>					
Performance-Based Incentives/Promotion	\$ 297	\$ 592	\$ 837	\$ 582	\$ 802
Performance-Based Evaluation	\$ 35	\$ 35	\$ 35	\$ 35	\$ 35
Performance-Based Administration	\$ 216	\$ 216	\$ 216	\$ 216	\$ 216
Total Performance-Based Program	\$ 548	\$ 843	\$ 1,088	\$ 833	\$ 1,053
<b>Low-Income</b>					
Low-Income Incentives/Promotion	\$ 9,705	\$ 10,647	\$ 11,863	\$ 12,419	\$ 13,261
Low-Income Evaluation	\$ 219	\$ 212	\$ 225	\$ 244	\$ 262
Low-Income Administration	\$ 1,425	\$ 1,425	\$ 1,425	\$ 1,425	\$ 1,425
Total Low-Income Program	\$ 11,349	\$ 12,284	\$ 13,514	\$ 14,088	\$ 14,948
<b>Large Volume</b>					
Large Volume Incentives/Promotion	\$ 400	\$ 349	\$ 373	\$ 397	\$ 421
Large Volume Evaluation	\$ -	\$ -	\$ -	\$ -	\$ -
Large Volume Administration	\$ 409	\$ 409	\$ 409	\$ 409	\$ 409
Total Large Volume Program	\$ 809	\$ 758	\$ 783	\$ 807	\$ 831
<b>Market Transformation</b>					
Optimum Home Incentives/Promotion	\$ 841	\$ -	\$ -	\$ -	\$ -
Optimum Home Evaluation	\$ -	\$ -	\$ -	\$ -	\$ -
Optimum Home Administration	\$ 201	\$ -	\$ -	\$ -	\$ -
Optimum Home Program	\$ 1,042	\$ -	\$ -	\$ -	\$ -
<b>Programs Sub-total</b>	<b>\$ 44,573</b>	<b>\$ 48,070</b>	<b>\$ 52,787</b>	<b>\$ 52,795</b>	<b>\$ 53,899</b>
<b>Portfolio Budget</b>					
Research	\$ 1,500	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000
Evaluation	\$ 1,300	\$ 1,300	\$ 1,300	\$ 1,300	\$ 1,300
Administration	\$ 2,935	\$ 2,842	\$ 2,842	\$ 2,842	\$ 2,842
Pilots	\$ 1,000	\$ 1,000	\$ 500	\$ 500	\$ 500
DSM Tracking and Reporting System Upgrades	\$ 5,000	\$ -	\$ -	\$ -	\$ -
Portfolio Sub-total	\$ 11,735	\$ 6,142	\$ 5,642	\$ 5,642	\$ 5,642
<b>Total DSM Budget Pre-Inflation</b>	<b>\$ 56,308</b>	<b>\$ 54,212</b>	<b>\$ 58,429</b>	<b>\$ 58,437</b>	<b>\$ 59,541</b>
Cumulative Inflation @ 1.68%	\$ 946	\$ 1,837	\$ 2,995	\$ 4,027	\$ 5,172
<b>Total DSM Budget Post-Inflation</b>	<b>\$ 57,254</b>	<b>\$ 56,049</b>	<b>\$ 61,424</b>	<b>\$ 62,464</b>	<b>\$ 64,714</b>

The program budgets and their individual components (development and start-up, incentives/promotion, evaluation and administration) are consistent with the definitions provided in the Guidelines, Section 9.1.2. The Portfolio budget captures DSM activities that are not

1 attributed to an individual program, such as research, evaluation, administration, pilots, DSM  
2 tracking and reporting system upgrades.

3  
4 The 2016 budget of \$56.3 million (excluding inflation) represents a significant budget increase  
5 of approximately 66% compared to 2015. The 2016 program year marks a fundamental shift in  
6 Union's DSM programming in direct response to the Framework, as demonstrated in Table 1.  
7 Excluding the 2016 DSM Tracking and Reporting System upgrade costs, Union's DSM pre-  
8 inflation budget increase is phased in over 5 years, beginning in 2016 at an average increase of  
9 approximately 4%, year over year, to a 2020 pre-inflation budget of \$59.5 million.

10  
11 As illustrated in Table 2 Union has included inflation in the total DSM budget calculation. The  
12 inflation factor of 1.68% is the amount used in setting 2015 Rates, calculated as the Q2 four  
13 quarter moving average inflation rate based on the Gross Domestic Product Implicit Price Index  
14 ("GDP IPI") reported by Statistics Canada.<sup>1</sup> The use of the GDP IPI is consistent with the 2012  
15 to 2014 DSM Plan (EB-2011-0327) Settlement. The cumulative inflation in Table 2 has been  
16 provided for illustrative purposes, and the inflation factor will be updated each year based on the  
17 methodology stated above. Any variance between the proposed 2016-2020 DSM budget and the  
18 actual 2016-2020 DSM costs will be trued up in the DSM Variance Account, as described at  
19 Exhibit A, Tab 3, Section 6.1 below.

20  

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<sup>1</sup> EB-2014-0271, Exhibit B.VECC.1

1 The Resource Acquisition programs, consisting of the Residential and Commercial/Industrial  
2 programs, represent the largest share of the DSM program budget, averaging 70%. Union has  
3 increased its Low Income program budget by 66% to \$11.3 million in 2016, and then further  
4 ramping up to \$14.9 million in 2020, representing more than double the 2015 Low Income  
5 program budget. The Low Income program budget share represents approximately 26% of the  
6 total program budget, which is consistent with the 2012-2014 DSM Plan. The remaining  
7 program budget consists of the Performance-Based, Large Volume and Market Transformation  
8 programs, each equating to approximately 2% of the total program budget.

9  
10 Union's 2016 Research budget is \$1.5 million, recognizing that \$0.5 million is earmarked to  
11 complete the Achievable Potential and DSM and Infrastructure Planning studies which have  
12 been identified as Framework requirements.<sup>2</sup> The Research budget will be maintained at \$1.0  
13 million for the remainder of the Framework to facilitate Union's DSM research process as  
14 outlined at Exhibit A, Tab 2, Section 10.

15  
16 Union is proposing to increase focus on DSM Evaluation, Measurement and Verification  
17 ("EM&V) activities by increasing the budget to approximately 4% of the total DSM budget.  
18 Union's proposed 2016 total evaluation budget is \$2.3 million, which is inclusive of program  
19 specific evaluation, such as verifying Union's Commercial/Industrial customer offering savings,  
20 as well as general portfolio evaluation activities like Technical Reference Manual updates. As

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<sup>2</sup> EB-2014-0134, Report of the Board, Demand Side Management Framework for Natural Gas Distributors (2015-2020), p. 4 and p. 36.



1 new DSM offerings are introduced, Union will require incremental budget to facilitate EM&V  
2 requirements while continuing to evaluate the existing suite of offerings. Union proposes to  
3 isolate the evaluation budget (program specific and general portfolio) to only evaluation related  
4 activities, ensuring the budget is not utilized for any other DSM activity. Further information on  
5 Union's evaluation plans can be found at Exhibit A, Tab 3, Appendix C.

6  
7 While Union's proposed DSM programming is comprehensive, a pilot program budget has been  
8 identified to allow Union to explore innovative DSM programs and market approaches. The  
9 budget will fund pilot projects identified by Union and/or industry partners, such as Enbridge,  
10 electric local distribution companies ("LDCs") and the Independent Electricity System Operator  
11 ("IESO"). While developing the 2016-2020 DSM Plan Union has identified a key pilot program  
12 that will be pursued over the course of the Framework: Direct Install Pilot for Small Business  
13 customers, which is outlined at Exhibit A, Tab 3, Appendix A, Section 1.1. Furthermore, Union  
14 is participating in a pilot, led by the Toronto and Region Conservation Authority ("TRCA") and  
15 the IESO, investigating the Performance-Based Conservation methodology for driving deeper  
16 savings in the commercial and institutional sectors.

17  
18 As discussed at Exhibit A, Tab 2, Section 12.2, Union will undertake activities to upgrade its  
19 DSM Tracking and Reporting System to ensure the requirements of the new framework are met.  
20 The required activities in 2016 are budgeted at \$5 million.

21

1 With the exception of the Low Income budget, Union's DSM budget is allocated to rate classes  
2 based on the forecasted budget by rate class. The budgeted program costs were calculated based  
3 on historical customer incentive spend and forecasted DSM activity at the rate class level. The  
4 Portfolio costs that could not be assigned to a rate class were first allocated to a customer class  
5 based on the percentage allocation of program costs. For example, 30% of the 2016 program  
6 budget is assigned to the Residential customer class, thus 30% of the portfolio costs are allocated  
7 to the Residential customer class. These portfolio costs are further allocated at the rate class  
8 level based on historical customer incentive spend and forecasted DSM activity in the rate class.

9  
10 Portfolio level costs are not allocated to the Large Volume Rate T2 and Rate 100 customers as  
11 the portfolio level activities do not impact the Large Volume program. The Low Income  
12 Program budget will continue to be allocated to all rate classes based on Union's most recent  
13 Board-approved distribution revenue. Exhibit A, Tab 3, Section 13 provides an analysis of the  
14 rate and impacts associated with Union's proposed budgets as well as projected bill reductions  
15 for DSM participants.

16  
17 Union will track the variance between the DSM budget included in rates, by rate class, and the  
18 actual DSM dollars spent by rate class. The variance, by rate class, will be disposed of annually  
19 through Union's deferral disposition application. Further information regarding the DSM  
20 Variance Account can be found at Exhibit A, Tab 3 Section 6.1. As described in the Guidelines,  
21 Section 6.6, Union can transfer funds among Board-approved DSM programs up to a cumulative

1 budget transfer of 30%. Union will inform the Board, as well as its stakeholders, in the event that  
2 the transfer exceeds 30%.

3  
4 Union's proposed targets supported by the proposed budget will save an estimated \$864 million  
5 in total resource costs and 6.1 billion in lifetime cubic meters over the term of the Plan. That  
6 translates to reducing carbon dioxide emissions by 11.5 million metric tonnes and avoided CO<sub>2</sub>  
7 emissions equivalent to removing 2.1 million cars from Ontario's roads for a year. The proposed  
8 budgets positions Union well to continue to deliver significant value to customers through DSM  
9 offerings.

### 11 **3.0 Targets**

12 Union's 2016-2020 annual and long-term targets were developed taking a balanced approach of  
13 continuing to drive significant savings from existing program offerings while introducing new  
14 program offerings in response to the key priorities and guiding principles outlined by the Board.  
15 The result is an aggressive annual and long-term plan to achieve significant savings for Ontario's  
16 residences and businesses. Table 3 outlines Union's proposed annual and long-term targets  
17 through the delivery of all program offerings.

Table 3

Union's 2016-2020 Long Term Natural Gas Savings

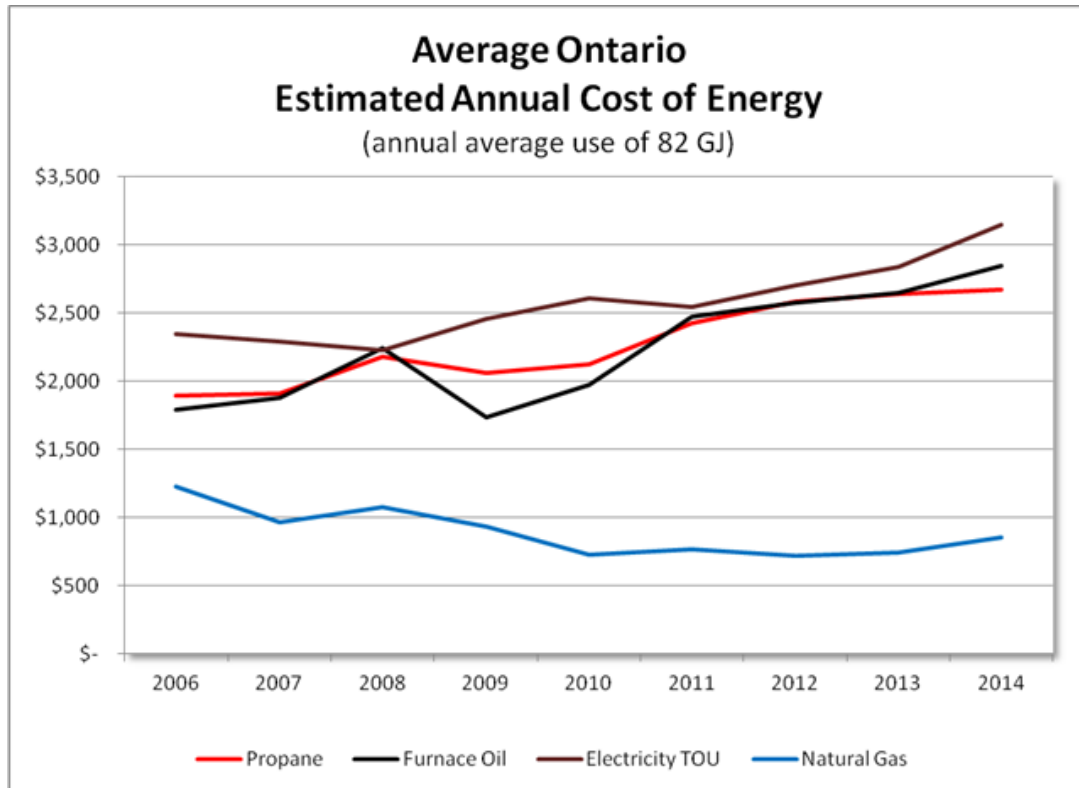
Long Term Natural Gas Savings Goal (millions of lifetime m <sup>3</sup> )						
Program	2016	2017	2018	2019	2020	Long Term
Residential	90	120	148	148	148	653
Commercial/Industrial	1,020	1,028	1,038	1,038	1,038	5,163
Low Income	51	53	56	60	61	282
Performance-Based Conservation	0	1	8	18	33	60
<b>Total</b>	<b>1,161</b>	<b>1,203</b>	<b>1,249</b>	<b>1,264</b>	<b>1,280</b>	<b>6,158</b>

Union will face many challenges in achieving the annual and long-term targets outlined above.

Some of these challenges include:

- Continuing to drive aggressive targets with existing offerings that are more mature in their program cycle and require Union to get to the “harder-to-reach” customers in order to be successful in meeting targets;
- Significant efforts required to develop and launch new offerings including Residential Behavioural, Aboriginal Conservation, Low Income End-of-Life Furnace Upgrades and Strategic Energy Management;
- Going broader in the market where the approach, channel partners and relationships are not already established and more uncertain; and,
- The relatively low cost of natural gas compared to electricity prices continuing to be a challenge in getting customers to prioritize DSM offerings while also addressing their electricity demand through the Conservation Demand Management (“CDM”) offerings in the market. Figure 1 provides the average Ontario estimated annual cost of energy.

Figure 1



**Sources:**

Propane & Heating Oil: The Kent Group. Rates taken for London for the South and Thunder Bay for the North

Natural Gas: Union Gas Limited Rate Schedules

Electricity: MEU time of use rates for sample of Southern and Northern utilities

Within each program offering outlined at Exhibit A, Tab 3, Appendix A, Union has identified the specific challenges that each Program area will have in achieving the planned targets.

1    Target Development

2    Union's approach to setting the annual and long-term targets was based on a detailed analysis  
3    that was performed using a bottom up approach based on Union's experience, program potential  
4    and market opportunity. It was then informed by the Board's Framework and Guidelines which  
5    included budget and rate impact guidance along with the guiding principles and key priorities.  
6    With these key drivers in mind, Union's internal teams performed detailed analysis, taking a  
7    phased approach to balance the various objectives.

8  
9    In Phase One of the analysis, Union took a bottom-up approach to assess the market opportunity  
10   available within existing program offerings. This included:

- 11       •   Reviewing Union's historical results and projected trends in many facets, including;  
12            participation levels, types of customers participating, measure penetration and trends in  
13            segments;
- 14       •   Assessing remaining market size using internal and third party data;
- 15       •   Performing jurisdictional scans to determine whether key elements of the program  
16            offering, such as incentive levels, were in-line with comparable jurisdictions;
- 17       •   Considering market insight from Union's account managers who hold key relationships  
18            with Union's customers and who have firsthand experience of the opportunities and  
19            barriers in the market; and,
- 20       •   Reviewing market research to better understand the opportunities and barriers in the  
21            market.

1 In Phase Two of the analysis, Union sought new program ideas through an extensive review,  
2 including:

- 3 • Performing jurisdictional scans on leading jurisdictions to identify new program  
4 opportunities;
- 5 • Holding internal sessions with various groups to generate new ideas;
- 6 • Engaging external stakeholders, including; intervenors, Enbridge, the IESO, customers  
7 and the Ministry of Energy to gain a better understanding of market opportunities and  
8 barriers, policy objectives and customer priorities (Exhibit A, Tab 3, Appendix B  
9 provides documentation regarding Union's stakeholder engagement);
- 10 • Re-assessing new measure opportunities with the updated Total Resource Cost ("TRC")  
11 values within the all cost-effective Framework;
- 12 • Considering customer insight from Union's account managers who hold key relationships  
13 in the field; and,
- 14 • Considering the key priorities and guiding principles outlined by the Board.

15  
16 In Phase Three of the analysis, Union struck a balance between all of the findings above with the  
17 following decision making criteria in mind:

- 18 • Addressing the key priorities and guiding principles outlined by the Board through new  
19 program offerings;
- 20 • Adhering to the rate impact guidelines set by the Board;
- 21 • Maximizing opportunities within existing program offerings; and,
- 22 • Having broad access for customers while taking a holistic approach to program design.

1 Union's most recent Achievable Potential Study, conducted in 2008 with an economic update in  
2 2011, while considered, did not play a significant role in the most recent target development.  
3 Union believes that while Achievable Potential studies provide an assessment of technical and  
4 economic potential, and can serve as a reference for achievable potential, it represents a point in  
5 time estimate based on a set of inputs.

6  
7 Union's most recent Achievable Potential Study does not reflect Union's program experience, or  
8 any new information outside of the scope of the economic update, since 2008, including the  
9 overriding policy objectives in the new Framework and Guidelines. Considering this, Union used  
10 a bottom-up approach to target development for the Plan.

11  
12 Union is committed to completing an achievable potential study by June 2016, as outlined by the  
13 Board in Section 1.3. of the Framework, and the results of the study will be used within the mid-  
14 term review process to test the directional long-term target, established based on the goals  
15 approved in the annual scorecards, to confirm whether any changes are required.

16  
17 Union believes that the appropriate balance has been struck in the target development around the  
18 key priorities and guiding principles the Board has outlined. While the primary focus of Union's  
19 annual and long-term targets continues to be the achievement of cumulative lifetime natural gas  
20 savings, this objective is appropriately balanced with the need to provide broad based offerings  
21 to enter new areas of the market, such as the Behavioural and Strategic Energy Management  
22 offerings.



1 Input Assumptions

2 In determining Union's scorecard achievement, Union strongly believes that revised input  
3 assumptions and adjustment factors, such as free ridership, spillover and persistence, should be  
4 applied on a prospective basis upon the completion of evaluation findings. Targets are  
5 established based on the information known by all parties at the time they are determined.  
6 Furthermore, applying retroactive input assumptions is not consistent with the policy of the  
7 majority of U.S. jurisdictions – 81% apply input assumption changes on a go-forward basis  
8 only.<sup>3</sup> As noted at Exhibit A, Tab 3, Section 9.2, Union will be finalizing the Technical Resource  
9 Manual ("TRM") and will be completing a net-to-gross study ("NTG") in 2015. Any input  
10 assumptions adjustments that occur as a result of the TRM and the NTG study will be applied to  
11 Union's 2016 targets on a go-forward basis only and they will scale up or down accordingly.

12  
13 Scorecard Target Achievement Level

14 Consistent with the Framework, Union is proposing scorecards with various metrics to monitor  
15 Union's performance. The scorecards and metrics have been designed to ensure the Board's  
16 guiding principles and key priorities are addressed through the delivery of Union's DSM  
17 programs. At Section 3.2 of the Framework, the Board states that "three levels of achievement  
18 should be provided on the scorecard(s) for each metric: one at each 75%, 100% (target) and  
19 150%". Union has proposed the scorecard metric levels to be 75%, 100% (target), and 125%.  
20 Union will refer to the target levels as the Lower Band (75%), Target (100%), and Upper Band

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<sup>3</sup> American Council for an Energy-Efficient Economy, A National Survey of State Policies and Practices for the Evaluation of Ratepayer-Funded Energy Efficiency Programs, February 2012, Page 28.

(125%), which is consistent with Union's 2012-2014 Plan.<sup>4</sup> For the proposed scorecards Union has established the Lower Band and Upper Band achievement levels as a symmetric multiplier of the Target, unless stated otherwise.

The multiplier for the Lower Band will be 0.75 of the Target (Lower Band = Target x 0.75). As per the Guidelines, Section 5.0, Union will not earn a DSM incentive for a weighted scorecard achievement of less than the Lower Band target. The multiplier for the Upper Band is consistent with Union's 2012-2014 Scorecard approach of 1.25 (Upper Band = Target x 1.25). The Upper Band multiplier has been established with the consideration that Union has to achieve a 25% increase above the target with additional funding of only 15% above the Board-approved DSM budget as outlined in Section 11.2 of the Guidelines. This approach is consistent with Union's Board-approved 2012-2014 DSM Plan (EB-2011-0327) Settlement. Union is motivated to achieve results beyond the Target (100%) as the Board has established a DSM incentive structure which introduces a pivot point at the scorecard's 100% target level.<sup>5</sup> Further information on the DSM incentive mechanism can be found at Exhibit A, Tab 3, Section 4.

### **3.1. Resource Acquisition Scorecard**

The Resource Acquisition scorecard will measure the performance of Union's Residential and Commercial/Industrial programs. The scorecard's performance will be measured on two metrics: Cumulative Natural Gas Savings (m<sup>3</sup>), and Home Reno Rebate ("HRR") Participants (Homes). Union is proposing these metrics as they reflect the Board's guiding principles and

---

<sup>4</sup> In the DSM Guidelines for Natural Gas Utilities (EB-2008-0346), the Board's Guidelines contained an Upper Band of 150% and the Board ultimately approved an Upper Band of 125% in Union's 2012-2014 DSM Plan.

<sup>5</sup> Union will earn a DSM incentive for a scorecard weighted achievement between 75% and 125% of the target.

1 key priorities. The Cumulative Natural Gas Savings Metric ensures Union’s DSM programs  
2 have been designed to pursue long-term energy savings to meet the Board’s goal of “assisting  
3 consumers in managing their energy bills through the reduction of natural gas consumption”<sup>6</sup>.  
4 The HRR Participant Metric reflects multiple objectives, such as the Board’s key priority of  
5 taking a holistic approach to identifying savings throughout a customer’s home, preventing lost  
6 opportunities and pursuing long-term energy savings through a focus on thermal envelope  
7 improvements. The proposed scorecard strikes the appropriate balance of Union’s efforts to meet  
8 the guiding principles and key priorities as set out in the Framework and Guidelines. As noted in  
9 the Framework, Union has placed a higher weighting on the Cumulative Natural Gas Savings  
10 Metric recognizing that it will produce the greatest long-term benefit to customers and the  
11 overall natural gas system. Table 4 summarizes Union’s proposed 2016-2020 Scorecards along  
12 with a description of the proposed metrics.

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23

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<sup>6</sup> EB-2014-0134, Report of the Board, Demand Side Management Framework for Natural Gas Distributors (2015-2020), p. 5.

1

Table 4

2

2016-2020 Resource Acquisition Scorecard<sup>7,8</sup>

2016 Resource Acquisition Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m <sup>3</sup> )	832,223,742	1,109,631,656	1,387,039,570	75%
Home Reno Rebate Participants (Homes)	2,250	3,000	3,750	25%

2017 Resource Acquisition Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2016 Post-Audit Scorecard Yield times 2017 Resource Acquisition pre-inflation promotion and incentive budget times 1.02	125% of Target	75%
Home Reno Rebate Participants (Homes)	75% of Target	2016 Post-Audit Scorecard Yield times 2017 HRR pre- inflation promotion and incentive budget	125% of Target	25%

2018 Resource Acquisition Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2017 Post-Audit Scorecard Yield times 2018 Resource Acquisition pre-inflation promotion and incentive budget times 1.02	125% of Target	75%
Home Reno Rebate Participants (Homes)	75% of Target	2017 Post-Audit Scorecard Yield times 2018 HRR pre- inflation promotion and incentive budget	125% of Target	25%

<sup>7</sup> The Post-Audit Scorecard Yield for the Cumulative Natural Gas Savings (m<sup>3</sup>) metric equates to the m3 per promotion and customer incentive dollar spent for the year in question.

<sup>8</sup> The Post-Audit Scorecard Yield for the Home Reno Rebate Participants (Homes) metric equates to the homes per promotion and customer incentive dollar spent for the year in question.

2019 Resource Acquisition Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2018 Post-Audit Scorecard Yield times 2019 Resource Acquisition pre-inflation promotion and incentive budget times 1.02	125% of Target	75%
Home Reno Rebate Participants (Homes)	75% of Target	2018 Post-Audit Scorecard Yield times 2019 HRR pre- inflation promotion and incentive budget	125% of Target	25%

2020 Resource Acquisition Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2019 Post-Audit Scorecard Yield times 2020 Resource Acquisition pre-inflation promotion and incentive budget times 1.02	125% of Target	75%
Home Reno Rebate Participants (Homes)	75% of Target	2019 Post-Audit Scorecard Yield times 2020 HRR pre- inflation promotion and incentive budget	125% of Target	25%

1  
2 Union's 2016 Resource Acquisition Scorecard targets have been established based on a bottom  
3 up analysis. For further information on the target, refer to Exhibit A, Tab 3, Appendix A,  
4 Sections 1.0 and 1.1 where the program offering targets and rationale are outlined in detail. As  
5 discussed earlier, the 2016 Lower and Upper Band targets have been established based on 75%  
6 of Target and 125% of Target respectively. Consistent with the approach outlined in the input  
7 assumptions subsection above, Union will update the 2016 Resource Acquisition Scorecard  
8 Targets upon completion of the TRM and NTG reviews.

9

Union proposes the 2017-2020 metric targets be based on a formulaic target setting mechanism. This approach is consistent with the Board-approved 2012-2014 Scorecards included in the EB-2011-0327 Settlement. This formulaic approach ensures that while Union strives to achieve exemplary results in any given year, the following year's targets are adjusted to reflect its performance. Union recognizes that establishing five year targets based on current market fundamentals, historical data, internal sales and account management teams, relevant research and current input assumptions may have inherent assumptions that may change in the future. Therefore the formulaic approach provides flexibility for the targets to reflect the best available information and most recent experience at the time the targets are set. The scorecard metric descriptions and illustrative examples of the formulaic approach are outlined below.

#### Scorecard Metric Descriptions

##### ***Cumulative Natural Gas Savings ( $m^3$ )***

The Cumulative Natural Gas Savings ( $m^3$ ) metric measures the total natural gas saved for all Resource Acquisition programs<sup>9</sup> delivered by Union for the term of their measure life, net of adjustment factors (such as free ridership, spillover and persistence). The Resource Acquisition offerings that contribute to the Scorecard can be found under the Residential and Commercial/Industrial Program Sections at Exhibit A, Tab 3, Appendix A, Sections 1.0 and 1.1.

For 2017-2020, the Cumulative Natural Gas Savings Target will be determined by multiplying the previous year's Resource Acquisition Scorecard post-audit yield ( $m^3$  saved per promotion

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<sup>9</sup> Rate T2/Rate 100 rate classes are excluded.

1 and incentive dollar spent) by the current year's pre-inflation promotion and incentive budget.<sup>10</sup>

2 The result is further multiplied by 1.02, which produces the final Cumulative Natural Gas  
3 Savings Target for the year in question. Union proposes to maintain the 2% increase in its  
4 targets (approved by the Board in EB-2011-0327), which in turn requires Union to deliver its  
5 Resource Acquisition programs more cost-effectively. The Lower Band will be 75% of the target  
6 and the Upper Band will be 125% of the target<sup>11</sup>. By using a formulaic approach, the targets will  
7 be adjusted based on the prior year's performance.

8  
9 In instances where a new offering is being introduced during the 2017-2020 term, the offering's  
10 target-outlook (as outlined in Exhibit A, Tab 3, Appendix A) would be added to the calculated  
11 target amount based on the formulaic approach. If the Residential Behavioural Offering were to  
12 be introduced for 2017, then the Behavioural Target outlook of 4,051,007 m<sup>3</sup>, as outlined at  
13 Exhibit A, Tab 3, Appendix A, Section 1.0, would be added to the target as established by the  
14 formula for a final 2017 target<sup>12</sup>. The formulaic approach will continue in the following years  
15 which will take into account the previous year's yield including any incremental offerings that  
16 were introduced. As demonstrated in the illustrative example found in footnote 8, the formulaic

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<sup>10</sup> The promotion and incentive budget for scorecard target calculations do not include any incremental budget from the cost-efficiency incentive.

<sup>11</sup> For illustrative purposes, if Union's 2016 post-audit achievement is 1,109,631,656 m<sup>3</sup> while spending \$30.8 million dollars (promotion and incentive spend) to achieve those results, the yield would be 36.0 m<sup>3</sup> per dollar spent. To calculate the 2017 target, the 2016 post audit yield (36.0 m<sup>3</sup>/\$) will be multiplied by the 2017 Resource Acquisition promotion and incentive budget (\$34.2 million) and 1.02 to equal a target of 1,255,189,380 m<sup>3</sup>. The Lower Band will be 941,392,035 m<sup>3</sup> (75% of 1,255,189,380 m<sup>3</sup>) and the Upper Band will be 1,568,986,725 m<sup>3</sup> (125% of 1,255,189,380 m<sup>3</sup>).

<sup>12</sup> For example, if the scorecard target formula determined the 2017 target to be 1,255,189,380 m<sup>3</sup>, then the final 2017 target will be 1,255,189,380 m<sup>3</sup> plus 4,051,007m<sup>3</sup> (Residential Behavioural offering target) equalling a target value of 1,259,240,387 m<sup>3</sup>.

approach to target setting provides flexibility and is responsive to market conditions and Union's performance, while ensuring aggressive targets are set based on current assumptions.

***Home Reno Rebate Participant (Homes)***

Homes that count as a participant towards the Home Reno Rebate ("HRR") Participant (Homes) metric must meet the following two requirements:

1. A homeowner must complete at least two eligible renovations as outlined at Exhibit A, Tab 3, Appendix A, Section 1.0, Table 1.
2. The aggregate of all of the homes counted towards the metric must achieve, on average, at least a 15% reduction in annual natural gas use as determined through comparing a pre and post energy assessment.<sup>13</sup>

For 2017-2020, the HRR participant target will be determined by multiplying the previous year's post-audit yield (homes per promotion and incentive dollar spent) by the current year's promotion and incentive budget<sup>14</sup>, producing the final HRR participant target for the year in question. The Lower Band will be 75% of the Target and the Upper Band will be 125% of the Target<sup>15</sup>. By using a formulaic approach, the targets will be adjusted based on the prior year's performance.

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<sup>13</sup> For detailed information on the Home Reno Rebate offering please refer to Exhibit A, Tab 3, Appendix A, Section 1.0.

<sup>14</sup> The promotion and incentive budget for scorecard calculations do not include any incremental budget from the cost-efficiency incentive.

<sup>15</sup> For illustrative purposes, if Union's 2016 post audit achievement is 3,000 homes while spending \$7.2 million dollars (promotion and incentive spend) to achieve those results, the yield would be 0.0004 homes per dollar spent. To calculate the 2017 target, the 2016 post-audit yield (0.0004 homes/\$) will be multiplied by the 2017 HRR



### 3.2. Low Income Scorecard

The Low Income Scorecard measures the performance of Union's Low Income Program offerings. The Scorecard's performance will be measured on three metrics: Single Family Cumulative Natural Gas Savings (m<sup>3</sup>), Social and Assisted Multi-Family Cumulative Natural Gas savings (m<sup>3</sup>), and Market Rate<sup>16</sup> Multi-Family Cumulative Natural Gas Savings (m<sup>3</sup>). These metrics have been included in Union's Low Income Scorecard as they reflect the Board's guiding principles and key priorities. The Cumulative Natural Gas Savings Metrics for Single Family and Multi-Family Offerings are focused on the pursuit of long-term energy savings and are consistent with Union's EB-2011-0327 Settlement. The Market Rate Multi-Family Metric was introduced based on feedback received by stakeholders during Union's 2016-2020 consultations, as outlined at Exhibit A, Tab 3, Appendix B. Stakeholders expressed their interest in increasing the DSM offering focus on the multi-family private sector by introducing a Scorecard Metric to monitor Union's performance. Table 5 summarizes Union's proposed 2016-2020 Low Income Scorecards along with a description of the proposed metrics.

---

promotion and incentive budget (\$9.9 million) to equal a target of 4,098 homes. The Lower Band will be 3,073 homes (75% times 4,098 homes) and the Upper Band will be 5,122 homes (125% times 4,098 homes).

<sup>16</sup> Market rate refers to the Low-Income private multi-family sector as outlined at Exhibit A, Tab 3, Appendix A.

Table 5

2016-2020 Low Income Scorecards<sup>17,18,19</sup>

2016 Low Income Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Single Family Cumulative Natural Gas Savings (m <sup>3</sup> )	25,763,419	34,351,225	42,939,031	60%
Social and Assisted Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	11,021,832	14,695,776	18,369,720	35%
Market Rate Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	1,834,422	2,445,896	3,057,370	5%

2017 Low Income Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Single Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2016 Post-Audit Scorecard Yield times the 2017 Single Family pre-inflation promotion and incentive budget	125% of Target	60%
Social and Assisted Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2016 Post-Audit Scorecard Yield times the 2017 Social and Assisted Multi-Family pre-inflation promotion and incentive budget	125% of Target	35%
Market Rate Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2016 Post-Audit Scorecard Yield times the 2017 Market Rate Multi-Family pre-inflation promotion and incentive budget	125% of Target	5%

<sup>17</sup> The Post-Audit Scorecard Yield for the Single Family Cumulative Natural Gas Savings (m<sup>3</sup>) metric equates to the m<sup>3</sup> per promotion and customer incentive dollar spent for the year in question.

<sup>18</sup> The Post-Audit Scorecard Yield for the Social and Assisted Multi-Family Cumulative Natural Gas Savings (m<sup>3</sup>) metric equates to the m<sup>3</sup> per promotion and customer incentive dollar spent for the year in question.

<sup>19</sup> The Post-Audit Scorecard Yield for the Market Rate Multi-Family Family Cumulative Natural Gas Savings (m<sup>3</sup>) metric equates to the m<sup>3</sup> per promotion and customer incentive dollar spent for the year in question.

2018 Low Income Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Single Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2017 Post-Audit Scorecard Yield times the 2018 Single Family pre-inflation promotion and incentive budget	125% of Target	60%
Social and Assisted Multi-Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2017 Post-Audit Scorecard Yield times the 2018 Social and Assisted Multi-Family pre-inflation promotion and incentive budget	125% of Target	35%
Market Rate Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2017 Post-Audit Scorecard Yield times the 2018 Market Rate Multi-Family pre-inflation promotion and incentive budget	125% of Target	5%

1

2019 Low Income Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Single Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2018 Post-Audit Scorecard Yield times the 2019 Single Family pre-inflation promotion and incentive budget	125% of Target	60%
Social and Assisted Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2018 Post-Audit Scorecard Yield times the 2019 Social and Assisted Multi-Family pre-inflation promotion and incentive budget	125% of Target	35%
Market Rate Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2018 Post-Audit Scorecard Yield times the 2019 Market Rate Multi-Family pre-inflation promotion and incentive budget	125% of Target	5%

2

2020 Low Income Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Single Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2019 Post-Audit Scorecard Yield times the 2020 Single Family pre-inflation promotion and incentive budget	125% of Target	60%
Multi Family Cumulative Natural Gas Savings (m <sup>3</sup> )	75% of Target	2019 Post-Audit Scorecard Yield times the 2020 Social and Assisted Multi-Family pre-inflation promotion and incentive budget	125% of Target	35%
Percent of Multi-Family savings from the Market Rate Sector (%)	75% of Target	2019 Post-Audit Scorecard Yield times the 2020 Market Rate Multi-Family pre-inflation promotion and incentive budget	125% of Target	5%

Union's 2016 Low Income Scorecard Targets were established based on a bottom up analysis. For further information on the target rationale, refer to Exhibit A, Tab 3, Appendix A, Section 1.4. The 2016 Lower and Upper Band targets have been established based on 75% of target and 125% of target, respectively. Consistent with the approach outlined in the input assumptions subsection above, Union will update the 2016 Low Income Scorecard Targets upon completion of the TRM and NTG reviews. Similar to the Resource Acquisition Scorecard, Union proposes a formulaic target setting mechanism for the 2017-2020 scorecards. The formulaic approach ensures that while Union strives to achieve exemplary results the following year's targets are adjusted accordingly to reflect past performance and current budget levels. The scorecard metric descriptions and illustrative examples for the formulaic approach are provided below.

#### Scorecard Metric Descriptions

##### ***Single Family Cumulative Natural Gas Savings ( $m^3$ )***

The Single Family Cumulative Natural Gas Savings ( $m^3$ ) Metric measures the total natural gas saved for all single family offerings delivered by Union for the term of their measure life, net of adjustment factors (such as free ridership, spillover and persistence). Exhibit A, Tab 3, Appendix A, Section 1.4 outlines the Single Family Offerings that contribute to the Scorecard Metric.

For 2017-2020, the Single Family Cumulative Natural Gas Savings Target will be determined by multiplying the previous year's Single Family Cumulative Natural Gas Savings Metric post-audit yield ( $m^3$  saved per promotion and incentive dollar spent) by the current year's pre-inflation

promotion and incentive budget<sup>20</sup> which produces the final target for the year in question. The Lower Band will be 75% of the Target and the Upper Band will be 125% of the Target<sup>21</sup>. By using a formulaic approach, the targets will be adjusted based on the prior year's performance.

***Social and Assisted Multi-Family Cumulative Natural Gas Savings (m<sup>3</sup>)***

The Social and Assisted Multi-Family Cumulative Natural Gas Savings (m<sup>3</sup>) Metric measures the total natural gas saved for all Multi-Family Offerings delivered to the social and assisted sector by Union for the term of their measure life, net of adjustment factors (such as free ridership, spillover and persistence). Exhibit A, Tab 3 Appendix A, Section 1.4 outlines the suite of Multi-Family Offerings that contribute to the Scorecard Metric. The Multi-Family target setting approach will follow the same direction as outlined in the Single Family Cumulative Natural Gas Savings Metric discussed above.

***Market Rate Multi-Family Cumulative Natural Gas Savings (m<sup>3</sup>)***

The Market Rate Multi-Family Cumulative Natural Gas Savings (m<sup>3</sup>) metric measures the total natural gas saved for all Multi-Family Offerings delivered to the Market Rate sector by Union for the term of their measure life, net of adjustment factors (such as free ridership, spillover and persistence). Exhibit A, Tab 3, Appendix A, Section 1.4 outlines the suite of Multi-Family

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<sup>20</sup> The promotion and incentive budget for scorecard target calculations do not include any incremental budget from the cost-efficiency incentive.

<sup>21</sup> For illustrative purposes, if Union's 2016 post-audit achievement is 34,351,225 m<sup>3</sup> while spending \$7.0 million dollars (promotion and incentive spend) to achieve those results, the yield would be 4.9 m<sup>3</sup> per dollar spent. To calculate the 2017 Target, the 2016 post audit yield (4.9 m<sup>3</sup>/\$) will be multiplied by the 2017 Low Income promotion and incentive budget (\$7.3 million) to equal a Target of 35,533,215 m<sup>3</sup>. The Lower Band will be 26,649,911 m<sup>3</sup> (75% of 35,533,215 m<sup>3</sup>) and the Upper Band will be 44,416,518 m<sup>3</sup> (125% of 35,533,215 m<sup>3</sup>).

offerings that contribute to the scorecard metric. The Market Rate Multi-Family target setting approach will follow the same direction as outlined in the single family cumulative natural gas savings metric discussed above

### 3.3. Market Transformation Scorecard

Union's Market Transformation Scorecard will measure the performance of Union's Optimum Home program. Union proposes a continuation of the Optimum Home program for 2016 as outlined at Exhibit A, Tab 3, Appendix A, Section 1.5. Based on feedback received by stakeholders at Union's consultative session on January 14, 2015, Union will continue to focus on supporting enrolled builders to increase the market penetration of homes that are built to a 20% higher energy efficient standard than OBC 2012 ("Optimum Home standard"). Table 6 illustrates Union's 2016 Market Transformation Scorecard.

Table 6

2016 Market Transformation Scorecard

2016 Market Transformation Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
Homes Built (>20% above OBC 2012) by Participating Builders	2015 Actual +15%	2015 Actual +20%	2015 Actual + 25%	100%

The Market Transformation Metric measures the percentage of homes built to Optimum Home standards in relation to the total number of homes built in a program year by actual participating builders who remain enrolled in the program.

Union's 2016 Market Transformation Scorecard builds on the 2015 scorecard approach as outlined at Exhibit A, Tab 2, Section 3.4. In 2016, the Metric Target will be calculated by taking the 2015 actual metric achievement plus 20%. The Lower Band and Upper Band metric targets similarly will be based on 2015 actual results plus 15% and 25% respectively<sup>22</sup>. Union's 2016 metric Target formula has an escalator that is 5% higher than the 2015 scorecard ensuring Union targets remain challenging as further experience is gained delivering the program. This offering is being exited in 2016 as noted in Exhibit A, Tab 3, Appendix A, Section 1.5 and therefore no targets beyond 2016 are proposed.

#### **3.4. Performance-Based Scorecard**

The Performance-Based Scorecard measures Union's success in delivering evidence-based DSM programs. The Scorecard performance will be measured through two types of metrics: Participation and Savings. Union's Scorecard and Metrics were developed with the Board's key priorities in mind in conjunction with feedback received by stakeholders encouraging Union to pursue Performance-Based Programs. The Participation Metric ensures Union's focus on the guiding principle of achieving higher customer participation levels in its evidence-based offerings of RunSmart and Strategic Energy Management ("SEM"). While the first metric measures the breadth of the Performance-Based Program, the Savings Metric ensures long-term savings are realized through metered analysis. Table 7 shows Union's proposed 2016-2020 Scorecards.

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<sup>22</sup> For illustrative purposes, if Union's 2015 metric achievement was 30% (30% of all homes built by program participants were built to Optimum Home standards) then the 2016 Target will be 50% (30% plus 20%). The Upper Band and Lower Band targets will be 45% (30% plus 15%) and 55% (30% plus 25%) respectively.

Table 7

2016-2020 Performance-Based Scorecards

2016 Performance-Based Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
RunSmart Participants	19	25	31	50%
SEM Participants	2	3	4	50%

2017 Performance-Based Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
RunSmart Participants	75% of Target	2016 Actual times 125%	125% of Target	20%
RunSmart Savings (%)	5%	10%	15%	60%
SEM Participants	2016 Actual	2016 Actual + 2	2016 Actual + 4	20%

2018 Performance-Based Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
RunSmart Participants	75% of Target	2017 Actual times 125%	125% of Target	10%
RunSmart Savings (%)	5%	10%	15%	40%
SEM Participants	2017 Actual	2017 Actual + 2	2017 Actual + 4	10%
SEM Savings (%)	4%	5%	6%	40%

2019 Performance-Based Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
RunSmart Participants	75% of Target	2018 Actual times 125%	125% of Target	10%
RunSmart Savings (%)	5%	10%	15%	40%
SEM Savings (%)	2018 Actual	2018 Actual + 2%	2018 Actual + 4%	50%



2020 Performance-Based Scorecard				
Metrics	Metric Target Scorecard			Weight
	Lower Band	Target	Upper Band	
RunSmart Participants	75% of Target	2019 Actual times 125%	125% of Target	10%
RunSmart Savings (%)	5%	10%	15%	40%
SEM Savings (%)	2019 Actual	2019 Actual + 2%	2019 Actual + 4%	50%

Union's 2016 Performance-Based Scorecard focuses on Participant Metrics as savings for these offerings will not be realized until a full year (post implementation) of metered data is available for analysis. In future years Union has placed greater weightings on the savings metrics, consistent with the direction outlined in the Framework. Further information on the targets is included in Exhibit A, Tab 3, Appendix A, Section 1.2 where the program offering targets are discussed in further detail. The Scorecard Metric descriptions are provided below.

#### Scorecard Metric Descriptions

##### ***RunSmart Participants***

The Participation Metric for RunSmart measures the number of customers that enter into an agreement with Union and participate in a site walk-through within a program year. This Metric is based on a number of customers without prior DSM participation history, consuming greater than 50,000 m<sup>3</sup> per year of natural gas. As identified at Exhibit A, Tab 3, Appendix A, Section 1.2, the Target assumes Union successfully engages 10% of customers without prior DSM participation history. For 2017-2020, the RunSmart participant targets will be determined by

1 multiplying the previous year's achievement by 125%. The Upper Band and Lower Band targets  
2 will be calculated at 75% and 125% of the Target respectively<sup>23</sup>.

3  
4 ***SEM Participants***

5 The SEM Participation Metric measures the number of customers that enter into a five-year  
6 agreement with Union to participate in the SEM offering, within a given program year. This  
7 Metric is based on an eligible pool of approximately 100 contract industrial manufacturing  
8 customers, consuming greater than 1,000,000 m<sup>3</sup> per year of natural gas. The Target assumes  
9 Union successfully engages 15% of the target market in the first three years of the program  
10 (approximately 15 customers by the 2018 program year). For 2017-2018, the SEM participant  
11 targets will be determined by adding two incremental participants to the previous year's  
12 participation achievement. The Lower Band will become the previous year's achievement and  
13 the Upper Band will be calculated as the Target plus two incremental participants<sup>24</sup>. This metric  
14 will not be included for 2019-2020 as a five-year customer commitment is required to establish a  
15 baseline and demonstrate savings.

16  
17  
18  

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<sup>23</sup> For illustrative purposes, if Union has 25 participants in 2016 than its 2017 Target will be 31 (2016 achievement of 25 times 1.25). Lower and Upper Band Targets will be 23 (2017 Target of 31 times 75%) and 39 (2017 Target of 31 times 125%).

<sup>24</sup> For illustrative purposes, if Union signs three customers to a five-year SEM agreement in 2016 than the 2017 Target will be five customers. The Lower Band target will be three participants (2016 achievement) and the Upper Band will be seven participants (2017 Target of five plus two).

1    ***RunSmart Savings (%)***

2    The Savings Metric for RunSmart measures the aggregate percentage of savings achieved by the  
3    program participant within a program year. This metric is proposed to begin in 2017, as that is  
4    the first year that program participants will demonstrate savings. For 2017-2020, Lower Band,  
5    Target, and Upper Band performance levels are based on the offering's incentive design.  
6    RunSmart's tiered incentive structure has been designed to reward customers for savings. The  
7    Lower Band target is established as an aggregate savings of 5% to be demonstrated by RunSmart  
8    participants. The Target performance reflects the next tier of savings, 10%, while the Upper  
9    Band reflects an exemplary savings of 15%.

11   ***SEM Savings (%)***

12   The Savings Metric for SEM measures the aggregate percentage of savings achieved by the  
13   program participants, within a program year. This metric is proposed to begin in 2018, which is  
14   the first year that program participants will demonstrate savings. SEM performance-based  
15   targets will change year-over-year as savings are measured on an on-going basis for participating  
16   customers over a 5-year period. While the 2018 scorecard targets are set based on expected  
17   savings, for 2019-2020 the targets will be established on a formulaic basis as follows: the Lower  
18   Band is the previous year's achievement, the Target is the previous year's achievement plus 2%,  
19   and the Upper Band is based on the Target plus 2%.<sup>25</sup>

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<sup>25</sup> For illustrative purposes, if Union's 2018 SEM program achieves an aggregate savings of 5% from all SEM participants then the 2019 Lower Band will be 5%, the Target will be 7% (2018 achievement of 5% plus 2%) and the Upper Band will be 9% (2019 Target of 7% plus 2%).

#### 4.0 DSM Incentive

As outlined in Section 5.2 of the Framework, Union’s maximum shareholder incentive (“DSM Incentive”) is \$10.45 million annually for 2016-2020 and is not subject to inflation.

The DSM Incentive will be allocated between the Resource Acquisition, Performance-Based, Low Income, and Market Transformation scorecards based on their approved program budget share as outlined in Section 5.2 of the Framework. The DSM Incentive allocation approach, along with the appropriately weighted scorecards and comprehensive DSM program mix ensures the Board’s key priorities are met. For illustrative purposes the 2016 DSM Incentive allocations are outlined in Table 8. For 2017-2020, the DSM Incentive allocation will follow the same methodology as outlined above.

Table 8

#### Maximum DSM Incentive Allocated to Each Scorecard Prior to Inflation

Scorecard	2016			
	Budget	Budget Share	Target Utility Incentive	Max Utility Incentive
	(\$000)	%	(\$000)	(\$000)
Resource Acquisition	30,825	70.4%	2,944	7,360
Performance-Based	548	1.3%	52	131
Low Income	11,349	25.9%	1,084	2,710
Market Transformation	1,042	2.4%	100	249
Program Sub-total	43,764	100.0%	4,180	10,450

As outlined in Section 5.0 of the Guidelines, a DSM Incentive will not be provided to any scorecard that achieves an overall weighted score of less than 75% (Lower Band). Union will

1 earn 40% of the maximum DSM Incentive for achieving a scorecard weighted score of 100%  
2 (Target). The remaining 60% will be achieved for a scorecard performance above the 100%  
3 (Target) up to a scorecard weighted performance of 125% (Upper Band). As stated in the  
4 Guidelines, Section 5.0, the scorecard results will be linearly interpolated between the scorecard  
5 metric target levels. The DSM Incentive amount is capped at the scorecard weighed score of  
6 125% (Upper Band).

7  
8 Beginning in 2016, Union proposes to include the DSM Incentive at Target, \$4.180 million, in  
9 rates. Customers have expressed interest in building the DSM Incentive into rates to avoid large  
10 out-of-period adjustments when Union disposes of its non-commodity deferral account balances.  
11 The variance between the DSM Incentive built into rates and the actual DSM Incentive achieved  
12 by Union will be recorded in the DSM Incentive Deferral Account (“DSMIDA”). For additional  
13 information on Union’s treatment of the DSMIDA please see Exhibit A, Tab 3, Section 6.3.

#### 14 15 **4.1. Cost-Efficiency Incentive**

16 Union strives for cost-efficiency in administering and delivering all of its energy efficiency  
17 programs. In Section 5.2 of the Framework, the Board provides for a cost-efficiency  
18 incentive. The intent of the cost-efficiency incentive is to provide the utility with greater  
19 flexibility and resources to achieve established target levels if it can efficiently produce results.  
20 In the event that Union is able to meet its overall annual natural gas savings target, Union will be  
21 eligible to carry forward any remaining approved DSM budget amounts in the immediately  
22 following year. The approved budget amounts to be carried forward will be incremental to

Union's approved DSM budget for the immediately following year, and can be used to help achieve the approved targets for the following year. In the event that Union does not achieve its annual target, Union is unable to carry forward any unspent DSM budget amounts into the following year. These amounts will be refunded in the DSMVA.

## **5.0 Lost Revenue Adjustment Mechanism ("LRAM")**

Union will calculate the full year impact of its DSM programs on a monthly basis. The volumetric impacts from its DSM programs, in that month, will be multiplied by the distribution rate for each of the rate classes in which the volumetric variance occurred. The distribution rate will be based on the average yearly Quarterly Rate Adjustment Mechanism ("QRAM"). For illustrative purposes, the natural gas saving from DSM activities in January of 2016 will have 12 months of LRAM calculated based on the average QRAM rate for the rate classes that achieved the savings whereas, the natural gas savings from DSM activities in November of 2016 will have two months of LRAM calculated. The natural gas savings tracked in LRAM will be based on the best available information for input assumptions resulting from the evaluation and audit process of the program year.

## **6.0 Recovery and Disposition of DSM Amounts**

### **6.1. DSM Variance Account ("DSMVA")**

Union will continue to track the variance between actual DSM spending by rate class relative to the DSM budget included in rates by rate class in the DSMVA. Union is eligible to recover up to

1 an additional 15% above its approved DSM budget. Any incremental funding can only be used  
2 on program expenses (i.e., promotion and incentive costs, not additional utility overheads).  
3 With the exception of the Low-income budget, the actual DSM spending will be calculated as  
4 follows. The DSM program costs will be calculated by rate class based on the total actual DSM  
5 spend by rate class. The customer incentive is the only element tracked at a rate class level and it  
6 will be allocated based on the amount spent within each rate class. All other program costs that  
7 are not tracked at the rate class level, such as promotion and administrative costs, will be  
8 allocated by customer class (e.g. Residential, Commercial/Industrial), and assigned by rate class  
9 based on the percentage allocation of the customer incentive costs. All portfolio-level costs that  
10 cannot be attributed to an individual program, such as the support staff engaged in DSM  
11 evaluation and program tracking, will be allocated to a rate class based on the percentage  
12 allocation of the program costs by rate class. To align with Union's ratemaking proposal  
13 described in Exhibit A, Tab 3, Section 13, Union proposes to track the variance between the  
14 DSM budget included in rates and actual DSM spending in Rate M4, Rate M5 and Rate M7 on a  
15 pooled basis for 2016-2018.

16  
17 The variance between the Low Income DSM budget included in rates and the actual amount  
18 spent on Low Income DSM Programming will be recovered in proportion to the most recent  
19 Board-approved distribution revenue by rate class. For 2016, this will be based on Union's 2015  
20 distribution revenue (EB-2014-0271). In Union's view, allocating Low income DSM costs to in-  
21 franchise rate classes using distribution revenue is a reasonable approach and is consistent with  
22 the 2012-2014 DSM Guidelines.

1       **6.2. Lost Revenue Adjustment Mechanism Variance Account (“LRAMVA”)**

2       Union will continue to track, at a rate class level, the actual impact of its DSM activities through  
3       the LRAM Variance Account (“LRAMVA”). Union will recover the associated lost distribution  
4       revenues by truing up the difference between the forecasted impacts included in distribution rates  
5       and the actual impacts of its DSM activities. Consistent with Union’s 2014-2018 Incentive  
6       Regulation Mechanism (“IRM”), LRAM is applicable to the contract rate classes (Rate M4, M5,  
7       M7, T1, T2, 20, 100). Union will apply annually for the disposition of the balance in the  
8       LRAMVA after the completion of the annual third party audit of its DSM programs.

10       **6.3. DSM Incentive Deferral Account (“DSMIDA”)**

11       The variance between the DSM incentive built into rates and the actual DSM incentive achieved  
12       by Union will be recorded in the DSM Incentive Deferral Account. Union will apply annually  
13       for the disposition of the balance in its DSMIDA after the completion of the annual third party  
14       audit of its DSM programs. The DSM Incentive amounts earned by Union will be allocated to  
15       rate classes in proportion of the amount actually spent on DSM activities on each rate class, as  
16       per Section 5.2 of the Framework.

18       **7.0 Cost-Effectiveness Screening**

19       Union’s proposed cost-effectiveness screening methodology is consistent with the approach  
20       outlined in the Framework and Guidelines. Union will be employing the Total Resource Cost-  
21       Plus (“TRC-Plus”) test as the primary cost-effectiveness test to screen its programs beginning in  
22       2016. As outlined in Section 9 of the Guidelines, the TRC-Plus test measures the benefits and



1 costs of DSM programs for as long as those benefits and costs persist and applies a 15% non-  
2 energy benefit adder to the benefit side of the TRC-Plus test calculation.

3  
4 The TRC-Plus test will be performed at both the program and portfolio level. A Program  
5 includes the combination of offerings available to a target market within a program type, for  
6 example, the Residential program is made up of Home Reno Rebate, Behavioural and the ESK  
7 offering. Union has only applied for DSM Programs that achieve, at a Program level, a TRC-  
8 Plus screening threshold benefit/cost ratio of 1.0 or greater, except in the case of the Low Income  
9 Programs, which is screened at a TRC-Plus ratio value of 0.70. Programs not amenable to the  
10 mechanistic TRC-Plus screening approach, such as Union's Market Transformation Program,  
11 have been assessed on a case-by-case basis.

12  
13 Where a change in program input assumptions is confirmed (including net equipment or program  
14 costs, and adjustments to account for free ridership, spillover effects or persistence of savings)  
15 which subsequently causes a Program to screen below the acceptable TRC-Plus threshold, the  
16 results of the Program will be included towards achievement of Union's annual DSM targets for  
17 that year. Union would seek to adjust its Program approach from the point at which the new  
18 input assumptions are confirmed forward to ensure Programs are cost effective. Where an  
19 offering is causing the Program to screen below the acceptable TRC-Plus threshold, a withdrawal  
20 period would be required to prevent customer and market disruption as well as managing  
21 contract commitments.

22

1 The Framework and Guidelines have introduced a secondary cost-effectiveness test: the  
2 Program Administrator Cost (“PAC”) test. The PAC test will measure Union’s avoided costs  
3 and the associated costs to administer its DSM programs. The PAC test will be used as a  
4 secondary cost-effectiveness reference tool to help better determine which programs deliver the  
5 most cost-effective results and, therefore, should be prioritized. Union will identify any  
6 programs that pass the TRC-Plus test but fail the PAC test and provide rationale to support the  
7 appropriateness of the Program. The program cost-effectiveness results can be found at Exhibit  
8 A, Tab 3, Appendix A.

## 10 **8.0 Avoided Costs**

11 Avoided costs represent the benefits in TRC-Plus and PAC calculations (i.e., the benefits of not  
12 having to provide an extra unit of supply of natural gas, electricity, water, heating fuel oil and/or  
13 propane)<sup>26</sup> and are thus integral to Program screening. In the case of the TRC-Plus test, a 15%  
14 non-energy benefit adder is applied to total avoided costs but will not be considered a component  
15 of avoided costs.

16  
17 For 2016-2020, Union will follow a consistent methodology for calculating the avoided costs as  
18 outlined at Exhibit A, Tab 2, Section 8. Starting in 2016, Union will discount the total avoided  
19 costs resulting over the life of each DSM measure by using a real discount rate of 4% as  
20 recommended by the Board, in Section 10.1 of the Guidelines.

21  

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<sup>26</sup> Only avoided natural gas costs are considered as benefits in the PAC calculation.

Exhibit A, Tab 3, Appendix F includes a preliminary 2016 avoided costs table for natural gas, electricity and water, that Union used for TRC-Plus and PAC screening in this Plan. The actual avoided costs used for cost-effectiveness screening in each program year will be filed annually in the Annual Report for the program year.

## **9.0 Evaluation**

### **9.1. Evaluation Governance and Audit Approach**

For 2016-2020, Union has proposed to follow the Evaluation Governance and Audit Approach as outlined at Exhibit A, Tab 2, Section 9.

### **9.2. Input Assumptions**

The Technical Reference Manual (“TRM”), which is currently in development, will be a complete listing of measures and assumptions for use by Union and Enbridge and is expected to be completed in Q2 of 2015. Until such time as the TRM is completed in its entirety, and filed with the Board, the Input Assumptions Spreadsheet will continue to be filed annually with the Board and document the measure assumptions.

The Input Assumptions Spreadsheet in Tab 3, Appendix D, contains the new and updated measure assumptions as per the most recent joint utility filing, EB-2014-0354, filed with the Board on March 27, 2015.

The deviations from EB-2014-0354 used in Union’s 2016-2020 Plan include:

1. Input Assumptions Spreadsheet:

- Includes free ridership values of zero for Strategic Energy Management (“SEM”) and RunSmart, based on design of the programs; and,
- Includes an updated free ridership value of 5% for Home Reno Rebate for 2016-2020 based on a change in the base case value beginning in 2016.

2. Custom Commercial and Industrial EUL Table:

- Includes substantiated values to reflect best available information.

3. Residential and Low Income EUL Table:

- Includes a new column to outline assumptions for 2016-2020 which reflects an updated EUL value for Home Reno Rebate based on a change in the base case value for this time period; and,
- Includes a value for the Residential Behavioural Offering for the 2016-2020 time period.

### **9.3. Adjustment Factors for Screening**

#### **Free Ridership and Spillover Effects**

#### **Union’s Definition of Free Ridership and Spillover Effects**

Consistent with Section 7.2.1 of the Guidelines, Union views free riders as program participants who would have installed the energy efficient measure without the influence of Union’s DSM programs. Free ridership is not a binary concept and consequently, different levels of free ridership exist.

1 *Pure or Total Free Riders:* These customers would have installed exactly the same quantity and  
2 type of equipment in the absence of the utility program.

3  
4 *Partial or Deferred Free Riders:* These customers would have installed some equipment on their  
5 own, but:

- 6 1. a smaller number of units and/or
- 7 2. at a lower efficiency level and/or
- 8 3. at a later point in time.

9 The utility had some impact on the quantity, efficiency and timing.

10  
11 *Non-Free Riders:* These customers would not have installed any equipment in the absence of the  
12 utility.

13  
14 *Spillover effects:* Refer to customers that adopt energy efficiency measures because they are  
15 influenced by a utility's related information and marketing efforts, but do not actually participate  
16 in the program.

17  
18 When the free ridership and spillover effects are combined, the result is referred to as the Net-to-  
19 Gross Ratio. Gross impacts are the program impacts prior to accounting for free ridership and  
20 spillover. Net impacts are the program impacts once free ridership and spillover have been  
21 accounted for. The net-to-gross ratio is defined as  $1 - (\text{free ridership ratio}) + (\text{spillover ratio})$ .

**Union's Process for Accounting for Free Ridership and Spillover Effects**

Union adjusts gross savings for free ridership on all programs. In 2015–2020, Union will continue to adjust for free ridership on all programs as well as include spillover where supportive evidence is available.

The frequency of updating free ridership and spillover values through the implementation of evaluation studies will be determined through the annual evaluation prioritization process that takes into account budget and program considerations.

An assessment of free ridership and spillover takes into account relevant information for Union's jurisdiction, program design, and program delivery. These factors should be considered when determining whether a common or differentiated free ridership and spillover rate is applied for Union and Enbridge.

**Net-to-Gross Study – Commercial and Industrial Custom Program**

In 2015 Union intends to complete a net-to-gross ("NTG") study that will develop new free ridership and spillover factors for commercial and industrial custom programs. The study methodology is currently being developed by the Technical Evaluation Committee ("TEC") and the selected Consultant. In mid-2014 the NTG study was deferred as the 2012-2014 DSM Guidelines (EB-2008-0346) did not provide the clarity required to confirm the study methodology. With the imminent release of the new Framework and Guidelines from the Board, the TEC felt it was prudent to ensure that the scope of work included the new Framework

requirements for this project. The NTG study recommenced in Q1 2015 as Board Staff advised the TEC to endeavour to confirm and finalize the study methodology.

The main objectives of the study include:

- Estimate program free ridership factors by prescribed market sectors and precision targets for Union's custom Commercial and Industrial programs. A 90/10 precision target is preferred for both the aggregate and sector level.
- Estimate participant inside and outside spillover for the prescribed market sectors and precision target for Union's custom Commercial and Industrial programs.
- Provide guidance on the development of an approach for applying NTG data collected on previous program participation to current and forward looking future DSM program activities.

When the study is completed, Union will update its 2016 natural gas savings targets, as outlined in Exhibit A, Tab 3, Section 2 above, to reflect the new NTG ratios. Union will apply the NTG ratios to natural gas savings achieved on a portfolio basis, differentiated by sector where appropriate, as determined by the NTG study on a go-forward basis.

#### Persistence

Persistence is the extent to which a DSM measure remains installed and is performing as originally predicted. Persistence of DSM savings takes 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;
- the impact of technical degradation; and
- the impact of potential changes in usage patterns (i.e. increases or decreases in plant production levels).

Effective Useful Life (“EUL”), or measure life, is a term often used to describe persistence. EUL is an estimate of the median number of years that a measure installed under a program is still in place and operable. This is consistent with the Guidelines and the IESO’s EM&V Protocols and Requirements v.2.0.

## **Union’s Process for Accounting for Persistence**

### **i. Union’s Prescriptive Measures**

Union uses the input assumptions that are developed through the joint utility Technical Resource manual (“TRM”) process that are TEC endorsed and filed with the Board. The TRM is comprised of substantiation documents that are subject to a rigorous third party review from an independent evaluation expert as well as members of the TEC. The ‘measure life’ section outlines the anticipated measure life (also known as EUL) which takes persistence into account therefore a separate persistence factor is not applied on Union’s prescriptive measures.

Additionally, Union uses best practice evaluation methodology of measuring post savings persistence for prescriptive measures that can be easily uninstalled. An example of the annual impact evaluation is on the Energy Savings Kit (“ESK”) included in the Residential and Low Income program offerings to quantify the number of measures contained in the kit that were



1 installed and remain installed. Energy efficient measures included in an ESK include  
2 showerheads, kitchen aerators, bathroom aerators, and pipe wrap. The results of these  
3 evaluations, conducted on a sample of participants, establish persistence adjustment factors to be  
4 applied to all ESK measures claimed.

5  
6 ii. Union's Custom Measures

7 Union's custom DSM project savings are determined based on the evaluation of energy use for  
8 each customer specific project. Union recognizes that economic and market driven factors can  
9 also influence project savings, and reflects these market impacts based on the best available  
10 information at the time of project processing.

11  
12 Where Union identifies changes within customer facilities that would impact the savings claim  
13 for a given program year, Union adjusts its DSM results to reflect the change. For example,  
14 where Union becomes aware that a customer who has undertaken a custom project in the  
15 program year is closing down a plant and as a result the project savings will not materialize as  
16 expected, Union removes the project from its DSM results. Similarly, where it is established a  
17 plant is increasing or decreasing production, savings will reflect the best information made  
18 available by the customer.

19  
20 Where adjustments are identified within the program year, the changes are applied to the  
21 individual project. Where adjustments are identified after-the-fact within the project sample  
22 through the CPSV process, they are reflected in the overall realization rate, and applied to the

1 overall custom project portfolio. Through this process Union ensures the custom DSM results  
2 represent best available information at the time of the audit. However, neither Union nor its  
3 customers are able to predict all future changes which would increase or decrease project savings  
4 (for example the date at which a currently profitable plant may close or expand production).

5 Under these circumstances, economic and market driven factors cannot realistically be reflected.

6  
7 Another determining factor in quantifying persistence is technical degradation which is  
8 accounted for on a per project basis. Union accounts for persistence in custom projects with  
9 considerations of equipment efficiencies, operating conditions and the operating life of similar or  
10 demonstrated equipment/process performance when assessing the high efficiency case and EUL,  
11 relative to the base case, to ensure the savings claim is accurate.

12  
13 Union's Custom EUL Guide is included in Exhibit A, Tab 3, Appendix D. This guide is based  
14 on a combination of accredited substantiated references and qualified engineering judgement that  
15 takes into account technical degradation.

16  
17 A formal post audit persistence savings study has been noted by the Board as a priority (EB-  
18 2013-0352, Decision and Order in the application by Enbridge for approval of the final balances  
19 and for clearance of certain DSM Variance Accounts dated May 1, 2014) which will be  
20 coordinated by Board Staff according to the new DSM Framework (Section 7.2).

## **10.0 Research**

For 2016-2020, Union will continue to follow the process as outlined at Exhibit A, Tab 2, Section 10, for DSM related research. The Research budget for 2016-2020 is outlined at Exhibit A, Tab 3, Section 2.

## **11.0 Stakeholder Consultation**

As noted at Exhibit A, Tab 1, Section 7, Union took a comprehensive approach to meeting with stakeholders both in advance of and after the release of the Framework and Guidelines. The various sessions that Union held proved to be valuable in the development and finalization of Union's 2015-2020 DSM Plan. Table 9 below is a summary of the key meetings Union held throughout 2013, 2014 and 2015:

Table 9

Summary of 2016-2020 DSM Plan Stakeholder Meetings

Date	Stakeholder Engagement	Items Covered
November 1, 2013	Union initiation of 2015-2020 DSM Plan Consultation with intervenors through a formal request for Program input	Union sent an email to intervenors seeking input on Union's existing program offerings as well as providing their thoughts around any new program offerings they wanted Union to explore.
December 11, 2013	DSM Consultative Meeting	Ten potential new Program concepts were presented to intervenors to seek input on them. These included: <ul style="list-style-type: none"><li>• Home Labeling</li><li>• On-Bill Financing</li><li>• Benchmarking</li><li>• Retro-commissioning</li><li>• Direct Install for Small Businesses</li><li>• Commercial New Construction</li><li>• Strategic Energy Management</li><li>• Simplified Custom</li><li>• Holistic Low-Income Multi-Family Retrofit</li></ul>

		<ul style="list-style-type: none"> <li>Fuel Switching</li> </ul>
<p>Five sessions were held on the following dates:</p> <p>January 21, 2014</p> <p>February 19, 2014</p> <p>April 8, 2014</p> <p>April 25, 2014</p> <p>September 11, 2014</p>	Low Income Working Group meetings regarding Low Income Market Rate Multi-Family	<p>Items discussed in these sessions included:</p> <ul style="list-style-type: none"> <li>Barriers preventing Low Income Market Rate Multi-Family Property Owners from leveraging existing C/I Program</li> <li>Financial and non-financial barriers</li> <li>Identification of areas/communities with a propensity to be low income</li> <li>Building eligibility criteria</li> <li>Update from Advocacy Center for Tenants Ontario on available research and data</li> <li>Information Received on barriers to participation in Enbridge's LIMRMF Program from Property Owners</li> <li>Eligibility requirements</li> <li>Incentives</li> <li>Tenant Education</li> </ul>
August 13, 2014	Union and Enbridge 2015-2020 DSM Plan Consultation	<p>Union and Enbridge held a joint session to discuss alignment on potential new Program offerings. Items discussed included:</p> <ul style="list-style-type: none"> <li>Home Reno Rebate</li> <li>Residential New Construction</li> <li>Residential Behavioural</li> <li>C/I Prescriptive</li> <li>C/I Direct Install</li> <li>Strategic Energy Management</li> <li>C/I Custom</li> <li>Low Income Single Family Weatherization</li> <li>Low Income Multi-Residential, prescriptive, custom and market rate</li> <li>Benchmarking</li> <li>Aboriginal Conservation</li> </ul>
September 11, 2014	Low Income Consultative	<p>Union discussed the following items with Low Income stakeholders:</p> <ul style="list-style-type: none"> <li>Single family; marketing, screening, savings potential, CDM collaboration and education</li> <li>Multi-Family; tenant education, education awareness, private market multi-family buildings, benchmarking and program screening</li> </ul>
January 14, 2015	Union DSM Consultative	Union met with stakeholders to review the approach to the 2015 Plan based on the direction from the Board to, "...roll-

		<p>forward their 2014 DSM plans, including all programs and parameters (i.e., budgets, targets, incentive structure) into 2015". Union reviewed the following items with stakeholders:</p> <ul style="list-style-type: none"> <li>• 2015 Program Approach</li> <li>• 2015 Scorecards, Targets and Budgets</li> </ul>
February 18, 2015	Union DSM Consultative	<p>Union met with stakeholders to review the following items regarding the 2015-2020 DSM Plan:</p> <ul style="list-style-type: none"> <li>• Changes to the 2015 Plan based on feedback from stakeholders at the Consultative Session held on January 14</li> <li>• 2016 – 2020 directional Program Proposals for Residential, Low Income, Commercial/Industrial Prescriptive and Market Transformation</li> <li>• Proposed scorecard and metrics for the Program areas noted above</li> </ul>
March 4, 2015	Union DSM Consultative	<p>Union met with stakeholders to review the following items regarding the 2015-2020 DSM Plan:</p> <ul style="list-style-type: none"> <li>• Changes to the 2016-2020 directional Program Proposals for Residential, Low Income, Commercial/Industrial Prescriptive and Market Transformation based on feedback from stakeholders at the Consultative Session held on February 18</li> <li>• 2016-2020 directional Program Proposal for Commercial/Industrial Custom and Large Volume</li> <li>• 2016-2020 Resource Acquisition and Low Income scorecards, budgets and shareholder Incentive</li> <li>• Residential rate impact</li> <li>• Conservation Demand Management Collaboration</li> <li>• DSM and Infrastructure Planning</li> <li>• DSM Tracking and Reporting System requirements</li> </ul>
March 11, 2015	Union DSM Consultative	<p>Union met with stakeholders to review the following items regarding the 2015-2020 DSM Plan:</p> <ul style="list-style-type: none"> <li>• 2016-2020 Program Proposal Updates for all markets</li> <li>• Portfolio budget</li> </ul>

		<ul style="list-style-type: none"><li>• 2016-2020 Scorecards with proposed metrics and formulas</li><li>• Proposed allocation of shareholder incentive across scorecards</li><li>• Allocation of budget across rate classes</li></ul>
--	--	---

Materials for all sessions noted above including, meeting attendees, meeting invitations, agendas and presentations can be found in Exhibit A, Tab 3, Appendix B.

## **12.0 Framework Considerations**

### **12.1. Treatment of Rate T1 Customers**

In 2016, Union is proposing to continue offering Rate T1 customers Commercial/Industrial programs and include them in the Resource Acquisition Scorecard. These programs are described in detail in Exhibit A, Tab 3, Appendix A, Section 1.1. Rate T1 is currently included on the Large Volume Scorecard due to the timing of splitting Rate T1 into a mid-size Rate T1 class and a large Rate T2 class. The programs offered to Rate T1 customers are different than the programs offered to Rate T2 and Rate 100 customers and continue to be consistent with the Commercial/Industrial Custom Offering on the Resource Acquisition Scorecard from 2012-2015. Union is proposing to exclude Rate T1 from the definition of Large Volume rate classes given the significant differences between Rate T1 and Rate T2 in terms of daily contracted demand and annual consumption. Rate T1 customers are similar in composition to customers in Union's Rate M4 and Rate M7 rate classes. Further, the Rate T1 rate class is similar to Enbridge's Rate 100 rate class, which is also not included in the definition of Large Volume rate class within the

Board's Framework. Accordingly, the Rate T1 rate class should be treated consistently with Rate M4 and Rate M7 and Enbridge's Rate 100.

This section of evidence is organized as follows:

1. The 2013 Board-approved Rate T1 redesign
2. Timing of DSM Proceedings relative to Rate T1 redesign
3. Comparison of the Rate T1, Rate T2, Rate M4 and Rate M7 rate classes
4. Comparison of Rate T1/Rate T2 to Enbridge's Rate 100/Rate 125

1. 2013 Board-approved Rate T1 Redesign

In EB-2011-0210 (Union's 2013 cost of service proceeding), Union proposed to split the existing Rate T1 rate class into a new Rate T1 mid-market rate class and a new Rate T2 large-market rate class. Union proposed to split Rate T1 to better align cost incurrence and cost recovery by recognizing the differences in distribution demand and distribution customer-related costs between small Rate T1 and large Rate T1 customers. The proposed split also addressed the significant diversity in daily contracted demand and firm annual consumption that existed between small and large customers within the Rate T1 rate class.

In its EB-2011-0210 Decision, dated October 25, 2012, the Board approved the split of Rate T1 into a new Rate T1 rate class and a new Rate T2 rate class, effective January 1, 2013. As a result of the Board's Decision, Union was able to address the significant diversity in daily contracted

demand and firm annual consumption that existed within the previous Rate T1 rate class through the introduction of Rate T2.

The 2013 Board-approved average firm daily contracted demand in Rate T1 is approximately 56,000 m<sup>3</sup>/day, while the 2013 Board-approved average firm daily contracted demand in Rate T2 is approximately 890,000 m<sup>3</sup>/day (or 16 times greater). Similarly, the average firm annual consumption in Rate T1 is approximately 13,000,000 m<sup>3</sup>/year, while the average firm annual consumption in Rate T2 is approximately 200,000,000 m<sup>3</sup>/year (or 15 times greater). Please also see Table 10 below.

Table 10

Summary of Rate T1 – 2013 Board-approved Firm Contracted Demand and Firm Annual Consumption with and without Rate T1 Redesign

Line No.	Particulars		2013 Rate T1 without Redesign	Rate T1 Redesign	
				Rate T1	Rate T2
			(a)	(b)	(c)
1	Firm Contracted Demand (m <sup>3</sup> /day)	MIN	9,300	9,300	165,000
2		MAX	2,755,000	140,000	2,755,000
3		AVG	343,191	55,812	889,212
4		MED	67,800	48,750	669,000
5	Annual Firm Volume (m <sup>3</sup> )	MIN	4,640,210	4,640,210	22,590,890
6		MAX	836,320,120	42,600,000	836,320,120
7		AVG	78,383,593	12,795,770	199,721,065
8		MED	13,628,490	10,726,120	146,616,000
<u>Note:</u> Table 1 above is Table 15 in EB-2011-0210, Exhibit H1, Tab 1, Page 40, updated: 2012-07-13.					



1 Given the significant differences between Rate T1 and Rate T2, classifying both rate classes as  
2 Large Volume is not appropriate. As described in more detail below, the composition of the  
3 Rate T1 rate class is similar to Union's Rate M4 and Rate M7 rate classes.

4  
5 2. Timing of DSM Proceedings relative to Rate T1 redesign

6 Union's 2012-2014 DSM Plan (EB-2011-0327) was filed on September 23, 2011, prior to the  
7 filing of Union's EB-2011-0210 evidence in which it proposed to split Rate T1. In its 2012-2014  
8 DSM Plan Union introduced a separate Large Volume balanced scorecard to provide additional  
9 transparency for the targets and rate impacts for customers in Rate T1 and Rate 100. As part of  
10 the EB-2011-0327 Settlement Agreement, Union agreed to file a new Large Industrial Rate T1 /  
11 Rate 100 DSM plan for 2013 and 2014.

12  
13 Union filed its 2013-2014 Large Volume DSM Plan (EB-2012-0337) on August 31, 2012. The  
14 plan was premised on the old Rate T1 rate class, as the Board had not approved Union's Rate  
15 T1/Rate T2 proposal at that time. Rate T1 continued to be included in the Large Volume  
16 balanced scorecard, however, it was proposed it be treated differently than Rate T2 and Rate 100  
17 in the 2013-2014 Large Volume DSM Plan. Union proposed that Rate T1 customers maintain  
18 access to an aggregate pool of customer incentives throughout the year, while Rate T2 and Rate  
19 100 would change to a Direct Access budget mechanism. The Board approved Union's  
20 proposals in its March 19, 2013 Decision.

3. Comparison of the Rate T1, Rate T2, Rate M4 and Rate M7 rate classes

The composition of the new Rate T1 rate class is more similar to Union's Rate M4 and Rate M7 rate classes than to Rate T2.

*2013 Board-Approved Contracted Demand and Annual Consumption*

As described above, the 2013 Board-approved average firm daily contracted demand in Rate T1 is approximately 56,000 m<sup>3</sup>/day, while the average firm daily contracted demand in Rate T2 is approximately 890,000 m<sup>3</sup>/day (or 16 times greater).

The 2013 Board-approved average firm daily contracted demand in Rate M4 is approximately 11,000 m<sup>3</sup>/day, which is comparable to the Rate T1 average firm daily contracted demand of 56,000 m<sup>3</sup>/day. The average Rate T1 firm daily contracted demand is only five times greater than the average firm daily contracted demand in Rate M4, while in contrast, the Rate T2 average firm daily contracted demand is 16 times greater than Rate T1 and 80 times greater than Rate M4.

Further, the 2013 Board-approved average firm annual consumption in Rate T1 is approximately 13,000,000 m<sup>3</sup>/year, while the average firm annual consumption in Rate T2 is approximately 200,000,000 m<sup>3</sup>/year (or 15 times greater).

The 2013 Board-approved average firm annual consumption in Rate M4 is approximately 2,650,000 m<sup>3</sup>/year, which is similar to the Rate T1 average of 13,000,000 m<sup>3</sup>/year. The average

Rate T1 firm annual consumption is only five times greater than the average firm annual consumption in Rate M4, while in contrast, the Rate T2 average firm annual consumption is 15 times greater than Rate T1 and 75 times greater than Rate M4. Please see Table 11 below.

Table 11

Summary of 2013 Board-approved - Firm Contracted Demand and Firm Annual Consumption  
Rate T1, Rate T2, Rate M4 and Rate M7

Line No.	Particulars		Rate T1			
			Rate T1	Rate M4	Rate M7	Rate T2
			(a)	(b)	(c)	(d)
1	Firm Contracted Demand (m³/day)	MIN	9,300	4,800	60,000	165,000
2		MAX	140,000	50,000	820,000	2,755,000
3		AVG	55,812	11,317	127,371	889,212
4		MED	48,750	7,500	85,000	669,000
5	Annual Firm Volume (m³)	MIN	4,640,210	700,800	2,475,880	22,590,890
6		MAX	42,600,000	14,400,000	52,235,000	836,320,120
7		AVG	12,795,770	2,652,236	15,392,376	199,721,065
8		MED	10,726,120	1,950,010	10,844,140	146,616,000
<u>Notes:</u> Rate T1 and Rate T2 reflect the Board-approved rate redesigns implemented in 2013 and based on the 2013 approved forecast. Rate M4 and Rate M7 reflect the Board-approved rate redesigns implemented in 2014 and based on the 2013 approved forecast.						

*Rate Class Eligibility*

As described above, the Board-approved rate class eligibility for Rate M4, Rate M5 and Rate M7 changed effective January 2014. Rate T1 customers can meet the rate class eligibility for either

Rate M4 or Rate M7 depending on their level of firm daily contracted demand. Accordingly, Rate T1 customers have the ability to remain in the semi-bundled Rate T1 service or select the bundled Rate M4 or Rate M7 services. Rate T1 customers cannot meet the rate class eligibility requirements for Rate T2. Please see Table 12 below for a summary of the rate eligibility criteria for Rate T1, Rate M4, Rate M7 and Rate T2.

Table 12

Rate Class Eligibility

Line No.	Particulars		Rate T1	Rate M4	Rate M7	Rate T2
			(a)	(b)	(c)	(d)
1	Firm Contracted Demand	MIN	n/a	2,400	60,000	140,870
2	(m <sup>3</sup> /day)	MAX	140,870	60,000	n/a	n/a

Finally, in Section 6.2 of the DSM Framework, the Board describes Rate T1, noting that:

*“Customers in this rate class include manufacturing plants, chemical plants, large processors/greenhouses and small specialty steel plants”.*

The Rate M4 and Rate M7 rate classes include similar types of customers as the Rate T1 rate class. Specifically, Rate M4 and Rate M7 include manufacturers, chemical plants and large processors/greenhouses. Many customers qualify for the volumetric requirement of the Rate T1 rate of 2,500,000 m<sup>3</sup>/year, but choose to remain in Rate M4 or Rate M7.

1 The rationale for remaining as a bundled customer in Rate M4 or Rate M7 is varied. Some  
2 customers prefer the ease and convenience of the bundled balancing service over the semi-  
3 unbundled Rate T1 service. The savings of associated with T1 service are not significant (as a  
4 total cost of their annual natural gas costs) and would be partially offset by the costs of having a  
5 third party energy manager administer the storage balance on a daily basis. Other customers  
6 choose to remain bundled to keep their energy contract as simple as possible as the energy  
7 contract is not within their area of expertise. There are several customers that have multiple  
8 locations, some of which would qualify for the T1 rate while others would not. In these  
9 instances, it is easier for them to manage the energy portfolio if all customers are part of the  
10 same rate, or at least manage to the same balancing parameters.

11  
12 In summary, similar types of customers of comparable size are included in Rate M4, Rate M7  
13 and Rate T1. In effect, Rate T1 service is interchangeable with Rate M4 or Rate M7 service  
14 depending on the customer's preference for a fully bundled service or a semi-bundled service.

15  
16 4. Comparison of Rate T1/Rate T2 to Enbridge's Rate 100/Rate 125

17 In addition to the similarities between Union's Rate T1, Rate M4 and Rate M7 described above,  
18 the rate class eligibility for Rate T1 is also similar to Enbridge's Rate 100 eligibility. Enbridge's  
19 Rate 100 is not defined as a Large Volume rate class in the Board's DSM Framework.

20  
21 Specifically, the Rate T1 rate class has a maximum firm daily contracted demand of up to  
22 140,870 m<sup>3</sup>/day. This rate class eligibility is similar to Enbridge's Rate 100, which requires a

maximum daily volume of not less than 10,000 m<sup>3</sup> and not more than 150,000 m<sup>3</sup>. In Union's view, given the similarities between Rate T1 and Enbridge's Rate 100, it is not appropriate for Rate T1 customers to be defined as a Large Volume rate class while similar customers in Enbridge's Rate 100 are not.

By comparison, Union's Rate T2 rate class has a minimum firm daily contracted demand of 140,870 m<sup>3</sup>/day and no maximum firm daily contracted demand. The Rate T2 rate class eligibility is similar to Enbridge's Rate 125 rate class, which requires a minimum firm daily contracted demand of 600,000 m<sup>3</sup>/day and also has no maximum firm daily contracted demand.

Both Rate T2 and Enbridge's Rate 125 are defined as Large Volume in the DSM Framework.

Please see Table 13 below for a comparison of Rate T1/Rate T2 and Enbridge's Rate 100/Rate 125 firm daily contracted demand requirements.

Table 13

Comparability of Union and Enbridge Firm Rate Eligibility

Line No.	Particulars	Union Rate T1 (1) (a)	Enbridge Rate 100 (2) (b)	Union Rate T2 (1) (c)	Enbridge Rate 125 (2) (d)
1	Minimum CD	n/a	10,000	140,870	600,000
2	Maximum CD	140,870	150,000	n/a	n/a

Notes:

- (1) Union's Rate T1 and Rate T2 parameters per EB-2011-0210.
- (2) Enbridge's Rate 100 and Rate 125 parameters per EB-2014-0276 Rates Handbook.

1 In summary, based on the significant differences between Rate T1 and Rate T2, the similarities  
2 of Rate T1 with bundled contract rates M4 and Rate M7 and the comparison of large volume rate  
3 classes between Union and Enbridge, Union is proposing to include Rate T1 in the  
4 Commercial/Industrial DSM programs within the Resource Acquisition Scorecard.

5  
6 **12.2. Fee-for-Service**

7 Union accepts the need articulated in the Framework to reduce the scale of ratepayer impact and  
8 potential cross-subsidization between ratepayers. However, Union has concluded that it should  
9 not offer a program based on fee-for-service consulting services on energy management for the  
10 following reasons:

- 11 • It would not be appropriate to develop fee-for-service offerings with Board-approved  
12 regulated rates when these services are already offered competitively in the market.
- 13 • Making reliable determinations of the actual natural gas savings from projects Union  
14 participates in would be required for Union to track savings for the purpose of  
15 determining a performance incentive. It would not be justifiable for a customer to devote  
16 staff resources to this activity without receiving a customer incentive.
- 17 • Reporting and receiving a performance incentive based on customer savings achieved as  
18 a result of fee-for-service consulting would constitute a potential conflict of interest for  
19 Union.

- Consultations with Large Volume customers showed that the nature of Union's technical contacts' interactions with the customer's energy team members and other staff does not lend itself to a fee-for-service approach.

Instead, based on direct customer input, Union has determined that it is appropriate for Union to offer a multi-year ratepayer-funded Rate T2/Rate 100 program. The scope of the proposed program would be significantly narrower than in the past, focusing on those items customers have identified as most important. The program cost would also be significantly reduced. A program of this nature will support large volume customers by ensuring a continued focus on energy efficiency by providing training and resources that will sustain the efforts to date. In view of the demonstrated high participation rates in the prior years' ratepayer-funded programs, the results of customer consultations in February and March 2015, and contributing to the achievement of Goal (ii) in Section 1.4 of the Framework to "Promote energy conservation and energy efficiency to create a culture of conservation", Union believes this is a natural and appropriate evolution of the DSM programs for this market. Union proposes the following:

- Continuing specialized technical support and equipment audits by qualified Union Professional Engineers on an as-requested basis.
- Coordinating and delivering training on energy near plant locations or online to minimize customer staff time away from the plant.
- Eliminating customer incentive payments for studies, capital or operations & maintenance equipment investments (as outlined in Framework).
- Eliminating costs associated with energy saving targets and performance measurement.



- Eliminating Rate T2/Rate 100 energy savings targets and Union's performance incentive.

### **12.3. Pay-for-Performance**

Union will begin to investigate a pay-for-performance mechanism, combining both the cost recovery and shareholder incentive into one standard rate. Union's approach to assessing pay-for-performance will include a jurisdictional scan to determine if it has been prevalent in other jurisdictions in North America and to identify industry best practices. Union will review the approach used in the CDM Framework and will continue to leverage electric LDCs' experience as their pay-for-performance approach develops. In addition, Union will examine the associated strengths, risks, impacts and limitations of this approach to guide the potential development of the structure. An in-depth quantitative analysis of Union's current programs will be conducted to determine which programs are conducive to a pay-for-performance approach and the appropriate rate (\$/m<sup>3</sup>) will be determined. This includes detailed financial modeling to determine the costs and results of a pay-for-performance structure for various scenarios based on past historical results and projected results. If deemed appropriate, Union will put forth a proposal for the Board to consider at the mid-term review.

### **13.0 Rate Impacts**

Guiding Principle 2 of the Framework states: "*Achieve all cost-effective DSM that result in a reasonable rate impact.*" The purpose of this evidence is to describe the rate impacts for all rate classes participating in Union's DSM programs.

1 This section of evidence is organized as follows:

2 1. Bill Impacts

3 2. Rate M4, Rate M5 and Rate M7 Proposal

4  
5 1. Bill Impacts

6 At Section 4.2 of the Framework the Board states:

7 *“Therefore, the Board has determined that for DSM activities between 2015 and 2020,*  
8 *the gas utilities’ annual DSM budgets should be guided by the simple principle that DSM*  
9 *costs (inclusive of both DSM budget amounts and shareholder incentive amounts) for a*  
10 *typical residential customer of each gas utility should be not greater than approximately*  
11 *\$2.00/month.”*

12  
13 Please see Exhibit A, Tab 3, Appendix E, Schedule 1 for a summary of the 2016 to 2020 DSM  
14 costs to be recovered in rates, including the 100% target incentive, compared to the 2015 DSM  
15 budget included in current approved rates.

16  
17 For the purposes of determining the bill impact for an average residential customer, Union  
18 compared the 2015 DSM budget included in current approved rates to the proposed 2020 DSM  
19 budget, including the 100% target incentive.

20  
21 In comparison to 2015 Board-approved rates per EB-2014-0356 (Union’s January 2015 QRAM),  
22 the annual bill impact for the average Rate M1 residential customer in Union South consuming

1 2,200 m<sup>3</sup> per year is an increase of approximately \$15 by 2020. In 2020, the average Rate M1  
2 residential customer will pay approximately \$23 per year or \$1.92 per month in DSM costs. This  
3 amount represents approximately 3.1% of the current approved bill.

4  
5 For the average Rate 01 residential customer in Union North consuming 2,200 m<sup>3</sup> per year, the  
6 bill impact is an increase of approximately \$17 by 2020. In 2020, the average Rate 01 residential  
7 customer will pay approximately \$26 per year or \$2.20 per month in DSM costs. This amount  
8 represents approximately 2.6% of the current approved bill.

9  
10 In accordance with the Framework, by 2020 the average residential customer in Union's  
11 franchise will pay approximately \$24 per year or \$2.00 per month in DSM costs. Please also see  
12 Exhibit A, Tab 3, Appendix E, Schedule 2, lines 1, 6 and 15 for the bill impacts for the average  
13 residential customer in 2020.

14  
15 The 2020 bill impacts for Union's other in-franchise rate classes where it offers DSM programs  
16 range from DSM costs representing between 0.1% to 8.6% of the current approved bill.  
17 Specifically, 2020 DSM costs in Rate 100 will represent 0.1% of the current approved bill, while  
18 2020 DSM costs in Rate M7 will represent 8.6%. With the exception of Rate M7, the bill  
19 impacts associated with Union's DSM programs in other in-franchise rate classes are consistent  
20 with the impacts to the average residential customer. DSM costs representing 8.6% of a typical  
21 Rate M7 bill in 2020 are not reasonable. Union's proposal to address the Rate M7 bill impacts is  
22 described below.

1 Please see Exhibit A, Tab 3, Appendix E, Schedule 2 for the 2020 bill impacts for all in-  
2 franchise rate classes where Union offers DSM programs.

3  
4 At Section 4.2 of the Framework the Board further states:

5 *“For each program proposed by the gas utilities, they should also include anticipated overall*  
6 *cost impacts (budget and shareholder incentive) for a typical customer in each rate class,*  
7 *and projected monthly and annual bill reductions for a typical participant and the overall*  
8 *costs borne by a typical non-participating customer. ”*

9  
10 Union has forecasted annual natural gas savings from 2016 to 2020 based on the expected  
11 number of participating customers by rate class. To determine the projected annual and monthly  
12 bill reductions for a typical participating customer by rate class, Union has calculated the average  
13 annual volume savings per customer in each rate class and multiplied the savings by the average  
14 unit rate associated with the variable portion of a customer’s bill.

15  
16 For the average Rate M1 residential customer in Union South participating in Union’s DSM  
17 programs, Union estimates annual volume savings of 65 m<sup>3</sup> in 2020. Based on the variable  
18 portion of a Rate M1 residential customer’s bill, the annual volume savings of 65 m<sup>3</sup> result in a  
19 bill reduction of approximately \$15 per year or \$1.23 per month. This bill reduction represents  
20 one year of natural gas savings and does not reflect customer incentives received or other utility  
21 savings (e.g. electricity, water). As described above, the average Rate M1 residential customer

1 will pay approximately \$23 per year or \$1.92 per month in DSM costs in 2020, regardless of  
2 their participation in Union's DSM programs.

3  
4 For the average Rate 01 residential customer in Union North participating in Union's DSM  
5 programs, Union estimates annual volume savings of 65 m<sup>3</sup> in 2020. Based on the variable  
6 portion of a Rate 01 residential customer's bill, the annual volume savings of 65 m<sup>3</sup> result in a  
7 bill reduction of approximately \$23 per year or \$1.91 per month. This bill reduction represents  
8 one year of natural gas savings and does not reflect customer incentives received or other utility  
9 savings (e.g. electricity, water). As described above, the average Rate 01 residential customer  
10 will pay approximately \$26 per year or \$2.20 per month in DSM costs in 2020, regardless of  
11 their participation in Union's DSM programs.

12  
13 Please see Exhibit A, Tab 3, Appendix E, Schedule 4 for the annual and monthly bill reductions  
14 associated with the estimated annual volume savings by rate class in comparison to the DSM  
15 costs included in rates.

16  
17 2. Rate M4, Rate M5 and Rate M7 Proposal

18 As noted above, 2020 DSM costs will represent 8.6% of a typical Rate M7 bill based on current  
19 approved rates. Similarly, 2020 DSM costs will represent approximately 4.2% of the current  
20 approved Rate M4 bill and 2.4% of the current approved Rate M5 bill. 2020 DSM costs in Rate  
21 M7 in proportion to the current approved bill are approximately two times greater than Rate M4  
22 and three times greater than Rate M5. The discrepancy between the proportion of DSM costs in

Rate M7 as compared to Rate M4 and Rate M5 is the result of rate class eligibility changes approved by the Board in EB-2011-0210, effective January 1, 2014.

Background

In EB-2011-0210, Union proposed to lower the rate class eligibility criteria for the mid-market bundled contract rate classes (Rate M4 and Rate M5) and the large volume bundled contract rate class (Rate M7), effective January 1, 2014. In particular, Union proposed to lower the Rate M7 eligibility to a daily contract demand of 60,000 m<sup>3</sup> from 140,870 m<sup>3</sup>. This minimum daily contracted demand for Rate M7 aligned with the proposed maximum daily contracted demand for Rate M4 and Rate M5. In its EB-2011-0210 Decision, the Board approved Union's proposed rate class eligibility changes. As a result of this change, 22 Rate M4 and Rate M5 customers in Union's 2013 Board-approved forecast were required to move to Rate M7 effective January 1, 2014.

During its 2014 to 2018 Incentive Regulation Mechanism ("IRM"), Union's rates are set based on the 2013 Board-approved volume forecast, subject to specific volume adjustments related to changes in normalized average consumption ("NAC") and DSM savings ("LRAM") only.

Union's ratemaking process during IRM does not recognize the annual volumes (i.e. billing units) associated with the transition of 22 customers from Rate M4 and Rate M5 to Rate M7, while Union's proposed 2016 to 2020 DSM budget reflects the current number of customers in all three rate classes. The 2013 Board-approved volumes associated with the 22 customers that

1 transitioned to Rate M7 are approximately 300,000  $10^3\text{m}^3$ , or two times greater than the 2013  
2 Board-approved Rate M7 volumes of 147,000  $10^3\text{m}^3$ . As a result, in the absence of Union's  
3 proposal, the proportion of DSM costs in a Rate M7 customer's bill would be substantially  
4 higher than in Rate M4 or Rate M5.

5  
6 *Union's Proposal*

7 To address the discrepancy between the proportion of DSM costs in Rate M7 compared to Rate  
8 M4 and M5, Union proposes to pool the proposed DSM costs for these three rate classes and  
9 reallocate the costs in proportion to 2015 approved billing units. Union is proposing this  
10 approach for ratemaking purposes from 2016 to 2018.

Table 14

Re-Allocation of Proposed DSM Budget for Rate M4, M5, and M7

Line No.	Particulars	Rate Class Specific DSM Unit Rate			Common DSM Unit Rate			
		2020 Proposed DSM Budget (\$000s)	2020 Proposed DSM Rates (cents/m <sup>3</sup> )	Percent Of Bill (%)	2020 Proposed DSM Budget (\$000s)	2020 Proposed DSM Rates (cents/m <sup>3</sup> )	Percent Of Bill (%)	Change in DSM Budget (\$000s)
		(a)	(b)	(c)	(d)	(e)	(f)	(g) = (d - a)
1	Rate M4	3,637	0.9532	4.2%	3,200	0.8385	3.7%	(438)
2	Rate M5	2,609	0.5099	2.4%	4,291	0.8385	4.0%	1,682
3	Rate M7	2,415	1.7292	8.6%	1,171	0.8385	4.2%	(1,244)
4	Total	<u>8,661</u>			<u>8,661</u>			

1

2

3 As shown in Table 14 above, combining and reallocating the proposed 2020 DSM costs for Rate

4 M4, Rate M5 and Rate M7 results in similar proportions of DSM costs in all three rate classes.

5 Specifically, Union's proposal reduces the DSM costs allocated to Rate M7 from \$2.415 million

6 to \$1.171 million (or \$1.2 million) and decreases the proportion of DSM costs in the current

7 approved bill from 8.6% to 4.2%.

8

9 For Rate M4, Union's proposal decreases the allocated DSM costs from \$3.637 million to \$3.200

10 million (or \$0.4 million) and decreases the proportion of DSM costs in the current approved bill

11 from 4.2% to 3.7%.

12



1 For Rate M5, Union's proposal increases the allocated DSM costs from \$2.609 million to \$4.291  
2 million (or \$1.7 million) and increases the proportion of DSM costs in the current approved bill  
3 from 2.4% to 4.0%.

4  
5 Please see Exhibit A, Tab 3, Appendix E, Schedule 3 for the 2020 bill impacts for all in-  
6 franchise rate classes, including Union's Rate M7 proposal.

7  
8 Union is also proposing to revise the DSMVA deferral account disposition treatment for Rate  
9 M4, Rate M5 and Rate M7 for 2016 to 2018. To align with Union's ratemaking proposal  
10 described above, Union proposes to track the variance between the DSM budget included in rates  
11 and actual DSM spending in Rate M4, Rate M5 and Rate M7 in the DSMVA on a pooled basis.

12  
13 At its next cost of service proceeding, when Union's volume forecast reflects the current  
14 approved rate class eligibility for the Rate M4, Rate M5 and Rate M7 rate classes, Union will  
15 include the DSM budget in rates consistent with the proposed 2016 to 2020 DSM budget. This  
16 approach will ensure that the DSM costs included in rates and the DSM plan are aligned and  
17 eliminate the requirement to pool the DSM costs for these rate classes, as proposed for 2016 to  
18 2018.

## **Proposed 2016-2020 DSM Programs**

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## **Resource Acquisition**

### ***1.0 Residential Program***

Union's proposed 2016-2020 Residential Program builds on the success of the existing Residential offerings while incorporating new offerings and elements. The changes proposed are in response to the guiding principles and key priorities outlined in the Framework and Guidelines and Union's experience in delivering DSM offerings to the Residential market. Additionally, Union has considered stakeholder feedback regarding its next generation residential DSM program.

Union will expand the Home Reno Rebate offering across the Union franchise area, and will continue to develop its Service Organization and contractor network to generate participant leads and provide an effective and efficient customer experience start-to-finish. In 2016, Union will introduce a bonus incentive and raise the maximum rebate allowance per home. These rebate adjustments are designed to encourage residential customers to pursue all identified natural gas savings opportunities in their home.

Union will introduce a behavioural offering in late 2016. This offering will be delivered through Home Energy Reports sent to residential customers with relatively high natural gas use, and will include an Online Portal available to all residential customers. The offering will provide customers with relevant natural gas usage comparisons and actionable recommendations to drive natural gas savings, as well as serve as a channel to drive participation in Union's Home Reno Rebate and Energy Savings Kit ("ESK") offerings.

Union's ESK offering will continue to be delivered through the most cost-effective channels and will act as a complement to the Home Reno Rebate and Behavioural offerings. Union has decreased its focus on ESK's relative to the 2012–2014 Plan to reflect the shift in emphasis towards Home Reno Rebate and Behavioural.

Further details regarding Union's Residential Program are provided below.

#### **1.0.1 Customer Class(es) Targeted**

- Residential

#### **1.0.2 Rate Classes Targeted**

- Rate M1, Rate 01

### 1.0.3 Goals

- The goal of the Residential program is to provide holistic whole-home savings and broad access to energy savings opportunities and education. The program is designed to achieve the Board's guiding principles and key priorities within the budget guidelines. To optimize the program within this context, the offerings goals are to:
  - ***Home Reno Rebate:*** Generate long term savings, avoid lost opportunities and encourage a holistic approach to energy efficiency
  - ***Behavioural Offering:*** Enhance energy literacy and promote efficient behaviours and participation in Home Reno Rebate and Energy Savings Kits
  - ***Energy Savings Kits:*** Pursue cost-effective energy savings and serve as a complement to other offerings

### 1.0.4 Program Strategies

- Strategies to achieve Union's program goals include:
  - Assist participants in making informed energy decisions through support for comprehensive home energy assessments and related energy efficiency improvement recommendations
  - Ensure information is translated into action through the provision of energy savings measures and rebates to drive whole home retrofits
  - Maintain engagement through the use of customized customer data to help make customers more aware of their natural gas usage trends, benchmarking them against their peers, and providing meaningful advice about how to improve their energy efficiency on an ongoing basis

### 1.0.5 Program Offerings

The offerings delivered in the Residential Program are outlined below.

#### **Home Reno Rebate Offering**

Union introduced the Home Reno Rebate offering in 2012. The offering takes a holistic approach to energy savings by helping homeowners understand opportunities throughout their home and encouraging them to install multiple deep, long-lasting measures.

Home Reno Rebate is strongly aligned with the Board's guiding principles and key priorities, and Union's focus on the offering will correspondingly continue to grow, with increased planned participation over the term of the Plan.

As well, Union envisions the Home Reno Rebate offering, in tandem with the Behavioural offering, as a critical vehicle for increasing energy literacy amongst Residential customers. Completing an energy assessment is not only a precursor to installing measures that result in long-lived energy savings, but also a source of energy information that can help consumers make informed energy choices on a daily basis.

### ***Description***

- Participants of the Home Reno Rebate offering work with a partner Service Organization to complete an initial energy assessment (known as the "D Assessment") to establish the home's current energy use and identify energy saving opportunities in the home. A critical component of the D Assessment is a blower door test that measures air tightness.
- The Service Organization provides a report to the participant outlining energy saving opportunities, along with the home's EnerGuide rating and energy saving tips and information.
- Rebates are available for completing energy assessments and implementing opportunities recommended from the D Assessment:
  - Building envelope: air sealing and insulation (basement, attic, and exterior wall)
  - Products: furnace, boiler, water heater, window, door or skylight
- After the upgrades are made, participants complete a second energy assessment (known as the "E Assessment") to determine energy savings.

### ***Target Market***

- Home Reno Rebate offering targets residential customers in detached, semi-detached, townhouses and individually metered row townhouses. Participants must have a natural gas furnace/boiler.
- Home Reno Rebate participants typically exhibit higher than average natural gas consumption and live in homes built prior to 1977.
- Union intends to target customers across the Union's franchise area. In the 2012-2014 period, the offering was gradually expanded throughout central and southern Ontario.

### ***Incentive Level***

- Assessment rebates:
  - Union provides a rebate for the D and E Assessments (\$500), provided all of the eligibility criteria and program rules have been met.
- Measure rebates:

- Rebates are available for building envelope and ENERGY STAR measures, as shown in Table 1 below. These rebate levels are consistent with 2015.

Table 1  
Measure Rebates

Measure	Rebate	Description
Basement Insulation	\$1,000	For adding at least R23 to 100% of basement
	\$500	For adding at least R12 to 100% of basement
	\$800	For adding at least R23 to 100% of crawl space wall
	\$400	For adding at least R10 to 100% of crawl space wall
	\$450	For adding at least R24 to 100% of floor above crawl space
Exterior Wall Insulation	\$1,500	Add at least R9 for 100% of building to achieve a minimum of R12
	\$1,000	Add at least R3.8 for 100% of building to achieve a minimum of R12
Attic Insulation	\$500	For increasing attic insulation from R12 or less to at least R50 from R12 or less
	\$250	For increasing attic insulation from R13 to R25 to at least R50
	\$500	For increasing cathedral/flat roof insulation by at least R14
Air Sealing	\$150	Achieve 10% or more above base target
	\$100	Achieve base target
Furnace/Boiler	\$500	For replacing low or mid-efficiency heating system with 95% AFUE or higher condensing natural gas furnace or 90% AFUE or higher ENERGY STAR® condensing gas boiler
Water Heater	\$200	For replacing water heater with ENERGY STAR natural gas water heater with EF of 0.82 or higher
Window/Door/Skylight	\$40	For each window, door or skylight replaced with ENERGY STAR-qualified model.

- Rebates will continue to be structured in a prescriptive manner to ensure simplicity for participants. The predictable nature of the rebates enables participants to make fully informed decisions, and assists Service Organizations and channel partners in communicating accurate information.
- Rebate amounts are based on a balancing of the rebate in proportion to the incremental cost and m<sup>3</sup> savings potential of the measure. Rebates are highest, for example, for measures that are both expensive and yield strong m<sup>3</sup> savings, such as insulation.

- 1 • Bonus Rebate
- 2 ○ Starting in 2016, Union intends to add a “bonus rebate” of \$250 for each measure
- 3 installed beyond the first two. This rebate is designed to encourage homeowners to
- 4 pursue all energy savings opportunities available to them.
- 5
- 6 • Maximum Rebate
- 7 ○ Starting in 2016, Union will increase the maximum rebate payment from \$2,500 to
- 8 \$5,000. The cost of the assessment, measure rebates, and bonus rebates will count
- 9 toward this cap.
- 10 ○ The higher rebate allowance will ensure homeowners are incented to pursue all
- 11 natural gas savings opportunities recommended to them, such as multiple insulation
- 12 measures.
- 13

#### 14 *Market Delivery*

- 16 • Awareness and interest in the offering will be cultivated through a number of channels
- 17 including:
- 18
- 19 ○ Mass-media promotion
- 20 ■ Radio, newspaper, and billboards/outdoor signs to build widespread
- 21 awareness, particularly in areas where Home Reno Rebate was not previously
- 22 available.
- 23
- 24 ○ Targeted promotion
- 25 ■ Direct mail, door-hangers, etc., targeted to the homes most likely to benefit
- 26 from the offering, such as older homes (built prior to 1977) with higher than
- 27 average natural gas consumption and neighbours of Home Reno Rebate
- 28 participants that are likely to be of the same vintage.
- 29
- 30 ○ Behavioural offering
- 31 ■ The Behavioural offering will act as a channel to reach the target group with
- 32 timely cross-promotions and adaptive messaging, and will also help Union
- 33 establish a more thorough profile of its customers and how they use energy in
- 34 the home, which can be used in support of campaigns.
- 35
- 36 ○ Contractor and Service Organization network
- 37
- 38 Union will continue to develop a network that can generate participant leads and provide
- 39 an effective and efficient customer experience start-to-finish. Developing and
- 40 maintaining this network involves:
- 41 ■ Identifying, pursuing, and screening Service Organizations and contractors
- 42 (e.g. heating, insulation, window/skylight, and general contractors) for

engagement in the offering. This involves working with trade organizations, research and one-on-one engagement.

- Providing Service Organizations, contractors, and other channel partners with promotional material, training and ongoing engagement and coaching to help them understand: (1) the logistics of the Home Reno Rebate offering; (2) how to “sell” energy efficiency; and (3) how to provide a positive customer experience.
- Assisting Service Organizations in expanding their geographic reach, and building a supporting network of contractors.

### ***Barriers Addressed***

- Primary barriers preventing higher uptake in the market include the following:
  - High product, installation and energy assessment costs
    - Union will address this barrier through the provision of financial incentives to eligible homeowners. Incentives will be straightforward and predictable so they can be factored into the customer’s investment decisions.
  - Lack of energy literacy amongst customers
    - Union will address this barrier by advertising the benefits of energy assessments and using a variety of educational tools to help customers understand the connection between equipment, behaviour and one’s energy bill and home comfort. Union anticipates educational support will also be required at the time of the transition to EnerGuide Rating System version 15.<sup>1</sup> This will also be supported through the complementary Behavioural offering.
  - Lack of customer awareness regarding opportunities to save energy in their home, particularly when it comes to out of sight measures such as insulation
    - Union will address this barrier by requiring that participants complete an energy assessment. Service Organizations are required to review the results of the assessment with homeowners, and are encouraged to do this in person to ensure the homeowner fully understands the recommendations being made.
  - Lack of channel partner expertise in selling the long-term benefits of high efficiency
    - Union will address this barrier by providing training and promotional materials to insulation contractors, HVACs, general contractors, etc., to assist them in selling the benefits of improved energy efficiency.

---

<sup>1</sup> The EnerGuide for Homes rating system is the dominant method of evaluating and labeling the energy efficiency of homes in Canada. EnerGuide will undergo an unprecedented transition during 2015 or 2016 (detailed schedule still forthcoming). Billed as ‘EnerGuide v15.0’, the revised system will include several changes, including a shift away from a score from 0 to 100 to a rating scale based on the actual GJ/year energy use of the home.



- Reluctance amongst channel partners to delay or complicate a sale by referring clients to Service Organizations.
  - Some contractors may be reluctant to refer customers to the Home Reno Rebate offering because they feel it will impact their ability to close the sale in a timely manner. They may also be reluctant to refer customers to Service Organizations if they do not have an established relationship due to concerns around how it may impact their reputation if the customer does not have a positive experience.
- Channel capacity
  - In order to offer Home Reno Rebate across the Union franchise area, new Service Organization partnerships and channel relationships will need to be established.
  - Union will address this barrier through numerous forms of channel engagement, as noted in the “Market Delivery” section above.

### **Behavioural Offering**

Union will launch a Behavioural offering in late 2016. This offering seeks to achieve natural gas savings by encouraging customers to change energy use decisions and actions. As well, the offering will produce benefits for other offerings by acting as a channel to promote the adoption of energy efficient measures and drive participation in Home Reno Rebate and ESKs.

This offering provides natural gas usage comparisons that benchmark the customer’s consumption against that of like peers as well as the customer’s own performance from past months/years. To help customers action this information, the Behavioural offering provides customized energy saving tips, and uses goal setting, progress trackers, and other coaching mechanisms to motivate behavioural changes.

The Behavioural offering has two components:

- (1) Home Energy Reports (“HER”) sent by mail and/or email to Residential customers with high natural gas use; and
- (2) An Online Portal available to all Residential customers.

Natural gas savings from the Behavioural offering are quantified by comparing the actual natural gas use of HER participants to that of a control group. The offering is therefore evidence based and relies on customer specific data.

1 ***Description***  
2

- 3 • Home Energy Reports  
4 ○ HERs will be sent to a group of 300,000 residential customers consuming greater  
5 than Union's Normalized Average Consumption ("NAC"). These are Union's  
6 highest consuming residential customers.  
7 ○ Reports will be mailed out during the heating season (Example: two reports  
8 during the October to December period, and two reports in the January to March  
9 period).  
10 ○ Union will complete a Request for Proposal ("RFP") process to select a vendor.  
11 The specific report contents may vary depending on the vendor, but HERs  
12 generally include:  
13     ▪ Benchmarking information, comparing the customer's natural gas  
14 usage to peers living in a similar geographic area with similar dwelling  
15 characteristics;  
16     ▪ Historical usage information, showing the customer how much gas  
17 they used in the most recent period compared to consumption from  
18 past periods/years;  
19     ▪ Goal setting and coaching toward that goal; and,  
20     ▪ Tips to save energy that involve both behavioural changes and the  
21 adoption of energy efficiency measures. Messages can also be used to  
22 cross-promote other offerings.  
23 • Online Portal  
24 ○ Similar information to the HERs will be made available to every residential  
25 customer in a digital format through an Online Portal. Union will investigate  
26 integrating the content into MyAccount, Union's existing online account  
27 management tool.  
28 ○ Union will seek to include an "energy assessment questionnaire" where customers  
29 can enter household, dwelling, and equipment characteristics and receive  
30 customized energy saving tips. The information will also be used by Union to  
31 refine benchmarking information and adaptive messaging, and to ensure the  
32 information presented in the Online Portal and HERs is relevant and meaningful  
33 to the customer.  
34

35 ***Target Market***  
36

- 37 • All Residential customers (both those enrolled in HERs and those not) will have  
38 access to the Online Portal.  
39 • HERs will be sent to 300,000 of the highest consuming Residential customers. This  
40 group was selected for participation due to several factors, including:  
41 ○ The opportunity to save energy is greater amongst high usage customers and by  
42 targeting this group, Union will achieve greater cost-effectiveness;

- Higher usage customers are more likely to notice the impact of Behavioural changes on their natural gas bill, helping them stay engaged in the offering over time; and,
- High usage customers are good candidates for the Home Reno Rebate offering, allowing Union to make the most of cross-promotional/lead generation opportunities.
- HERs participation will operate on an “opt-out” basis, with participants automatically signed up based on their consumption.

### ***Incentive Level***

- There is no direct financial market incentive to customers for this offering. Action on behalf of the customer is driven by intrinsic motivators (such as social norms/neighbour comparisons, commitments, and aversion to loss) as opposed to financial incentives.

### ***Market Delivery***

- Union will enroll 300,000 high-use Residential customers in HERs, initially providing print reports to customers that receive their Union Gas bill by mail, while experimenting with digital reports sent by email to customers that are enrolled in paperless billing. Union also anticipates providing all HERs participants the option to switch from print reports to email and vice versa. All Residential customers (both those enrolled in HERs and those not) will have access to the Online Portal.
- Messages, recommendations, and peer comparisons will be targeted based on internal data, such as the customer’s consumption patterns, and data purchased from the Municipal Property Assessment Corporation (“MPAC”). MPAC data, such as the age and size of the home is necessary to ensure that information presented to the customer is meaningful and relevant, and benchmarks are realistic. Union can also leverage this data to support Home Reno Rebate, focusing promotions on customers with housing characteristics that make them more likely to participate.
- Union anticipates refining the offering over time by using program analytics to understand what works and what does not. Similarly, new outreach strategies to keep participants engaged and interested may need to be layered into the offering over time. Possibilities include:
  - Competitions and pledges
    - Contests pitting individual customers, teams or communities against each other to save energy. Progress toward winning or achieving goals can be charted in much the same way as with multiplayer competitions.

- Co-creation through social media
  - Sharing tools to allow customers to communicate with friends about energy and compare usage on social media sites such as Facebook and Twitter. Participants help create content for the offering by submitting pictures, stories and tips.
- Story-telling
  - The sharing of personal energy efficiency stories through testimonials and interviews can be used to help motivate and inspire peers.
- Special offers and contests
  - Coupons, contests and other special offers to keep customers engaged or to reward participants who reach their energy efficiency goals or demonstrate improvement.

#### ***Barriers Addressed***

- Primary barriers to achieving energy savings include:
  - Customers are not aware of how behavioural factors are linked to energy usage and energy costs, or they think they are already energy efficient.
    - The Behavioural offering addresses this barrier by benchmarking natural gas usage against similar and/or high-performing “neighbours” to evoke norms about the desirability of energy efficiency and help customers make connections between the choices they make every day and their energy bill.
    - For those customers willing to take actions that will reduce consumption, but don’t know where to start, HERs provide that information by tailoring recommendations to each specific customer. Union has the ability to inform customers of opportunities, products, and services that align with their interest and values.
  - With low natural gas prices, and increasing electricity prices, customers are less focused on natural gas efficiency. Customers may not feel the potential for dollar savings from behavioural changes warrants attention.
    - Through the use of social norms, commitments, and aversion to loss this program offering encourages customers to take action.
  - Repetitive behaviours are difficult to promote. Actions must be developed into new habits that last over time, which requires commitment and long-term engagement.
    - Union, working with a vendor, will leverage insights from social and behavioral sciences to build a thoughtful engagement model. The Market Delivery section above details a number of creative approaches

Union may pursue to help make energy efficiency top of mind a part of daily routines.

### **Energy Savings Kit (“ESK”) Offering**

ESKs have been offered since 2000. As the focus of the Residential Program continues to shift towards Home Reno Rebate and Behavioural, the focus on the ESK offering will be significantly reduced relative to the 2012-2014 DSM Plan. However, as a mature offering with highly refined channels, there remains an opportunity to pursue cost effective energy savings and provide Residential customers with broad access to DSM. The ESK will also act as a complement to the Home Reno Rebate and Behavioural offerings.

#### ***Description***

- ESKs are pre-packaged measures designed to reduce a customer’s energy usage and water consumption.
- The Energy Saving Kit contains:
  - Energy efficient Showerhead [1.25 Gallons Per Minute (GPM) (4.73 LPM)]
  - Energy efficient kitchen aerator [1.50 GPM (5.68 LPM)]
  - Energy efficient bathroom aerator [1.00 GPM (3.79 LPM)]
  - Pipe wrap (two meters)
  - Teflon tape (1 roll for ease of showerhead installation)
  - \$25 Programmable Thermostat rebate coupon

#### ***Target Market***

- The ESK offering is targeted to Union residential customers living in detached, semi-detached, townhouses and individually metered row townhouses who have a natural gas water heater and furnace. Each household is eligible to receive one kit.
- This offering is not available to Union customers living in high-rise buildings and multi-family buildings with more than five units.

#### ***Incentive Level***

- The ESK is provided at no cost to the customer.
- A \$25 rebate coupon is provided towards the purchase of a programmable thermostat.

#### ***Market Delivery***

- Online orders and door-to-door delivery will continue to be the main areas of focus.
  - Online orders will be supported through:

- 1                   ▪ Traditional mass-market tactics, such as bill inserts and advertisements
- 2                   on the Union Gas website
- 3                   ▪ Cross-promotional activities with the Home Reno Rebate and
- 4                   Behavioural offerings<sup>2</sup>
- 5                   ▪ Broad-based customer energy efficiency education efforts
- 6           ○ Door-to-door delivery will be supported by a third party delivery agent targeting
- 7           neighbourhoods with a high saturation of eligible homes. Only homes that have
- 8           not received a kit in the past will be targeted through this channel.
- 9       • Union foresees gradually declining its focus on the door-to-door channel over the
- 10       2015-2020 DSM Plan term as online orders through the Home Reno Rebate and
- 11       Behavioural offering become more robust.

### 12       ***Barriers Addressed***

- 13
- 14
- 15       ○ As a mature offering, the ESK now targets harder-to-reach customers who may
- 16       not be aware of energy saving opportunities in their home. To address this
- 17       challenge, Union will leverage Home Reno Rebate and the new Behavioural
- 18       offering to educate customers on energy saving opportunities in their home. The
- 19       ESK will be offered as an easy and no-cost way to start working toward a more
- 20       energy efficient home and lifestyle.
- 21

### 22       **1.0.6 Program Duration**

- 23
- 24       • The Home Reno Rebate and ESK offerings will be available for the duration of the
- 25       Plan.
- 26       • The Behavioural offering will launch in late 2016, and continue for the rest of the
- 27       Plan term.
- 28           ○ Union anticipates it will require eight to twelve months for the Request for
- 29           Proposal process, up-front system implementation, data integration, testing,
- 30           and development of the Online Portal and HERs. The start-up process will
- 31           begin when the Plan is approved, with the Online Portal and first reports
- 32           expected to launch in late 2016.
- 33
- 34
- 35

---

<sup>2</sup> Home Reno Rebate Service Organizations will likely leave behind promotional materials directing customers online to order an ESK. Union engaged in dialogue with the Service Organizations who provide energy assessments for the Home Reno Rebate offering about the potential to install the ESK while in the home. However, the online method is a much more cost effective delivery mechanism at this time.

### 1.0.7 Program Budget

The budget presented in Table 2 below does not include inflation.

Table 2  
Residential Program Budget (\$000)

Program Cost	2016	2017	2018	2019	2020
Development and Start-up	\$1,850	\$0	\$0	\$0	\$0
Incentives/Promotion					
<i>Home Reno Rebate</i>	\$7,233	\$9,880	\$12,226	\$12,226	\$12,226
<i>Behavioural</i>	\$1,124	\$3,303	\$3,303	\$3,303	\$3,303
<i>ESK</i>	\$389	\$387	\$386	\$386	\$386
Total	\$8,745	\$13,569	\$15,916	\$15,916	\$15,916
Evaluation	\$559	\$709	\$859	\$859	\$859
Administrative Costs	\$991	\$1,071	\$1,071	\$1,071	\$1,071
<b>Total</b>	<b>\$12,145</b>	<b>\$15,349</b>	<b>\$17,845</b>	<b>\$17,845</b>	<b>\$17,845</b>

### 1.0.8 Program Participation and Simple Payback

#### *Program Participation*

As requested by the Board in the Framework, Table 3 below is a summary of forecasted participants in Union's Residential program per offering. The forecast was developed at the offering level and a customer may choose to participate in multiple offerings.

Table 3  
Residential Program Participation

Offering	2016	2017	2018	2019	2020
Home Reno Rebate	3,000	4,000	5,000	5,000	5,000
Behavioural	300,000	300,000	300,000	300,000	300,000
ESK	15,000	15,000	15,000	15,000	15,000

#### *Simple Payback*

Simple payback is calculated using the incremental costs of the offering and dividing by the annual gas, electricity and water savings benefits to the customer. The simple payback after a DSM incentive would reduce the incremental cost and therefore, reduce the payback period for the customer. Table 4 provides the simple payback analysis by participant.

**Table 4 Corrected**  
**Simple Payback Analysis per Participant**

<b>Offering</b>	<b>Annual Gas, Electricity and Water Resource Savings Benefits (\$/unit)</b>	<b>Incremental Costs (\$/unit)</b>	<b>Simple Payback (years)</b>	<b>Incentives (\$/unit)</b>	<b>Simple Payback after Incentives (years)</b>
	<b>(a)</b>	<b>(b)</b>	<b>c=(b/a)</b>	<b>(d)</b>	<b>e=(b-d)/a</b>
Home Reno Rebate*	\$474	\$3,173	6.69	\$1,680	3.15
Behavioural	\$0	\$0	0	\$0	0
ESK	\$26	\$7	0.28	\$7	0
Thermostat – Programmable	\$17	\$27	1.57	\$25	0.11

\*Data reflects annual gross gas savings, electricity savings and rebate for an example home which implemented attic and basement insulation, as well as air sealing. Natural gas savings reflect 90% AFUE furnace base case and rebate reflects planned \$250 bonus for third measure.

### 1.0.9 Targets

Table 5 and Table 6 below provide the Residential Program annual natural gas savings (m<sup>3</sup>) targets, and the Residential Program Cumulative Natural Gas Savings (m<sup>3</sup>) targets by offering.

**Table 5**  
**Residential Program Annual Natural Gas Savings (m<sup>3</sup>)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Home Reno Rebate	3,118,020	4,157,360	5,196,700	5,196,700	5,196,700
Behavioural	-	4,051,007	5,570,134	5,823,322	5,823,322
ESK	1,160,583	1,170,517	1,171,479	1,171,479	1,171,479
<b>Total</b>	<b>4,278,603</b>	<b>9,378,884</b>	<b>11,938,314</b>	<b>12,191,501</b>	<b>12,191,501</b>

**Table 6**  
**Residential Program Cumulative Natural Gas Savings (m<sup>3</sup>)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Home Reno Rebate	77,950,500	103,934,000	129,917,500	129,917,500	129,917,500
Behavioural	0	4,051,007	5,570,134	5,823,322	5,823,322
ESK	11,990,584	12,089,924	12,099,542	12,099,542	12,099,542
<b>Total</b>	<b>89,941,084</b>	<b>120,074,931</b>	<b>147,587,176</b>	<b>147,840,364</b>	<b>147,840,364</b>

### 1.0.10 Rationale for Targets



1 **1.0.10.1 Context for Targets**

2  
3 ***Context for Home Reno Rebate Targets***

- 4 • Eligibility requirements are as follows for a home to qualify towards the “Residential  
5 Deep Savings” metric:
- 6 ○ Homeowner must complete at least two eligible energy efficiency upgrades  
7 (eligible measures are listed in Table 1).
- 8 ○ The aggregate of all of the homes counted must achieve, on average, at least a  
9 15% reduction in annual natural gas use, comparing the results of the D  
10 Assessment to the results of the E Assessment. D and E Assessment savings will  
11 be based on Natural Resource Canada’s energy rating software, and will not  
12 include free ridership or spillover.<sup>3</sup>
- 13 • The lifetime m<sup>3</sup> targets for Home Reno Rebate were built using the current assumptions  
14 within the Hot2000 modeling tools. As noted at Exhibit A, Tab 3, Appendix A, Section  
15 1.0.10.2, there are anticipated changes to the modeling tools. The lifetime m<sup>3</sup> targets for  
16 Home Reno Rebate will be adjusted up or down accordingly upon the release of a new  
17 industry standard modeling tool.
- 18
- 19 • *Home Reno Rebate Participants 2016-2017*
- 20 ○ Initially, participation growth will be limited by Service Organization capacity,  
21 particularly in the east and north regions where Home Reno Rebate was not  
22 offered in the past.
- 23 ○ During the ramp-up period Union intends to carefully screen, test and train  
24 Service Organizations and continue to work with contractors to ensure a suitable  
25 network of supporting channel partners and trades is in place across the franchise  
26 area. This will be critical in maintaining appropriate service standards, (such as  
27 wait times for having an energy assessment completed), preserving a positive  
28 customer experience, and protecting the reputation of the offering amongst  
29 customers and channel partners alike.
- 30
- 31 • *Home Reno Rebate Participants 2018-2020*
- 32 ○ Home Reno Rebate is a relatively new offering that has not yet been expanded  
33 across the entire Union franchise area. Establishing a baseline for annual  
34 participation is therefore challenging, and Union has directionally been informed  
35 in establishing the deep homes target by participation rates seen from comparable  
36 offerings in other jurisdictions.
- 37 ○ With approximately 1.3 million residential customers, the projected annual  
38 participation rate for Home Reno Rebate in the 2018-2020 plan years is 0.4%.  
39 This is a relatively aggressive target relative to the most comparable participation

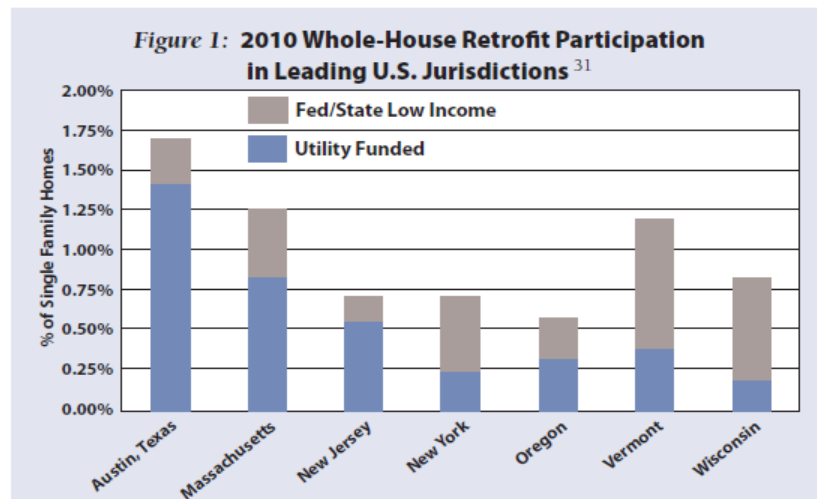
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<sup>3</sup> Details of the home savings modeling is provided in the Residential Home Reno Rebate EM&V Plan, Exhibit A, Tab 3, Appendix C.

rates experienced in leading jurisdictions.

- Whole house retrofit participation rates are displayed in Figure 1 below. The authors of this Figure made great effort to obtain data only for homes that received at least two major measures, which aligns with the requirement of the Home Reno Rebate offering. However, the utility funded data is not directly comparable to Home Reno Rebate as it appears to include utility-funded low-income as well as standard-income residential retrofits and represents both electric and natural gas retrofits, which may skew participation rates.

Figure 1  
Whole-House Retrofit Participation in Leading US Jurisdictions<sup>4</sup>



- The results of Figure 1 indicate a directional relationship between the level of customer rebate and residential participation rates (e.g. the rebates as a percentage of project costs are approximately 10% in New York, 33% in Vermont and Wisconsin, 50% in New Jersey and 75% in Massachusetts). Given the relatively high cost of whole-home retrofit upgrades, such as building envelope and water/space heating measures, it is intuitive that a relatively high rebate level may be required to achieve broad uptake of whole-home retrofit program offerings.

<sup>4</sup> Regulatory Assistance Project. *Residential Efficiency Retrofits: A Roadmap for the Future*. (2011) p. 15.

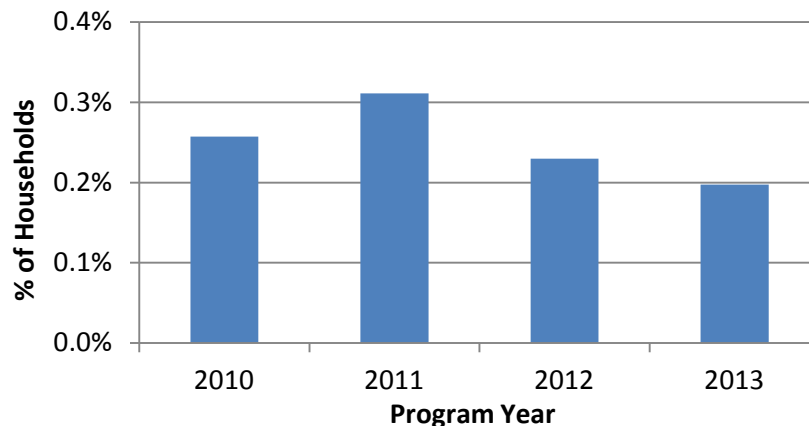
- Similar to Massachusetts, the *ecoENERGY Retrofit – Homes* program that was offered by the federal government, and matched with grants from the provincial *Ontario Home Energy Savings Program (HESP)*, were able to achieve a high participation rate in Ontario through the use of high incentives. Federal *EcoENERGY* grants combined with Provincial *HESP* rebates were more than double that of Home Reno Rebate.
- Union’s projected rebate covers an average of 34% of project costs. Increasing Home Reno Rebate incentives to a 70% - 75% level is not feasible within the ratepayer impact guidelines provided by the Board. Therefore Union has sought to maximize participation at a rebate level that can be supported within those parameters and proposed targets that are aggressive relative to the States with relatively comparable incentive levels.
- In establishing targets Union also considered the experience of the home retrofit program of Columbus Gas of Ohio, identified as exemplary in the American Council for an Energy Efficient Economy (“ACEEE”) Third National Review of leading programs<sup>5</sup>. As a natural gas utility serving approximately 1.3 million residential customers, Columbus Gas of Ohio shares similarities with Union. Their Home Performance Solutions program provides relatively strong rebate levels (e.g. approximately 30% - 60% of the insulation cost, a bonus available for multiple measures and higher incentive tiers based on income level). The 2010 – 2013 participation results are provided in Figure 2<sup>6</sup>.

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<sup>5</sup> American Council for an Energy Efficient Economy. *Leaders of the Pack: ACEEE’s Third National Review of Exemplary Energy Efficiency Programs* (June 2013).

<sup>6</sup> Based on communication with Columbus Gas of Ohio.

**Figure 2**  
**2010 – 2013 Home Performance Solutions Program Participation**



- *Lifetime  $m^3$  Savings*
  - Savings reflect historical average savings per participant, adjusted to reflect the use of a 90% AFUE furnace as the base case for all projects where the current furnace is below this efficiency level, as opposed to using the in situ furnace. As well, a lift in average savings was assumed and is attributed to the addition of the \$250 “bonus rebate” for each measure installed after the first two, and increasing the maximum rebate from \$2,500 to \$5,000.

#### ***Context for Behavioural Targets***

- The contribution of the Behavioural offering toward savings targets is based on information received from OPower, a behavioural software service provider. Union worked with OPower to develop basic assumptions around the format of the offering (examples: number of reports sent each year, communication methods, and inclusion of the Online Portal). OPower then modeled savings using those parameters, as well as natural gas consumption patterns and basic franchise characteristics, and provided a savings estimate for each year of the 2017-2020 period. Union’s target level achievement is based on OPower’s estimate, assuming one year of persistence as the savings will be measured based on metered data.

#### ***Context for Energy Savings Kit Targets***

- Targets reflect market opportunity for the two remaining channels – (1) online (including online orders through Home Reno Rebate and Behavioural cross-promotions); and (2) door-to-door delivery.

- Market saturation, past trends, reduced focus and anticipated uptake from the new behavioural and Home Reno Rebate cross-promotions informed the targets.

#### **1.0.10.2 Challenges in Achieving Targets**

##### ***Challenges in Achieving Home Reno Rebate Targets***

- **DSM Budget and rate payer impact guidelines limit Union's ability to offer incentives on par with top performing jurisdictions**
  - As noted above, it is not reasonable to offer rebates at the level of top performing jurisdictions while still achieving high participation rates within Union's budget guidelines. The experience of Ohio, Vermont and Wisconsin indicate that Union's targets at the projected rebate level (34% of project costs) will be challenging.
- **Low/stable natural gas prices relative to high/increasing electricity prices**
  - With natural gas forming a smaller share of a customers' total energy bill, customers may focus their attention and financial resources on higher efficiency space cooling and other electric efficiency upgrades. In tandem with considerations around rebate levels, lower natural gas prices will extend payback periods for whole home deep retrofits.
- **Service Organization Capacity**
  - Program participation will be limited by Service Organization capacity in the ramp-up phase of the program offering due to factors such as:
    - Gaps in Service Organization coverage, particularly in the north and east
      - To-date, Home Reno Rebate has been offered in the southern part of Union's franchise only. To reach the targets set out in the Plan, Union will need to increase Service Organization coverage to the entire franchise area, including areas that are currently not served, or are served on a very limited basis.
      - Over time, Union can establish necessary coverage partnering with new Service Organizations, or encouraging existing partners to expand their business.
    - Service Organization hesitancy to commit resources.
      - Through its existing experience to-date, Union has found that Service Organizations prefer to "dip their toes" into the Home Reno Rebate offering before devoting significant resources. The certainty and stability provided by a multi-year DSM Plan will undoubtedly assist, but experience has shown that it still takes time and relationship building to get Service Organizations to the point that they are willing to embrace the

offering and expand their involvement.

- **Upcoming changes to the *EnerGuide for Homes Rating System/Hot2000***
  - The *EnerGuide for Homes* rating system is the dominant method of evaluating and labeling the energy efficiency of homes in Canada. Hot2000, the most current reference calculation software, is leveraged by the Home Reno Rebate offering to establish baseline energy consumption and savings for participant homes.
  - New training, exams and licensing requirements will be rolled out in conjunction with the release of EnerGuide v15.0, which may cause confusion and disruption in the market in the short-term.

#### ***Challenges in Achieving Behavioural Targets***

- **Unknowns surround offering details**
  - Natural gas savings contributions from the Behavioural offering were based on data supplied by a potential vendor, OPower. OPower modeled savings for Union is based on basic customer and franchise characteristics from Union, trends seen from other jurisdictions, and high-level assumptions regarding the potential design of Union's offering. More concrete savings estimates cannot be developed until Union selects a vendor and works with that vendor to design the offering in more detail. This creates risk and uncertainty around the achievability of the targets.
- **Low/stable natural gas prices relative to high/increasing electricity prices**
  - With natural gas forming a smaller share of a customers' total energy bill, customers may not feel the potential for dollar savings from behavioural actions warrants their attention. If customers do make behavioural changes, but don't see a significant impact on their bill, they may become frustrated and disengaged.

#### ***Challenges for Achieving Energy Savings Kit Targets***

- In delivering ESKs, Union is constrained by opportunity in the remaining delivery channels, online and door-to-door. Additional less cost-effective channels could be added with more budget, but Union is balancing the Board's Guiding Principles and Priorities by limiting ESK distribution in order to free up resources for other offerings.

### **1.0.11 Consideration of the Board's Key Priorities and Guiding Principles**

### ***Home Reno Rebate Offering***

- *Minimize lost opportunities when implementing energy efficient upgrades.*
  - The Home Reno Rebate offering prevents lost opportunities by encouraging the installation of high efficiency measures during heating/water heating system replacements and renovation work. As well, incentives, eligibility requirements, and other elements are designed to encourage participants to go “deep” in the home avoid additional lost opportunities that they did not initially consider.
- *Programs should be designed to pursue long-term energy savings.*
  - Home Reno Rebate produces long-term energy savings by encouraging the installation of deep measures such as thermal envelope improvements and EnergyStar products with long lives.
  - Home Reno Rebate takes a comprehensive, holistic approach to energy savings, using an energy assessment to identify opportunities throughout the home.

### ***Behavioural Offering***

The Behavioural offering serves as a channel to encourage participation in the Home Reno Rebate and ESK offerings, assisting in the achievement in the objectives noted above. Additionally, the behavioural offering itself aligns with several of the Board’s guiding principles and key priorities:

- *Design programs so that they achieve high customer participation levels.*
  - The behavioural offering ensures that all Residential customers can share in the benefits of DSM. All Residential customers will have access to an Online Portal with benchmarking/usage information, as well as advice and opportunities about how to be more efficient. An additional 300,000 high-usage customers will have access to Home Energy Reports (HERs) by mail or email.
- *Implement DSM programs that are evidence-based and rely on detailed customer data*
  - As described in the Evaluation Plan, savings from the Behavioural program will be quantified through an analysis of actual natural gas consumption “at the meter”.
  - The information presented through both the HERs and online portal will be based on actual consumption, and messages could be targeted or “adaptive” based on customer/housing characteristics, preferences, and interactions with Union.

### ***Energy Savings Kit (ESK) Offering***

- *Achieve all cost-effective DSM that result in a reasonable rate impact*
  - The ESK is a cost-effective offering. With a decade of experience delivering

ESKs, Union has developed highly refined delivery channels that allow cost-effective savings to be achieved with minimal resources.

- *Design programs so that they achieve high customer participation levels*
  - The ESK is available to any Residential customer with a natural gas water heater, is easy and free for customers to acquire. The ESK acts as a simple and no-cost introduction to DSM and puts customers on a path to greater energy literacy that can lead to interest in other offerings.

#### 1.0.12 Cost Effectiveness

Table 7  
2016 Total Resource Cost-Plus

Measure/Offering	Units	Total TRC-Plus Benefits	Total TRC-Plus Costs	Total Net TRC-Plus Before Program Costs	TRC Plus Ratio
ESK - Push - Door to Door <sup>1</sup>	9,195	\$4,425,402	\$58,518	\$4,366,884	75.62
ESK - Pull - Online <sup>1</sup>	5,805	\$2,935,364	\$36,944	\$2,898,421	79.46
Thermostat - Programmable	3,000	\$414,407	\$46,085	\$368,322	8.99
Home Reno Rebate	3,000	\$18,176,996	\$12,266,400	\$5,910,596	1.48
Behavioural <sup>3</sup>	-	\$0	\$0	\$0	
<b>Total</b>		<b>\$25,952,169</b>	<b>\$12,407,946</b>	<b>\$13,544,223</b>	
		Development	\$1,850,000		
		Promotion Costs	\$2,765,715		
		Administration Costs	\$990,978		
		Evaluation	\$558,618		
		<b>Program Total Net TRC</b>		<b>\$7,378,912</b>	
		<b>Program Enhanced TRC Ratio<sup>3</sup></b>			<b>1.4</b>



Table 8 Corrected  
2016 Program Administrator Cost

Measure	Units	Total PAC Benefit <sup>4</sup>	Total PAC Cost <sup>5</sup>	Total Net PAC Before Program Costs	PAC Ratio
ESK - Push - Door to Door <sup>1</sup>	9,195	\$1,263,056	\$58,204	\$1,204,852	21.7
ESK - Pull - Online <sup>1</sup>	5,805	\$837,784	\$40,055	\$797,729	20.92
Thermostat - Programmable	3,000	\$226,299	\$75,000	\$151,299	3.02
Home Reno Rebate	3,000	\$14,669,193	\$5,806,500	\$8,862,693	2.53
Behavioural <sup>3</sup>	-	\$0	\$0	\$0	
<b>Total</b>		<b>\$16,996,332</b>	<b>\$5,979,759</b>	<b>\$11,016,573</b>	
		Development	\$1,850,000		
		Promotion Costs	\$2,765,715		
		Administration Costs	\$990,978		
		Evaluation	\$558,618		
		<b>Program Total Net PAC</b>		<b>\$4,851,262</b>	
		<b>Program PAC Ratio</b>			<b>1.4</b>

1 TRC benefits adjusted based on 2014 results. The adjustents reflecte installation rates, persistence rates, percentage of showering under showerhead (for showerhead measures), and percentage of homes without gas water heaters
2 TRC Ratio adjusted for 2015 avoided costs and 4% discount factor. Includes 15% Non Energy Benefits Adder
3 Behavioural program will realize savings from 2016 participants in 2017
4 PAC Benefits refer to the avoided natural gas benefits associated with the offering
5 PAC Costs refers to the total incentives for the offering

## **1.1 Commercial / Industrial Program**

Union will continue to focus on advancing customer energy efficiency and productivity through providing a mix of custom and prescriptive incentive offerings to customers in the commercial, institutional, agricultural and industrial markets (C/I customers).

DSM projects available to Union's C/I customers are categorized as either custom or prescriptive. A custom project is a natural gas savings project that is based on customer-specific information and considerations, and includes new capital equipment, retrofit (or replacement) equipment and optimization energy savings measures. The prescriptive offering provides eligible C/I customers with financial incentives towards recommended technologies that have pre-determined incentive and savings amounts, defined by facility type and equipment size. The offering includes space heating, water heating, ventilation, building controls, heat recovery and efficient equipment (for cooking, cleaning and laundry) applications.

Union encourages the adoption of energy efficient technology and equipment targeting facilities in the C/I markets, using a segment focus. Union influences end use customers, and the many stakeholders and trade allies in this market, to use best practices when operating or replacing equipment and when implementing energy efficiency projects. Offerings will continue to target end use customers and will be delivered directly through account management and trade ally approaches utilizing targeted marketing promotion strategies. Union will also explore enhancing self-service strategies.

To ensure consistent access to DSM for comparable customers, Union is proposing to continue to offer Rate T1 customers the C/I offerings.

Union has proposed the following changes to its C/I offerings:

- Increase incentive levels in custom and prescriptive offerings to reach customers who are inherently more costly to reach, such as Union's general service C/I customers who typically have longer payback periods;
- Revise Union's custom offering to eliminate incentives for O&M Repair type projects and redistribute incentives to new offerings for this customer group; and,
- Provide offerings to target non DSM participants in Union's franchise through targeted initiatives such as a Direct Install offering for small commercial customers.

### **1.1.1 Customer Classes Targeted**

- Account managed and mass market (non account-managed) C/I General Service and Contract Customers (including Rate T1).
- Targets market segments include but are not limited to:
  - Manufacturing, Industrial Processing and Refining
  - Municipalities, Universities, Schools, Hospitals, Long-term Care

- Warehouse, Greenhouse, Agriculture
- Multi-Residential, Office, Retail, Lodging, Food Service
- Commercial customers with multiple facilities in Union's franchise area that are managed by a single corporate entity (i.e. National Accounts)

#### **1.1.2 Rate Classes Targeted**

- Rate M1, Rate M2, Rate 01, Rate 10, Rate M4, Rate M5, Rate M7, Rate T1, Rate 20,

#### **1.1.3 Program Goals**

Program goals for the C/I program consist of the following:

- Develop and implement initiatives to enable all C/I customers increase their awareness and knowledge of energy efficient practices
- Deliver a suite of offerings for all types of C/I customers to increase participation from customers who have not yet embraced a culture of conservation in their facility
- Generate long term energy savings in C/I facilities

#### **1.1.4 Program Strategy**

Strategies to achieve Union's goals for the C/I program include:

- Provide customers with incentives, education and training to help them reduce their energy usage
- Develop a suite of offerings targeting customers who do not traditionally participate in DSM programs
- Expand the knowledge base and awareness of long-life energy efficiency technologies with service providers including: HVAC contractors, architects, designers and engineers (key influencers) by motivating them to take action and market these types of technologies
- Build strategic relationships with trade allies and delivery agents to maximize alliance opportunities to expand the reach of the program
- Continue to explore partnerships with targeted electric LDCs, where possible, to co-promote/educate DSM and CDM programs

#### **1.1.5 Program Offerings**

The offerings delivered in the C/I Program are outlined below:

1 **C/I Prescriptive Offering**

2  
3 ***Description***

4  
5 The prescriptive offering will provide customers with a list of recommended technologies that  
6 have pre-determined incentive and savings amounts, defined by facility type and equipment size.  
7 The application process for the prescriptive offering promotes ease of participation as customers  
8 know upfront the incentive available for each measure. This allows customers with multiple  
9 facilities the option of rolling out technologies to an entire portfolio in an efficient way. Program  
10 initiatives target space heating, water heating, ventilation, building controls, heat recovery and  
11 efficient equipment (for cooking, cleaning and laundry) applications.  
12

- 13 • The prescriptive offering consists of several energy efficient measures that deliver  
14 significant m<sup>3</sup> savings:
  - 15 ○ Condensing Boilers
  - 16 ○ Infrared Heating Units
  - 17 ○ Energy Recovery Ventilators
  - 18 ○ Heat Recovery Ventilators
  - 19 ○ Condensing Make Up Air Units
  - 20 ○ Laundry Washing Equipment with Ozone
  - 21 ○ Condensing Unit Heaters
  - 22 ○ Condensing Gas Water Heaters
  - 23 ○ Demand Control Kitchen Ventilation Units
  - 24 ○ CEE Tier 2 Front-Loading Clothes Washers
  - 25 ○ Demand Control Ventilation with CO2 Sensors
  - 26 ○ Energy Star Dishwashers
  - 27 ○ Energy Star Convection Ovens
  - 28 ○ Energy Star Steam Cookers
  - 29 ○ Energy Star Fryers
  - 30 ○ High-Efficiency Under-Fired Broilers
  - 31 ○ Air Curtains (Pedestrian Doors & Shipping Docks)
  - 32 ○ Destratification Fans
  - 33 ○ Combination Boilers
  - 34 ○ Tankless Water Heaters
  - 35 ○ Energy Star Clothes Washers
  - 36 ○ Condensing Unit Heaters
  - 37 ○ Boiler Load Controls
  - 38 ○ High Efficiency Condensing Furnaces
- 39  
40 • Union will explore additional measures to include in the prescriptive offering over the  
41 course of the plan, including but not limited to:
  - 42 ○ Linkageless Controls

- Boiler Economizers (Non Condensing & Condensing)
- Demand Control Ventilation (in other commercial segments)
- Boiler Tune-Up
- Destratification Fans < 20 ft Diameter and/or < 25 ft Ceiling Height
- Commercial Weatherization and Insulation (Roof and Wall)
- Drain Water Heat Recovery Systems
- Adaptive Thermostats
- Griddles
- Dock Door Seals
- Direct Fired Make Up Air Units
- Weatherized Air Sealing
- Hydronic Boilers

#### ***Target Market***

- All C/I customers, targeting broader participation from non-participants
- Commercial customers with multiple facilities in Union's franchise area that are managed by a single corporate entity (i.e. National Accounts)

#### ***Incentive Level***

- Incentive levels for energy efficiency measures in the prescriptive offering were established based on the following considerations:
  - The m<sup>3</sup> savings generated
  - Both the incremental cost of the energy-efficient technology as compared to base case assumptions, and the total installed cost of the energy-efficient technology
  - The effective useful life of the equipment
  - The effectiveness of the incentive to increase uptake in the marketplace
  - Return on investment of the equipment
  - Support from external stakeholders for increased incentive levels, as previous incentives for C/I prescriptive measure offerings were comparatively lower than other jurisdictions
- Incentive levels were determined to target non-participants in DSM, who have not participated in previous years due to high upfront costs, project payback timelines or lack of awareness. Union explored comparability with other North American utilities, in colder climates, and identified the need to increase incentives.
- Incentives are primarily directed towards the end-use customer.
- Union will explore an upstream incentive offer to reach deeper into the market through influence at the supply chain level. The following are key considerations for this type of incentive model:

- Target manufacturers who do not have a distributor network and/or distributors of eligible equipment.
- Determine opportunities where this incentive model is most effective in the supply chain in Union's franchise to increase sales and distribution of energy efficient technologies.
- Assess customers with low adoption that would benefit from influence at the supply chain level, and technologies that are most suited to this type of incentive model.
- Ensure there is ability for the utility to demonstrate influence over the results.

### ***Market Delivery***

- For the past several years Union has focused on a segmented market approach consistent with marketing best practices. Through this plan, Union will continue to deliver offerings using a segmented market approach. Within each segment, Union identifies and targets the key influencers and segment leaders.
- In addition, where applicable, measures will be targeted using a National Account strategy to reach decision makers who are part of a centralized management decision making process for implementing energy improvements.
- Offers will be delivered both directly to the customer, supported through Union's Account Management team, and indirectly, through delivery channels that consist of service providers including HVAC contractors, design build contractors, engineers, distributors, manufacturers, and building owners and managers. In addition Union will explore enhancements to self-service capabilities for customers and trade allies.
- Offers will be marketed through targeted strategies, both direct-to-customer and mass market, including print and digital media-based tactics. Union will also explore implementing event-based marketing strategies, such as tradeshow targeting specific customer segments, and other strategies such as an online web portal to provide a resource for mass market customers.

### ***Barriers Addressed***

Primary barriers preventing higher uptake in the market include the following:

- Upfront cost of capital and lengthy payback periods
  - Union offers incentives that help to offset initial project costs and reduce project payback time.
- Customer knowledge of payback period

○ Union will provide ROI data to assist customers in understanding payback and gaining support within their organization for energy efficiency projects.

- Customer awareness and knowledge of Union’s offerings and of energy efficient options (technologies), particularly in the smaller mass market commercial market
  - Union will focus on awareness and education through communication strategies including tradeshow, workshops, seminars, case studies, newsletters, website resources and other marketing collateral to improve knowledge of our customers, and foster measure adoption.

### **Direct Install Offering – Pilot**

#### ***Description***

The Direct Install offering will be designed to generate long-term natural gas energy savings in small commercial facilities by providing higher incentives and direct equipment installation. This offer will establish awareness and knowledge of energy efficiency to small commercial customers who typically do not participate in traditional DSM programs due to limited resources and high upfront costs. With higher customer incentives and full support throughout the entire process (simplified process, turnkey), this offering will address barriers to participation providing energy savings to typically hard-to-reach small commercial customers.

Union will work with external partners to deliver the program; including assessment of energy usage in eligible customer’s facilities and installation of energy efficient technologies where the utility pays at least half of the total equipment and installation cost.

Technologies may include:

- Insulation
- Air Curtains
- High efficiency Furnaces and Water Heaters
- DCV with CO2 Sensors
- Heat and Energy Recovery Systems
- Other space heating, water heating and cooking equipment

#### ***Knowledge Gaps***

A survey, followed by a pilot, will be implemented over two years to inform the program development, including the offer’s incentive requirements, delivery and evaluation. Knowledge gaps to be addressed through the survey and subsequent pilot include the following:

- 1       • Explore the opportunity to deliver up-front assessment/audit of customer's equipment
  - 2           ○ Provide targeted list of equipment based on assessment results
  - 3
- 4       • Interest and applicability of potential energy-efficient technologies that are essential
  - 5           to the operation of the facility (i.e. heating and water heating); to ensure the higher
  - 6           efficient option is financially viable to a small business customer
  - 7           ○ For essential equipment, the customer will already have an existing version of
  - 8           the technology installed and would likely only install a new version when
  - 9           faced with existing equipment failure
  - 10
- 11       • Interest and applicability of potential energy-efficient technologies that are not
  - 12           essential to the operation of the business; as a small business customer would likely
  - 13           see the upfront cost as unnecessary
  - 14
- 15       • Explore incentive approaches for essential and non-essential equipment:
  - 16           ○ Incent incremental cost of essential equipment
  - 17           ○ Incent total cost of equipment for non-essential equipment (i.e. DCV, Air
  - 18           Curtains)
  - 19
- 20       • Suitable incentive levels to drive program adoption, exploring incentive ranges
  - 21           between 50 to 100%
  - 22
- 23       • How to address market barriers to program participation such as customer time
  - 24           constraints, resource limitations and decision-making process
  - 25
- 26       • Collaboration with an electric LDC:
  - 27           ○ Variances in installation requirements between electric and gas offerings (i.e.
  - 28           gas fitter required for gas technologies as opposed to electrician for lighting
  - 29           retrofits)
  - 30           ○ Coordination (design) and integration (delivery) opportunities of existing
  - 31           small to mid-sized business offerings between gas and electric utilities to
  - 32           improve customer adoption
  - 33
  - 34
  - 35



The pilot will consist of:

- A market survey to address market knowledge gaps
  - Minimum 250 surveys (or optimal number of surveys to meet appropriate research requirements)
  - Survey to occur in early 2016
  - One municipality with a larger commercial market – potentially Hamilton
  - Electric LDC collaboration is ideal to deliver the survey through their current Direct Install lighting program, if collaboration cannot be achieved, Union will deliver the survey independently
- Pilot will be implemented in one market:
  - Survey outcomes will inform pilot design
  - Pilot will explore potential collaboration with an LDC; assessing design and/or delivery of common Direct Install offering
  - Pilot will inform potential for market expansion beyond test market
  - Pilot to occur late 2016 - 2017

#### ***Incentive Level***

- The pilot will test various incentive ranges to determine the most appropriate incentive to influence equipment adoption
- Incentive levels may range from 50% to 100% of the total equipment and installation costs
  - While there is no industry standard for Direct Install incentive levels (percentage of total installed costs), an internal review of other jurisdictional offers has indicated the most leading utility programs have landed between 50 – 70%
    - Jurisdictional offers largely cover measures such as programmable thermostats, pre-rinse spray valves, pipe insulation and low-flow showerheads and aerators.
    - This pilot will test technologies that achieve deeper savings, such as heating equipment and ventilation equipment
  - Union will explore starting the incentives between 50 - 60% and use the pilot to test measure adoption of various technologies
  - Union will consider offering deeper incentive e.g. 75% for adopting additional equipment as bundles
  - Union will consider offering incentives based on equipment classified as essential to the operation of the facility (heating, water heating) and non-essential equipment that the customer, if resource-constrained, would opt not to install

1 ***Market Delivery***  
2

3 Program delivery will be implemented through a Program Administrator, who will operate as the  
4 central channel for program coordination, including direct outreach to customers and channel  
5 partner delivery to customers.  
6

7 Customer engagement and activity process describes the participant's path through the program:  
8

- 9 1. Customer is informed of program  
10 ○ Direct outreach from the program administrator  
11
- 12 2. Eligible equipment for installation is identified  
13 ○ Program Administrator determines equipment upgrade opportunities for the  
14 customer  
15 ○ Customer is provided a report with recommendations including equipment,  
16 cost, incentives and projected savings  
17 ○ Customer determines what equipment they would like to install  
18
- 19 3. Scope of work is developed  
20 ○ Program Administrator develops the work order with the customer and liaises  
21 directly with contractor to complete installation  
22 ○ Program Administrator coordinates installation of eligible equipment on  
23 behalf of customer  
24
- 25 4. Installation occurs  
26 ○ The selected energy efficient equipment is installed by approved contractor  
27
- 28 5. Payment is coordinated  
29 ○ Program Administrator collects payment from customer for remaining costs  
30 not covered by the incentive  
31 ○ Program Administrator receives payment from Union and coordinates  
32 payment to the contractor  
33
- 34 6. Reporting is provided to Union  
35 ○ Program Administrator provides reporting to Union including customer data,  
36 equipment installed and other information for tracking and reporting.  
37

38 ***Target Market***  
39

- 40 • Small commercial customers under 75,000 m<sup>3</sup> annual consumption, which may be  
41 adjusted based on survey results, in retail and office segments  
42

- 1 • Market segments include but are not limited to:
  - 2 ○ Office, Retail, Food Service, Lodging
  - 3
- 4 • Union will determine whether business type/segment is applicable, or if consumption  
5 should be the deciding factor on target audience and eligibility
  - 6 ○ Retail and Office customers total approximately 48,000 customers,  
7 representing almost half of Union's total commercial customers
  - 8 ○ According to Union's research, Office and Retail customers have old and  
9 inefficient equipment and are likely to replace in the next few years and have  
10 historically low participation
  - 11
- 12 • Customers who pay their natural gas bill; whether they rent or own the building
- 13
- 14 • Customers who operate less than 2 buildings
  - 15 ○ National account customers are not eligible
  - 16

### 17 ***Barriers Addressed***

18  
19 A direct install offering is a solution that addresses small commercial business barriers,  
20 specifically limited resources and upfront costs. The key barriers in this program offering and  
21 potential means of mitigation include:  
22

- 23 • High upfront cost of equipment and lengthy payback period
  - 24 ○ Incentives that address full cost of equipment and installation, and are above  
25 the 50% incentive level
  - 26
- 27 • Lack of resources; expertise and time
  - 28 ○ Providing full support and guidance from a program administrator who will  
29 manage all of the activities through the entire process; from initial customer  
30 engagement to installation of equipment
  - 31 ○ Reducing complexity of utility programs through a turn-key model design  
32 with a single contact point to overcome time and resource limitations
  - 33
- 34 • Limited knowledge of program offerings and technologies
  - 35 ○ Providing direct outreach approach to inform customers through delivery  
36 agents about technologies applicable to their business and understanding of  
37 associated savings and payback
  - 38 ○ Providing access to information about technologies and qualified contractors
  - 39
  - 40

1 ***Jurisdictional Review***  
2

3 Utilities throughout North America have successfully developed small to mid-size business  
4 direct install offerings that generate long-term energy savings and encourage high participation.  
5 The vast majority of these offerings are electric-only, with several natural gas and electric and  
6 few natural gas-only program offerings in the market.  
7

8 *Electric-focus Direct Install Offerings:*  
9

- 10 • Where the offerings are natural gas and electric, the utility is typically a natural  
11 gas/electric utility i.e. National Grid  
12 ○ Lighting and other electricity saving technologies (i.e. refrigeration,  
13 insulation)  
14 ○ Limited direct install programs offering technologies with deeper natural gas  
15 savings e.g. heating, water heating, ventilation, etc.  
16

17 *Jurisdictional Review - Market Approaches:*  
18

- 19 • National Grid promoted their gas-only direct install offering (targeting high efficiency  
20 gas furnaces, hot water boilers and steam boilers) through bill inserts, customer  
21 newsletters, training events and National Grid's website  
22
- 23 • ConEdison and Rockland Utilities offered a joint direct install electric and gas  
24 offering  
25 ○ ConEdison identified leads by acquiring databases that identified small  
26 business customers with high consumption  
27 ○ Market delivery was implemented through marketing strategies, such as door-  
28 to-door outreach and contact with targeted associations. Customers  
29 participated in an energy audit to identify energy saving equipment that could  
30 be installed  
31 ○ Installation was coordinated between the customer and contractor. Payment  
32 was made directly to the contractor from the utility  
33

34 *Jurisdictional Review – Incentive Levels:*  
35

- ConEdison and Nicor Gas offered a joint electric and natural gas direct install offering. Through this program they experimented with varying incentive levels before determining 75% was required to reach customer adoption targets
  - The joint offering primarily focused on lighting
  - Nicor Gas kept incentive levels at about 50% when there was a deep measure included in installation
  - After ConEdison and Nicor Gas implemented the starting incentive level of 75% of total installed cost in the market, they chose to lower it to 50%. This change had significant impact to market adoption resulting in the incentive being raised back to 75%.
- ConEdison also explored a geographical approach to incentives, by offering 100% incentive level to customers in hard to reach geographies
- National Grid's natural gas-only direct install offering provides incentives for up to 75% of incremental cost of large measures such as boilers and furnaces, instead of total installed costs to achieve a higher cost effectiveness

#### ***Expected Outcome***

The outcomes of the pilot will determine an appropriate Direct Install offering for small commercial customers which may include expansion of the offering to other areas.

- The survey will be designed to inform the pilot design and will identify knowledge gaps, as outlined above, including:
  - Energy efficient technologies
  - Appropriate incentive levels
  - Interest in a direct install approach
  - Market barriers
- The pilot will inform a program offering by:
  - Identifying the small commercial market's willingness to participate in a natural gas Direct Install program
  - Identifying any additional barriers to program participation
  - Confirming the appropriateness of the selected technologies and incentive levels
  - Identifying program expansion opportunities

1 **C/I Custom Offering**

2 **Description**

3 Union will continue to refine its approach to market for its DSM custom program to reflect  
4 continuous process improvement. Union proposes to continue its customer relationship focused  
5 approach to market during the 2016-2020 timeframe of this framework since it continues to be  
6 the most effective way for Union to execute its DSM industry leading custom program.

7  
8 Union's DSM team has developed and maintained a long-term business relationship with  
9 Union's large commercial, industrial and agricultural customers. As a result of this long-term  
10 relationship, Union is positioned to assess customer-specific considerations and develop  
11 appropriate DSM custom projects based on the unique energy needs and decision process of the  
12 customer. Energy conservation is one of many considerations customers are faced with.

13  
14 Union's value proposition to its customers is to provide technical expertise and guidance with  
15 respect to energy-related decision making and business justifications, including financial  
16 incentives. Union's guidance and incentives help customers prioritize energy efficiency projects  
17 against their own internal competing factors (such as those activities which are deemed more  
18 business critical) and demonstrate the competitive advantage customers can gain through  
19 efficiency upgrades.

20  
21 The savings claims are subsequently assessed through Union's internal quality assurance/quality  
22 control process to validate the project results. A description of Union's technical assessment  
23 process, and the internal stakeholders engaged, is provided below.

24  
25 **Account Managers**

26 Union employs an account management strategy for dealing with its approximately 550  
27 larger "contract sized" commercial and industrial customers. The Union Account Manager  
28 assigned to each of these customers is responsible for providing and administering the full  
29 range of applicable services within the Union service portfolio, including DSM offerings.  
30 The account manager's role is to work with assigned customers to gain in-depth knowledge  
31 of their business plans, particularly with respect to their energy use and needs. As Account  
32 Managers typically interact with multiple departments within the customer's organization  
33 (e.g. purchasing/procurement, plant operations, technical/engineering functions), they are  
34 uniquely positioned to identify customer-specific information which is a critical input into  
35 the assessment of custom project savings opportunities.

36 **Project Managers**

37 Account Managers engage Union's Project Managers with specific customers as needed to  
38 assist customers in recognizing, identifying and developing specific energy efficient natural  
39 gas based solutions to customer business problems. Union's Project Managers are all

1 engineers with a Professional Engineering designation (in Ontario) and have many years of  
2 engineering experience, including previous external commercial or industrial experience. The  
3 Project Manager works together with the Account Manager as well as third party engineers,  
4 equipment manufacturers and service providers as necessary to complete the DSM custom  
5 project application and confirm the appropriate base case, high efficiency option and EUL for  
6 the project. Union's Project Managers effectively become energy conservation and/or  
7 technology subject matter experts with respect to the customer businesses as required.  
8 Union's experienced staff supports these customers in identifying best-practice energy  
9 conservation solutions that meet their requirements. They also support customers as required  
10 throughout the project implementation process.

11 *Internal Quality Assurance/Quality Control ("QA/QC")*

12 Each custom project is assessed by Union's internal project review and verification QA/QC  
13 team prior to the external project review, verification and audit. The review is conducted by  
14 engineers within the Commercial/Industrial Energy Efficiency Programs ("CIEEP") team.  
15 CIEEP reviews and confirms the calculated savings through evaluation of project and  
16 customer-specific factors, including:

- 17 • Confirmation of high-efficiency case assumptions;
- 18 • Reasonableness of base case assumptions;
- 19 • Confirmation of "other" factors affecting gas demand (e.g. production and weather);
- 20 • Confirmation of customer project costs; and,
- 21 • Reasonableness of project life assumptions (EUL).

22 Project savings calculations are based on the best information available at the time of review.  
23 CIEEP works directly with Project Managers and Account Managers to clarify assumptions and  
24 confirm/revise calculated savings as required. Custom projects submitted that are not deemed  
25 eligible for an incentive are rejected by the CIEEP team.

26  
27 ***Target Market***

- 28 • Commercial /Industrial Contract Customers (including Rate T1 as outlined in Tab 1,  
29 Section 8)
- 30 • Target market segments that include but are not limited to:
  - 31 • Manufacturing, Industrial Processing and Refining, Hospitals, Warehouses  
32 and Greenhouses

33  
34 ***Incentive Level***

35 Custom incentives are targeted at non-prescriptive energy savings opportunities, improving the  
36 utilization of natural gas.

## Custom Projects

- Eligible projects include new equipment, retrofit equipment, and building/system optimization.
- Customer incentives will no longer be made available for O&M repair projects due to a shift of focus to other custom initiatives
- All Contract custom projects will be incented at \$0.10 per annual m<sup>3</sup> of natural gas saved, up to \$100,000 or 50% of the high-efficiency upgrade cost
  - Increased from Union's historic cap of \$40,000 for new equipment and \$20,000 for O&M projects. Union proposes a single \$100,000 incentive cap (per project) for all Contract custom projects
- All general service custom projects will be incented at \$0.20 per annual m<sup>3</sup> of natural gas saved, up to \$40,000 or 50% of the high-efficiency upgrade cost
  - Union is proposing to provide an enhanced incentive of \$0.20/m<sup>3</sup> to general service customers to recognize that projects for this customer size typically have longer payback periods and require additional funding to drive participation.

## Studies & Metering:

Union's incentives for engineering feasibility and process improvement study funding continue to be a critical element of Union's Custom offering. Providing support for studies help customers identify, justify and prioritize DSM custom project opportunities. Incentives are available to assist both general service and Contract customers to complete:

- Engineering feasibility studies – 50% of the study cost up to a maximum of \$10,000.
- Process improvement studies for the evaluation of energy savings through system/process optimization – 66% of the study cost up to a maximum of \$20,000.
- Union will no longer provide study incentives for steam trap surveys.

Union also provides incentives towards metering to assist customers with the cost of natural gas sub-meters to better measure their gas usage.

- Customers are eligible for up to \$3,500 per meter

## ***Market Delivery***

- The custom offering is communicated and delivered directly to the customer by their Union Account Manager with support from Union's Project Managers.



- Union's Project Managers offer support to customers in the following areas:
  - Facility walk-through and opportunity evaluation
  - Energy Team meeting participation
  - Pre-feasibility assessment of energy efficiency projects
  - Training of internal technical personnel
  - Energy savings estimates
- Engineering calculations are commonly used to support estimated savings for high-efficiency upgrades. In circumstances where appropriate, cumulative savings analysis (CUSUM<sup>7</sup>) will be used for evaluating project specific gas savings.

### ***Barriers Addressed***

Primary barriers preventing higher customer uptake of energy efficiency upgrades include:

- Costs
  - Increasing the project incentive cap for contract customers to \$100,000 will help customers justify larger investments in energy efficiency. With a higher incentive cap, more projects can be completed with incentives near 50% of the project upgrade cost
  - Increasing the annual incentive for general service customers to \$0.20 an annual m3 will help reduce the cost barrier smaller customers typically see on custom projects due to longer payback periods
- Awareness
  - Union will focus on awareness and education by communicating with customers through tradeshow events, education workshops, published case studies, and website resources, to improve market penetration and further influence customer decision making with respect to energy conservation
- Competing priorities and economic conditions in the marketplace
  - Union will demonstrate the customer benefits of prioritizing and incorporating energy conservation into decision making related to: continued maintenance of operating systems, replacement of less efficient but still operable equipment, optimization of existing systems, addition of new equipment or new construction

#### **1.1.6 Program Duration**

- The Prescriptive and Custom offering will be available for the duration of the Plan. The specific measures within the offering may vary should new measures be introduced or as market and customer needs change over the course of the plan.

---

<sup>7</sup> CUSUM analysis is a means of calculating energy savings based on actual metered data – it is a statistical method used to compare energy utilization before and after an energy savings measure is put in place.

- The Direct Install Pilot will be in market mid 2016 – 2017. The survey will take place late 2015 - early 2016.

#### 1.1.7 Program Budget

The budget presented in Table 9 below does not include inflation.

Table 9  
Commercial/Industrial Program Budget

Program Cost (\$000)	2016	2017	2018	2019	2020
Incentives/Promotion					
<i>Prescriptive</i>	\$6,755	\$6,763	\$7,486	\$7,149	\$7,149
<i>General Service Custom</i>	\$1,449	\$1,449	\$1,449	\$1,449	\$1,449
<i>Contract Custom</i>	\$5,769	\$5,769	\$5,769	\$5,769	\$5,769
<i>Studies &amp; Metering</i>	\$590	\$590	\$590	\$590	\$590
Total	\$14,562	\$14,571	\$15,293	\$14,957	\$14,957
Evaluation	\$189	\$189	\$189	\$189	\$189
Administrative Costs	\$3,929	\$4,076	\$4,076	\$4,076	\$4,076
<b>Total</b>	<b>\$18,680</b>	<b>\$18,836</b>	<b>\$19,558</b>	<b>\$19,222</b>	<b>\$19,222</b>

#### 1.1.8 Program Participation and Simple Payback

##### *Program Participation*

As requested by the Board in the Framework, Table 10 below provides a summary of forecasted participants in Union's Residential program per offering. The forecast was developed at the offering level and a customer may choose to participate in multiple offerings.

Table 10  
Commercial/Industrial Program Participation

Offering	2016	2017	2018	2019	2020
Prescriptive	1,549	1,645	1,715	1,715	1,715
General Service Custom	89	89	89	89	89
Contract Custom	159	159	159	159	159
Studies & Metering	120	120	120	120	120

### Simple Payback

Simple payback is calculated using the incremental costs of the offering and dividing by the annual gas, electricity and water savings benefits to the customer. The simple payback after a DSM incentive would reduce the incremental cost and therefore, reduce the payback period for the customer. Table 11 provides the simple payback analysis per participant.

**Table 11**  
**Simple Payback Analysis per Participant**

Offering	Annual Gas, Electricity and Water Resource Savings Benefits (\$/unit)	Incremental Costs (\$/unit)	Simple Payback (years)	Incentives (\$/unit)	Simple Payback after Incentives (years)
	(a)	(b)	$c=(b/a)$	(d)	$e=(b-d)/a$
Prescriptive*	\$4,442	\$21,500	4.84	\$4,500	3.83
General Service Custom – Building Automation System**	\$8,890	\$38,791	4.4	\$6,570	3.60
Contract Custom – Boiler Economizer***	\$57,033	\$123,184	2.16	\$16,493	1.87

\*For the prescriptive simple payback analysis Union is assuming a customer will install a condensing boiler (1000 MBTU/HR). Condensing boilers between 100 btu/hr – 1000 btu/hr (or greater) currently account for 37.4% (in 2016) of the savings from Unions prescriptive offering.

\*\* Assuming a general service customer will install a building automation system (BAS) to better control building heating components – based on Union’s historical average BAS project costs, savings, and incentives (15 general service BAS projects completed 2012 – 2014).

\*\*\* Assuming a contract customer will install a boiler economizer to recover flue gas heat – based on Union’s historical average economizer project costs, savings, and incentives (29 contract economizer projects completed 2012 – 2014).

### 1.1.9 Targets

Targets for the C/I Custom Program are proposed as follows:

**Table 12**  
**Commercial/Industrial Program Annual Natural Gas Savings (m<sup>3</sup>)**

Offering	2016	2017	2018	2019	2020
Prescriptive	15,216,463	15,769,734	16,375,788	16,375,788	16,375,788
General Service Custom	4,495,322	4,495,322	4,495,322	4,495,322	4,495,322
Contract Custom	40,934,812	40,934,812	40,934,812	40,934,812	40,934,812
<b>Total</b>	<b>60,646,597</b>	<b>61,199,868</b>	<b>61,805,922</b>	<b>61,805,922</b>	<b>61,805,922</b>

**Table 13**  
**Commercial/Industrial Program Cumulative Natural Gas Savings (m3)**

<b>Offering</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Prescriptive	274,596,193	283,349,790	293,111,244	293,111,244	293,111,244
General Service Custom	76,328,866	76,328,866	76,328,866	76,328,866	76,328,866
Contract Custom	668,765,513	668,765,513	668,765,513	668,765,513	668,765,513
<b>Total</b>	<b>1,019,690,572</b>	<b>1,028,444,169</b>	<b>1,038,205,623</b>	<b>1,038,205,623</b>	<b>1,038,205,623</b>

## **1.1.10 Rationale for Targets**

### **1.1.10.1 Context for Targets**

#### ***Context for C/I Prescriptive Offering Targets***

##### ***Budget***

The C/I prescriptive budget allocation for 2016 was derived by the following considerations:

- A budget increase of approximately \$3.0 million from 2014 to 2016, which is attributed to:
  - Increased incentive levels to target customers who have not participated in previous years and customers who are more challenging to reach
  - An increased focus of market penetration on deeper measures which are inherently more costly to deliver
  - The introduction of additional deep measures to the portfolio of prescriptive offerings
  - The implementation of a series of new marketing strategies to reach deeper into the market, specifically targeting mass market customers
    - Channel partner marketing strategy – enhancing engagement with trade allies to more effectively reach commercial customers
    - Increased focus on marketing activities including targeted advertising tactics
    - The development of an enhanced online website portal for non-managed customers to act as a virtual account manager

**Table 14**  
**C/I Standard Offer Budget (Program and Incentive Costs Only)**

<b>2012 Budget (\$000)</b>	<b>2013 Budget (\$000)</b>	<b>2014 Budget (\$000)</b>	<b>2016 Forecast (\$000)</b>
3,441	4,720	3,752	6,755

*Cumulative m<sup>3</sup> Targets*

- Cumulative m<sup>3</sup> savings targets by measure were established using a bottom up analysis. For example, forecasts were established using:
  - Historical data
    - Historical results by measure and remaining market opportunities
    - Variances in cumulative m<sup>3</sup> savings based on the type of segment/building where the equipment is installed; ie. smaller units from ERVs installed in dormitories
    - Customer eligibility of equipment (ie. by segment, building size)
  - Increased incentives
    - Response to increased incentives based on insights from market knowledge
  - New measure offerings
    - Introducing new measures which also includes equipment with lower savings per unit
  - Market trends
    - Equipment penetration in the market
    - Affects of external factors on program participation, such as government funding, new construction
  - Account management expertise
    - Customer insights, ie. awareness level, expertise, available capital
    - Trade ally insights, ie. role in influence of equipment adoption

**Table 15**  
**C/I Prescriptive Historical Cumulative m<sup>3</sup> Savings**

<b>2012 Actual (000)</b>	<b>2013 Actual (000)</b>	<b>2014 Actual (000)</b>	<b>2016 Forecast (000)</b>
202,274	272,204	215,760	268,216

## ***Context for C/I Custom Offering Targets***

Targets for the C/I Custom Program considered the Board's guiding principles and key priorities as well as budget required to deliver results and the associated rate impacts.

The target rationale for the Custom C/I offering is as follows:

- Based on historical average project equivalent cost effectiveness (2012-14), considering project types, customer market segments and revised contract and general service incentive structures.
  - Union processed approximately 1,700 custom C/I projects in program years 2012 through 2014
- Custom targets are largely dependent on projects completed by Union's contract rate customers (approximately 500 customers, in total)
- Additional focus on smaller custom project opportunities with Union's general service C/I customers

Historical Custom Program participation is outlined in Table 16 below:

Table 16  
Historical Custom Results

	2012	2013 (incl. Rate T1)	2014 (incl. Rate T1)
Projects – Total*	511	557	628
Studies (incl. steam trap surveys)	114	107	124
Cumulative Savings** (M m <sup>3</sup> )	656	793	909

\*Totals include O&M repair projects

\*\* 2012/2013 cumulative savings represent post-Audit adjusted results, 2014 cumulative savings is pre-Audit adjustments

### **1.1.10.2 Challenges in Achieving Targets**

#### ***Challenges in Achieving C/I Prescriptive Offering Targets***

- Challenges exist through limited support and participation from trade allies in extending Union's program information and establishing awareness with customers.
- Union expects slower take-up in the first year with the introduction of new prescriptive offerings and new marketing strategies targeting mass market commercial customers to build momentum in the market.

- The diverse nature of the market applies to not only the business types but also the varying levels of energy conservation knowledge; customer perceptions are difficult to overcome and take time.
- Unknown acceptance of new emerging technologies in the market delaying adoption.
- The potential for reduced customer interest in natural gas conservation as a result of:
  - Rising electricity prices
  - Projected stable natural gas prices
  - Incentives dollars being offered through CDM programming

#### ***Challenges in Achieving C/I Custom Offering Targets***

- Relatively low natural gas commodity pricing (compared with rising electricity prices) will impact customer decisions to consider natural gas energy conservation opportunities, as project paybacks are directly affected by the potential financial savings
- Customer capital budgets are affected by a number of global economic factors, which are beyond both customers' and Union's control, and have a direct impact on the success of the Custom C/I offering; significant customer investment is required to achieve the Custom C/I targets

#### **1.1.11 Consideration of the Board's Key Priorities and Guiding Principles**

##### ***C/I Prescriptive Offering***

###### ***Prevent lost opportunities***

- Partnering with trade allies and stakeholders to teach, share and promote best practices.
- Educating the marketplace on energy efficiency best practices through various methods of communication. These include Union account management expertise and targeted marketing strategies; both direct to customer and indirect through external partners.

###### ***Holistic-approach programs, targeting all energy saving opportunities throughout the customer's business***

- Identifying a variety of new long-life measures to be incorporated into the prescriptive offering over the plan term.
- Offering incentives and delivering market strategies which drive program uptake in prescriptive offerings with long-term savings.

1 **Direct Install Offering**

2 Focusing on the Board's Key Priorities and Guiding Principles, through the pilot design Union  
3 will address the following:

4  
5 *Coordinate and integrate with CDM to increase overall efficiencies, reduce delivery costs, and*  
6 *maximize program impacts; and ensure that programs take a holistic approach, targeting all*  
7 *energy saving opportunities throughout a customer's business.*

- 8 • Reduce delivery cost by offering common direct install program through a single  
9 program administrator
- 10 • Improve energy savings by offering both gas and electric energy efficient  
11 technologies to customers through a simple turn-key process  
12

13 *Achieve high customer participation by removing financial, information and other barriers,*  
14 *allowing many customers an opportunity to participate.*

- 15 • Reducing high upfront cost barrier by providing a suitable incentive based on total  
16 equipment and installation cost
- 17 • Improving customer awareness through direct outreach to hard-to-reach small  
18 commercial customers
- 19 • Reducing knowledge and time constraints by providing customer with expertise to  
20 assess energy efficient opportunities in their facilities through a simple, turn-key  
21 process  
22

23 **C/I Custom Offering**

24 Union has considered the Board's guiding principles and key priorities in the development of its C/I  
25 Custom Program as follows:

- 26 • *Design programs so that they achieve high customer participation levels*
  - 27 ○ The increased incentive cap for contract customers and the increased annual  
28 incentive amount for general service customers were designed to influence greater  
29 participation in the C/I custom offering  
30

- 31 • *Minimize lost opportunities when implementing energy efficient upgrades*

32 Union's proposed custom incentives are structured to encourage customers to consider high-  
33 efficiency upgrades for all decision making which affects their demand for energy. Study  
34 incentives in particular are designed to provide customers with a comprehensive view of energy  
35 saving opportunities in their facilities  
36  
37  
38



## 1.1.12 Cost Effectiveness

Table 17 Corrected  
2016 Total Resource Cost-Plus

	Measure/Offering	Units	Total TRC-Plus Benefits	Total TRC-Plus Costs	Total Net TRC-Plus Before Program Costs	TRC Plus Ratio
Retrofit	Air Curtains - Pedestrian Single Door - $\geq 46\text{ft}^2$ & $< 96\text{ft}^2$	30	\$72,474	\$47,025	\$25,449	1.54
Retrofit	Air Curtains - Pedestrian Double Door - $\geq 96\text{ft}^2$	8	\$52,280	\$19,000	\$33,280	2.75
New Const/Retrofit	Air Curtains - Shipping and Receiving - $\geq 100\text{ft}^2$	13	\$841,322	\$125,600	\$715,722	6.70
New Const/Retrofit	Air Curtains - Shipping and Receiving - $\geq 80\text{ft}^2$ & $< 100\text{ft}^2$	1	\$22,105	\$7,830	\$14,275	2.82
New Const/Retrofit	Air Curtains - Shipping and Receiving - $\geq 64\text{ft}^2$ & $< 80\text{ft}^2$	3	\$47,318	\$23,490	\$23,828	2.01
New Const/Replace	Condensing Boiler - Space Heating- 1000 Mbtu/hr and up <sup>1</sup>	135	\$12,929,043	\$2,757,375	\$10,171,668	4.69
New Const/Replace	Condensing Boiler - Space Heating 300 to 999 Mbtu/hr <sup>2</sup>	245	\$6,602,755	\$1,408,138	\$5,194,618	4.69
New Construction	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)-90% AFUE-New <sup>3</sup>	32	\$443,541	\$98,101	\$345,440	4.52
Replacement	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)-90% AFUE-Existing <sup>4</sup>	100	\$1,354,398	\$360,715	\$993,683	3.75
New Const/Replace	Condensing Boiler - DHW (1000 to 1499 Mbtu/h)-90% or greater AFUE-New/Existing <sup>5</sup>	7	\$282,078	\$99,750	\$182,328	2.83
New Const/Replace	Condensing Boiler - DHW (300 to 599 Mbtu/h)-90% or greater AFUE-New/Existing <sup>6</sup>	25	\$401,566	\$124,426	\$277,140	3.23
New Construction	Condensing Boiler - DHW (100 to 199 Mbtu/h)-90% or greater AFUE-New <sup>7</sup>	4	\$40,006	\$9,173	\$30,833	4.36
Replacement	Condensing Boiler - DHW (200 to 299 Mbtu/h)-90% or greater AFUE- Existing <sup>8</sup>	12	\$159,625	\$43,286	\$116,339	3.69
New Const/Replace	Condensing Gas Water Heater (100gal/day)	25	\$22,578	\$52,963	-\$30,385	0.43
New Const/Replace	Condensing Gas Water Heater (500gal/day)	50	\$118,736	\$105,925	\$12,811	1.12
New Const/Replace	Condensing Gas Water Heater (1,000gal/day) - Purchase	105	\$442,995	\$222,443	\$220,553	1.99
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Imp efficiency 1000 -4999 cfm <sup>9</sup>	10	\$94,081	\$30,125	\$63,957	3.12
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Imp efficiency $\geq 5000$ cfm <sup>10</sup>	3	\$56,813	\$15,678	\$41,135	3.62
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + 2 speed 1000 -4999 cfm <sup>11</sup>	5	\$127,610	\$21,404	\$106,207	5.96
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + 2 speed $\geq 5000$ cfm <sup>12</sup>	1	\$56,716	\$8,503	\$48,213	6.67
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + VFDs 1000 -4999 cfm <sup>13</sup>	12	\$506,692	\$51,779	\$454,913	9.79
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + VFDs $\geq 5000$ cfm <sup>14</sup>	4	\$469,159	\$42,066	\$427,093	11.15
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency Imp efficiency 1000 -4999 cfm <sup>15</sup>	8	\$31,520	\$21,614	\$9,906	1.46
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency Imp efficiency $\geq 5000$ cfm <sup>16</sup>	3	\$49,529	\$26,055	\$23,474	1.90
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + 2 speed 1000 -4999 cfm <sup>17</sup>	3	\$64,684	\$16,296	\$48,387	3.97
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + 2 speed $\geq 5000$ cfm <sup>18</sup>	1	\$26,942	\$6,582	\$20,360	4.09
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + VFDs $\geq 1000$ -4999 cfm <sup>19</sup>	13	\$239,800	\$42,645	\$197,156	5.62
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + VFDs $\geq 5000$ cfm <sup>20</sup>	7	\$550,800	\$79,049	\$471,751	6.97
New Const/Replace	DCV Fast Casual ( $< 5000$ cfm)	12	\$442,439	\$114,000	\$328,439	3.88
New Const/Replace	DCV Dinner House (10000 - 15000 cfm)	7	\$970,748	\$133,000	\$837,748	7.30
New Const/Replace	DCV Full Menu (5000 - 9999 cfm)	21	\$1,804,181	\$299,250	\$1,504,931	6.03
New Const/Replace	DCV Office - RTU/MUA $< 2,500$ sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>21</sup>	4	\$823	\$3,360	-\$2,537	0.24
New Const/Replace	DCV Retail - RTU/MUA $< 5,000$ sq ft ventilated with CO2 Sensor- (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>22</sup>	30	\$37,706	\$25,200	\$12,506	1.50
New Const/Replace	DCV Retail - RTU/MUA $\geq 5,000$ sq ft ventilated with CO2 Sensor- (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>23</sup>	40	\$259,124	\$33,600	\$225,524	7.71
Retrofit	DCV Office - RTU/MUA $< 2,500$ sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>24</sup>	26	\$12,949	\$33,345	-\$20,396	0.39
Retrofit	DCV Office - RTU/MUA $\geq 2,500$ sq ft with CO2 Sensor - (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>25</sup>	20	\$19,008	\$25,650	-\$6,642	0.74
Retrofit	DCV Retail - RTU/MUA $< 5,000$ sq ft ventilated with CO2 Sensor- (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>26</sup>	7	\$21,554	\$8,978	\$12,577	2.40
Retrofit	DCV Retail - RTU/MUA $\geq 5,000$ sq ft ventilated with CO2 Sensor- (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>27</sup>	53	\$413,519	\$67,973	\$345,546	6.08
New Const/Retrofit	Destratification Fan <sup>28</sup>	120	\$4,401,795	\$758,268	\$3,643,527	5.81
New Const/Replace	Energy Star Dishwasher - Rack Conveyor - Multi Tank - High Temperature - Purchase	2	\$62,068	\$1,416	\$60,651	43.83
New Const/Replace	Energy Star Dishwasher - Rack Conveyor - Single Tank - High Temperature - Purchase	15	\$161,984	\$22,448	\$139,537	7.22
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Door Type - High Temperature - Purchase	35	\$404,237	\$21,560	\$382,677	18.75
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Door Type - Low Temperature - Purchase	140	\$1,926,676	\$86,240	\$1,840,436	22.34
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Single Rack - High Temperature - Purchase	4	\$46,199	\$2,464	\$43,735	18.75
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Single Rack - Low Temperature - Purchase	4	\$55,048	\$2,464	\$52,584	22.34
New Const/Replace	Energy Star Dishwasher - Undercounter - High Temperature - Purchase	21	\$36,552	\$1,512	\$35,040	24.17
New Const/Replace	Energy Star Dishwasher - Undercounter - Low Temperature - Purchase	4	\$4,498	\$120	\$4,378	37.49
New Const/Replace	Energy Star Convection Oven	15	\$26,676	\$10,500	\$16,176	2.54
New Const/Replace	Energy Star Steam Cooker (boiler-based)	5	\$131,995	\$4,140	\$127,855	31.88
New Const/Replace	Energy Star Fryer	100	\$298,373	\$272,400	\$25,973	1.10
New Construction	ERV 1- up to 1999 cfm MURB,Healthcare,Nursing- Ventilation with ERV -New Construction <sup>29</sup>	155	\$453,904	\$79,073	\$374,830	5.74
Retrofit	ERV 1- up to 1999 cfm MURB,Healthcare,Nursing- Ventilation with ERV -Retrofit <sup>30</sup>	12	\$257,599	\$42,340	\$215,260	6.08
New Construction	ERV 2 -> 2000 cfm MURB,Healthcare,Nursing- Ventilation with ERV -New Construction <sup>31</sup>	33	\$2,009,946	\$350,430	\$1,659,516	5.74
Retrofit	ERV 2 -> 2000 cfm MURB,Healthcare,Nursing- Ventilation with ERV -Retrofit <sup>32</sup>	12	\$1,038,999	\$170,783	\$868,216	6.08
New Construction	ERV 3- up to 1999 cfm Hotel,Restaurant,Retail- Ventilation with ERV -New Construction <sup>33</sup>	40	\$279,558	\$87,628	\$191,930	3.19
Retrofit	ERV 3- up to 1999 cfm Hotel,Restaurant,Retail- Ventilation with ERV -Retrofit <sup>34</sup>	20	\$144,990	\$42,902	\$102,088	3.38
New Construction	ERV 4 -> 2000 cfm Hotel,Restaurant,Retail- Ventilation with ERV -New Construction <sup>35</sup>	16	\$640,709	\$200,792	\$439,917	3.19
Retrofit	ERV 4 -> 2000 cfm Hotel,Restaurant,Retail- Ventilation with ERV -Retrofit <sup>36</sup>	11	\$871,234	\$257,770	\$613,464	3.38

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Exhibit A  
Tab 3  
Appendix A  
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New Construction	ERV 5- up to 1999 cfm All Other Commercial-New Construction <sup>37</sup>	70	\$351,651	\$172,568	\$179,083	2.04
Retrofit	ERV 5- up to 1999 cfm All Other Commercial -Retrofit <sup>38</sup>	195	\$829,807	\$384,764	\$445,042	2.16
New Construction	ERV 6- => 2000 cfm All Other Commercial -New Construction <sup>39</sup>	41	\$1,027,310	\$504,130	\$523,180	2.04
Retrofit	ERV 6- => 2000 cfm All Other Commercial -Retrofit <sup>40</sup>	45	\$1,337,231	\$619,918	\$717,313	2.16
New Construction	HRV 500 to 2,000cfm-Hotel, Restaurant, Retail, Rec <sup>41</sup>	2	\$7,562	\$3,629	\$3,933	2.08
Retrofit	HRV 500 to 2,000cfm-Hotel, Restaurant, Retail, Rec <sup>42</sup>	6	\$45,524	\$19,916	\$25,608	2.29
New Construction	HRV >2,000cfm-Hotel, Restaurant, Retail, Rec <sup>43</sup>	1	\$22,872	\$10,974	\$11,897	2.08
Retrofit	HRV >2,000cfm-Hotel, Restaurant, Retail, Rec <sup>44</sup>	1	\$31,352	\$13,718	\$17,634	2.29
New Construction	HRV 500 to 2,000cfm - All other commercial <sup>45</sup>	25	\$52,608	\$39,520	\$13,088	1.33
Retrofit	HRV 500 to 2,000cfm - All other commercial <sup>46</sup>	33	\$159,874	\$109,317	\$50,556	1.46
New Construction	HRV >2,000cfm-All other commercial <sup>47</sup>	17	\$464,048	\$348,646	\$115,402	1.33
Retrofit	HRV >2,000cfm-All other commercial <sup>48</sup>	21	\$1,022,433	\$699,168	\$323,265	1.46
New Construction	HRV >2,000cfm- Multi Family, Health Care, Nursing <sup>49</sup>	17	\$819,395	\$218,639	\$600,756	3.75
Retrofit	HRV >2,000cfm- Multi Family, Health Care, Nursing <sup>50</sup>	5	\$141,146	\$34,295	\$106,851	4.12
New Construction	HRV 500 to 2000cfm- Multi Family, Health Care, Nursing <sup>51</sup>	1	\$5,334	\$1,423	\$3,911	3.75
Retrofit	HRV 500 to 2000cfm- Multi Family, Health Care, Nursing <sup>52</sup>	1	\$5,801	\$1,410	\$4,391	4.11
New Const/Replace	Infrared Heating 1- 20 to 99 MBtu/hr 1-Stage <sup>53</sup>	400	\$1,167,108	\$179,292	\$987,816	6.51
New Const/Replace	Infrared Heating 2- 100-300 MBtu/hr 1-Stage <sup>54</sup>	800	\$5,126,577	\$894,048	\$4,232,529	5.73
New Const/Replace	Infrared Heating 3- 20 to 99 MBtu/hr 2-Stage <sup>55</sup>	200	\$1,062,189	\$108,004	\$954,185	9.83
New Const/Replace	Infrared Heating 4- 100-300 MBtu/hr 2-Stage <sup>56</sup>	400	\$4,048,662	\$435,500	\$3,613,162	9.30
New Const/Retrofit	Ozone WE <= 60 lbs cap & 100,000 to 199,999lbs <sup>57</sup>	35	\$697,771	\$354,200	\$343,571	1.97
New Const/Retrofit	Ozone WE <= 60 lbs cap & => 200,000 lbs <sup>58</sup>	40	\$1,795,636	\$404,800	\$1,390,836	4.44
New Const/Retrofit	Ozone WE >60 lbs & <= 120lbs & => 200,000 lbs <sup>59</sup>	8	\$469,461	\$184,000	\$285,461	2.55
New Const/Retrofit	Ozone WE > 120lbs & <500lbs & => 260,000 lbs <sup>60</sup>	8	\$662,078	\$184,000	\$478,078	3.60
New Const/Replace	High Efficiency Under-Fired Broiler - Three Foot - New/Replace	8	\$42,569	\$12,160	\$30,409	3.50
New Const/Replace	High Efficiency Under-Fired Broiler - Four Foot - New/Replace	8	\$56,742	\$12,160	\$44,582	4.67
New Const/Replace	High Efficiency Under-Fired Broiler - Five Foot - New/Replace	7	\$62,065	\$10,640	\$51,425	5.83
New Const/Replace	High Efficiency Under-Fired Broiler - Six Foot - New/Replace	7	\$74,481	\$10,640	\$63,841	7.00
New/Replace	Condensing Unit Heaters - New/Replace	60	\$195,272	\$116,100	\$79,172	1.68
Replacement	High Efficiency Condensing Furnace - Replacement	60	\$25,411	\$31,185	-\$5,774	0.81
New/Replace	Commercial Condensing Tankless Gas Water Heater - Low <200 kBtu/hr - Elementary schools, office, retail, churches - New/Replacement	15	\$17,064	\$32,090	-\$15,026	0.53
New/Replace	Commercial Condensing Tankless Gas Water Heater - Low >200 kBtu/hr - Elementary schools, office, retail, churches - New/Replacement	15	\$25,785	\$32,090	-\$6,305	0.80
New/Replace	Commercial Condensing Tankless Gas Water Heater - Medium <200 kBtu/hr - Secondary schools, fast food restaurant, dormitories, other - New/Replacement	20	\$29,071	\$42,787	-\$13,715	0.68
New/Replace	Commercial Condensing Tankless Gas Water Heater - Medium >200 kBtu/hr - Secondary schools, fast food restaurant, dormitories, other - New/Replacement	20	\$44,913	\$42,787	\$2,126	1.05
New/Replace	Commercial Condensing Tankless Gas Water Heater - High <200 kBtu/hr - Fitness center, full service restaurant, hotels, in patient health care - New/Replacement	25	\$44,239	\$53,484	-\$9,244	0.83
New/Replace	Commercial Condensing Tankless Gas Water Heater - High >200 kBtu/hr - Fitness center, full service restaurant, hotels, in patient health care - New/Replacement	25	\$61,408	\$53,484	\$7,925	1.15
New/Replace	CEE Tier 2 Front-Loading Clothes Washer Multi-Family	600	\$1,235,818	\$324,000	\$911,818	3.81
New/Replace	Energy Star Front-Loading Clothes Washer Multi-Family New/Replacement	15	\$7,431	\$1,170	\$6,261	6.35
New	Boiler Load Controls - Basic - CI (Purchase)	10	\$107,811	\$75,591	\$32,220	1.43
New	Boiler Load Controls - Basic - MURBs (Purchase)	10	\$72,442	\$75,591	-\$3,149	0.96
Existing	Boiler Load Controls - Temp Sensor - MURBs (Existing Buildings)	8	\$208,025	\$115,200	\$92,825	1.81
New	Boiler Load Controls - Temp Sensor - MURBs (New Buildings)	2	\$37,987	\$28,800	\$9,187	1.32
New	DCV Office - RTU/MUA < 2,500 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>61</sup>	5	\$1,029	\$4,200	-\$3,171	0.24
New	DCV Office - RTU/MUA > 2,500 sq ft with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>62</sup>	5	\$2,572	\$4,200	-\$1,628	0.61
New	DCV Retail - RTU/MUA < 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>63</sup>	20	\$25,137	\$16,800	\$8,337	1.50
New	DCV Retail - RTU/MUA > 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>64</sup>	20	\$129,562	\$16,800	\$112,762	7.71
Retrofit	DCV Office - RTU/MUA < 2,500 sq ft ventilated with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>65</sup>	20	\$9,961	\$25,650	-\$15,689	0.39
Retrofit	DCV Office - RTU/MUA > 2,500 sq ft with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors - Retrofit w/o maintenance plan <sup>66</sup>	15	\$14,256	\$19,238	-\$4,982	0.74
Retrofit	DCV Retail - RTU/MUA < 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>67</sup>	5	\$15,396	\$6,413	\$8,983	2.40
Retrofit	DCV Retail - RTU/MUA > 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>68</sup>	30	\$234,067	\$38,475	\$195,592	6.08
New/Replace	Combination Boiler - Multi Family Residential	10	\$477,706	\$216,885	\$260,821	2.20
Custom	General Service Custom <sup>69</sup>	178	\$25,470,859	\$23,211,039	\$2,259,820	1.10
Custom	Contract Custom <sup>70</sup>	318	\$151,039,014	\$65,436,310	\$85,602,704	2.31
Total			\$244,463,778	\$105,018,481	\$139,445,296	
			Promotion Costs	\$2,431,085		
			Administration Costs	\$3,928,876		
			EM&V Costs	\$188,959		
			Program Total Net TRC		\$132,896,376	
			Program Enhanced TRC Ratio <sup>71</sup>			2.2

**Table 18 Corrected**  
**2016 Program Administrator Cost**

	Measure/Offering	Units	Total PAC Benefit <sup>22</sup>	Total PAC Cost <sup>23</sup>	Total Net PAC Before Program Costs	PAC Ratio
Retrofit	Air Curtains - Pedestrian Single Door - $\geq 46ft^2$ & $< 96ft^2$	30	\$55,904	\$18,000	\$37,904	3.11
Retrofit	Air Curtains - Pedestrian Double Door - $\geq 96ft^2$	8	\$34,174	\$8,000	\$26,174	4.27
New Const/Retrofit	Air Curtains - Shipping and Receiving - $\geq 100ft^2$	13	\$748,366	\$45,500	\$702,866	16.45
New Const/Retrofit	Air Curtains - Shipping and Receiving - $\geq 80ft^2$ & $< 100ft^2$	1	\$26,421	\$3,000	\$23,421	8.81
New Const/Retrofit	Air Curtains - Shipping and Receiving - $\geq 64ft^2$ & $< 80ft^2$	3	\$63,406	\$9,000	\$54,406	7.05
New Const/Replace	Condensing Boiler - Space Heating- 1000 Mbtu/hr and up <sup>1</sup>	135	\$11,242,646	\$607,500	\$10,635,146	18.51
New Const/Replace	Condensing Boiler - Space Heating 300 to 999 Mbtu/hr <sup>2</sup>	245	\$5,741,526	\$367,500	\$5,374,026	15.62
New Construction	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)-90% AFUE-New <sup>3</sup>	32	\$385,687	\$19,200	\$366,487	20.09
Replacement	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)-90% AFUE-Existing <sup>4</sup>	100	\$1,177,738	\$60,000	\$1,117,738	19.63
New Const/Replace	Condensing Boiler - DHW (1000 to 1499 Mbtu/h)-90% or greater AFUE-New/Existing <sup>5</sup>	7	\$245,285	\$31,500	\$213,785	7.79
New Const/Replace	Condensing Boiler - DHW (300 to 599 Mbtu/h)-90% or greater AFUE-New/Existing <sup>6</sup>	25	\$349,188	\$37,500	\$311,688	9.31
New Construction	Condensing Boiler - DHW (100 to 199 Mbtu/h)-90% or greater AFUE-New <sup>7</sup>	4	\$34,788	\$2,400	\$32,388	14.50
Replacement	Condensing Boiler - DHW (200 to 299 Mbtu/h)-90% or greater AFUE- Existing <sup>8</sup>	12	\$138,804	\$7,200	\$131,604	19.28
New Const/Replace	Condensing Gas Water Heater (100gal/day)	25	\$19,633	\$12,500	\$7,133	1.57
New Const/Replace	Condensing Gas Water Heater (500gal/day)	50	\$103,249	\$25,000	\$78,249	4.13
New Const/Replace	Condensing Gas Water Heater (1,000gal/day) - Purchase	105	\$385,213	\$52,500	\$332,713	7.34
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Imp efficiency 1000 -4999 cfm <sup>9</sup>	10	\$81,810	\$12,000	\$69,810	6.82
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Imp efficiency $\geq 5000$ cfm <sup>10</sup>	3	\$49,403	\$7,500	\$41,903	6.59
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + 2 speed 1000 -4999 cfm <sup>11</sup>	5	\$97,560	\$10,000	\$87,560	9.76
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + 2 speed $\geq 5000$ cfm <sup>12</sup>	1	\$43,360	\$3,500	\$39,860	12.39
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + VFDs 1000 -4999 cfm <sup>13</sup>	12	\$352,423	\$36,000	\$316,423	9.79
New Const/Replace	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + VFDs $\geq 5000$ cfm <sup>14</sup>	4	\$326,318	\$20,000	\$306,318	16.32
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency Imp efficiency 1000 -4999 cfm <sup>15</sup>	8	\$27,409	\$9,600	\$17,809	2.86
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency Imp efficiency $\geq 5000$ cfm <sup>16</sup>	3	\$43,068	\$7,500	\$35,568	5.74
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + 2 speed 1000 -4999 cfm <sup>17</sup>	3	\$50,289	\$6,000	\$44,289	8.38
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + 2 speed $\geq 5000$ cfm <sup>18</sup>	1	\$20,947	\$3,500	\$17,447	5.98
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + VFDs $>1000$ -4999 cfm <sup>19</sup>	13	\$190,360	\$39,000	\$151,360	4.88
New Const/Replace	Condensing Rooftop Units (MUA) All other Commercial Efficiency + VFDs $\geq 5000$ cfm <sup>20</sup>	7	\$437,250	\$35,000	\$402,250	12.49
New Const/Replace	DCKV Fast Casual ( $< 5000$ cfm)	12	\$160,957	\$36,000	\$124,957	4.47
New Const/Replace	DCKV Dinner House (10000 - 15000 cfm)	7	\$370,091	\$52,500	\$317,591	7.05
New Const/Replace	DCKV Full Menu (5000 - 9999 cfm)	21	\$673,885	\$105,000	\$568,885	6.42
New Const/Replace	DCV Office – RTU/MUA < 2,500 sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>21</sup>	4	\$716	\$1,600	-\$884	0.45
New Const/Replace	DCV Retail - RTU/MUA < 5,000 sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>22</sup>	30	\$32,788	\$12,000	\$20,788	2.73
New Const/Replace	DCV Retail – RTU/MUA $\geq 5,000$ sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>23</sup>	40	\$225,326	\$16,000	\$209,326	14.08
Retrofit	DCV Office – RTU/MUA < 2,500 sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>24</sup>	26	\$11,260	\$13,000	-\$1,740	0.87
Retrofit	DCV Office – RTU/MUA $\geq 2,500$ sq ft with CO2 Sensor - (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>25</sup>	20	\$16,528	\$10,000	\$6,528	1.65
Retrofit	DCV Retail - RTU/MUA < 5,000 sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>26</sup>	7	\$18,743	\$3,500	\$15,243	5.36
Retrofit	DCV Retail – RTU/MUA $\geq 5,000$ sq ft ventilated with CO2 Sensor - (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>27</sup>	53	\$359,581	\$26,500	\$333,081	13.57
New Const/Retrofit	Destratification Fan <sup>28</sup>	120	\$3,840,504	\$216,000	\$3,624,504	17.78
New Const/Replace	Energy Star Dishwasher - Rack Conveyor - Multi Tank - High Temperature - Purchase	2	\$11,593	\$900	\$10,693	12.88
New Const/Replace	Energy Star Dishwasher - Rack Conveyor - Single Tank - High Temperature - Purchase	15	\$22,924	\$6,750	\$16,174	3.40
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Door Type - High Temperature - Purchase	35	\$73,795	\$7,000	\$66,795	10.54
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Door Type - Low Temperature - Purchase	140	\$678,725	\$28,000	\$650,725	24.24
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Single Rack - High Temperature - Purchase	4	\$8,434	\$800	\$7,634	10.54
New Const/Replace	Energy Star Dishwasher - Stationary Rack - Single Rack - Low Temperature - Purchase	4	\$19,392	\$800	\$18,592	24.24
New Const/Replace	Energy Star Dishwasher - Undercounter - High Temperature - Purchase	21	\$3,469	\$4,200	-\$731	0.83
New Const/Replace	Energy Star Dishwasher - Undercounter - Low Temperature - Purchase	4	\$1,549	\$800	\$749	1.94
New Const/Replace	Energy Star Convection Oven	15	\$23,661	\$3,750	\$19,911	6.31
New Const/Replace	Energy Star Steam Cooker (boiler-based)	5	\$81,900	\$1,250	\$80,650	65.52
New Const/Replace	Energy Star Fryer	100	\$259,455	\$25,000	\$234,455	10.38
New Construction	ERV 1- up to 1999 cfm MURB,Healthcare,Nursing- Ventilation with ERV -New Construction <sup>29</sup>	155	\$394,699	\$155,000	\$239,699	2.55
Retrofit	ERV 1- up to 1999 cfm MURB,Healthcare,Nursing- Ventilation with ERV -Retrofit <sup>30</sup>	12	\$223,999	\$12,000	\$211,999	18.67
New Construction	ERV 2- => 2000 cfm MURB,Healthcare,Nursing- Ventilation with ERV -New Construction <sup>31</sup>	33	\$1,747,779	\$82,500	\$1,665,279	21.19
Retrofit	ERV 2- => 2000 cfm MURB,Healthcare,Nursing- Ventilation with ERV -Retrofit <sup>32</sup>	12	\$903,477	\$30,000	\$873,477	30.12
New Construction	ERV 3- up to 1999 cfm Hotel,Restaurant,Retail- Ventilation with ERV -New Construction <sup>33</sup>	40	\$243,094	\$40,000	\$203,094	6.08
Retrofit	ERV 3- up to 1999 cfm Hotel,Restaurant,Retail- Ventilation with ERV -Retrofit <sup>34</sup>	20	\$126,078	\$20,000	\$106,078	6.30
New Construction	ERV 4- => 2000 cfm Hotel,Restaurant,Retail- Ventilation with ERV -New Construction <sup>35</sup>	16	\$557,138	\$40,000	\$517,138	13.93
Retrofit	ERV 4- => 2000 cfm Hotel,Restaurant,Retail- Ventilation with ERV -Retrofit <sup>36</sup>	11	\$757,595	\$27,500	\$730,095	27.55

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Exhibit A  
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New Construction	ERV 5- up to 1999 cfm All Other Commercial-New Construction <sup>37</sup>	70	\$305,783	\$70,000	\$235,783	4.37
Retrofit	ERV 5- up to 1999 cfm All Other Commercial -Retrofit <sup>38</sup>	195	\$721,571	\$195,000	\$526,571	3.70
New Construction	ERV 6- => 2000 cfm All Other Commercial -New Construction <sup>39</sup>	41	\$893,313	\$102,500	\$790,813	8.72
Retrofit	ERV 6- => 2000 cfm All Other Commercial -Retrofit <sup>40</sup>	45	\$1,162,810	\$112,500	\$1,050,310	10.34
New Construction	HRV 500 to 2,000cfm-Hotel, Restaurant, Retail, Rec <sup>41</sup>	2	\$6,576	\$1,000	\$5,576	6.58
Retrofit	HRV 500 to 2,000cfm-Hotel, Restaurant, Retail, Rec <sup>42</sup>	6	\$39,586	\$3,000	\$36,586	13.20
New Construction	HRV >2,000cfm-Hotel, Restaurant, Retail, Rec <sup>43</sup>	1	\$19,888	\$750	\$19,138	26.52
Retrofit	HRV >2,000cfm-Hotel, Restaurant, Retail, Rec <sup>44</sup>	1	\$27,263	\$750	\$26,513	36.35
New Construction	HRV 500 to 2,000cfm - All other commercial <sup>45</sup>	25	\$45,746	\$12,500	\$33,246	3.66
Retrofit	HRV 500 to 2,000cfm - All other commercial <sup>46</sup>	33	\$139,021	\$16,500	\$122,521	8.43
New Construction	HRV >2,000cfm-All other commercial <sup>47</sup>	17	\$403,520	\$12,750	\$390,770	31.65
Retrofit	HRV >2,000cfm-All other commercial <sup>48</sup>	21	\$889,072	\$15,750	\$873,322	56.45
New Construction	HRV >2,000cfm- Multi Family, Health Care, Nursing <sup>49</sup>	17	\$712,517	\$12,750	\$699,767	55.88
Retrofit	HRV >2,000cfm- Multi Family, Health Care, Nursing <sup>50</sup>	5	\$122,735	\$3,750	\$118,985	32.73
New Construction	HRV 500 to 2000cfm- Multi Family, Health Care, Nursing <sup>51</sup>	1	\$4,638	\$500	\$4,138	9.28
Retrofit	HRV 500 to 2000cfm- Multi Family, Health Care, Nursing <sup>52</sup>	1	\$5,044	\$500	\$4,544	10.09
New Const/Replace	Infrared Heating 1- 20 to 99 MBtu/hr 1-Stage <sup>53</sup>	400	\$813,596	\$120,000	\$693,596	6.78
New Const/Replace	Infrared Heating 2- 100-300 MBtu/hr 1-Stage <sup>54</sup>	800	\$4,055,332	\$240,000	\$3,815,332	16.90
New Const/Replace	Infrared Heating 3- 20 to 99 MBtu/hr 2-Stage <sup>55</sup>	200	\$823,002	\$80,000	\$743,002	10.29
New Const/Replace	Infrared Heating 4- 100-300 MBtu/hr 2-Stage <sup>56</sup>	400	\$3,319,295	\$160,000	\$3,159,295	20.75
New Const/Retrofit	Ozone WE =< 60 lbs cap & 100,000 to 199,999lbs <sup>57</sup>	40	\$376,987	\$140,000	\$236,987	2.69
New Const/Retrofit	Ozone WE =< 60 lbs cap & => 200,000 lbs <sup>58</sup>	35	\$970,162	\$180,000	\$790,162	5.39
New Const/Retrofit	Ozone WE >60 lbs & =< 120lbs & => 200,000 lbs <sup>59</sup>	8	\$253,641	\$36,000	\$217,641	7.05
New Const/Retrofit	Ozone WE > 120lbs & <500lbs & => 260,000 lbs <sup>60</sup>	8	\$357,709	\$64,000	\$293,709	5.59
New Const/Replace	High Efficiency Under-Fired Broiler - Three Foot - New/Replace	8	\$37,017	\$2,000	\$35,017	18.51
New Const/Replace	High Efficiency Under-Fired Broiler - Four Foot - New/Replace	8	\$49,341	\$2,000	\$47,341	24.67
New Const/Replace	High Efficiency Under-Fired Broiler - Five Foot - New/Replace	7	\$53,970	\$1,750	\$52,220	30.84
New Const/Replace	High Efficiency Under-Fired Broiler - Six Foot - New/Replace	7	\$64,766	\$1,750	\$63,016	37.01
New/Replace	Condensing Unit Heaters - New/Replace	60	\$198,053	\$30,000	\$168,053	6.60
Replacement	High Efficiency Condensing Furnace - Replacement	60	\$22,097	\$24,000	-\$1,903	0.92
New/Replace	Commercial Condensing Tankless Gas Water Heater - Low <200 kBtu/hr - Elementary schools, office, retail, churches - New/Replacement	15	\$14,838	\$11,250	\$3,588	1.32
New/Replace	Commercial Condensing Tankless Gas Water Heater - Low >200 kBtu/hr - Elementary schools, office, retail, churches - New/Replacement	15	\$22,422	\$11,250	\$11,172	1.99
New/Replace	Commercial Condensing Tankless Gas Water Heater - Medium <200 kBtu/hr - Secondary schools, fast food restaurant, dormitories, other - New/Replacement	20	\$25,279	\$15,000	\$10,279	1.69
New/Replace	Commercial Condensing Tankless Gas Water Heater - Medium >200 kBtu/hr - Secondary schools, fast food restaurant, dormitories, other - New/Replacement	20	\$39,055	\$15,000	\$24,055	2.60
New/Replace	Commercial Condensing Tankless Gas Water Heater - High <200 kBtu/hr - Fitness center, full service restaurant, hotels, in patient health care - New/Replacement	25	\$38,469	\$18,750	\$19,719	2.05
New/Replace	Commercial Condensing Tankless Gas Water Heater - High >200 kBtu/hr - Fitness center, full service restaurant, hotels, in patient health care - New/Replacement	25	\$53,398	\$18,750	\$34,648	2.85
New/Replace	CEE Tier 2 Front-Loading Clothes Washer Multi-Family	600	\$134,197	\$120,000	\$14,197	1.12
New/Replace	Energy Star Front-Loading Clothes Washer Multi-Family New/Replacement	15	\$1,259	\$750	\$509	1.68
New	Boiler Load Controls - Basic - CI (Purchase)	10	\$93,749	\$30,000	\$63,749	3.12
New	Boiler Load Controls - Basic - MURBs (Purchase)	10	\$62,993	\$30,000	\$32,993	2.10
Existing	Boiler Load Controls - Temp Sensor - MURBs (Existing Buildings)	8	\$180,891	\$48,000	\$132,891	3.77
New	Boiler Load Controls - Temp Sensor - MURBs (New Buildings)	2	\$33,032	\$12,000	\$21,032	2.75
New	DCV Office - RTU/MUA < 2,500 sq ft ventilated with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>61</sup>	5	\$895	\$2,000	-\$1,105	0.45
New	DCV Office - RTU/MUA ≥ 2,500 sq ft with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>62</sup>	5	\$2,237	\$2,000	\$237	1.12
New	DCV Retail - RTU/MUA < 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>63</sup>	20	\$21,859	\$8,000	\$13,859	2.73
New	DCV Retail - RTU/MUA ≥ 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -New w/o maintenance plan <sup>64</sup>	20	\$112,663	\$8,000	\$104,663	14.08
Retrofit	DCV Office - RTU/MUA < 2,500 sq ft ventilated with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>65</sup>	20	\$8,662	\$10,000	-\$1,338	0.87
Retrofit	DCV Office - RTU/MUA ≥ 2,500 sq ft with CO2 Sensor -Demand Controlled Ventilation (DCV) controls with CO2 sensors - Retrofit w/o maintenance plan <sup>66</sup>	15	\$12,396	\$7,500	\$4,896	1.65
Retrofit	DCV Retail - RTU/MUA < 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>67</sup>	5	\$13,388	\$2,500	\$10,888	5.36
Retrofit	DCV Retail - RTU/MUA ≥ 5,000 sq ft ventilated with CO2 Sensor-Demand Controlled Ventilation (DCV) controls with CO2 sensors -Retrofit w/o maintenance plan <sup>68</sup>	30	\$203,537	\$15,000	\$188,537	13.57
New/Replace	Combination Boiler - Multi Family Residential	10	\$430,521	\$25,000	\$405,521	17.22
Custom	General Service Custom <sup>69</sup>	178	\$14,057,413	\$1,372,461	\$12,684,952	10.24
Custom	Contract Custom <sup>70</sup>	318	\$125,099,241	\$5,641,618	\$119,457,623	22.17
Custom	Studies and Metering	120		\$590,024		
<b>Total</b>			<b>\$191,877,803</b>	<b>\$12,131,103</b>	<b>\$180,336,724</b>	
			Promotion Costs	\$2,431,085		
			Administration Costs	\$3,928,876		
			EM&V Costs	\$188,959		
			<b>Program Total Net PAC</b>		<b>\$173,197,780</b>	
			<b>Program PAC Ratio</b>			<b>10.3</b>

1	Condensing Boiler - over 1000 Mbtu/h measure is quasi-prescriptive. Savings are based on an average capacity of 1,791,639 Btu/hr from 2014 year results
2	Condensing Boiler - 300 to 999 Mbtu/h measure is quasi-prescriptive. Savings are based on an average capacity of 504,170 Btu/hr from 2014 year results
3	Condensing Boiler - 200 to 299 Mbtu/h measure is quasi-prescriptive. Savings are based on an average capacity of 264,643 from 2014 year results
4	Condensing Boiler - 200 to 299 Mbtu/h measure is quasi-prescriptive. Savings are based on an average capacity of 258,597 from 2014 year results
5	Condensing Boiler - DHW (1000 to 1499 Mbtu/h)-90% or greater AFUE-New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 1,250,000 from 2014 year results
6	Condensing Boiler - DHW (300 to 599 Mbtu/h)-90% or greater AFUE-New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 436,571 from 2014 year results
7	Condensing Boiler - DHW (100 to 199 Mbtu/h)-90% or greater AFUE-New measure is quasi prescriptive. Savings are based on the midpoint capacity of 150,000
8	Condensing Boiler - DHW (200 to 299 Mbtu/h)-90% or greater AFUE- Existing measure is quasi prescriptive. Savings are based on an average capacity of 266,800 from 2014 year results
9	Condensing Rooftop Units (MUA) Multifamily & Healthcare Improved efficiency 1000 -4999 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 3,486 CFM from 2014 year results
10	Condensing Rooftop Units (MUA) Multifamily & Healthcare Improved efficiency ≥ 5000 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 7,017 CFM from 2014 year results
11	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + 2 speed 1000 -4999 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 3,600 CFM from 2013 year results
12	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + 2 speed ≥ 5000 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 8,000 CFM from 2014 year results
13	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + VFDs 1000 -4999 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 3,600 CFM from 2013 year results
14	Condensing Rooftop Units (MUA) Multifamily & Healthcare Efficiency + VFDs ≥ 5000 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 10,000 CFM from 2014 year results
15	Condensing Rooftop Units (MUA) All other Commercial Efficiency Improved efficiency 1000 -4999 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 2,991 CFM from 2014 year results
16	Condensing Rooftop Units (MUA) All other Commercial Efficiency Improved efficiency≥ 5000 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 12,533 from 2013 year results
17	Condensing Rooftop Units (MUA) All other Commercial Efficiency + 2 speed 1000 -4999 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 4,800 CFM from 2014 year results
18	Condensing Rooftop Units (MUA) All other Commercial Efficiency + 2 speed ≥ 5000 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 5,998 CFM from 2013 year results
19	Condensing Rooftop Units (MUA) All other Commercial Efficiency + VFDs 1000 -4999 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 2,532 CFM from 2014 year results
20	Condensing Rooftop Units (MUA) All other Commercial Efficiency + VFDs ≥ 5000 cfm measure is quasi-prescriptive. Savings are based on an average capacity of 10,801 CFM from 2014 year results
21	DCV Office - < 2,500 sq ft ventilated with CO2 Sensor New w/o maintenance plan measure is quasi-prescriptive. Savings are based on an average capacity of 1,000 from 2014 year results
22	DCV Retail - < 5,000 sq ft ventilated with CO2 Sensor New w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 1,745 from 2014 year results
23	DCV Retail - ≥ 5,000 sq ft ventilated with CO2 Sensor New w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 8,994 from 2014 year results
24	DCV Office - < 2,500 sq ft ventilated with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 2,038 from 2014 year results
25	DCV Office - ≥ 2,500 sq ft with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 3,889 from 2014 year results
26	DCV Retail - < 5,000 sq ft ventilated with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 3,600 from 2014 year results
27	DCV Retail - ≥ 5,000 sq ft ventilated with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 9,122 from 2014 year results
28	Destratification Fans - New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 24,184 from 2014 year results
29	ERV 1- up to 1999 cfm MURB,Healthcare,Nursing- Ventilation with ERV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 169 from 2014 year results
30	ERV 1- up to 1999 cfm MURB,Healthcare,Nursing- Ventilation with ERV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 1,168 from 2014 year results
31	ERV 2- > 2000 cfm MURB,Healthcare,Nursing- Ventilation with ERV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 3,515 from 2014 year results
32	ERV 2- > 2000 cfm MURB,Healthcare,Nursing- Ventilation with ERV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 4,711 from 2014 year results
33	ERV 3- up to 1999 cfm Hotel,Restaurant,Retail- Ventilation with ERV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 725 from 2014 year results
34	ERV 3- up to 1999 cfm Hotel,Restaurant,Retail- Ventilation with ERV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 710 from 2014 year results
35	ERV 4- > 2000 cfm Hotel,Restaurant,Retail- Ventilation with ERV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 4,154 from 2014 year results
36	ERV 4- > 2000 cfm Hotel,Restaurant,Retail- Ventilation with ERV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 7,757 from 2014 year results
37	ERV 5- up to 1999 cfm All Other Commercial-New Construction measure is quasi prescriptive. Savings are based on an average capacity of 816 from 2014 year results
38	ERV 5- up to 1999 cfm All Other Commercial -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 653 from 2014 year results
39	ERV 6- > 2000 cfm All Other Commercial -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 4,070 from 2014 year results
40	ERV 6- > 2000 cfm All Other Commercial -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 4,560 from 2014 year results
41	HRV 500 to 2,000cfm-Hotel, Restaurant, Retail, Rec <sup>44</sup> - Ventilation with HRV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 529 from 2014 year results
42	HRV 500 to 2,000cfm-Hotel, Restaurant, Retail, Rec <sup>45</sup> - Ventilation with HRV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 968 from 2014 year results
43	HRV >2,000cfm-Hotel, Restaurant, Retail, Rec <sup>41</sup> - Ventilation with HRV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 3,200 from 2014 year results
44	HRV >2,000cfm-Hotel, Restaurant, Retail, Rec <sup>42</sup> - Ventilation with HRV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 4,000 from 2014 year results
45	HRV 500 to 2,000cfm - All Other Commercial -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 461 from 2014 year results
46	HRV 500 to 2,000cfm - All Other Commercial -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 966 from 2014 year results
47	HRV ≥2,000cfm- All Other Commercial -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 5,980 from 2014 year results
48	HRV ≥2,000cfm-All Other Commercial -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 9,708 from 2014 year results
49	HRV ≥2,000cfm Multi Family, Health Care, Nursing <sup>46</sup> - Ventilation with HRV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 3,750 from 2013 year results
50	HRV ≥2,000cfm Multi Family, Health Care, Nursing <sup>48</sup> - Ventilation with HRV - Retrofit measure is quasi prescriptive. Savings are based on minimum capacity of 2,000
51	HRV 500 to 2,000cfm Multi Family, Health Care, Nursing <sup>46</sup> - Ventilation with HRV -New Construction measure is quasi prescriptive. Savings are based on an average capacity of 415 from 2014 year results
52	HRV 500 to 2,000cfm Multi Family, Health Care, Nursing <sup>47</sup> - Ventilation with HRV -Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 411 from 2014 year results
53	Single Stage & High Intensity Infrared Heaters-20,000 - 99,999 BTU/hr-New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 54,871 from 2014 year results
54	Single Stage & High Intensity Infrared Heaters-100,000 - 300,000 BTU/hr-New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 136,751 from 2014 year results
55	2-Stage Infrared Heaters-20,000 - 99,999 BTU/hr-New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 66,056 from 2014 year results
56	2-Stage Infrared Heaters-100,000 - 300,000 BTU/hr-New/Existing measure is quasi prescriptive. Savings are based on an average capacity of 133,207 from 2014 year results
57	Ozone WE ≤ 60 lbs cap & 100,000 to 199,999lbs/yr. - New/Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 111,600 from 2014 year results
58	Ozone WE ≤ 60 lbs cap & ≥ 200,000 lbs/yr. - New/Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 251,299 from 2014 year results
59	Ozone WE >60 lbs & ≤ 120lbs & ≤ 200,000 lbs/yr. - New/Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 328,500 from 2014 year results
60	Ozone WE > 120lbs & <500lbs & ≥ 260,000 lbs/yr. - New/Retrofit measure is quasi prescriptive. Savings are based on an average capacity of 463,283 from 2014 year results
61	DCV Office - < 2,500 sq ft ventilated with CO2 Sensor New w/o maintenance plan measure is quasi-prescriptive. Savings are based on an average capacity of 1,000 from 2014 year results
62	DCV Office - ≥ 2,500 sq ft with CO2 Sensor New w/o maintenance plan measure is quasi prescriptive. Savings are based on minimum capacity of 2500
63	DCV Retail - < 5,000 sq ft ventilated with CO2 Sensor New w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 1,745 from 2014 year results
64	DCV Retail - ≥ 5,000 sq ft ventilated with CO2 Sensor New w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 8,994 from 2014 year results
65	DCV Office - < 2,500 sq ft ventilated with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 2,038 from 2014 year results
66	DCV Office - ≥ 2,500 sq ft with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 3,889 from 2014 year results
67	DCV Retail - < 5,000 sq ft ventilated with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 3,600 from 2014 year results
68	DCV Retail - ≥ 5,000 sq ft ventilated with CO2 Sensor Retrofit w/o maintenance plan measure is quasi prescriptive. Savings are based on an average capacity of 9,122 from 2014 year results
69	General Service Custom. TRC Benefits and TRC Costs based on 3 year historical average of general service custom results
70	Contract Custom. TRC Benefits and TRC Costs based on 3 year historical average of contract custom results
71	TRC Ratio adjusted for 2015 avoided costs and 4% discount factor. Includes 15% Non Energy Benefits Adder
72	PAC Benefits refer to the avoided natural gas benefits associated with the offering
73	PAC Costs refers to the total incentives for the offering

## **Performance-Based**

### ***1.2 Performance-Based Program***

Union's proposed 2016-2020 Performance-Based Program was developed in response to the Board's Framework and Guidelines and reflect feedback received from customers and stakeholders through various forums.

Performance-Based conservation is a means of benchmarking a customer's energy use to evaluate energy saving opportunities, and to measure on-going savings using an evidence based approach (e.g. comparing before and after metered billing data). Union will provide funding for customers to evaluate opportunities for performance improvement, and incentives once deep, long-term savings are demonstrated. The Program has an emphasis on a comprehensive approach to energy savings opportunities and includes the following offerings:

- RunSmart
- Strategic Energy Management

#### **1.2.1 Customer Class targeted**

- Commercial General Service and Industrial Contract Customers
- Targets market segments that include but are not limited to:
  - General Service commercial customers (e.g. office, multi-family, schools, and hospitals)
  - Contract industrial manufacturing customers (e.g. parts manufacturing, food and beverage, chemical/petroleum, and steel)

#### **1.2.2 Rate Classes Targeted**

- Rate M2, Rate 10, Rate M4, Rate M5, Rate M7, Rate T1, Rate 20

#### **1.2.3 Program Goals**

- Program goals for the Performance-Based Custom Program consist of the following:
  - Generate long-term energy savings in commercial, institutional, and industrial facilities;
  - Increase participation and make it a priority for customers who have not yet embraced a culture of conservation in their facility;
  - Determine customer savings using an evidence-based approach, comparing before and after measured billing data

#### **1.2.4 Program Strategy**

- Program strategies to achieve Union's goals include:
  - Provide customers with incentives to evaluate opportunities for behavioural improvement and take action on those opportunities

- Provide financial support to customers for establishing a baseline for existing operations to monitor and identify savings opportunities
- Develop energy savings milestones for customers (i.e. 5%, 10%) by providing enhanced incentive for achieving each goal
- Provide customers with incentives when long-term, deep savings are demonstrable through metered data analysis

### **1.2.5 Program Offerings**

The offerings delivered in the Performance-Based Program are outlined below.

#### **RunSmart Offering**

##### ***Description***

Union's RunSmart offering has been enhanced to improve its effectiveness as a "deep" savings Performance-Based Program.

- Union's RunSmart offer assists customers with the recommissioning of building comfort heating and domestic hot water equipment and control systems, as well as evaluating building envelope integrity
- The focus for the RunSmart offering is to identify low cost or no cost building optimization and operation and maintenance improvements for customers
- A site walk through will be administered by a third party agency at no cost to the customer to identify opportunities to more efficiently utilize their heating equipment and systems in place.

Savings are evaluated 12 months after the completion of the site assessment. This 12-month period is referred to as the recommissioning<sup>8</sup> period. Annual energy savings are based on the new annual consumption for the site compared to the customer's baseline consumption, determined by CUSUM analysis. Customers will be provided incentives for savings achieved as outlined below in the incentive level section.

##### ***Target Market***

- Union's General Service commercial customers (e.g. office, multi-family, schools, and hospitals) with an annual consumption in excess of 50,000 m3. The customer size eligibility criteria has been reduced from the previous threshold of 200,000 m3/year to expand access to mid-size commercial customers for participation in this program.

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<sup>8</sup> Recommissioning is a means of evaluating and improving how building heating equipment and systems function together.

- Industrial customers are not eligible for RunSmart as it is focused on improving the efficiency of comfort heating equipment and systems, and is not designed to address production and process variables.
- RunSmart specifically targets customers that have not recently implemented energy conservation measures at their site (e.g. non-DSM participants)

#### ***Incentive Level***

- Participating customers will be provided a site assessment at no charge – evaluating the performance of existing equipment and potential energy savings following recommissioning of comfort heating and domestic hot water systems
- Savings will be evaluated once, 12 months after a customer's site assessment has been completed – comparing new (post-recommissioning) annual consumption against the customer's annual baseline consumption
- Savings that are realized beyond 5% of the baseline post-recommissioning will be incented at \$0.20 per annual m<sup>3</sup> saved with a deep savings performance bonus available beyond 10% savings:
  - Savings demonstrated less than the minimum threshold of 5% improvement from baseline will not receive an incentive
  - Savings demonstrated between 5% and 10% improvement from baseline will receive \$0.20 per annual m<sup>3</sup> saved
  - An incremental deep savings bonus of \$0.05 is applied to customers demonstrating greater than 10% improvement (but less than 15%)
  - An incremental deep savings bonus of \$0.10 is applied to customers demonstrating greater than 15% improvement
- Customers participating in RunSmart are not eligible to receive General Service custom project incentives

#### ***Market Delivery***

- Union will identify and target eligible customer participants through account management outreach and direct marketing efforts.
- A third party consultant and service provider will be selected by Union to complete a site evaluation at each participating customer facility (at no cost to customer)
- Union will measure the savings one-year after the completion of the site evaluation on metered performance for the site
- Customers will receive the appropriate incentive amount based on the incentive structure outlined above

#### ***Barriers Addressed***

Primary barriers addressed with the RunSmart offer, include:



- New DSM program entrants
  - Union’s RunSmart program specifically targets non-DSM participants with low-cost, no-cost energy conservation opportunities
- Measured energy savings
  - Energy savings for RunSmart projects will be based on actual billing meter data, normalized for weather (comparing annual baseline consumption vs. annual post-recommissioning consumption)
- Deep savings
  - Union’s RunSmart program will enable participating customers to more efficiently utilize their heating equipment by implementing low or no-cost measures to decrease their baseline gas consumption

### **Strategic Energy Management Offering**

#### ***Description***

- Strategic Energy Management (“SEM”) is a successor to Union’s Integrated Energy Management System (“IEMS”) program
- SEM is a long-term, deep savings initiative, whereby a customer’s energy performance will be tracked and measured against their baseline performance established through their first year of participation in the program
- SEM will target industrial manufacturing distribution contract customers who use more than 1 million m<sup>3</sup>/year. SEM is a multiyear program and will measure results and progressive savings over five years.
- SEM is focused on enabling a customer to analyze current energy performance to establish a baseline for existing operations, and to track performance over time and measure continuous improvement efforts (e.g. ISO 50001<sup>9</sup>).
- Incentives and in-kind technical support are available to customers for start-up evaluation and implementation of a monitoring system, as well as incentives for demonstrated energy performance improvements over time.

#### ***Target Market***

- Union’s Contract industrial-manufacturing customers are eligible to participate in the SEM program, provided:
  - The customer has not previously participated in the IEMS program

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<sup>9</sup> ISO 50001 is the International Standard’s Organization’s (ISO) Energy Management system standard – a framework of requirements for an organization to track, report, and improve the way it uses energy on a continuous improvement cycle.

- The customer does not currently have an energy management system (by which they track, report and plan continuous improvement energy efficiency activities, already) in place
- The customer has a minimum annual natural gas usage of 1,000,000 m<sup>3</sup>

#### ***Reporting requirements***

- Upon installation of sub-metering, participating customers will be required to submit annual performance reports detailing continuous improvement opportunities, and energy usage for the prior 12-month operating period:
  - Year-2 – Baseline Report
  - Year-3/4/5 – Performance Report
- All reporting commitments will be supported by a third party technical resource selected by Union and provided at no cost to the customer.

#### ***Incentive Level***

- Incentives will be structured to support initial start-up costs, and provided as fixed incentives for measured energy efficiency improvements over a 5-year participation period
- Year-1 start-up incentives:
  - Up to \$25,000 to support the purchase and installation of sub-metering and data management equipment
  - Additionally, In-kind technical support (from Union and a third party) will be made available at no charge to the customer, to assess and identify appropriate unitized energy use metrics (relative to a customer's process and production), to recommend sub-metering requirements, and to aid in the development of a continuous improvement energy management plan for the customer
- Year-2 baseline incentive:
  - Customer to submit a 12-month baseline report
  - No incentive available since only baseline data is being collected
- Year-3 performance incentive:
  - Customer to submit a 12-month performance report
  - >5% savings (from baseline) = \$10,000 fixed incentive
- Year-4 performance incentive:
  - Customer to submit a 12-month performance report
  - >10% savings (from baseline) = \$15,000 fixed incentive
- Year-5 performance incentive:
  - Customer to submit a 12-month performance report
  - >15% savings (from baseline) = \$20,000 fixed incentive
- Savings demonstrated less than target levels will be ineligible for incentives

- Customers participating in SEM are not eligible to receive Contract custom project incentives (i.e. \$0.10 per annual m<sup>3</sup> of gas saved)

#### ***Incentive Rationale***

- Start-up incentives – up to \$25,000
  - The \$25,000 incentive is the approximate average incentive provided to customers that participated in IEMS program through the implementation phase (for system upgrade costs, including metering and data management)
- Performance incentives
  - Incentives are fixed for all SEM participants (based on a Contract customer with an annual baseline consumption of 2,000,000 m<sup>3</sup> per year), and paid for performance as outlined:
    - Year-3 savings demonstrated greater than 5% improvement from baseline will receive \$10,000
    - Year-4 savings demonstrated greater than 10% improvement from baseline will receive \$15,000
    - Year-5 savings demonstrated greater than 15% improvement from baseline will receive \$20,000
    - Savings demonstrated less than the minimum threshold of improvement from baseline will not receive an incentive

#### ***Market Delivery***

- Union will identify and target eligible participants by account management outreach
- Program participants will sign a Memorandum-of-Understanding outlining their commitment to the program and performance incentive opportunities
- A third party consultant and service provider will provide site evaluations and assist in defining unitized baseline energy performance metrics, to recommend sub-metering requirements, and to aid in the development of a continuous improvement energy management plan at no cost to the customer
- A third party consultant will complete an annual report to identify demonstrated savings, including details on the customer's improvement opportunities implemented and those planned in the future at no cost to the customer

#### ***Barriers Addressed***

- High cost of monitoring system equipment and undefined payback periods
  - SEM will enable customers to monitor and identify low-cost/no-cost energy savings opportunities and justify business case requirements with actual process data for future capital investments

- Awareness and acceptance of an energy efficiency culture
  - Union will promote the value of adopting a continuous improvement energy management system, and will emphasize the importance of integrating energy efficiency into production decision making
  - Through the long-term commitment for the program, Union will evaluate progress for its SEM program participants and will meet with those customers throughout the DSM plan to gather feedback on the program and to share lessons learned
- New DSM program entrants
  - Union's SEM program specifically targets participants that have yet to develop an energy management system for their operation
- Measured energy savings
  - Energy savings for SEM will be based on actual metered data, normalized for weather and production (comparing against annual baseline energy use)
- Deep savings
  - Union's SEM program will demonstrate continuous improvement with measured deep savings throughout the DSM plan

#### **1.2.6 Program Duration**

- Union will accept new participants each program year in the RunSmart program
- Union will not accept new participants into the SEM program after 2018, due to the 5-year incentive commitment to the participating customer. Program funding will be required through 2023 to complete the program cycle for all participating customers.

#### **1.2.7 Program Budget**

The budget presented in Table 19 below does not include inflation.

Table 19  
Performance-Based Program Budget

<b>Program Cost (\$000)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Incentives/Promotion	\$297	\$592	\$837	\$582	\$802
Evaluation	\$35	\$35	\$35	\$35	\$35
Administrative Costs	\$216	\$216	\$216	\$216	\$216
<b>Total</b>	<b>\$548</b>	<b>\$843</b>	<b>\$1,088</b>	<b>\$833</b>	<b>\$1,053</b>

## 1.2.8 Program Participation

Table 20  
Performance-Based Program Participation

	2016	2017	2018	2019	2020
RunSmart	25	35	45	55	65
Strategic Energy Management*	3	5	7	0	0

\*SEM Customers sign a 5 year agreement, thus the participants remain each year of the plan. The participants displayed in the table above are additional participants each year.

## 1.2.9 Targets

Table 21  
Performance-Based Program Annual Natural Gas Savings

m <sup>3</sup>	2016	2017	2018	2019	2020
RunSmart	-	250,000	350,000	450,000	550,000
Strategic Energy Management	-	-	300,000	800,000	1,500,000
Total	-	250,000	650,000	1,250,000	2,050,000

Table 22  
Performance-Based Program Cumulative Natural Gas Savings

m <sup>3</sup>	2016	2017	2018	2019	2020
RunSmart	-	1,250,000	1,750,000	2,250,000	2,750,000
Strategic Energy Management	-	-	6,000,000	16,000,000	30,000,000
Total	-	1,250,000	7,750,000	18,250,000	32,750,000

## 1.2.10 Rationale for Targets

### 1.2.10.1 Context for Targets

#### *Context for RunSmart Targets*

- Participation
  - Eligibility based on approximately 1,900 General Service (Rate M2 and Rate 10) commercial customers with an annual consumption greater than 50,000 m<sup>3</sup>, and without prior participation history in Union's DSM programs (since the 2009 program year)

- Participation considers Union successfully engaging 10% of those eligible customers in the first 4 years of the program (approximately 200 customers at most by the 2019 program year)
- Savings
  - The performance metric is based on the savings result for all RunSmart participants with eligible savings within a program year.
  - Savings will be recorded beginning in year 2 of the program (2017)

#### ***Context for Strategic Energy Management Targets***

- Participation
  - Eligibility based on approximately 100 Contract rate industrial-manufacturing customers with an annual consumption greater than 1,000,000 m3
  - Participation considers Union successfully engaging 15% of those eligible customers in the first 3 years of the program (15 customers by the 2018 program year)
  - First-year Target participation is estimated to be 3% of the eligible contract customer pool, with an additional 2% increase in participation year-over-year.
  - No new participants are expected after year-3 of the program (2018)
- Savings
  - The performance metric is based on the Savings for all SEM participants with eligible savings within a program year (note, program participants and eligible savings are staggered over the course of the DSM plan).
  - Savings will be recorded beginning in year-3 of the program (2018) and continue through 2022

#### **1.2.10.2 Challenges in Achieving Performance-Based Custom Targets**

- Relatively low natural gas commodity pricing (compared with rising electricity prices) will impact customer decisions to consider natural gas energy conservation opportunities
- The long-term nature of the Performance-Based programs, RunSmart and SEM, may deter customer participation given the commitment timeline; SEM in particular is a 5-year initiative with annual reporting requirements
- The SEM program requires that a customer subscribe to a continuous improvement philosophy for the way in which it uses energy; it is a program that will only succeed with an organization-wide adoption of an energy efficiency culture

### 1.2.11 Considerations of the Board's Guiding Principles and Key Priorities

Union has considered the Board's Guiding Principles in the development of its Performance-Based Program as follows:

- Design programs so that they achieve high customer participation levels
  - Union's Performance-Based programs target customers that have not historically participated in Union's DSM program
  - Projected customer participation in the Performance-Based programs reflect Union's expectations for program eligibility and uptake
- Programs should be designed to pursue long-term energy savings
  - Union's focus on savings and Performance-Based programs will evolve the custom program to adopt "whole facility" evaluation for evidence-based, metered savings

### 1.2.12 Cost Effectiveness

Table 23  
2018 Total Resource Cost-Plus

Measure/Offering	Units	Total TRC-Plus Benefits	Total TRC-Plus Costs	Total Net TRC-Plus Before Program Costs	TRC Plus Ratio
RunSmart <sup>1</sup>	35	\$401,953	\$0	\$401,953	N/A
Strategic Energy Management <sup>1</sup>	15	\$1,325,525	\$0	\$1,325,525	N/A
<b>Total</b>		<b>\$1,727,477</b>	<b>\$0</b>	<b>\$1,727,477</b>	
		Promotion Costs	\$422,000		
		Administration Costs	\$215,696		
		EM&V Costs	\$35,000		
		<b>Program Total Net TRC</b>		<b>\$1,054,781</b>	
		<b>Program Enhanced TRC Ratio<sup>2</sup></b>			<b>2.6</b>

Table 24  
2018 Program Administrator Cost

Measure/Offering	Units	Total PAC Benefit <sup>3</sup>	Total PAC Cost <sup>4</sup>	Total Net PAC Before Program Costs	PAC Ratio
RunSmart	35	\$401,953	\$210,000	\$191,953	1.91
Strategic Energy Management	15	\$1,325,525	\$205,000	\$1,120,524	6.47
<b>Total</b>		<b>\$1,727,477</b>	<b>\$415,000</b>	<b>\$1,312,477</b>	
		Promotion Costs	\$422,000		
		Administration Costs	\$215,696		
		EM&V Costs	\$35,000		
		<b>Program Total Net PAC</b>		<b>\$639,781</b>	
		<b>Program PAC Ratio</b>			<b>1.6</b>

1 No Incremental Costs associated with offering. TRC is displayed at the program level

2 TRC Ratio adjusted for 2015 avoided costs and 4% discount factor. Includes 15% Non Energy Benefits Adder

3 PAC Benefits refer to the avoided natural gas benefits associated with the offering

4 PAC Costs refers to the total incentives for the offering



### 1 ***1.3 Large Volume***

#### 3 **Background**

4 Following extensive customer consultation in 2012, Union designed and delivered a DSM  
5 Program specifically for its Large Volume (T2 and Rate 100) Customers in 2013 and 2014. The  
6 program includes the following key elements:

- 7 • Customer incentives for studies, custom projects, and metering.
- 8 • Union technical staff to assist customers with Energy Efficiency Plans and projects.
- 9 • Technical training courses
- 10 • A Direct Access Budget specific to each customer to provide clarity on the amount of  
11 incentives available
- 12 • Union performance incentives based on achievement level relative to natural gas savings  
13 targets

14 Through close collaboration between Union and Large Volume Customers, the program  
15 participation rate in 2013 was 82% of T2 and Rate 100 customers and increased to 95% in 2014.  
16 The audited program cost and lifetime savings in 2013 were \$3.55 million and 1,664 million m<sup>3</sup>  
17 of natural gas respectively. These natural gas savings represent almost 60% of 2013 DSM  
18 program savings from all Union Rate Classes.

19 Under the new Framework, this program will conclude at the end of 2015

#### 21 **2015-2020 Demand Side Management Framework**

22 The Framework offers the following conclusions to guide the design of a DSM Program for  
23 Large Volume Customers starting in 2016:

- 24 • No ratepayer-funded customer incentives
- 25 • Proposed fee for consulting service by Union technical experts
- 26 • Union performance incentives based on achievement level relative to natural gas savings  
27 targets
- 28 • Only portfolio-level staff costs can be ratepayer-funded

#### 30 **Customer Consultations**

31 Union carried out consultations with 16 Large Volume Customers (44% of all Union's Rate T2  
32 and Rate 100 customers) in February and March 2015 to share the new Framework and  
33 understand what features and benefits the customers value in a utility energy efficiency program.  
34 The detailed responses are tabulated in Attachment A and the results are summarized here:

- 1 • Some customers valued ratepayer-funded incentives and wanted them to continue in the
- 2 program
- 3 • Some customers treat incentive payments as a revenue stream to offset costs of future
- 4 energy saving initiatives.
- 5 • Most customers supported continuing involvement of Union technical experts with
- 6 customers' energy teams and/or other technical staff.
- 7 • Four (4) customers specifically supported the idea of a program with an emphasis on
- 8 technical support for energy teams, technical training and early-stage identification of
- 9 energy efficiency opportunities, which would be funded through rates.
- 10 • The concept of fee-for-service offerings by Union was not attractive to customers as they
- 11 believed that their internal processes would make them administratively complicated to
- 12 access and inflexible in practice.
- 13 • Customers wanted to minimize the impact of deferral account dispositions and supported
- 14 lower program costs.

15  
16 This feedback has resulted in the development of a new program outlined below.

## 17 18 **Union Conclusions**

19 Union accepts the need articulated in the Framework to reduce the scale of ratepayer impact.  
20 The issue of cross-subsidization between ratepayers within each rate class, was addressed in  
21 2013 by the creation of Direct Access Budgets for all Rate T2 and Rate 100 customers.

22 Union has concluded that it should not offer a program based on fee-for-service consulting  
23 services on energy management for the following reasons:

- 24  
25 • It would not be appropriate to develop fee-for-service offerings with Board-approved
- 26 regulated rates when these services are already offered competitively in the market.
- 27 • Making reliable determinations of the actual natural gas savings from projects Union
- 28 participates in would be required for Union to track savings for the purpose of
- 29 determining a performance incentive. It would not be justifiable for a customer to devote
- 30 staff resources to this activity without receiving a customer incentive.
- 31 • Reporting and receiving a performance incentive based on customer savings achieved as
- 32 a result of fee-for-service consulting would constitute a conflict of interest for Union.
- 33 • Consultations with Large Volume Customers showed that the nature of Union's technical
- 34 interactions with the customer's energy team members and other staff does not lend itself
- 35 to a fee-for-service approach.

36  
37 Instead, based on direct customer input, Union has determined that it is appropriate for Union

1 to offer a multi-year ratepayer-funded Rate T2/Rate 100 program that will support large  
2 volume customers by ensuring a continued focus on energy efficiency by providing training  
3 and resources that will sustain the efforts to date. The program cost to ratepayers would be  
4 reduced to \$800,000/year.

5  
6 In view of the demonstrated high participation rates in the prior years' ratepayer-funded  
7 programs, the results of customer consultations in February and March 2015, and  
8 contributing to the achievement of Goal (ii) in Section 1.4 of the Framework to "Promote  
9 energy conservation and energy efficiency to create a culture of conservation", Union  
10 believes this is a natural and appropriate evolution of the DSM programs for this market.  
11 The proposed program would include the following:

- 12 • Continuing specialized technical support and equipment audits by qualified Union  
13 Professional Engineers on an as-requested basis
- 14 • Coordinating and delivering training on energy near plant locations or online to minimize  
15 customer staff time away from the plant
- 16 • Eliminating customer incentive payments for studies, capital or operations &  
17 maintenance equipment investments
- 18 • Eliminating Union's performance incentive and Rate T2/Rate 100 energy saving targets
- 19 • Eliminating costs associated with energy saving targets and performance measurement
- 20 • Providing increased program cost certainty to customers by greatly reducing the  
21 magnitude of deferred costs to customers.

### 22 23 **1.3.1 Customer Class(es) Targeted**

24  
25 Large Volume Customers

### 26 27 **1.3.2 Rate Classes Targeted**

- 28 • Rate T2 - Storage and Transportation Rates for Contract Carriage Customers (Union  
29 South).
- 30 • Rate 100 - Large Volume High Load Factor Firm Service (Union North).

### 31 **1.3.3 Program Goals**

- 32 • Provide all Large Volume customers with the tools, expertise and support to incorporate  
33 energy-efficiency into their everyday operations and practices through continuous  
34 improvement.
- 35 • Promote the identification of energy saving measures through proper analysis techniques.

- Support the development of a growing knowledge base of customer staff on natural gas efficiency-related topics by offering customized technical training programs locally or online, building on Union's demonstrated competency and success in this area

#### **1.3.4 Program Strategy**

To achieve these program goals, the program strategy for Large Volume Rate T2 and Rate 100 program consists of the following:

Union will provide dedicated technical expertise to assist customers in obtaining value from the identification, adoption and implementation of energy efficient actions throughout their sites, facilities and operations. Union will engage customers to increase awareness surrounding the positive benefits achieved through active energy management. The need for job-related technical training will be particularly high in the next few years due to demographic shifts in the workforce. Customers will be offered easy-to-access and low cost training initiatives designed to increase awareness, knowledge and skills related to improving the efficient use of natural gas in their plants' equipment and processes.

#### **1.3.5 Program Offering**

The Large Volume Rate T2 and Rate 100 offering is outlined below.

##### ***Description***

##### **Technical Support**

The support of Union Professional Engineers with experience in industrial energy efficiency and natural gas utilization will be available to all Rate T2/Rate 100 customers, offering the following services:

- Support the activities of a plant Energy Team, or technical staff, such as arranging for visiting speakers, visits to other (non-competitor) plants and employee recognition for energy saving initiatives.
- Provide single-topic training presentations to the Energy Team and other customer staff at meetings on site (e.g. 'Lunch and Learn' sessions)
- Provide customers with copies of texts, such as the ISO 50001 Manual and the Fives North American Combustion Handbook, to enable them to achieve best practice standards in energy management.
- Energy efficiency calculation tools developed for the Energy Solutions Center will be made available as required.
- Under the customers' guidance, carry out research on available and emerging

technologies which, if applied, could result in improved energy efficiency and other benefits such as reduced emissions or maintenance requirements.

- Provide benchmarking information on the expected performance of natural gas equipment and processes where this will assist in determining the potential for improvements.
- Undertake energy use analysis of specific process equipment in collaboration with customer staff. Union staff can provide and utilize or loan measurement instrumentation and/or temporary flow metering and data-logging equipment. This kind of initial assessment has been shown to be an important precursor to customers undertaking a more in-depth study of the equipment using a consultant. Where applicable, Union staff will make use of industry-recognized software tools available from Natural Resources Canada and the U.S. Department of Energy :
  - RETScreen Energy Management Software
  - Steam System Tool Suite: Steam System Assessment Tool
  - 3EPlus Insulation Assessment Tool
  - Combined Heat & Power Application Tool
  - Process Heating Assessment and Survey Tool

#### Customer Training

- In consultation with Large Volume Customers in a given locality, Union will organize specialized 1- or 2-day training courses that meet the training needs of the customers on topics related to the efficient use of natural gas. These courses may be system related (e.g. steam system optimization) or on a specific technical topic (e.g. process temperature measurement and control). A list of suggested topics is provided in Attachment B, but others may be added on the basis of customer needs.
- Train all eligible staff in a range of relevant topics over the duration of the Program (2016-2020). Union will work diligently with Large Volume Customers to plan a range of training offerings that will meet their stated needs each year. A logistical challenge which Union will manage is sourcing the qualified training organizations, obtaining competitive bids and arranging course locations which are close enough to a plant or a group of plants that there will be no significant travel or accommodation required for customers' staff to attend. This will reduce the amount of time the staff will need to be away from the plant for training and therefore help to minimize the disruption of shift plans etc. In some cases courses may be offered online. Training plans for each year the Program runs will be developed through consultations with customers in January and February and training sessions will begin in April and run through November.

- To encourage the uptake of this training, customer departments sending staff for training will be required to pay only a nominal fee of \$100 per attendee for each course to ensure attendance by those who register. The balance of the course costs will be covered by the Program costs, within rates.
- The overall participation rate (number of customers sending staff to courses) and the number of attendees per customer are expected to rise over the 5 years this Program will be offered. Especially in the early years, significant promotion will be undertaken to ensure that customers are aware of the Program and how it can meet their energy efficiency training needs.
- Initial estimates of the Program cost of delivering staff training local to plants indicate that it will increase from \$0.29 million in 2016 to \$0.38 million in 2020 (excluding inflation).

#### ***Target Market***

Large Volume Industrial and Power Generation firm service contract customers

#### ***Market Delivery***

- This energy efficiency program is delivered directly to customers in these rate classes by dedicated Technical Account Managers, who are Professional Engineers with a background in industrial energy efficiency and natural gas applications. In addition to providing technical support to customers' energy teams, they will act as the program contact person for the customer to communicate their training needs to Union in January and February of each year so that the Training Plans can reflect their input.
- Union will plan and deliver high quality industrial and power generation system energy efficiency training in locations that will meet customer needs. Union will qualify vendors, consultants and training organizations and select organizations on the basis of competitive bids wherever possible.
- Union will track the number and role titles of attendees from all Rate T2/Rate 100 customers in order to evaluate the overall reach of the program and compare progress year-on-year.
- Union will monitor attendee satisfaction with the content and delivery of each course offered, and will make adjustments based on customer feedback over the duration of the program to address weaknesses identified and build on strengths.
- The development of professional working relationships between Union staff and the staff of vendors, consultants and training organizations offering training will be a priority to ensure that the highest quality customized training will continue to be available to customers.

## **Barriers Addressed**

- Rate T2 and Rate 100 customers in these rate classes utilize very large amounts of natural gas in their operations, representing 42% of Union's total volume throughput in 2014. Energy purchases are, in most cases, a significant fraction of their overall production costs. Due to the focus on core production competencies such as quality, reliability and safety, energy use continues to be viewed as a 'cost of doing business' allocated between business units at a given site, making it challenging to maintain a disciplined, focused approach to energy efficiency.
  - Union's technical support helps to address this barrier by providing resources to Energy Team members in identifying and quantifying potential actions that could result in saving of natural gas, and helping to recognize both customer staff who bring forward the ideas and those who act upon the ideas.
- In this customer group there is a wide range of equipment using large quantities of natural gas; examples include but are not limited to turbine or engine drives, steam raising, product smelting, reheating or heat treating, product drying or curing and space heating. The efficient operation and maintenance of equipment requires experienced and well trained operators, technicians and trades people. With demographic shifts currently occurring at these plants, there is a growing need for training of new staff or staff who move departments so that they understand the equipment they are working with. Given tight staffing situations at many plants, a barrier to undertaking the necessary training is making staff available for courses that may be held in other parts of North America, including the associated overnight stays and travel time and costs.
  - The customer training offering in this program is designed to address this barrier by making high quality training courses available in the vicinity of customer plants, and handling reservations and course logistics to make staff attendance convenient, with the least possible staff time away from the plant.

### **1.3.6 Program Duration**

- The offerings to the Rate T2 and Rate 100 customers will be delivered throughout the 2016– 2020 DSM Plan.
- A program review will take place in 2018 as the Framework proposes

### **1.3.7 Program Budget**

The budget presented in Table 25 below does not include inflation

Table 25  
Large Volume Program Budget

<b>Program Cost (\$000)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Incentives/Promotion*	\$400	\$349	\$373	\$397	\$421
Evaluation	\$0	\$0	\$0	\$0	\$0
Administrative Costs	\$409	\$409	\$409	\$409	\$409
<b>Total</b>	<b>\$809</b>	<b>\$758</b>	<b>\$783</b>	<b>\$807</b>	<b>\$831</b>

\* Includes Training Program Delivery Costs and Educational material costs

### **1.3.8 Projected Program Participation**

As requested by the Board in the Framework, below is a summary of forecasted participants in Union's Large Volume program per offering. A participant represents a customer within the Rate T2/Rate 100 rate class. Customers can participate in both offerings.

Table 26  
Large Volume Program Participation

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Large Volume Participation	29	30	32	33	34



## 1 ***Low Income***

### 3 **1.4 Low Income Program**

5 Union's proposed 2016-2020 Low Income Program will build on the successes from the current  
6 DSM framework. Proposed enhancements, including new offerings and customer segments,  
7 reflect both the new Framework and Guidelines as well as the feedback received through  
8 ongoing consultation with low income intervenors, stakeholders and customers.

9 Union has proposed the following enhancements to its Low Income Program:

- 10 • Single family offering enhancements – Union proposes:
  - 11 ○ *Continued expansion of the Home Weatherization offering to new, and smaller,*  
12 *geographic areas across Union's franchise.* This will ensure that this offering is  
13 accessible to low income customers across the province; however, this will result in  
14 increased costs, as promoting and delivering this offering within non-urban centres  
15 will become increasingly more expensive.
  - 16
  - 17 ○ *Introduction of an Aboriginal offering.* Union will utilize a unique market approach to  
18 promote and deliver the Home Weatherization and Furnace End-of-Life Upgrade  
19 offerings within Aboriginal reserves. This will include leveraging Union's existing  
20 Band Council relationships, employing local band members and implementing  
21 community events and marketing. To date, on-reserve customers have not  
22 participated in Union's low income offerings; therefore, this approach will be critical  
23 to ensuring that customers within these areas trust, buy-into, take up and benefit from  
24 Union's DSM program.
  - 25
  - 26 ○ *Introduction of a Furnace End-of-Life Upgrade offering.* This will provide Social and  
27 Assisted Housing Providers and private market customers with an incentive to  
28 upgrade to a 95% or greater efficiency rating (AFUE) furnace when their existing  
29 furnace reaches end-of-life and is being replaced. This offering will be available to all  
30 low income single family customers, regardless of whether or not they are a Home  
31 Weatherization participant. This offering helps ensure that Union is addressing all  
32 deep saving opportunities and is also minimizing lost opportunities.
  - 33
- 34 • Multi-family offering – Union proposes:
  - 35 ○ *Extension of the current offering to market rate buildings that are occupied by low*  
36 *income tenants:* A portion of low-income customers reside in market rate multi-  
37 family buildings; therefore, expanding the multi-family offering to this new customer  
38 segment helps to ensure that low income customers across Union's franchise area  
39 benefit from the DSM offerings. Union worked closely with low income interveners

to define eligibility criteria, determine appropriate incentive levels and to build an initial market delivery approach.

#### **1.4.1 Customer class(es) targeted**

- Residential, C/I General Service

#### **1.4.2 Rate Classes Targeted**

- Rate M1, Rate M2, Rate 01, Rate 10

#### **1.4.3 Goals**

Program goals for the Low Income Program are to:

- Reduce the energy burden of Union's low income customer base
- Provide offerings to Union's low income customer base that adhere to the guiding principles and key priorities outlined in Section 2.0 of the Guidelines
- Continue to develop the breadth and the depth of the low income offerings throughout the term of the multi-year plan
- Minimize the barriers that low income customers face in participating in energy conservation programs

#### **1.4.4 Program Strategy**

Program strategies to achieve Union's goals for the Low Income Program include:

- Addressing all measures and natural gas savings opportunities in dwellings while meeting the program cost-effectiveness requirements
- Growing the offering's infrastructure across Union's franchise area
- Providing customers with the education required to continue conservation in their home after measure installation has been performed
- Addressing universality by expanding the Program to new low income markets (i.e. Low Income Market Rate Multi Family, Aboriginal communities etc.)
- Fostering relationships with key influencers in the low income community (i.e. Municipal Service Manager Offices, social service agencies, associations)

#### **1.4.5 Program Offerings**

The offerings delivered in the Low Income Program are outlined below.

##### **Home Weatherization ("HW") Offering**

##### ***Description***

The Home Weatherization offering provides:

- A free home energy audit ("Initial Audit") to qualified homeowners and tenants to determine the building envelope upgrade requirements. During the Initial Audit, an

assessment of the furnace will be made to determine if it's at end-of-life and if it qualifies for an incentive under the Furnace End-of-Life Upgrade Offering. If the furnace is not at end-of-life, the auditor will leave information regarding Union's Furnace End-of-Life Upgrade Offering for future reference.

- All qualifying building envelope upgrades are installed for free including: attic insulation, wall insulation, basement insulation and draft-proofing measures.
- One carbon monoxide detector per home will be left behind for self-installation.
- Health and safety upgrades - if health and safety issues are discovered during the Initial Audit that prevent measures from being installed, the issues will be assessed to determine whether they fall within Union's Health and Safety Protocols and, if qualified, these issues will be addressed to allow for installations. Union has worked with industry experts to define appropriate Health and Safety Protocols and these are outlined in Union's general Health & Safety Policy document that is provided to the contracted delivery agents. The most common Health & Safety issue addressed is a customer's inability to safely clear clutter from the required work space. This is due to age and mental or physical disabilities.
- A follow-up home energy audit ("Final Audit") that will evaluate the energy savings realized in the home by installation of the measures.
- One-on-one energy conservation education by the auditors and contractors.
- Free installation of up to two energy efficient showerheads, two metres of pipe wrap and a programmable thermostat. Kitchen and bathroom aerators are left behind for self-installation.

### ***Target Market***

#### *Social and Assisted Housing Market*

The Home Weatherization offering will be targeted at Social and Assisted Housing Providers with tenants that meet the following eligibility criteria:

- A household income at or below 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs ("LICO") for communities of 500,000 or more, as updated from time to time (income eligibility to be confirmed by the housing provider).
- Occupant of either a:
  - Single family detached home, semi-detached home, row home or town home
  - OR
  - Part 9 building (as defined by Part 9 of the Ontario Building Code)

#### *Private Market*

Any private market customer who meets the following eligibility criteria will be targeted:

- Customer is an occupant (owner or renter) of either a:
  - Single family detached home, semi-detached home, row home or town home
  - OR
  - Part 9 building (as defined by Part 9 of the Ontario Building Code)
- Customer pays their own gas bill
- Customer has either:
  - A household Income at or below 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs (“LICO”) for communities of 500,000 or more, as updated from time to time
  - OR
  - Received one of the following social benefits within the last twelve months:
    - The National Child Benefit (NCB)
    - Allowance for the Survivor
    - Guaranteed Income Supplement (GIS)
    - Allowance for Seniors
    - Healthy Smiles Ontario Child Dental Program
    - Ontario Works
    - Ontario Disability Support Programs (ODSP)
    - LEAP Emergency Financial Assistant Grant
    - Participants of Union’s End-of-Life Furnace Upgrade program, or
    - Participants of electric CDM Home Assistance Program

### ***Incentive Level***

- The Home Weatherization offering is delivered at no cost to the customer
- The health and safety incentive will vary by home, as the incentive level will be dependent upon cost-effectiveness. These levels are outlined in the Health & Safety Policy that is provided to the contracted Delivery Agent.

### ***Market Delivery***

To build awareness and take-up of the Home Weatherization offering, the following channels will be utilized by market:

#### ***Social and Assisted Housing Market Delivery***

- *Direct Sales:* Union’s Commercial Account Managers (CAMs) will target housing providers directly to bring the Home Weatherization offering to their tenant base. Housing providers will qualify tenants to ensure that they meet the eligibility criteria.

- *Association and Organization Partnerships:* Union will maintain and grow partnerships with key Associations and Organizations including but not limited to Ontario Non-Profit Housing Association (ONPHA), Ontario Municipal Social Services Association (OMSSA), and Institute of Housing Management (IHM). Through these partnerships, Union will gain key housing provider contacts and insights, which will allow for increased exposure to the offering.

#### Private Market Delivery

- Traditional marketing: Union will utilize a mix of following to create demand within the private market:
  - *Direct Mail:* Union will deliver direct mail to targeted communities
  - *Advertorials:* Union will place advertorials in targeted local community newspapers
  - *Radio Advertising:* Union will run radio advertising in targeted communities
  - *Other:* Union will continue to explore and leverage other channels, such as online/digital advertising and grass-roots community promotion, that are assessed to be appropriate and efficient
- Partnerships - Social Service Agencies
  - Union will continue to leverage existing relationships and build new relationships with social service agencies such as United Way, Ontario 211 and other Winter Warmth intake agencies. Union will ensure that agencies are both informed of and promoting the Home Weatherization offering to their clients. Union will assess and provide agencies with the support they require to promote the Home Weatherization offering, such as continued education sessions for their front line staff and supporting their community outreach efforts.
- Union Customer Contact Centre
  - Union will leverage its internal Customer Care Contact Centre to promote the Home Weatherization offering for callers identified to have a high propensity to be home and income eligible.
- Cross-Promotion
  - Union will leverage the Furnace End-of-Life Upgrade offering as a way to promote the Home Weatherization offering.

1 ***Barriers Addressed***

2  
3 ***Barriers for both the Social and Assisted Housing and Private Market***

- 4
- 5 • *Cost of measures and installation requirements:* Home weatherization is not affordable  
6 for low income customers due to the cost and installation requirements. Union has  
7 addressed this barrier by offering all measures and installation at no cost, ensuring access  
8 to those that would not otherwise have the financial means to participate.  
9
  - 10 • *Customer home readiness - health and safety issues:* Many homes require health and  
11 safety improvements prior to being able to participate in the Home Weatherization  
12 offering. To address this issue, Union has allocated funds to a health and safety budget  
13 that will be used to remove health and safety participation barriers where possible.  
14

15  
16 ***Barriers for the Private Market only include***

- 17
- 18 • *Customer awareness:* The primary focus was on the Social and Assisted Housing market  
19 2012 to 2014; therefore, there is not a wide spread awareness of the Home  
20 Weatherization offering within the private market. Moving forward, Union will address  
21 this barrier by creating and utilizing the comprehensive multi-channel approach outlined  
22 in the 'Market Delivery' section.  
23
  - 24 • *Customer communication issues:* Through research, Union has learned that low income  
25 private market customers require communications with minimal text that are easy to  
26 understand. Union will continue to ensure that marketing materials incorporate elements  
27 that address this communication barrier and improve the application forms/process to  
28 increase understanding and take-up rates.  
29
  - 30 • *Customer trust/credibility concerns:* Through market insights, Union has learned that the  
31 private market often does not trust the validity of the Home Weatherization offering,  
32 since all aspects are free. Union will address this barrier by leveraging social service  
33 agency relationships when targeting a community, as their name is a trusted source of  
34 information.  
35

36  
37  
38 ***Aboriginal Offering***

39  
40 The Aboriginal Offering will provide Aboriginal customers with the following:

- 41 • Home Weatherization offering  
42 • Furnace End-of-Life Upgrade offering

- Energy Saving Kit/Basic Measures – These will be offered to all homes targeted with the Aboriginal Offering, regardless of whether the customer is a participant of the Home Weatherization offering. Customers can receive free installation of up to two energy efficient showerheads, two metres of pipe wrap and a programmable thermostat. Kitchen and bathroom aerators are left behind for self-installation.
- Carbon monoxide detector – One detector will be offered to all homes targeted with the Aboriginal Offering, regardless of whether the customer is a participant of the Home Weatherization offering. The detector will be left behind for self-installation.

### ***Target Market***

- The 13 Aboriginal reserves with residential gas service in Union’s franchise area will be targeted with the Aboriginal Offering; however, how many and which reserves will be targeted each year depends on a number of criteria, which is outlined in the “Context for Targets” section.

### ***Incentive Level***

- The Aboriginal offering will be delivered at no cost to the customer
- The health and safety incentive will vary by home, as the incentive level will be dependent upon cost-effectiveness. These levels are outlined in the Health & Safety Policy that is provided to the contracted Delivery Agent.

### ***Market Delivery***

The following promotion and delivery approach will be utilized within each targeted reserve. The goal of this approach is to leverage Union’s existing Band Council relationships, and through these build trust within each community to ensure maximum buy-in and take-up of the Aboriginal offering.

- Union’s Low Income Marketing team, together with Union’s internal Aboriginal Affairs group, will approach each reserve’s Band Council to ensure existing strong relationships are leveraged when discussing and agreeing upon the promotion and delivery of the Aboriginal Offering within their community.
- Union will seek to employ and work closely with a First Nations delivery agent that has experience working with Aboriginal communities. Within each community the delivery agent will work closely with Union to complete the following:
  - *Host a Community Launch Event* - Union will collaborate with Band council to hold an on-reserve launch, where the Aboriginal Offering will be promoted and the community will be educated about energy conservation.

- *Hire local reserve members to be ‘Community Canvassers’* - These individuals will go door-to-door on the reserve canvassing for Aboriginal Offering participants. The in person program promotion will build trust and, therefore, increased buy-in and take-up of the offering. During canvassing, Home Weatherization offering participants will be identified, and Free Energy Savings Kits and carbon monoxide detectors will be offered, regardless of whether they qualify for Home Weatherization offering.
- *Hire a local reserve member to act as a ‘Project Lead’* - this includes overseeing the canvassing and application process to ensure a seamless participation experience
- *Complete all Audit and Insulation Upgrades*

### ***Barriers Addressed***

The following barriers have been identified and addressed for on reserve Aboriginal customers.

- *Cost of measures and installation requirements*
  - Low income Aboriginal customers are generally unable to take advantage of weatherization upgrades due to the cost and installation requirements. Union will address this barrier by offering all measures and installation at no cost to the customer, ensuring access to those that would not otherwise have the financial means to participate.
- *Customer awareness*
  - Customers within Aboriginal communities are not aware of Union’s low-income DSM offerings, as current promotion has not reached and/or resonated with band members. To address this, Union will implement a unique Aboriginal marketing delivery approach (as outlined in the ‘Market Delivery’ section above), which will include obtaining buy-in/endorsement from Band Council, local community events, and door-to-door canvassing.
- *Customer trust*
  - Based on market insights, customers within Aboriginal communities can lack trust for promoted offerings. To address this, Union’s Aboriginal Affairs team will leverage their strong Band Council relationships to gain buy-in for Union’s programs and community approach. With Band Council’s endorsement, on-reserve customers will have higher levels of trust and Union will generate greater levels of participation. To further build trust with reserve members, Union will attempt to employ local band members and will incorporate traditional Aboriginal cultural elements into all promotional elements.



- 1 • *Customer home readiness - health and safety issue*
- 2 • Many Aboriginal homes could require expensive health and safety improvements
- 3 prior to being able to participate in Union's Aboriginal Offering. To address this
- 4 issue, Union has allocated funds to an Aboriginal health and safety budget that
- 5 will be used to remove participation barriers where possible.
- 6
- 7

### 8 **Furnace End-of-Life Upgrade Offering**

#### 9 ***Description***

10 The Furnace End-of-Life Upgrade offering provides Social and Assisted Housing providers and  
11 private market customers with an incentive to upgrade to a 95% or greater efficiency rating  
12 (AFUE) furnace when their existing furnace reaches end-of-life and is being replaced.  
13  
14  
15  
16

#### 17 ***Target Market***

##### 18 **Social and Assisted Housing Market**

19 The Furnace End-of-Life Upgrade offering will target Social and Assisted Housing Providers  
20 with tenants that meet the following eligibility criteria:

- 21 • A household Income at or below 135% of the most recent Statistics Canada
- 22 Pre-Tax Low-Income Cut-Offs ("LICO") for communities of 500,000 or
- 23 more, as updated from time to time (Income eligibility to be confirmed by the
- 24 housing provider).
- 25 • Occupant of either a:
- 26 ○ Single family detached home, semi-detached home, row home or
- 27 town home
- 28 OR
- 29 ○ Part 9 building (as defined by Part 9 of the Ontario Building Code)
- 30
- 31
- 32
- 33

##### 34 **Private Market including Aboriginal Reserves**

35 Any private market customer, including private market customers on an Aboriginal reserve,  
36 who meet the following eligibility criteria, will be targeted:

- 37 • Customer is an occupant (owner or renter) of either a:
- 38 ○ Single family detached home, semi-detached home, row home or town
- 39 home
- 40 OR
- 41 ○ Part 9 building (as defined by Part 9 of the Ontario Building Code)
- 42

- Customer pays their own gas bill
- Customer has either:
  - A household Income at or below 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs (“LICO”) for communities of 500,000 or more, as updated from time to time
- OR
- Received one of the following social benefits within the last twelve months:
  - The National Child Benefit (NCB)
  - Allowance for the Survivor
  - Guaranteed Income Supplement(GIS)
  - Allowance for Seniors
  - Healthy Smiles Ontario Child Dental Program
  - Ontario Works
  - Ontario Disability Support Programs(ODSP)
  - LEAP Emergency Financial Assistant Grant
  - Participants of Union’s Home Weatherization Offering, or
  - Participants of electric CDM Home Assistance Program
- Union will investigate whether homes heated primarily with gas fireplaces qualify for the offering, and how savings could be accurately estimated.

### ***Incentive Level***

#### ***Social and Assisted Housing Market***

- Social and Assisted Housing Providers will be provided with an incentive amount that is equal to half of the incremental cost<sup>10</sup> of upgrading to a 95% or greater efficiency rating (AFUE) furnace. Only half of the incremental costs will be covered within this market to reflect that Social and Assisted Housing Providers can gain access to additional funds, whereas private market customers do not have this option.

#### ***Private Market including Aboriginal Reserves***

- Private market customers, including those on Aboriginal reserves, will be provided with an incentive equal to the incremental cost of upgrading to a 95% or greater efficiency rating (AFUE) furnace.

---

<sup>10</sup> The incremental cost is currently valued at \$1,400. This is based on an existing new build furnace upgrade substantiation document and on current market insights. This value is being evaluated through the current Technical Evaluation Committee and should a new incremental cost be determined, new incentive values will be implemented in both the Social and Assisted Housing and Private market to reflect the findings.

1 ***Market Delivery***

2  
3 *Social and Assisted Housing:*

- 4  
5 • The market delivery approach for Social and Assisted Housing is consistent with the  
6 Home Weatherization Offering.

7  
8 *Private Market Delivery*

- 9  
10 • *Partnership - Social Service Agencies:* Union will leverage Social Service Agencies to  
11 promote the Furnace End-of-Life Upgrade offering, as they are in contact with the low  
12 income customers who are most in need and are also aware of and able to promote other  
13 supporting incentives at one touch-point. Union will target specific social service  
14 agencies to launch the Furnace End-of-Life Upgrade offering with, and will expand to  
15 other social service agencies across the franchise based on uptake and available funding.  
16  
17 • *Cross-Promotion:* Union will leverage the Home Weatherization offering and Aboriginal  
18 Offering as a way to cross promote the Furnace End-of-Life Upgrade offering.  
19  
20 • *Other:* Based on market uptake and available funding, Union will continue to explore and  
21 leverage other channels that are assessed to be appropriate and efficient.  
22  
23

24 ***Barriers Addressed***

25  
26 Barriers preventing both Social and Assisted Housing Providers and the private market from  
27 participating in the Furnace End-of-Life Upgrade offering include:  
28

- 29 • Cost of furnace upgrade  
30 • Upgrading to a 95% or greater efficiency rating (AFUE) furnace is not affordable  
31 for low income customers due to the associated incremental cost. Union will  
32 address this barrier by providing an incentive to offset a portion or all of the  
33 incremental upgrade cost. This ensures access to those that would not otherwise  
34 have the financial means to upgrade.  
35  
36 • Customer awareness  
37 ○ Because this is a new offering, market awareness will need to be built. This will  
38 be done through Union's Commercial Account Managers in the Social and  
39 Assisted Housing market and through targeted social service agencies within the  
40 private market. In the Aboriginal market, market awareness will be built through  
41 the channels outlined in the 'Market Delivery' section of the Aboriginal offering.  
42

1 **Multi-Family Offering:**

2 *For Social and Assisted Housing and Low Income Market Rate Multi-Family (LI MR MF)*  
3 *Buildings*

4  
5 ***Description***

6  
7 This offering provides the Social and Assisted Housing and LI MR MF markets with:

- 8 • Enhanced incentives to encourage energy efficient upgrades. Eligible upgrades include:
  - 9 ○ Prescriptive measures such as condensing boilers and condensing make up air
  - 10 units
  - 11 ○ Custom measures such as building envelope and window upgrades
- 12 • In-suite measures, where applicable, including:
  - 13 ○ Basic hot water conservation measures, including installation of up to 2
  - 14 showerheads, and kitchen and bathroom aerators left behind for free
- 15 • Funding for an “Energy Audit and Report”
- 16 • Education for housing providers, building operators and tenants about their building’s
- 17 energy usage and ways to increase energy efficiency. Available education elements of
- 18 this program include:
  - 19 ○ *Comprehensive Review of “Energy Audit and Report”* - review report with
  - 20 customer for identification of potential energy efficiency projects and their
  - 21 associated costs, savings and payback calculations
  - 22 ○ *Tenant education* - which provides building owners with tenant education tools
  - 23 appropriate to the size of their building, increasing tenants’ understanding and
  - 24 accountability of energy use in their building
  - 25 ○ *Benchmarking enrollment (For Social and Assisted Housing Providers Only)* -
  - 26 Provide benchmarking services including: free enrollment in tool, and active
  - 27 monitoring and reporting for two subsequent years – increasing housing
  - 28 providers’ awareness of energy measurement & management, and assisting them
  - 29 in identifying areas of improvement
  - 30

31 ***Target Market***

- 32  
33 • *Social and Assisted Housing Target Market:* Social and Assisted Housing Providers that
- 34 meet the following criteria will be eligible:
  - 35 ○ Operate Part 3 buildings with tenants who have a household income at or below
  - 36 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs
  - 37 (“LICO”) for communities of 500,000 or more, as updated from time to time
  - 38 (income eligibility to be confirmed by the housing provider).
  - 39
- 40 • *LI MR MF Target Market:* Privately owned multi-family buildings that meet all of the
- 41 following criteria will be eligible:
  - 42 ○ Privately owned multi-family, Part 3, buildings

- Privately owned multi-family buildings that have a high propensity of low-income tenants, as determined by the following criteria;

1. Building is located in a low-income neighbourhood, as determined by one of the following data sources:
  - a. A “forward sortation area” (FSA - the first 3 digits of a postal code) with 70% or greater likelihood of being low-income, as determined by data sourced from Statistics Canada LICO information
  - b. Census tract data that shows that there is a 40% or greater likelihood of being low income, as determined by data sourced from Low Income Measure
  - c. A poverty or other neighbourhood report indicating that it is low income
  - d. A high percentage of Ontario Works recipients, as determined by data sourced from Municipal Ontario Works recipient postal code maps
- OR
- e. Any neighbourhood or building identification method as agreed upon through consultation with Low-income Stakeholders

**AND**

2. Average rents of the building are at or below the Average Market Rent for that municipality as determined by one of:
  - a. Rent roll review, demonstrating average rent levels
  - b. Existence of Rent Geared to Income (RGI) or rent supplement contract(s) with the Service Manager Office (SMO)
  - c. Building has participated in Ontario Renovates or Canadian Housing and Mortgage Corporation’s (CHMCs) Residential Rehabilitation Assistance Program (RRAP) in the last five years

***Incentive Level***

- The enhanced incentives offered to Social and Assisted Housing and to LI MR MF buildings for prescriptive measures and custom projects include:
  - \$0.10 per lifetime m<sup>3</sup> saving up to 50% of the fully installed project cost.
    - *Exception:* custom window replacement projects will be eligible for an incentive of \$1,000 per living unit, up to 50% of the project’s fully installed cost
    - *Note:* Project costs include the cost of the measure, installation of the measure and any costs associated with an assessment required to determine the upgrade needs of the given measure

- Incentives are provided after the work is complete and invoices are submitted to Union
- Funding for a comprehensive “Energy Audit and Report” - incentive of up to \$5,000 per building and up to \$25,000 per housing entity
- In-suite basic hot water conservation measures and education portion of the offering are provided at no cost to the customer

### ***Market Delivery***

Union will drive participation through multiple channels, including:

- For Both Social and Assisted Housing and LI MR MF Market:
  - *Direct sales:* Union’s Commercial Account Managers (CAMs) will collaborate with housing providers and building owners directly to assess the energy needs of their buildings and provide support for development of a 5-year energy conservation plan.
  - *Association and Organization Partnerships:* Union will maintain and form partnerships with key associations/ organizations including but not limited to Ontario Non-Profit Housing Association (ONPHA), Ontario Municipal Social Services Association (OMSSA), Institute of Housing Management (IHM), Housing Services Corporation (HSC), Federation of Rental Housing Providers of Ontario (FRPO), and Municipal Property Management Associations. Through these partnerships, Union will gain housing provider, building owner and property managers’ contacts and insights, which will allow for increased exposure to the offering.
- For Social and Assisted Housing Market Only:
  - *Municipalities, Consolidated Municipal Service Managers and District Social Services Administration Boards:* Union’s CAMs will continue to form and leverage relationships with municipal offices, as they are key influencers in Social and Assisted Housing Providers’ energy efficiency decisions.

### ***Barriers Addressed***

The primary barriers preventing higher Social and Assisted Housing Provider and LI MR MF building owner uptake include:

- 1 • *Limited access to capital to fund upgrades:*
  - 2
  - 3 ○ Lack of funds to spend on energy efficiency upgrades due to competing priorities:  
4 Union will address this barrier by continuing to offer enhanced incentives.  
5 Enhanced incentives reduce the financial burden faced when creating a business  
6 case to purchase/install energy efficient measures – the payback period is reduced,  
7 allowing buildings to realize ongoing energy savings sooner.  
8
  - 9 ○ *Limited flexibility to reallocate funds once capital budget is set: For Social and*  
10 *Assisted Housing Market only* - Each Municipality has a different level of  
11 autonomy and flexibility with regards to spending their capital and maintenance  
12 budgets. Some are autonomous, while others have to request approval from  
13 council to make changes to previously agreed upon plans. For those  
14 Municipalities/Housing Providers with a lack of flexibility, this creates a barrier  
15 to reallocating the set budget when new projects are identified, for example a new  
16 technology. Union will address this barrier by continually educating housing  
17 providers on new and upcoming technologies, as well as assisting the housing  
18 provider in analyzing the benefits of moving budget to these new/unplanned  
19 projects.  
20
- 21 • *Awareness of energy efficiency upgrade opportunities*
  - 22 ○ Union will address this barrier by continuing to offer a comprehensive “Energy  
23 Audit and Report”. These assessments identify gas saving opportunities available  
24 to the Housing Provider that they were not previously aware of.
  - 25 ○ *For Social and Assisted Housing Providers Only* - Union will also address this  
26 barrier by offering free Benchmarking enrollment to Social and Assisted Housing  
27 Providers. Information obtained through Benchmarking will allow Housing  
28 Providers to understand how their building is performing relative to previous  
29 years as well as to other like buildings. This will assist in identification of  
30 available gas savings opportunities.  
31
- 32 • *Limited human resources to identify and implement upgrade projects*
  - 33 ○ *For non-profit/ co-operative housing providers only* – Through preliminary  
34 outreach, Union has learned that the non-profit/co-op housing providers have  
35 minimal resources dedicated to identifying energy efficiency projects and  
36 managing them from procurement to installation. Union will address this barrier  
37 by working with a partner marketing agency to create tools and templates to be  
38 used with their Board, provide funding to conduct a comprehensive building  
39 assessment and working closely with them, as appropriate, to support  
40 implementation.  
41

#### 1.4.6 Program Duration

- The Home Weatherization Offering and the Multi-Family Offering will be available for the duration of the Plan.
  - LI MR MF: Demonstration Project in 2015. Post Demonstration Project completion, the program design will be adjusted using insights gained, and a offering launch will be launched for the remainder of the Plan.
- The Aboriginal offering is available from 2017 to 2020.
  - 2015 and 2016 will be planning years, where Union will RFP for a delivery agent, begin to identify and leverage Union's Aboriginal Affairs Team's Band Council relationships and further develop knowledge regarding the unique implementation requirements within Aboriginal communities.
- The Furnace End-of-Life Upgrade Offering will be delivered throughout the 2016-2020 DSM Plan.
  - For Social and Assisted Housing Market and Private market: 2016-2020
  - For Aboriginal reserves: 2017-2020

#### 1.4.7 Program Budget

The budget presented in Table 27 below does not include inflation.

Table 27  
Low Income Program Budget

<b>Program Cost (\$000)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Incentives/Promotion					
<i>Home Weatherization</i>	\$6,285	\$6,086	\$7,445	\$8,013	\$8,324
<i>Furnace End-of-Life</i>	\$761	\$784	\$924	\$919	\$917
<i>Aboriginal</i>	\$8	\$419	\$511	\$456	\$448
<i>Multi-Family</i>	\$2,651	\$3,359	\$2,984	\$3,031	\$3,573
Total	\$9,705	\$10,647	\$11,863	\$12,419	\$13,261
Evaluation	\$ 219	\$ 212	\$ 225	\$ 244	\$ 262
Administrative Costs	\$ 1425	\$ 1425	\$ 1425	\$ 1425	\$ 1425
<b>Total</b>	<b>\$11,349</b>	<b>\$ 12,284</b>	<b>\$13,514</b>	<b>\$14,088</b>	<b>\$14,948</b>

#### 1.4.8 Program Participation and Simple Payback

##### ***Program Participation***

As requested by the Board in the Framework, below is a summary of forecasted participants in Union's Residential program per offering. The forecast was developed at the offering level and a customer may choose to participate in multiple offerings. The Multi-Family participant denotes individual buildings who participate in Union's Multi-Family offering.



Table 28  
Low Income Program Participation

Offerings	2016	2017	2018	2019	2020
<i>Home Weatherization</i>	1,350	1,169	1,279	1,375	1,426
<i>Furnace End-of-Life</i>	680	404	709	634	529
<i>Aboriginal</i>	-	100	106	106	106
<i>Multi-Family</i>	360	386	410	137	143
<i>Social and Assisted Housing</i>	348	367	391	113	119
<i>Market Rate</i>	12	19	19	24	24

### ***Simple Payback***

Simple payback is calculated using the incremental costs of the offering and dividing by the annual gas, electricity and water savings benefits to the customer. The simple payback after a DSM incentive would reduce the incremental cost and therefore, reduce the payback period for the customer.

Table 29  
Simple Payback Analysis per Participant

Offering	Annual Gas, Electricity and Water Resource Savings Benefits (\$/unit)	Incremental Costs (\$/unit)	Simple Payback (years)	Incentives (\$/unit)	Simple Payback after Incentives (years)
	(a)	(b)	c=(b/a)	(d)	e=(b-d)/a
Home Weatherization*	\$231	\$2,450	10.59	\$2,450	0
Furnace End-of-Life**	\$31	\$1,400	45.73	\$1,400	0
Multi-Family Prescriptive* **	\$969	\$4,689	4.84	\$9,524	0
Multi-Family Custom – Building Automation System****	\$6,817	\$73,765	10.8	\$37,933	5.3

\* Data reflects annual gross gas savings, electricity savings and incentive for an example home which implemented attic and basement insulation, as well as air sealing. Natural gas savings reflect 90% AFUE furnace base case.

\*\*Simple payback analysis for furnace end-of-life offering is based on private market homes. Private market represents 37% of participation in this offering.

\*\*\* For the Multi Family prescriptive simple payback analysis Union is assuming a customer will install a condensing boiler (300 - 599 MBTU/HR). Condensing boilers between 300 btu/hr – 599 btu/hr currently account for 17% (in 2016) of the savings from Unions Multi Family prescriptive measures

\*\*\*\* Assuming a general service Low Income customer will install a building automation system (BAS) to better control building heating components – based on Union’s historical average BAS project costs, savings, and incentives (4 Low Income BAS projects completed 2012 – 2014)

## 1.4.9 Targets

Table 30 Corrected  
Low Income Program Annual Natural Gas Savings (m<sup>3</sup>)

Offerings	2016	2017	2018	2019	2020
Home Weatherization	1,312,213	1,294,829	1,378,001	1,484,501	1,541,954
Furnace End-of-Life	87,720	52,116	91,461	81,786	68,241
Aboriginal	-	55,351	59,447	58,862	59,447
Multi-Family	1,007,217	1,064,374	1,039,617	1,203,335	1,191,633
<i>Social and Assisted Housing</i>	870,342	812,638	786,787	841,965	830,264
<i>Market Rate</i>	136,875	251,736	252,830	361,369	361,369
<b>Total</b>	<b>2,407,150</b>	<b>2,466,670</b>	<b>2,568,526</b>	<b>2,828,483</b>	<b>2,861,275</b>

Table 31  
Low Income Program Lifetime Natural Gas Savings (m<sup>3</sup>)

Offerings	2016	2017	2018	2019	2020
Home Weatherization	32,772,265	32,080,315	34,430,515	37,090,124	38,524,280
Furnace End-of-Life	1,578,960	938,088	1,646,298	1,472,148	1,228,338
Aboriginal	-	1,383,782	1,486,178	1,471,550	1,486,178
Multi-Family	17,141,672	18,995,389	18,344,563	20,028,638	20,024,214
<i>Social and Assisted Housing</i>	14,695,776	14,414,187	13,733,226	13,722,425	13,718,000
<i>Market Rate</i>	2,445,896	4,581,202	4,611,338	6,306,214	6,306,214
<b>Total</b>	<b>51,492,897</b>	<b>53,397,574</b>	<b>55,907,555</b>	<b>60,062,460</b>	<b>61,263,010</b>

## 1.4.10 Rationale for Targets

### 1.4.10.1 Context for Targets

#### *Context for Home Weatherization Offering Targets*

##### Municipal Social Housing Single Family Targets

- Over the course of 2012-2014, Union formed and maintained relationships with the 27 Municipal Housing Providers in Union's franchise area. Union worked closely with each Municipal Housing Provider to understand their single family housing stock, including: heating type, age of the homes, past upgrades etc. This allowed Union to proactively create a single family upgrade plans that ensured all eligible home were addressed

- Through this planning, Union has addressed the majority of all eligible single family homes, and assuming no additional applicable measures are identified all remaining potential is planned to be completed between in 2015 or 2016.

#### Non-Profit & Co-operative Social Housing Single Family Targets

- Over the course of 2012-2014, Union's focus was placed on Municipal Social Housing Providers and, therefore, limited emphasis was placed on engaging and understanding the non-profit/co-op market. Through its preliminary outreach, Union has learned that most of the non-profit/co-op housing providers have smaller single family housing portfolios with newer homes than the Municipal market. This in turn means that the savings potential within the non-profit/co-op market is much smaller than that of the Municipal market. Union took these factors into consideration when estimating market potential and associated annual savings targets. Sources that confirmed these initial findings include: Ontario Non-Profit Housing Association (ONPHA), Service Manager Offices (SMOs), District Social Services and Administration Boards (DSSABs), Housing Services Corporation (HSC) and Property Management firms.

#### Private Housing Market

Union undertook a number of steps to determine the overall private market lifetime m3 potential and resulting annual Home Weatherization targets, including:

- *Estimated total remaining market opportunity:* Union leveraged internal and external data sources to estimate the total number of potential low income households in Union's franchise area. Relevant discount factors were then applied, such as past participation, home ineligibility etc. to arrive at an estimated remaining Home Weatherization market opportunity.
- *Applied take-up rates and savings assumptions per home to determine annual lifetime m3 targets:* Union then applied an annual take-up rate to the estimated remaining Home Weatherization Offering opportunity. This take-up rate was largely defined by the constraints delivery agents face when ramping up the number of private market homes they complete – such as difficulty finding and maintaining local energy advisors and contractors in non-major urban centers that are both willing to work in this market and have the critical soft skills to do so. Assumptions around savings per home were then applied - Union leveraged past results and market insights to arrive at these values.

#### Context for Aboriginal Offering Targets

Union gathered market insights from both internal and external sources to determine which of Union's reserves would be eligible and targeted with the Aboriginal Offering, and then estimated

the approximate number of homes that would qualify/take-up this offering. Below is the detailed approach taken:

- *Determined the number of eligible Aboriginal Reserves within Union's franchise area:*
  - All 13 Aboriginal reserves with a residential gas services are eligible
- *Determined how many, and which, reserves could be addressed each year:* This is dependent upon the following criteria:
  - Union's Aboriginal Affairs Team Bandwidth: Union's Aboriginal Affairs group has noted, based on experience, that there is limited number of communities that they can support the promotion and implementation of this offering to, given the required market delivery approach. Because leveraging their relationships is critical to gaining Band Council buy-in and support, Union has taken this into consideration when determining the number of reserves that can be addressed each year.
  - Band council election dates: Based on market insights, it is known that Band Councils are very unlikely to promote the Aboriginal Offering to their reserves in a year where there is a community council election; therefore, reserves will only be targeted in non-election years.
  - Delivering certain communities together: Based on market insights, Union must provide the Aboriginal Offering to certain reserves at the same time. This is often due to proximity and existing relationships.
  - Ramp up time per community: Based on market insights, there is a significant amount of time required within each community to organize/hold a Kick-Off Event, as well as to identify and train a local Project Lead and group of Canvassers.
- *Estimated the number of homes to participate per Aboriginal reserve:*
  - Union first determined the number of homes within each eligible reserve by looking at both the number of residential gas accounts and any expansion plans. Union then applied certain discount factors for income eligibility, home eligibility and willingness to participate to arrive at the target homes per year.

#### **Context for Furnace End-of-Life Offering Target**

Union utilized the data and assumptions considered within the "Home Weatherization Private Single Family Housing Market - Context for Target Setting" section above, and applied a number of additional assumptions to arrive at the total number of eligible single family homes that would have a furnace reach end of life each year, and the associated annual lifetime m3 target. The steps taken, as well as the data and assumptions utilized are outlined below:

- Obtained low income single family home data for Union's Franchise area
- Estimated what percentage of the potential low income single family homes have a high probability of being low income:
- Determined how many of the homes with a high probability of being low income will have a furnace reach end of life each year. The estimated useful life (EUL) of a furnace is 20 years; therefore, each year ~5% homes will have a furnace that reaches its end of life.
- Determined the number of Furnace End-of-Life Upgrade offering participants each year. Although ~5% of homes will have a furnace reach end-of-life each year, this offering is budget constrained and Union, therefore, determined the number of participants per year based on how many could be driven with the available funds.
- Applied savings per furnace to determine annual lifetime m<sup>3</sup> targets: Union then utilized the lifetime m<sup>3</sup> furnace assumptions outlined in the most recent 'new build furnace upgrade' substantiation document.

### **Context for Multi-Family Offering Target**

#### **Social Housing Multi-Family Targets**

- *Municipal Social Housing Multi-Family Targets:*
  - Union's Commercial Account Managers (CAMs) have worked closely with each Municipal housing provider to understand the buildings within their portfolio, including: heating type of building, age of building, current space and water heating equipment, budget planning cycles etc. This has allowed the CAMs to work with the housing providers to proactively create a 5-year capital upgrade plan that ensures they move to energy efficient technologies and also take advantage of Union's social housing incentives where available.
  - Through this proactive planning, Union has a detailed understanding of what energy efficiency projects exist and when they are most likely to occur. This information was utilized to create Union's Municipal Housing targets.
- *Non-Profit & Co-op Social Housing Multi-Family Targets:*
  - Over the course of 2012-2014, the majority of Union CAMs focus was placed on Municipal Social Housing Providers and, therefore, limited emphasis was placed on engaging and understanding the smaller non-profit/co-op market. Through our preliminary outreach/contact, however, Union has learned that the non-profit/co-op housing providers have building portfolios with a fewer number of buildings and these buildings are much smaller and newer, which in turn means that, most of these would have newer equipment and the savings per measure would be much smaller compared to the municipal market. Union took both of these factors into consideration while estimating market potential and associated annual savings targets.

Sources that confirmed these initial findings include: Ontario Non-Profit Housing Association (ONPHA), Service Manager Offices (SMOs), District Social Services and Administration Boards (DSSABs), Housing Services Corporation (HSC) and Property Management firms.

#### LI MR MF Targets

- To build the LI MR MF target, Union first overlaid FSAs with a 70% or greater likelihood of being low income (an agreed upon LI MR MF offering eligibility criteria) with Union's database of all private multi-family buildings to identify the potential number of LI MR MF buildings.
- From this potential list of LI MR MF buildings, Union then extracted all buildings with a 25,000m<sup>3</sup> or greater annual gas consumption (~25 apartments or greater) to more closely estimate which would be Part 3 multi-family buildings.
- Then for each of these LI MR MF buildings, Union estimated, based on past experience and market knowledge, how many projects including both end-of-life replacement and new technology installations, can be expected per year to arrive at a total estimated number of LI MR MF projects per year.
- Lastly, Union applied the appropriate discount factors and projected annual take-up rates to this potential number of project per year to arrive at the annual lifetime m<sup>3</sup> target.

#### **1.4.10.2 Challenges in Achieving Targets**

##### ***Challenges in Achieving Home Weatherization Program Targets***

- *Utilization of new private market channels*
  - As outlined in the Market Delivery section, with an increased focus on the private market, a number of new marketing channels will be utilized. Because these are new methods of reaching the private market, the participation rates they drive are unknown. If the take-up rates projected for these channels prove to be incorrect it will be extremely challenging to meet the single family targets.
- *Estimated Delivery Agent Constraints*
  - As outlined in the Context for Targets section, the ability to ramp up single family participation is highly dependent upon our delivery agents' capability to overcome the key constraints they face in the market. If the ramp-up rates projected for the delivery agents prove to be incorrect, it will be extremely challenging to meet the single family targets.

### ***Challenges in Achieving Aboriginal Offering Targets***

- *Aboriginal contractor availability:* Market insights show that an on-reserve weatherization program will have increased levels of participation when utilizing local Aboriginal contractors; however, finding suitable Aboriginal contractors in remote locations to complete a relatively limited amount of work, can prove challenging.
- *Cultural differences and mistrust:* Although Union's offering will be provided at no cost to the residents, First Nations communities have a unique history, culture, and set of values, that may affect ability for any non-aboriginal organization to gain the level of trust required for effective program delivery.

### ***Challenges in Achieving Furnace End-of-Life Offering Targets***

- *Utilization of social service agency partnerships for delivery within the private market*
  - Utilizing social service agency partnerships to promote and deliver a furnace program will be new for Union. Through past experience, Union has learned that agencies have limited resources and a great deal of programs to learn and highlight for their clients, which can result in some programs not consistently being promoted. If Union's assumptions around how many furnace upgrades can be driven through the social service agency channel are incorrect, it will be challenging to meet the associated savings target.

### ***Challenges in Achieving Multi-Family Offering Targets***

### **Challenges in Achieving Social Housing and LI MR MF Targets**

- *Capital project delays* - although a Municipality may plan to have a project completed in a given year, Social and Assisted Housing Providers often face delays due to last minute shifts in resources. Although this can happen in other markets, it presents an exceptionally large challenge within the Social and Assisted Housing market due to the fact that this market is small/finite and it often has inflexible budget planning cycles.

## **1.4.11 Consideration of Board's Guiding Principles**

### ***Home Weatherization Offering***

- *Ensure low income programs are accessible across the province* - Union's Home Weatherization offering is available to eligible low income customers throughout the franchise; however, Union has not actively promoted the offering in non-major urban

1 centers. Over the course of the Plan, Union will actively promote the offering in non-  
2 major urban centers to drive increased participation in these areas. Union's aim is to have  
3 a minimum of ten applications within a rural community before deploying a delivery  
4 agent.

- 5  
6 • *Ensure offerings pursue a holistic-approach that drives long-term energy savings -*  
7 Union's Home Weatherization Offering will be enhanced to identify and address all deep  
8 saving opportunities in a customer's home such as the furnace upgrade.

#### 9 10 ***Aboriginal Offering***

- 11  
12 • *Ensure low income programs are accessible across the province -* To date, customers  
13 residing in Aboriginal communities have not participated in Union's low income DSM  
14 single family offerings; therefore, expanding promotion and delivery to Aboriginal  
15 reserves helps to ensure that low income customers across Union's franchise area benefit  
16 from DSM.
- 17  
18 • *Ensure Offerings pursue a holistic-approach that drives long-term energy savings -*  
19 Union's Aboriginal offering is designed to both identify and address all deep saving  
20 opportunities in a customer's home. In addition, providing an Energy Savings Kit, a  
21 carbon monoxide detector and assessing the furnace while in home to determine if they  
22 can take advantage of a furnace end-of-life upgrade incentive ensures that the home is  
23 being approached in a holistic manner.

#### 24 25 ***Furnace End-of-Life Upgrade Offering***

- 26  
27 • *Minimize lost opportunities when implementing energy efficient upgrades -* The Furnace  
28 End-of-Life Upgrade offering will help to ensure that all possible energy saving  
29 opportunities are being addressed within a low-income customer's home; which in the  
30 absence of an incentive to upgrade to a higher efficiency furnaces, would have resulted in  
31 lost opportunity.

#### 32 33 34 ***Multi-Family Offering***

- 35  
36 • *Design programs so that they achieve high customer participation levels -* Historic DSM  
37 program take-up rates illustrate that both Social and Assisted Housing and LI MR MF  
38 buildings are not likely to participate in Union's Commercial/Industrial DSM offering  
39 due to the unique barriers that these markets face. The enhanced incentives offered  
40 through the low income Multi-Family offering help these customers overcome their  
41 unique barriers with the goal of increasing participation levels.
- 42



- Minimize lost opportunities when implementing energy efficient upgrades - Union's low income Multi-Family offering provides Social and Assisted Housing and LI MR MF customers with enhanced incentives on deep measures that have reached their end-of-life. When building owners within these markets face an equipment replacement decision, they have historically not chosen the more energy efficient upgrade due to a number of unique barriers that they face. The enhanced incentives offered through this program have shifted this behaviour, minimizing lost opportunities.

#### 1.4.12 Cost Effectiveness

Table 32  
2016 Total Resource Cost-Plus

Measure/Offering	Units	Total TRC-Plus Benefits	Total TRC-Plus Costs	Total Net TRC-Plus Before Program Costs	TRC Plus Ratio
Home Weatherization <sup>1</sup>	1350	\$7,681,222	\$4,237,007	\$3,444,215	1.81
Furnace Replacement <sup>2</sup>	680	\$351,808	\$952,000	-\$600,192	0.37
Condensing Gas Water Heater 2- 1000gal/day	1	\$4,219	\$2,119	\$2,101	1.99
HRV 5- MURB,Healthcare,Nursing <sup>3</sup>	25	\$549,041	\$133,400	\$415,641	4.12
MUA 11- Other Comm Effic + VFD 1000-4999 cfm <sup>4</sup>	55	\$729,048	\$109,434	\$619,614	6.66
MUA 12- Other Comm Effic + VFD =>5000 cfm <sup>5</sup>	14	\$998,549	\$117,021	\$881,528	8.53
Condensing Boiler DHW- 300 to 599 MBtu/h <sup>6</sup>	3	\$46,554	\$14,424	\$32,130	3.23
Condensing Boiler DHW- 1,500 MBtu/h <sup>7</sup>	1	\$48,697	\$18,765	\$29,932	2.60
Condensing Boiler SH - 200 to 299 MBtu/h <sup>9</sup>	12	\$142,846	\$43,286	\$99,560	3.30
Condensing Boiler SH- 300 to 599 MBtu/h <sup>10</sup>	20	\$417,765	\$89,095	\$328,670	4.69
Condensing Boiler SH- 600 to 999 MBtu/h <sup>11</sup>	3	\$157,279	\$33,542	\$123,736	4.69
Condensing Boiler SH- 1,000 to 1,499 MBtu/h <sup>12</sup>	2	\$126,645	\$27,009	\$99,636	4.69
Multi Family Custom Offering <sup>14</sup>	42	\$973,956	\$2,204,038	-\$1,230,082	0.44
<b>Total</b>		<b>\$12,227,629</b>	<b>\$7,981,140</b>	<b>\$4,246,489</b>	
		Promotion Costs	\$2,462,689		
		Administration Costs	\$1,424,749		
		EM&V Costs	\$219,400		
		<b>Program Total Net TRC</b>		<b>\$139,651</b>	
		<b>Program Enhanced TRC Ratio<sup>13</sup></b>			<b>1.0</b>

**Table 33**  
**2016 Program Administrator Cost**

Measure/Offering	Units	Total PAC Benefit <sup>14</sup>	Total PAC Cost <sup>15</sup>	Total Net PAC Before Program Costs	PAC Ratio
Home Weatherization <sup>1</sup>	1350	\$6,167,281	\$4,237,007	\$1,930,274	1.46
Furnace Replacement <sup>2</sup>	680	\$305,920	\$650,732	-\$344,813	0.47
Condensing Gas Water Heater 2-1000gal/day	1	\$3,669	\$1,915	\$1,753	1.92
HRV 5- MURB,Healthcare,Nursing <sup>3</sup>	25	\$477,427	\$85,462	\$391,965	5.59
MUA 11- Other Comm Effic + VFD 1000-4999 cfm <sup>4</sup>	55	\$475,117	\$245,100	\$230,016	1.94
MUA 12- Other Comm Effic + VFD =>5000 cfm <sup>5</sup>	14	\$698,410	\$359,114	\$339,295	1.94
Condensing Boiler DHW- 300 to 599 MBtu/h <sup>6</sup>	3	\$40,482	\$23,011	\$17,471	1.76
Condensing Boiler DHW- 1,500 MBtu/h <sup>7</sup>	1	\$42,345	\$17,913	\$24,432	2.36
Condensing Boiler SH - 200 to 299 MBtu/h <sup>9</sup>	12	\$124,214	\$64,419	\$59,795	1.93
Condensing Boiler SH- 300 to 599 MBtu/h <sup>10</sup>	20	\$363,274	\$190,486	\$172,788	1.91
Condensing Boiler SH- 600 to 999 MBtu/h <sup>11</sup>	3	\$136,764	\$42,817	\$93,948	3.19
Condensing Boiler SH- 1,000 to 1,499 MBtu/h <sup>12</sup>	2	\$110,126	\$35,826	\$74,301	3.07
Multi Family Custom Offering <sup>14</sup>	42	\$846,918	\$1,315,216	-\$468,298	0.64
Building Assessments	6		\$30,000		
Total		<b>\$9,791,947</b>	<b>\$7,299,019</b>	<b>\$2,522,928</b>	
		Promotion Costs	\$2,462,689		
		Administration Costs	\$1,424,749		
		EM&V Costs	\$219,400		
		<b>Program Total Net PAC</b>		<b>-\$1,613,910</b>	
		<b>Program PAC Ratio</b>			<b>0.9</b>

1 Home Weatherization (Attic Insulation, Basement Insulation, Sealing Measures, Wall Insulation) includes Municipal, Independent, private and attic only homes. Assumes a weighted average of 968 m3 of natural gas savings per home. Assumes a weighted average incremental cost of \$3,139
2 Furnace Replacement is stand alone offering for end of life furnances in both Union Gas weatherized and non-weatherized homes. Assumes a natural gas savings of 129 m3 per unit and incremental cost of \$1,400. Incentives are based on weighted averaged for social and private housing
3 HRV 5- MURB,Healthcare,Nursing measure is quasi prescriptive. Savings are based on the minimum capacity of 1,556 CFM
4 MUA 11- Other Comm Effic + VFD 1000-4999 cfm measure is quasi prescriptive. Savings are based on an average capacity of 2,493 CFM
5 MUA 12- Other Comm Effic + VFD =>5000 cfm measure is quasi prescriptive. Savings are based on an average capacity of 8,626 CFM from 2014 results
6 Condensing Boiler measure is quasi-prescriptive. Savings are based on an average capacity of 421,769 Btu/hr
7 Condensing Boiler measure is quasi-prescriptive. Savings are based on an average capacity of 1,646,024 Btu/hr
8 Condensing Boiler measure is quasi-prescriptive. Savings are based on an average capacity of 227,259 Btu/hr
9 Condensing Boiler measure is quasi-prescriptive. Savings are based on an average capacity of 390,769 Btu/hr
10 Condensing Boiler measure is quasi-prescriptive. Savings are based on an average capacity of 980,769 Btu/hr
11 Condensing Boiler measure is quasi-prescriptive. Savings are based on an average capacity of 1,184,615 Btu/hr
12 Multi Family Custom. Input assumptions based on driving a TRC ratio of 0.7 by funding \$0.10/m3 up to 50% of the full cost. Window projects are incented at \$1,000 per unit
13 TRC Ratio adjusted for 2015 avoided costs and 4% discount factor. Includes 15% Non Energy Benefits Adder
14 PAC Benefits refer to the avoided natural gas benefits associated with the offering
15 PAC Costs refers to the total incentives for the offering

## Market Transformation

### *1.5 Optimum Home*

The Optimum Home program proposal reflects the interventions that are required for the final years of the program, informed by Union's lessons learned and experience from 2012 – 2014. The program was designed with consideration for the OEB Framework/Guidelines, and has been informed by consultation with intervenors. Union has not proposed a specific updated Optimum Home program for 2017 and beyond but will investigate the possibility of introducing a new version of Optimum Home at the Mid-Term Review.

In 2015–2016 Union will not enroll new builders in the program as the focus will shift to:

- Supporting enrolled builders to complete the original program phases and leverage incremental consulting support to address remaining barriers to building and selling high efficient homes
- Disseminating best practices and hosting “forums” for non-participating builders to learn about the program and be inspired to build high efficiency homes
- Increasing promotional activities to drive demand for high efficiency homes to new home buyers

Further details regarding each of these proposed elements are outlined below.

### **Optimum Home Program**

The Optimum Home program seeks to address barriers to the wider adoption of high efficiency homes in residential new construction, thereby avoiding lost opportunities and setting the stage for long-term energy savings in the residential market. Optimum Home examines all aspects of the builder's business in an attempt to create fundamental change toward energy efficient building practices using a whole-home approach.

Envisioned to run from 2012-2016, the first three years of the program focused on recruiting participants from the fifty largest builders in Union's franchise area and teaching them, through a three phase consulting process, to build homes that are at least 20% above Ontario Building Code (OBC) 2012.

The twenty-two participants enrolled in the program over the 2012-2014 period are now in various stages of completion. Many have demonstrated success by incorporating Optimum Home practices into their housing starts. In 2014, Union successfully influenced participants to

1 build, on average, 14% of their homes to the Optimum Home specification, compared to an  
2 average penetration of 4.6%<sup>11</sup> in Ontario as a whole.  
3

4 Building code minimum energy efficiency requirements are expected to increase when a new  
5 version of the Ontario Building Code is introduced (currently planned for 2017). Leading up to  
6 this transition, Union will use the final years of the current Optimum Home program to support  
7 participating builders in growing the number of homes built to the Optimum Home standard,  
8 addressing any remaining challenges and barriers within their building practices. Union will also  
9 seek to eliminate barriers to the widespread adoption of high efficiency homes by nurturing  
10 customer demand through education and outreach and encouraging spillover amongst other  
11 builders.  
12

### 13 **1.5.1 Customer Class(es) Targeted**

- 14 • Residential new build market, both single family detached homes as well as individually  
15 metered town-homes  
16

### 17 **1.5.2 Rate Classes Targeted**

- 18 • Rate M1, Rate 01  
19

### 20 **1.5.3 Program Goals**

- 21  
22 • The goal of the Optimum Home program is to increase the market share of homes built at  
23 least 20% more efficient than Ontario Building Code 2012. Advancement of building  
24 practices lays the groundwork for increased minimum efficiency standards in future  
25 building codes. The program works with builders to find cost efficiencies across their  
26 business to ensure the incremental cost of higher efficiency homes is not prohibitive.  
27 Since launching the program in 2012, Union has been progressing toward this goal by  
28 working with homebuilders to:
  - 29 ○ Review their key business functions and building practices with the purpose of  
30 identifying areas where efficiencies can be gained.
  - 31 ○ Integrate the identified new best practices into their daily business functions and  
32 new housing starts.
  - 33 ○ Incorporate high efficiency measures into their new home designs to improve  
34 overall house efficiency by at least 20% above OBC 2012.
  - 35 ○ Utilize the savings identified through the Optimum Home Program to reduce the  
36 incremental costs associated with the energy efficient upgrades.
- 37 • In the remaining program years, Union will continue to work with the 22 participating  
38 builders to complete these tasks and reduce remaining supply-side barriers, while  
39 layering on incremental efforts to encourage spillover and to eliminate barriers to  
40 consumer demand.

---

<sup>11</sup> Based on information provided by EnerQuality on January 30, 2015

#### 1.5.4 Program Strategy

- Strategies to achieve Union's Program goals for the Optimum Home Program include:
  - Supply-side strategy
    - Support participants in completing the original program phases, refining building practices and developing a customized high performance building plan to guide them in building homes that are least 20% above OBC 2012.
    - Offer incremental consulting support to builders that have completed all three program phases, but require additional support to address remaining internal barriers and challenges to incorporating the Optimum Home Standard across the majority of their housing starts.
  - Demand-side strategy
    - Provide incremental support where required to increase builder's effectiveness in selling higher efficiency homes to new home buyers. This will involve working with builder sales teams and educating them on how to "sell" energy efficiency, and enhancing builder marketing and advertising efforts.
    - Educate and build awareness amongst new home buyers about the benefits of higher efficiency homes – this will heighten their understanding of the energy savings they will experience and will increase both their desire and demand for these new homes, which will in turn drive builder commitment to the program.

#### 1.5.5 Program Offerings

The offering that will be delivered in the Optimum Home program is outlined below.

##### *Description*

- Original program phases for the Optimum Home program are as follows:
  - Phase 1: Discover
    - Expression of interest/agreement by builder to participate
    - Corporate commitment - alignment across the company including the builder's corporate head office. Experienced building scientists will require a cross-functional team of senior managers, led by the CEO or his/her designated "champion" to address the company's management issues that stand in the way of broader implementation of energy efficiency across the builders' entire production.
    - Consultative process - extensive modelling using Natural Resources Canada approved modelling software, on-site analysis, benchmarking current construction, develop a new Builder Option Package to achieve at

- 1 least 20% above OBC 2012, work with trades, and set management goals  
2 and priorities.
- 3     ▪ Builder will build a prototype home and evaluate lessons learned into  
4 future builds. This is constructed as a field laboratory to demonstrate, de-  
5 bug and ultimately resolve issues relating to construction.
- 6
- 7     ○ Phase 2 : Production
- 8         ▪ Examine builder's internal business processes and identify efficiencies as  
9 needed
- 10         ▪ Work with the builder to test the new Builder Option Package, examine  
11 lessons learned and establish training requirements
- 12         ▪ Introduce and coach builder on opportunities to integrate high efficiency  
13 homes into sales and marketing materials and sales agent training
- 14
- 15     ○ Phase 3 : Transformation
- 16         ▪ Encourage builder team to embrace new philosophy into company culture
- 17         ▪ Implement increased focus towards expanded rollout of the Optimum  
18 Home specifications
- 19         ▪ Integrate high efficiency homes into sales and marketing materials and  
20 sales agent training
- 21         ▪ Develop sustainment plan to maintain momentum of building to the higher  
22 efficiency level.
- 23
- 24     ○ With several builders currently completing Phase 3, Union has reviewed lessons learned  
25 and asked participants, building scientists and other stakeholders to identify remaining  
26 barriers. The need for incremental consulting support was noted, particularly to:
- 27         ○ Help builders work through unanticipated technical and quality issues that have,  
28 in some cases, arisen due to the increased tightness of the home or due to the use  
29 of new and previous untested energy efficient technologies/building materials.
- 30             ▪ Some of these issues were not fully understood when the builders'   
31 Discovery Homes were created, and providing incremental consulting  
32 support will help ensure that builders are not discouraged by these issues  
33 and can address them in future housing starts.
- 34         ○ Assist builders and their sales teams in "selling" higher efficiency homes.
- 35             ▪ While builders had the option to use consulting support to train their sales  
36 teams and refined marketing and promotional materials, many builders  
37 were initially more focused on learning to build higher efficiency homes.  
38 Now that higher efficiency homes are being build, there is a need to shift  
39 attention to the selling them.
- 40         ○ In response to these findings, Union will introduce incremental engagement for  
41 existing participants starting in 2015. This incremental support will come in the

form of time with building scientists and will help accelerate the adoption of homes build at least 20% more efficient than OBC 2012.

- Concurrently, Union will enhance direct-to-customer tactics to promote the value of higher efficiency homes to consumers.

### ***Target Market***

- There are three target audiences for Optimum Home
  - Participating Builders
    - The primary target market is the 22 existing Optimum Home participants. These participants were enrolled throughout the 2012-2014 and are among the fifty largest builders in Union's franchise area.
  - Non-Participating Builders
    - Builders that are not participating in the Optimum Home program, but build homes in Union's franchise area. Union will engage this group to encourage spillover.
  - Consumers
    - In order for builders to fully embrace the program and build a significant number of housing starts to the Optimum Home standard, home buyers need to be willing to purchase them. Union will work to help this group understand and value higher efficiency.

### ***Market Incentive***

- The builder incentive for the original three program phases, and new incremental engagement phase, is outlined below. The incentives will come in the form of consulting services, education and training:
  - Phase 1 - \$30,000 per builder
  - Phase 2 – \$30,000 per builder
  - Phase 3 – \$15,000 per builder
  - Incremental engagement (after the completion of Phase 3) – up to \$17,500 per builder over the 2015-2016 period

### ***Market Delivery***

- Supply-side efforts will be delivered through partnering building scientists, as coordinated through a third party vendor (currently EnerQuality). Union's residential sales team also plays a role by monitoring builder engagement and helping to troubleshoot issues as needed, and leveraging manufacturing and channel partner relationships to provide product knowledge and education.
- Demand-side efforts will focus on supporting builders in driving demand for high efficiency homes to new home buyers, and may include activities such as:



- Mass-media promotion
  - Radio, newspaper, and billboards/outdoor signs to build widespread awareness of the benefits of high efficiency homes.
- Consulting support for builder sales staff
  - Participating builders can leverage incremental consulting support after completing Phase 3, and use this support to teach their sales staff to more effectively “sell” higher efficiency homes. For example, participants have worked with Union’s building scientists to facilitate “mystery shopping” in order to diagnose current strengths and opportunities with the builders’ sales teams. This allows the building scientist to develop customized recommendations for training in response.
- Publicity and media support
  - Creating publicity for participants by sending out press releases and highlighting achievements through Union Gas publications, social media, and community and trade events.

To encourage spillover Union intends to disseminate best practices and host “forums” for non-participating builders to learn about the program and be inspired to build high efficiency homes

## ***Barriers***

- During the 2012-2014 period, Union was able to successfully address several supply side barriers, and participants are now building a portion of their housing starts at least 20% above OBC 2012. To accelerate the adoption of higher efficiency homes, Union will address the following barriers:
  - Participating builders have experienced technical and quality issues using new technologies or processes that are more energy efficient. Builders may stop using these products or become weary of higher efficiency homes in general.
    - To address this, Union will provide incremental consulting support to builders that have completed Phase 3. As technical and quality issues are resolved, Union will also actively encourage the sharing of “lessons learned” between building scientists and both participating and non-participating builders so the entire industry can benefit from program innovations.
  - Builders and their sales teams may not know how to “sell” energy efficiency upgrades to home buyers
    - To address this, Union will assist the builder with sales training and marketing/promotional materials.

- Energy efficiency may not be top of mind for home buyers, who tend to value factors such as location, builder reputation, and aesthetic upgrades ahead of “hidden” energy efficiency.
  - Union will address this barrier by advertising the benefits of higher efficiency homes and educating consumers on what to ask/look for when buying a home. As well, Union will work with builders and their sales teams to design effective promotions and marketing efforts of their own.

#### **1.5.6 Program Duration**

- Optimum Home in its current form will be offered from 2015-2016. The program will conclude at the end of 2016 as the Ontario Building Code is expected to be updated in 2017.
- Union will investigate the possibility of introducing a new version of Optimum Home at the Mid-Term Review, based on the lessons learned from the 2012-2016 program and an assessment of market barriers in relation to achieving efficiency greater than specified by the Ontario Building Code 2017.
  - Union has not proposed a specific updated Optimum Home program for 2017 and beyond due to some level of uncertainty over the timing for the next Ontario Building Code update, or the degree of minimum energy efficiency requirements that will actually be incorporated. The 2012 Building Code was initially planned for introduction in 2010 and was delayed by two years. Because of these uncertainties, Union believes it would be inappropriate to define specific budget or target requirements for a new program at this point in time.

#### **1.5.7 Optimum Home Program Budget**

Table 34  
Market Transformation Program Budget

<b>Optimum Home Program Budget (\$ 000)</b>	
<b>Program Cost</b>	<b>2016</b>
Incentives/Promotion	\$841
Evaluation	0
Administrative Costs	\$201
<b>Total</b>	<b>\$1,042</b>

## 1.5.8 Optimum Home Program Targets

Table 35  
Market Transformation Program Budget

Optimum Home Program Target	
Offerings	2016
<i>Optimum Home</i>	2015 Actual + 20%

## 1.5.9 Rationale for Targets

### 1.5.9.1 Context for Optimum Home Targets

- There will be a single metric in 2015 and 2016: the percentage of homes built by participants that are at least 20% above OBC 2012. Targets are based on achieving percentage point gains above achievement in the previous year.
- Targets are based on Union's vision of growing the total market share for homes that are at least 20% above OBC 2012 in Union's franchise area

### 1.5.9.2 Challenges in Achieving Optimum Home Targets

- **Ability of builders to transition the majority of their housing types to the Optimum Home Standard (at least 20% above OBC 2012)**
  - Through the program, builders are encouraged and supported to adopt the Optimum Home Standard across all of the types of homes they build, and in developing targets Union has assumed that all housing types can and should meet the standard. However, this standard is more difficult to achieve with smaller home types, such as townhomes.
- **Participating builders may offer homes built at least 20% above OBC 2012 as an "option" to home buyers as opposed to a standard.**
  - To achieve targets, participating builders will need to build a significant percentage of their housing starts to the Optimum Home standard. Several participants are currently offering the higher efficiency homes as an option to customers. Therefore, Union will need to influence these builders to make these homes a standard offering, or successfully influence the majority of buyers to pay extra for a higher efficiency home.

1       • **Differences in builder planning and building cycles**

- 2           ○ The number of housing starts built by participating builders varies year-to-year  
3           based on the availability of land, demand/market health, and other factors. As  
4           well, the timeline in which builders are selling and building homes varies builder  
5           to builder. These factors create unpredictability for targets.  
6  
7

8       **1.5.10 Consideration of the Board's Key Priorities and Guiding Principles**  
9

10      • **Minimize lost opportunities when implementing energy efficient upgrades.**

- 11           ○ Optimum Home removes barriers preventing the construction of higher efficiency  
12           homes (at least 20% above OBC 2012). This is the essence of preventing lost  
13           opportunities since the energy conservation technologies are installed at the  
14           beginning of the lifespan of the home, when it is most cost effective.  
15

16      • **Programs should be designed to pursue long-term energy savings.**

- 17           ○ Union is taking a "whole home approach" that focuses on deep measures that will  
18           drive extensive savings. These measures will primarily have longer life cycles  
19           (e.g. thermal envelope improvements).  
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## **Attachment A Corrected**

### **Compilation of Rate T2/Rate 100 Customer Feedback**

#### **On Proposed Program Changes for 2016-2020**

The following comments were received in February and March 2015 from customers who had been presented the PowerPoint slides included as Attachment C, entitled: "T2/R100 Large Volume Custom Program: Next Generation Demand Side Management Plan Concepts"

<b>Customer</b>	<b>Comment</b> <i>(note the numbers in brackets refer to Consultation Slide #)</i>
<b>A</b>	<ul style="list-style-type: none"> <li>Strongly wants to reduce or eliminate their exposure to deferral costs (4)</li> <li>The proposal supports DSM program principles from a sustainability standpoint (3)</li> <li>Incentives are appreciated but the underlying reality is reduced and avoided costs of fuel (2)</li> <li>The proposal makes sense, and they would like to retain access to an experienced Professional Engineer with a good breadth of energy saving approaches (4)</li> <li>The concept provided seems to be a good program especially at 1/3<sup>rd</sup> the cost in rates with a reduction in deferral exposure (4) (5)</li> <li>Incentives for steam maintenance activities are directly earmarked for future steam maintenance activities thus helping reduce the risk of spending cuts to those activities from year to year (2)</li> </ul>
<b>B</b>	<ul style="list-style-type: none"> <li>Stated the desire to reduce or eliminate exposure to deferral costs (4)</li> <li>Although incentives are appreciated, reduced cost of fuel remains the primary driver (2)</li> <li>The program concepts regarding training (regional seminars and lunch &amp; learns) and access to an experienced energy expert were strongly supported (4)</li> <li>The concept of a ratepayer-funded technical support program seemed reasonable based on the rate impact (5)</li> </ul>
<b>C</b>	<ul style="list-style-type: none"> <li>Avoided costs of fuel has been a stronger driver for energy efficiency projects than incentives (2)</li> <li>The proposed program concepts regarding training and access to an experienced energy expert were strongly supported (4)</li> </ul>
<b>D</b>	<ul style="list-style-type: none"> <li>Reduction of fuel usage is a bigger driver for energy efficiency than incentives have been (2)</li> <li>Strong support was expressed for the proposed program elements i.e. training (regional seminars and lunch &amp; learns) and access to an experienced "energy expert"(4)</li> </ul>
<b>E</b>	<ul style="list-style-type: none"> <li>Incentives drive good energy efficiency behavior, illustrate internal results for their energy efficiency efforts and allows recognition of individual efforts (2)</li> <li>Strong support was expressed for the program concepts regarding training and access to an experienced energy expert (4)</li> <li>Keeping a ratepayer-funded program seemed reasonable given the reduced rate impact (5)</li> <li>Likely would use steam training (4)</li> </ul>

Customer	Comment <i>(note the numbers in brackets refer to Consultation Slide #)</i>
	<ul style="list-style-type: none"> <li>• “There is nothing like getting some incentives” – it drives behavior towards energy conservation especially while gas is cheap (2)</li> <li>• There is value in the existing program as well as the proposed (3)</li> <li>• Appreciate the partnership with Union Gas on energy conservation (4)</li> <li>• Incentives give real reward rather than something imaginary (2)</li> </ul>
<b>F</b>	<ul style="list-style-type: none"> <li>• “We will be sorry to see the end of the incentives” (2)</li> <li>• The current program assists them in their energy program, and they expressed concern about the cancellation of the incentives (2)</li> <li>• The two main offerings Union is proposing for the new program (Technical support and Training) are important and they need them, however they do not support a ratepayer funded program based on customer demand as the benefits do not justify the cost (4)</li> <li>• Incentives they have been receiving are utilized directly by the Energy Group to help justify difficult energy projects such as metering and furnace studies (2)</li> <li>• The current program has not had much of a net cost to them (2)</li> </ul>
<b>G</b>	<ul style="list-style-type: none"> <li>• Do not mind that incentives are to be eliminated (2)</li> <li>• Supportive of the concepts (Technical Support and Training) presented and likes the reduced Program cost (4) (5)</li> <li>• Strongly opposed to retroactive deferral account clearing and was pleased to hear that will be greatly reduced under the new program (4)</li> <li>• Staff have had value from support from the Technical Account Manager (4)</li> </ul>
<b>H</b>	<ul style="list-style-type: none"> <li>• Disappointed that incentives are to be terminated; they helped to get smaller projects and studies approved (2)</li> <li>• Have appreciated Union’s DSM training courses to date, and would definitely make use of training offered under the proposed program if it can be offered locally (4)</li> <li>• The services offered by the Union Technical Account Manager are appreciated (4)</li> </ul>
<b>I</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track (5)</li> <li>• It is consistent that both customer incentive and Union incentive should be eliminated (3)</li> <li>• Less concern if there is a small bill impact (5)</li> </ul>
<b>J</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track (5)</li> <li>• Training content is interesting (4)</li> </ul>
<b>K</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track – we appreciate the ‘skinnying down’ of the program cost (5)</li> <li>• There is always some opportunity for additional energy savings (4)</li> <li>• As an energy conversion company we have our own expertise (4)</li> <li>• The education component has been valuable in the past (4)</li> <li>• Doubtful whether Union Gas staff could provide sufficiently specialized technical expertise for their plant processes and if required will be secured in the competitive marketplace(3)</li> <li>• Oppose embedded DSM program costs in rates</li> </ul>

<b>Customer</b>	<b>Comment</b> <i>(note the numbers in brackets refer to Consultation Slide #)</i>
<b>L</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track (5)</li> <li>• Doubtful whether Union Gas staff could provide sufficiently specialized technical expertise for their plant processes and if required will be secured in the competitive marketplace(3)</li> <li>• Oppose embedded DSM program costs in rates</li> </ul>
<b>M</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track (5)</li> <li>• The services offered by the Union Technical Account Manager are appreciated (4)</li> <li>• The magnitude of savings achieved in the projects supported by Union's DSM incentives was surprisingly large.</li> </ul>
<b>N</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track (5)</li> <li>• The services offered by the Union Technical Account Manager are appreciated (4)</li> </ul>
<b>O</b>	<ul style="list-style-type: none"> <li>• Cost reductions are on the right track (5)</li> <li>• The services offered by the Union Technical Account Manager are appreciated (4)</li> </ul>
<b>P</b>	<ul style="list-style-type: none"> <li>• Interested in the training (4)</li> <li>• Doubtful whether Union Gas staff could provide sufficiently specialized technical expertise for their plant processes(3)</li> </ul>
<b>Q</b>	<ul style="list-style-type: none"> <li>• Significant program cost reductions while still trying to keep the focus on energy efficiency from slipping (5)</li> <li>• Union needs to maintain a presence in Energy Efficiency with customer at all levels or folks will tend to slide backwards without someone advocating for efficiency (4)</li> <li>• Unsure as to whether they'd get value from technical expertise until more details are given.</li> <li>• Have appreciated Union's DSM training courses to date, and would definitely make use of training offered under the proposed program (4)</li> </ul>
<b>R</b>	<ul style="list-style-type: none"> <li>• Doubtful whether Union Gas staff could provide sufficiently specialized technical expertise for their plant processes(3)</li> <li>• Oppose embedded DSM program costs in rates</li> </ul>
<b>S</b>	<ul style="list-style-type: none"> <li>• Proposed program is more favourable than current in that rates will be less. (5)</li> <li>• Doubtful whether Union Gas staff could provide sufficiently specialized technical expertise for their plant processes (3)</li> <li>• Prefer removing DSM program costs from rates</li> </ul>
<b>T</b>	<ul style="list-style-type: none"> <li>• Doubtful whether Union Gas staff could provide sufficiently specialized technical expertise for their plant processes as they have in house specialists (3)</li> <li>• Oppose embedded DSM program costs in rates</li> </ul>

## **Attachment B**

### **Some Potential Topics for Customer Staff Training Under Consideration**

- Fuels and combustion (Efficient blending and control of mixed fuels)
- Steam boiler and ancillary equipment operation
- Boiler burners and combustion control
- Furnace control systems (Level 1 and Level 2 control basics)
- Furnace efficiency improvements (e.g. heat recovery, excess air control, pressure control)
- Refinery heater operation
- Refinery heater combustion control
- Basic heat transfer for boilers, heaters and furnaces
- Process temperature measurement principles and practice (selection and location of appropriate sensing devices)
- Refractory types and applications
- Steam system optimization
- Steam traps – operation and surveying
- Steam trap replacement/repair (hands-on training)
- Surveying and diagnosis of insulation and refractory degradation

=====




## **Attachment C**

**Slides Presented as Part of Consultations on Large Volume  
DSM Program Concepts in February & March 2015**



## Framework Highlights

# DRAFT




### Highlights

- The Ontario Energy Board "OEB" issued both a framework report and filing guidelines for the next generations Demand Side Management (DSM) program on Dec 22, 2014 in EB-2014-0134
  - Governs DSM programs from 2015-2020 with a mid-term review by June 2018
- Carry 2014 programs 'As-is' into 2015



For 2016-2020

- Only Portfolio Level Administration costs can be recovered through rates restricted to: utility staff, marketing and evaluation activities
- If a gas utility, in consultation with its large volume customers, determines that there is substantial interest in the gas utility providing expertise and a value-added service to help improve the energy efficiency levels of these customers' facilities, the gas utilities are able to propose a fee-for-service program which the Board will approve on its merits.
- Primary program focus should be technical expertise
- Fee to recover consulting service costs
- Plan must be filed with the OEB by April 1, 2015




A Spectra Energy Company

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Large Volume Program <b>DRAFT</b> 	
In Scope	Out of Scope
On-Site or Local Staff Technical Training	Individual out-of-Province staff training
Experienced Union Gas Staff to work with Energy Teams	2015 program changes
Early-stage evaluation of process equipment for energy efficiency improvements	Full site energy surveys
Equipment performance benchmarking	Energy Project Incentives
Intelligence about new/emerging energy efficiency technologies	Union Gas Incentives for T2/R100 Program
 A Spectra Energy Company	

## Program Concepts

# DRAFT




- Customer Staff Technical Training (e.g. Combustion, Burners, Controls, Steam System Equipment)
- Choice of topics and training organizations, delivered at or in the vicinity of customer's plant
- Specialized hands-on training may be arranged at off-site locations where facilities exist
- Possible delivery of Training and Benchmarking through an existing energy efficiency organization such as CIPEC, if synergies exist.
- Provide Informational resources (ie: ISO 50001 publications)
- Possible collaboration with Universities, Colleges to develop and deliver some of the training.
- Experienced Union Gas Engineers to work with customers' energy teams on benchmarking and early evaluation for energy efficiency improvements, including the use of simple measurement equipment (e.g. Thermal Imaging)

### Notes

- Union Gas is not proposing savings targets, verification requirements, requests for shareholder incentives
- Reduce deferral impact(s) from Large Volume program on customers

4



A Spectra Energy Company

## Program Costs in Rates **DRAFT**



### T2

Current cost per year	Multi-Year Framework cost per year
\$0.0096 per m3 in Demand rates	Estimated \$0.003 to \$0.004 per m3 in Demand rates
\$0.0066 per m3 eligible in Direct Access Incentives to customer ++	No project incentives
~0.6% of demand charge annually *	~0.2 to 0.3% of demand charge annually *

++ Some customers may receive larger incentive totals depending on the their participation level and access to aggregate pool incentive funds

\* Assumed demand weighted demand charge at 2/3 tier 2 rate and 1/3 at tier 1 equalling \$0.14 per m3 per month

## Program Costs in Rates

**DRAFT**



### R100 (approximate costs)

Current cost per year	Multi-Year Framework cost per year
\$0.017 per m3 in Demand rates and \$0.00002 in delivery	Estimated \$0.004 to \$0.005 per m3 in Demand rates
\$0.012 per m3 eligible in Direct Access Incentives to customer ++	No project incentives
~0.9% of demand charge annually	~0.2 to 0.3% of demand charge annually *

++ Some customers may receive larger incentive totals depending on the their participation level and access to aggregate pool incentive funds

## Customer Feedback

**DRAFT**



- What is your support level for the concept?
- What would you change?
- Is there other feedback you would like to offer?

**APPENDIX B: 2016-2020 DSM PLAN STAKEHOLDER CONSULTATION****Union's Stakeholder Invite List<sup>1</sup>**

	<b>Organization</b>	<b>Representative</b>
1	Association of Power Producers ("APPrO")	David Butters
2	APPrO	John Wolnik
3	Building Owners and Managers of Ontario ("BOMA")	Thomas Brett
4	BOMA	Marion Fraser
5	BOMA	Chris Conway
6	Consumers Council of Canada ("CCC")	Julie Girvan
7	City of Kitchener	Jaya Chatterjee
8	Canadian Manufacturers and Exporters ("CME")	Paul Clipsham
9	CME	Nancy Coulas
10	CME	Peter Thompson
11	CME	Vince DeRose
12	Direct Energy	Ric Forster
13	Energy Probe	Norman Rubin
14	Energy Probe	David MacIntosh
15	EnerQuality	Corey McBurney
16	Environmental Defence	Murray Klippenstein
17	Environmental Defence	Kent Elson
18	Environmental Defence	Jack Gibbons
19	Federation of Rental-housing Providers of Ontario ("FRPO")	Dwayne Quinn
20	Green Energy Coalition ("GEC")	David Poch
21	GEC	Kai Millyard
22	GEC	Chris Neme
23	Heating, Refrigeration and Air Conditioning Institute of Canada ("HRAI")	Martin Luymes
24	Hydro One	Ian Malpass
25	Industrial Gas Users Association ("IGUA")	Dr. Shahrzad Rahbar
26	IGUA	Ian Mondrow
27	IGUA	Mark Crane
28	Just Energy Ontario	Nola Ruzyski
29	Low Income Energy Network ("LIEN")	J. Abouchar
30	LIEN	Matt Gardiner
31	LIEN	Judy Simon
32	London Property Management Association ("LPMA")	Randy Aiken
33	Ministry of Energy	Grant Cockburn
34	Ministry of Energy	Malena Mendez
35	Natural Resource Gas Limited	Jack Howley
36	Ontario Energy Board ("OEB") Staff	Josh Wasylyk
37	OEB Staff	Takis Plagiannakos
38	OEB Staff	Michael Bell
39	Ontario Power Authority ("OPA")	Miriam Heinz
40	School Energy Coalition ("SEC")	W. McNally
41	SEC	Jay Shepherd
42	Toronto and Region Conservation Authority	Ian Jarvis
43	TransCanada Energy ("TCE")	Brian Kelly
44	Vulnerable Energy Consumers Coalition ("VECC")	Michael Buonaguro
45	VECC	Roger Higgin
46	VECC	Shelley Grice

<sup>1</sup> Invite list is accurate as of March 2015, consultation invites may not match invite list due to adjustments made, adding or removing representatives as requested by stakeholders. List is used for all generic consultation sessions; another invite list is used for the Low Income consultation invite, as shown below.



November 1, 2013 – Request for Stakeholder Input

**From:** Moore, Alison [<mailto:AMoore@uniongas.com>]

**Sent:** November 1, 2013 6:13 PM

**To:** C. Brant ([cbrant@willmsshier.com](mailto:cbrant@willmsshier.com)); C. Conway ([cconway@bomatoronto.org](mailto:cconway@bomatoronto.org)); C. Neme ([cneme@energyfuturesgroup.com](mailto:cneme@energyfuturesgroup.com)); Corey McBurney ([Corey@enerquality.ca](mailto:Corey@enerquality.ca)); David Butters; David MacIntosh ([DavidMacIntosh@nextcity.com](mailto:DavidMacIntosh@nextcity.com)); David Poch ([dpoch@eelaw.ca](mailto:dpoch@eelaw.ca)); Dr. Shahrzad Rahbar ([srahbar@igua.ca](mailto:srahbar@igua.ca)); Dwayne Quinn ([drquinn@rogers.com](mailto:drquinn@rogers.com)); Eric Nadeau ([eric\\_nadeau@transcanada.com](mailto:eric_nadeau@transcanada.com)); General MailBox ([TCE\\_Regulatory@transcanada.com](mailto:TCE_Regulatory@transcanada.com)); Hydro One ([regulatory@HydroOne.com](mailto:regulatory@HydroOne.com)); Ian Jarvis ([ian.jarvis@enerlife.com](mailto:ian.jarvis@enerlife.com)); Ian Mondrow ([ian.mondrow@gowlings.com](mailto:ian.mondrow@gowlings.com)); J. Abouchar ([jabouchar@willmsshier.com](mailto:jabouchar@willmsshier.com)); J. Simon ([jsimon@elenchus.ca](mailto:jsimon@elenchus.ca)); Jack Gibbons ([jack@cleanairalliance.org](mailto:jack@cleanairalliance.org)); James Gruenbauer ([jim.gruenbauer@kitchener.ca](mailto:jim.gruenbauer@kitchener.ca)); Jay Shepherd ([jay.shepherd@canadianenergylawyers.com](mailto:jay.shepherd@canadianenergylawyers.com)); John Beauchamp ([john.beauchamp@nortonrose.com](mailto:john.beauchamp@nortonrose.com)); John Wolnik ([jwolnik@elenchus.ca](mailto:jwolnik@elenchus.ca)); Josh Wasyluk ([josh.wasyluk@ontarioenergyboard.ca](mailto:josh.wasyluk@ontarioenergyboard.ca)); Julie Girvan ([jgirvan@uniserve.com](mailto:jgirvan@uniserve.com)); Kai Millyard ([kai@web.ca](mailto:kai@web.ca)); Kent Elson ([kent.elson@klippensteins.ca](mailto:kent.elson@klippensteins.ca)); Laura-Marie Berg ([laura-marie\\_berg@transalta.com](mailto:laura-marie_berg@transalta.com)); M. Gardiner ([mgardner@willmsshier.com](mailto:mgardner@willmsshier.com)); Marion Fraser ([Marion.Fraser@rogers.com](mailto:Marion.Fraser@rogers.com)); Michael Buonaguro ([mrb@mrb-law.com](mailto:mrb@mrb-law.com)); Miriam Heinz ([Miriam.Heinz@powerauthority.on.ca](mailto:Miriam.Heinz@powerauthority.on.ca)); Murray Klippenstein ([murray.klippenstein@klippensteins.ca](mailto:murray.klippenstein@klippensteins.ca)); Nancy Coulas ([nancy.coulas@cme-mec.ca](mailto:nancy.coulas@cme-mec.ca)); Natural Resource Gas Limited ([howley@nrgas.on.ca](mailto:howley@nrgas.on.ca)); Nola Ruzycki ([nruzycki@justenergy.com](mailto:nruzycki@justenergy.com)); Norman Rubin ([Normrubin.energyprobe@gmail.com](mailto:Normrubin.energyprobe@gmail.com)); Paul Clipsham ([paul.clipsham@cme-mec.ca](mailto:paul.clipsham@cme-mec.ca)); Paul Seaman ([Paul.Seaman@gowlings.com](mailto:Paul.Seaman@gowlings.com)); Pete Serafini ([pete\\_serafini@transalta.com](mailto:pete_serafini@transalta.com)); Peter Thompson ([pthompson@blg.com](mailto:pthompson@blg.com)); Randy Aiken ([randy.aiken@sympatico.ca](mailto:randy.aiken@sympatico.ca)); Ric Forster ([ric.forster@directenergy.com](mailto:ric.forster@directenergy.com)); Roger Higgin ([spainc@rogers.com](mailto:spainc@rogers.com)); Thomas Brett ([tbrett@foglers.com](mailto:tbrett@foglers.com)); Vince DeRose ([vderose@blg.com](mailto:vderose@blg.com)); W. McNally ([wmcnally@opsba.org](mailto:wmcnally@opsba.org))

**Cc:** Lynch, Tracy; Innis, Vanessa; Nicholson, Tina; Dibaji, Ehsan; [michael.bell@ontarioenergyboard.ca](mailto:michael.bell@ontarioenergyboard.ca); [takis.plagiannakos@ontarioenergyboard.ca](mailto:takis.plagiannakos@ontarioenergyboard.ca); 'Fiona Oliver-Glasford'

**Subject:** Union Gas Next Generation DSM Plan Program Consultation Process - RESPONSE REQUESTED NOVEMBER 15, 2013

Good afternoon,

Union Gas is initiating its program consultation process for the next generation DSM Plan by inviting interested stakeholders to provide written responses to the attached letter. Your comments will serve as an input to Union's program assessment process, and inform the next stages of our program consultation for the DSM Plan beginning in 2015. The final 2012 Annual Report distributed earlier today provides a summary of Union's existing programs for your reference, and can be accessed through the OEB website at: [http://www.ontarioenergyboard.ca/documents/2012\\_UGL\\_DSM\\_Audit\\_Documents.pdf](http://www.ontarioenergyboard.ca/documents/2012_UGL_DSM_Audit_Documents.pdf).

I will be replacing Tracey Brooks as Union's Manager, DSM Strategy for the duration of her maternity leave. I look forward to your DSM program input – please send me your feedback in the templates provided by **November 15, 2013**.

As Union has demonstrated through our years of designing and delivering DSM programs, we are committed to providing the market with robust program offerings that best serve our customers. We value the perspectives of our stakeholders as we plan for the next generation of DSM programs, and will reimburse stakeholder organizations for the cost of their participation in this consultation.

We look forward to your participation in this process.

Cheers,  
Alison.

---

**Alison Moore**

Manager, DSM Strategy  
Union Gas Limited | A Spectra Energy Company  
777 Bay Street, Suite 2801 | Toronto, ON M5G 2C8  
Tel: 416 496 5289  
Cell: 416 994 4576  
Fax: 416 496 5331

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# Stakeholder Input on Union Gas DSM Programs

November 1, 2013

In anticipation of the next DSM Plan beginning in 2015, Union Gas is initiating its program consultation process by inviting interested stakeholders to provide written input to inform our program planning.

We invite you to comment on Union's existing DSM programs that are of interest to your organization, as well as to provide new program ideas for consideration.

Interested stakeholders are invited to provide written comments in the templates provided to Alison Moore ([amoores@uniongas.com](mailto:amoores@uniongas.com)) by **November 15, 2013**.

Your input will inform Union's assessment of our existing programs and new program opportunities, and will serve to inform the focus of our program consultation process for the next generation DSM Plan.

## Items for Stakeholder Comment

### 1. Existing DSM Programs

For our existing DSM programs listed below, Union is seeking your input on the following items. For DSM programs that are of interest to your organization, please confirm whether you feel the current approach under each heading is appropriate, or provide suggested adjustments.

- 1.1 Budget Level
- 1.2 Target Market
- 1.3 Program Offerings (Measures and Initiatives)
- 1.4 Market Incentive Structure
- 1.5 Market Delivery Channels / Approaches
- 1.6 Any Additional Comments

Union has provided a template to be used for each existing program you provide input on as Appendix A.

Market	Resource Acquisition	Market Transformation
<b>Residential</b> <i>(Rate M1, Rate 01)</i>	Residential Program <ul style="list-style-type: none"> <li><i>Energy Savings Kit offering</i></li> <li><i>Home Reno Rebate offering</i></li> </ul>	Optimum Home Program <ul style="list-style-type: none"> <li><i>Top 50 Builder offering</i></li> <li><i>Education Workshops</i></li> </ul>
<b>Commercial/ Industrial</b> <b>C/I Program:</b> <i>(Rate M1, Rate M2, Rate 01, Rate 10, Rate M4, Rate M5, Rate M7, Rate 20)</i> <b>Large Volume Program:</b> <i>(Rate T1, Rate T2, Rate 100)</i>	Commercial/Industrial Program <ul style="list-style-type: none"> <li><i>Prescriptive offering</i></li> <li><i>Custom offering</i></li> </ul> Large Volume Program <ul style="list-style-type: none"> <li><i>Engagement offering</i></li> <li><i>Process Improvement Studies</i></li> <li><i>Site Energy Assessments</i></li> <li><i>O&amp;M Performance Incentives</i></li> <li><i>Equipment &amp; Processes</i></li> </ul>	
<b>Low-Income</b> <i>(Rate M1, Rate M2, Rate 01, Rate 10)</i>	Low-Income Program <ul style="list-style-type: none"> <li><i>Helping Homes Conserve offering</i></li> <li><i>Affordable Housing Conservation offering</i></li> </ul>	

## 2. New DSM Program Ideas

For each new program idea you would like Union to consider, Union is seeking your input on each of the following items.

- 1.1 Program Description / Overview
- 1.2 Program Type (Resource Acquisition, Low-Income, Market Transformation)
- 1.3 Budget Level
- 1.4 Target Market
- 1.5 Program Offerings (Measures and Initiatives)
- 1.6 Market Barrier(s) / Hurdle(s) / Challenge(s) Program Would Address
- 1.7 Market Delivery Channels / Approaches
- 1.8 Similar Program(s) Offered by Other Program Administrator(s) Union Should Assess
- 1.9 Any Additional Comments

Union has provided a template to be used for each new program idea suggested as Appendix B.

## Consultation Costs

Union Gas will reimburse stakeholder organizations for the costs of their participation in this consultation.

## **Appendix A – Existing DSM Program Template**

---

**Program:** (Residential, Commercial/Industrial, Large Volume, Low-Income or Optimum Home)

### **1.1 Budget Level**

### **1.2 Target Market**

### **1.3 Program Offerings (Measures and Initiatives)**

### **1.4 Market Incentive Structure**

### **1.5 Market Delivery Channels / Approaches**

### **1.6 Any Additional Comments**

## **Appendix B – New DSM Program Ideas Template**

---

**Program:** Program Name

### **1.1 Program Description / Overview**

### **1.2 Program Type (Resource Acquisition, Low-Income, Market Transformation)**

### **1.3 Budget Level**

### **1.4 Target Market**

### **1.5 Program Offerings (Measures and Initiatives)**

### **1.6 Market Barrier(s) / Hurdle(s) / Challenge(s) Program Would Address**

### **1.7 Market Delivery Channels / Approaches**

### **1.8 Similar Program(s) Offered by Other Program Administrator(s) Union Should Assess**

### **1.9 Any Additional Comments**

December 11, 2013 – DSM Consultation



**From:** Nicholson, Tina  
**To:** [Brian Kelly \(brian\\_kelly@transcanada.com\)](mailto:brian_kelly@transcanada.com); [C. Brant \(cbrant@willmsshier.com\)](mailto:C.Brant@willmsshier.com); [C. Conway \(cconway@bomatoronto.org\)](mailto:C.Conway@cconway@bomatoronto.org); [C. Neme \(cneme@energyfuturesgroup.com\)](mailto:C.Neme@energyfuturesgroup.com); [Corey McBurney \(Corey@energyquality.ca\)](mailto:Corey.McBurney@Corey@energyquality.ca); [David Butters \(David.Butters@appro.org\)](mailto:David.Butters@appro.org); [David MacIntosh \(DavidMacIntosh@nextcity.com\)](mailto:David.MacIntosh@DavidMacIntosh@nextcity.com); [David Poch \(dpocheelaw.ca\)](mailto:David.Poch@dpocheelaw.ca); [Dr. Shahrazad Rahbar \(srahbar@igua.ca\)](mailto:Dr.Shahrazad.Rahbar@srahbar@igua.ca); [Dwayne Quinn \(drquinn@rogers.com\)](mailto:Dwayne.Quinn@drquinn@rogers.com); [General MailBox \(TCE\\_Regulatory@transcanada.com\)](mailto:General.MailBox@TCE.Regulatory@transcanada.com); [Hydro One \(regulatory@HydroOne.com\)](mailto:Hydro.One@regulatory@HydroOne.com); [Ian Jarvis \(ian.jarvis@enerlife.com\)](mailto:Ian.Jarvis@ian.jarvis@enerlife.com); [Ian Mondrow \(ian.mondrow@gowlings.com\)](mailto:Ian.Mondrow@ian.mondrow@gowlings.com); [J. Abouchar \(jabouchar@willmsshier.com\)](mailto:J.Abouchar@jabouchar@willmsshier.com); [J. Simon \(jsimon@elenchus.ca\)](mailto:J.Simon@jsimon@elenchus.ca); [Jack Gibbons \(jack@cleanairalliance.org\)](mailto:Jack.Gibbons@jack@cleanairalliance.org); [James Gruenbauer \(jim.gruenbauer@kitchener.ca\)](mailto:James.Gruenbauer@jim.gruenbauer@kitchener.ca); [Jay Shepherd \(jay.shepherd@canadianenergylawyers.com\)](mailto:Jay.Shepherd@jay.shepherd@canadianenergylawyers.com); [John Beauchamp \(john.beauchamp@nortonrose.com\)](mailto:John.Beauchamp@john.beauchamp@nortonrose.com); [John Wolnik \(jwolnik@elenchus.ca\)](mailto:John.Wolnik@jwolnik@elenchus.ca); [Josh Wasylyk \(josh.wasylyk@ontarioenergyboard.ca\)](mailto:Josh.Wasylyk@josh.wasylyk@ontarioenergyboard.ca); [Julie Girvan \(jgirvan@uniserve.com\)](mailto:Julie.Girvan@jgirvan@uniserve.com); [Kai Millyard \(kai@web.ca\)](mailto:Kai.Millyard@kai@web.ca); [Kent Elson \(kent.elson@klippensteins.ca\)](mailto:Kent.Elson@kent.elson@klippensteins.ca); [M. Gardiner \(mgardner@willmsshier.com\)](mailto:M.Gardiner@mgardner@willmsshier.com); [Marion Fraser \(Marion.Fraser@rogers.com\)](mailto:Marion.Fraser@marion.fraser@rogers.com); [Michael Bell \(michael.bell@ontarioenergyboard.ca\)](mailto:Michael.Bell@michael.bell@ontarioenergyboard.ca); [Michael Buonaguro \(mrb@mrb-law.com\)](mailto:Michael.Buonaguro@mrb@mrb-law.com); [Miriam Heinz \(Miriam.Heinz@powerauthority.on.ca\)](mailto:Miriam.Heinz@miriam.heinz@powerauthority.on.ca); [Murray Klippenstein \(murray.klippenstein@klippensteins.ca\)](mailto:Murray.Klippenstein@murray.klippenstein@klippensteins.ca); [Nancy Coulas \(nancy.coulas@cme-mec.ca\)](mailto:Nancy.Coulas@nancy.coulas@cme-mec.ca); [Natural Resource Gas Limited \(howley@nrgas.on.ca\)](mailto:Natural.Resource.Gas.Limited@howley@nrgas.on.ca); [Nola Ruzycki \(nruzycki@justenergy.com\)](mailto:Nola.Ruzycki@nruzycki@justenergy.com); [Norman Rubin \(Normrubin.energyprobe@gmail.com\)](mailto:Norman.Rubin@normrubin.energyprobe@gmail.com); [Paul Clipsham \(paul.clipsham@cme-mec.ca\)](mailto:Paul.Clipsham@paul.clipsham@cme-mec.ca); [Paul Seaman \(Paul.Seaman@gowlings.com\)](mailto:Paul.Seaman@Paul.Seaman@gowlings.com); [Peter Thompson \(pthompson@blg.com\)](mailto:Peter.Thompson@pthompson@blg.com); [Randy Aiken \(randy.aiken@sympatico.ca\)](mailto:Randy.Aiken@randy.aiken@sympatico.ca); [Ric Forster \(ric.forster@directenergy.com\)](mailto:Ric.Forster@ric.forster@directenergy.com); [Roger Higgin \(spainc@rogers.com\)](mailto:Roger.Higgin@spainc@rogers.com); [Takis Plagiannakos \(takis.plagiannakos@ontarioenergyboard.ca\)](mailto:Takis.Plagiannakos@takis.plagiannakos@ontarioenergyboard.ca); [Thomas Brett \(tbrett@foglers.com\)](mailto:Thomas.Brett@tbrett@foglers.com); [Vince DeRose \(vderose@blg.com\)](mailto:Vince.DeRose@vderose@blg.com); [W. McNally \(wmcnally@opsba.org\)](mailto:W.McNally@wmcnally@opsba.org); ["Fiona Oliver-Glasford"](#); ["Ravi Sigurdson"](#); [Innis, Vanessa](#)  
**Cc:** [Lynch, Tracy](#); [Moore, Alison](#)  
**Subject:** FW: Union Gas DSM Consultative Meeting  
**Date:** December 9, 2013 9:03:00 PM  
**Attachments:** [Agenda - Union Gas DSM Consultative.docx](#)  
[Union Gas DSM Consultative December 11 2013.pdf](#)

Hello Everyone,

We are pleased to provide you with the materials that will be presented/discussed at Union's upcoming DSM Consultative.

Kind regards,

Tina

---

**From:** Nicholson, Tina  
**Sent:** December 6, 2013 6:14 PM  
**To:** 'C. Brant'; 'C. Conway'; 'C. Neme'; 'Corey McBurney'; 'David Butters'; 'David MacIntosh'; 'David Poch'; 'Dr. Shahrazad Rahbar'; 'Dwayne Quinn'; 'Eric Nadeau'; 'General MailBox'; 'Hydro One'; 'Ian Jarvis'; 'Ian Mondrow'; 'J. Abouchar'; 'J. Simon'; 'Jack Gibbons'; 'James Gruenbauer'; 'Jay Shepherd'; 'John Beauchamp'; 'John Wolnik'; 'Josh Wasylyk'; 'Julie Girvan'; 'Kai Millyard'; 'Kent Elson'; 'M. Gardiner'; 'Marion Fraser'; 'Michael Buonaguro'; 'Miriam Heinz'; 'Murray Klippenstein'; 'Nancy Coulas'; 'Natural Resource Gas Limited'; 'Nola Ruzycki'; 'Norman Rubin'; 'Paul Clipsham'; 'Paul Seaman'; 'Peter Thompson'; 'Randy Aiken'; 'Ric Forster'; 'Roger Higgin'; 'Thomas Brett'; 'Vince DeRose'; 'W. McNally'; 'Fiona Oliver-Glasford'; 'Ravi Sigurdson'; 'Michael Bell'; 'takis.plagiannakos@ontarioenergyboard.ca'; [Innis, Vanessa](#)  
**Cc:** Lynch, Tracy; Moore, Alison  
**Subject:** Union Gas DSM Consultative Meeting

Hello Everyone,

Further to our previous email (Save the Date), we are pleased to provide additional details regarding our upcoming DSM Consultative Meeting.

**Date/Time & Venue Details**

Date/Time: Wednesday, December 11<sup>th</sup> – 10:00 am – 3:00 pm  
Venue: InterContinental Hotel Toronto Yorkville - Barclay Room  
220 Bloor Street West Toronto, Ontario  
<http://www.toronto.intercontinental.com/>

### **Agenda**

- 2012 DSM Audit Review
- 2013 Technical Evaluation Committee Update
- Program Concept Pulse Check

We anticipate the Program Concept Discussion to be an interactive session to seek your initial feedback and considerations as we look forward to the next generation of DSM programs for all sectors of Union's DSM portfolio. We will review the list of initial concepts for discussion that have been identified as areas of focus, both within Union as well as those submitted by members of our Consultative in response to our Program Consultation request November 1<sup>st</sup>.

Union is committed to providing the market with robust program offerings that best serve our customers. Your active participation is an integral part of the process and we value the perspectives of our stakeholders.

Please RSVP to Joe McCartney at [jmccartney@uniongas.com](mailto:jmccartney@uniongas.com) by 12 noon Tuesday, December 10<sup>th</sup>.

We look forward to your attendance!

Best regards,

Tina

[Tina Nicholson](#)

Manager, DSM Research & Evaluation  
Union Gas Limited | A Spectra Energy Company  
2901 - 777 Bay Street | Toronto, ON M5G 2C8  
Tel: 416-496-5342  
Cell: 416-894-4463

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## December 11, 2013 - Consultation

### Attendees

	Organization	Representative	In Person/Dial-in
1	APPrO	John Wolnik	In Person
2	BOMA	Marion Fraser	In Person
3	Consumers Council of Canada	Julie Girvan	In Person
4	CME	Vincent DeRose	Dial-in
5	Enbridge Gas Distribution (EGD)	Ravi Sigurdson	In Person
6	Enbridge Gas Distribution (EGD)	Suzette Mills	In Person
7	Enbridge Gas Distribution (EGD)	Deborah Bullock	In Person
8	Energy Probe	Norman Rubin	In Person
9	EnerQuality	Zygmunt Strawczynski	In Person
10	Environmental Defence	Jack Gibbons	In Person
11	FRPO/OGVG	Dwayne Quinn	Dial-in
12	GEC	Kai Millyard	In Person
13	Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI)	Martin Luymes	In Person
	London Property Management Association	Randy Aiken	Dial-in
14	Ontario Energy Board (OEB)	Michael Bell	In Person
15	School Energy Coalition	Jay Shepherd	In Person
16	Toronto and Region Conservation Authority (TRCA)	Ian Jarvis	In Person



**Union Gas DSM Consultative**  
**Wednesday, December 11<sup>th</sup>, 2013**  
**10:00 a.m. – 2:30 p.m.**  
**InterContinental Hotel Toronto Yorkville - Barclay Room**  
**220 Bloor Street West Toronto, Ontario**

**Agenda:**

10:00 a.m.	Welcome / Opening Remarks	Jeff Okrucky
	Agenda	
	Introductions & Meeting Logistics	
10:20 a.m.	2012 Audit Results	Eric Buan
	2013 Technical Evaluation Committee Update	Haris Ginis
11:00 a.m.	Program Concepts Discussion	Alison Moore
12:00 p.m.	Lunch	
12:45 p.m.	Program Concepts Discussion	Alison Moore
2:30 p.m.	Closing Remarks & Adjourn	Jeff Okrucky



# 2013 Union Gas DSM Consultative

December 11, 2013

# Agenda



Filed: 2015-04-01  
EB-2015-0029  
Exhibit A  
A Spectra Energy Company

Appendix B

Page 15 of 240

- 2012 DSM Results
- 2013 Technical Evaluation Committee Update
- Program Concept Pulse Check



# 2012 DSM Results

Tina Nicholson

Manager, DSM Research & Evaluation



- Audit Committee representatives were:
  - Julie Girvan – Consumers Council of Canada
  - Kai Millyard – Green Energy Coalition
  - Jay Shepherd – School Energy Coalition
- Auditor – EnerNOC Inc.
- Final Audited Annual Report, Auditor's Report, Audit Committee Summary of Results and Responses document were filed on October 30, 2013



# 2012 Scorecards



Filed: 2015-04-01  
EB-2015-0029  
Exhibit A  
A Spectra Energy Company

Appendix B

Page 18 of 240

- Resource Acquisition
- Low Income
- Large Industrial T1/R100
- Market Transformation

# 2012 Audited Resource Acquisition Scorecard



Filed: 2015-04-01  
 EB-2015-0029  
 Exhibit A  
 A Spectra Energy Company

Tab 3

Appendix B

Page 19 of 240

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings (m <sup>3</sup> )	619,500,000	826,000,000	1,032,500,000	90%	887,302,617	115%	103%
Deep Savings – Residential	120	160	200	5%	73	-9%	-0.4%
Deep Savings - C/I	4%	5%	6%	5%	9.36%	318%	16%
				<b>Total Scorecard Target Achieved</b>			<b>119%</b>
				<b>Scorecard Incentive Achieved</b>			<b>\$3,496,862</b>

# 2012 Audited Low Income Scorecard



Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings from Single Family (m <sup>3</sup> )	20,600,000	30,000,000	37,500,000	65%	44,042,693	194%	126%
Cumulative Natural Gas Savings from Multi-Family (m <sup>3</sup> )	9,750,000	13,000,000	16,250,000	35%	11,871,819	83%	29%
				<b>Total Scorecard Target Achieved</b>			<b>150%*</b>
				<b>Scorecard Incentive Achieved</b>			<b>\$2,725,227</b>

\*Actual scorecard achievement result is 155%. Maximum achievement is capped at 150%.

# 2012 Audited Large Industrial Rate T1/R100 Scorecard



Metrics	Metric Target Levels			Weight	Achieved	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings (m <sup>3</sup> )	750,000,000	1,000,000,000	1,250,000,000	100%	1,392,931,990	179%	179%
<b>Total Scorecard Target Achieved</b>							<b>150%*</b>
<b>Scorecard Incentive Achieved</b>							<b>\$1,806,595</b>

\*Actual scorecard achievement result is 179%. Maximum achievement is capped at 150%.

# 2012 Audited Market Transformation Scorecard



Filed: 2015-04-01  
 EB-2015-0029  
 Exhibit A  
 A Spectra Energy Company  
 Tab 3  
 Appendix B  
 Page 22 of 240

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Residential New Build - Top 10 Builders Participating	1	2	4	50%	3	125%	63%
Residential New Build - Top 50 Builders Participating	5	8	15	50%	8	100%	50%
				<b>Total Scorecard Target Achieved</b>			<b>113%</b>
				<b>Scorecard Incentive Achieved</b>			<b>\$181,734</b>

# 2012 Pre & Post Audit DSM Incentive



SCORECARD	PRE AUDIT DSM Incentive (% of scorecard)	POST AUDIT DSM Incentive Achieved (% of scorecard)	VARIANCE
Resource Acquisition	\$3,868,403 (124%)	\$3,496,862 (119%)	-\$371,541 (-10%)
Low Income*	\$2,725,227 (150%)	\$2,725,227 (150%)	\$0
Large Industrial Rate T1/R100*	\$1,806,595 (150%)	\$1,806,595 (150%)	\$0
Market Transformation	\$198,255 (117%)	\$181,734 (113%)	-\$16,521 (-8%)
<b>Total DSM Incentive</b>	<b>\$8,598,480</b>	<b>\$8,210,417</b>	<b>-\$388,063</b>

\*Low Income and Large Industrial scorecards are above the cap both pre and post audit.



- Resource Acquisition Scorecard



- Residential – treatment of “Don’t Know” responses in ESK survey

- LRAM Decrease of \$2,206
    - Decrease of 675,703 lifetime m3
    - Decrease of \$9,873



- Commercial Industrial Realization Rate Adjustments

- LRAM Decrease of \$66,527
    - Decrease of 12,465,664 lifetime m3
    - Decrease of \$361,668



- Market Transformation Scorecard



- Moving one builder from Top 10 Builder metric to Top 50 Builder metric
- Decrease of \$16,521



# 2012 Budget Spend



Filed: 2015-04-01  
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Exhibit A  
A Spectra Energy Company

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Program	Total
Residential	\$3,053,693
Commercial/Industrial	\$11,314,294
Low-Income	\$7,702,047
Large Industrial Rate T1 and Rate 100	\$5,043,295
Market Transformation	\$434,823
<b>Program Subtotal</b>	<b>\$27,548,152</b>
<b>Portfolio Costs</b>	
DWHR Sunset	\$477,142
Research	\$770,057
Evaluation	\$489,102
Administration	\$2,037,763
<b>Portfolio Subtotal</b>	<b>\$3,774,064</b>
<b>Total 2012 Spend</b>	<b>\$31,322,216</b>

# 2012 Program & Evaluation Recommendations



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Program	Recommendation
Residential	<ul style="list-style-type: none"><li>•Label future ESK reports to reflect work conducted</li><li>•Address cumulative gas savings for Home Retrofit</li></ul>
Low Income	<ul style="list-style-type: none"><li>•Consider future study to determine appropriate EUL for energy efficient windows</li></ul>
Commercial Prescriptive	<ul style="list-style-type: none"><li>•Revisit incremental cost and value of incentives for non-condensing boilers</li></ul>
Custom - Commercial Industrial & Large Industrial	<ul style="list-style-type: none"><li>•Revisit EULs for control settings</li><li>•Limit use of energy savings calculations provided by vendors</li><li>•Custom project savings verification process</li></ul>

# Future Guideline Recommendations



Program	Recommendation
Custom - Commercial Industrial & Large Industrial	<ul style="list-style-type: none"><li>•Develop guidelines on how to differentiate between baselines, free riders and EULs</li><li>•Include an express protocol in the next DSM framework with respect to timing of project recognition</li></ul>



- AC representatives are:
  - Vince DeRose – Canadian Manufacturers & Exporters
  - Julie Girvan – Consumers Council of Canada
  - Kai Millyard – Green Energy Coalition



# 2013 Technical Evaluation Committee

Tina Nicholson

Manager, DSM Research & Evaluation



- **Independent Members**

- Ted Kesik
- Bob Wirtshafter

- **Elected Members**

- Julie Girvan (Consumers Council of Canada)
- Chris Neme (Green Energy Coalition)
- Jay Shepherd (School Energy Coalition)

- **Utility Members**

- Leslie Kulperger (Union Gas)
- Ravi Sigurdson (Enbridge)



- Jurisdictional Review of Custom Free Ridership and Participant Spillover
- Commercial/Industrial Custom Net to Gross Research Study
- Technical Reference Manual (TRM)
- Custom Project Savings Verification Terms of Reference

# Free Ridership/Spillover Jurisdictional Review



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- Comprehensive review of assessment of Net to Gross (NTG) values in other jurisdictions across North America comparable to Union & Enbridge's commercial and industrial custom energy conservation programs
- Determine if there was sufficient information available from other jurisdictions to estimate Ontario NTG values without a full study
- TEC suggested a full research study to allow for a comprehensive reassessment of current values



# Commercial/Industrial Custom - Net to Gross Research Study



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- TEC finalized a Request for Proposal (RFP)
- Proposals due December 23, 2013
- Selection process January 2014



- Develop a TRM that will be common to both Union and Enbridge
- Documenting the most current research underpinning efficiency measure savings assumptions (and/or formulae) necessary for cost-effectiveness screening and program metrics.
- Estimated time of completion Spring 2014

# Custom Project Savings Verification (CPSV) Terms of Reference (ToR)



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- 2012 marked 1<sup>st</sup> year of standardized CPSV ToR for both utilities
- TEC sought feedback from 2012 CPSV process
- Subsequently, TEC updated CPSV ToR for 2013 verification process



- **Independent Members**

- Ted Kesik
- Bob Wirtshafter

- **Elected Members**

- Julie Girvan (Consumers Council of Canada)
- Chris Neme (Green Energy Coalition)
- Jay Shepherd (School Energy Coalition)

- **Utility Members**

- Tina Nicholson (Union Gas)
- Ravi Sigurdson (Enbridge)



# Program Concepts

Alison Moore  
Manager, DSM Strategy



- *All Markets*
  - Financing
  - Behavioural Peer Benchmarking
  
- *Commercial & Industrial*
  - Retrocommissioning
  - Direct Install for Small Businesses
  - Commercial New Construction
  - Strategic Energy Management
  - Simplified Custom
  
- *Residential*
  - Home Labeling
  
- *Low-Income*
  - Holistic Multifamily
  
- *Other*
  - Fuel Switching

## Concept Summary

Assist customers with the upfront costs of DSM retrofits through facilitating access to competitive financing options.

- Allow customers to pay back the loans through their Union Gas bill; or
- Facilitate access to financing - e.g. support municipalities in establishing LIC financing for efficiency retrofits which dovetail with Union's programs. Could utilize program criteria as qualification criteria for LIC loans (paid on customer property tax bill, remain with the property in the event of sale.)

## Concept Details

- Customers apply for a loan for a specified list of qualified measures and expected savings, in tandem with rebates.
- Union Gas or partner qualifies these customers for the loan.
- Customer pays loan back through utility bill or third party financing arrangement (e.g. property tax bill) with realized savings.
- Maximum loan terms and caps.
- Delivery channels through account executives or vendors.

### Target Customer Segment

- Residential
- Commercial / Industrial
- Low-Income Multi-Family

### Customer Value Proposition

- Address upfront cost barrier for deep energy saving measures
- Low interest rate
- Cost neutrality - payments offset with realized savings

### Measures Included

- Low-interest loans for deeper energy efficiency measures with higher payback periods

## Key Success Factors

- Competitively lower interest rates to influence behavior
- Adequate screening criteria to minimize loan defaults

## Considerations

- Risk of loan default, customers most likely to take up may be highest risk
- Ability to mitigate impact on collections, arrears and bad debt, with consideration to current restrictions on collection actions during winter moratoriums.
- In the case of LIC, large number of Municipalities to coordinate with in establishing LIC funding.

# Behavioral Peer Benchmarking



## Concept Summary

Help build awareness of energy saving potential by providing comparative information on the customer's usage relative to relevant peers. Provide suggested actions that each customer can take to reduce gas use and align with complimentary rebate-based initiatives.

## Concept Details

- Deliver energy usage reports to participating customers.
- Usage reports include overall usage, disaggregation (if possible), historical comparisons and comparisons or ratings compared to relevant peers.
- Potential to include competitions, rewards or discounts for customers who achieve significant savings relative to their peers.
- Customers are offered support in understanding and achieving energy and cost savings potential in their building, initiative can be linked to custom and prescriptive offers.

### Target Customer Segment

- Residential
- Commercial
- Low-Income – single family / multi-family

### Customer Value Proposition

- Education and awareness of usage
- Social aspect to comparing usage
- Potential rewards or discounts
- Low cost behavioural savings

### Measures Included

- Behavioural savings
- Online energy assessment
- Promotion of other initiatives

## Key Success Factors

- Driving high rate of customer interest and enrollment
- Pull through for other initiatives
- Customer data

## Considerations

- Potentially low TRC / cost effectiveness
- Only monthly usage data available, ability to profile customers
- If offered online:
  - Access to email addresses for customers
  - Access to internet for some single-family low-income segments (e.g. seniors) could reduce participation



# Retrocommissioning



## Concept Summary

Provide an analysis of what can be done to increase the energy efficiency of existing equipment and systems through low-cost adjustments and operational efficiencies, followed by implementation of measures with relatively short payback periods. In effect, this initiative helps building owners and managers identify opportunities for savings via an assessment and ‘tune-up’ of existing buildings.

## Concept Details

- Customer signs an agreement that they will perform all energy saving measures with less than one year payback prior to investigation.
- Site assessment performed to identify all operating and equipment opportunities and payback.
- Low-cost/ no-cost measures are implemented on-site during inspection, operational savings are identified and implemented with building operations staff.
- Measures with less than 1 year payback are implemented within 1 year.
- Additional deeper energy savings measures are identified through the assessment process and potentially packaged with financing or rebates.

### Target Customer Segment

- Commercial

### Customer Value Proposition

- Engagement and education on ways to save energy
- Determine cost-effective measures and operational saving opportunities
- Low/ no cost investigation

### Measures Included

- Weatherization
- Heating systems
- Water heating efficiency and tune-ups
- Programmable thermostats

## Key Success Factors

- Incorporate safeguards to ensure that only serious and viable projects are enrolled.
- Continuous improvement/ process initiatives to fill in gaps and remove barriers to achieving targeted energy savings opportunities.
- Need adequate number of providers to conduct customer site screening and RCx investigations.

## Considerations

- Risk that companies will not implement recommended measures
- High cost of acquisition for smaller organizations
- Ensuring quality inspections and positive customer experience
- Potential concept integration with behavioural peer benchmarking, prescriptive and custom rebates

# Direct Install for Small Businesses



## Concept Summary

Assess smaller commercial buildings and then install cost-effective measures at a modest cost to the customer. Union would pay a portion of the installed cost for qualifying efficiency measures. Customers would pay the remainder, and could also be given/directed to a financing option for their share of the installed cost.

## Concept Details

- The program focuses on direct install measures that can create substantial savings and be installed quickly, including weatherization measures, water heating efficiency improvements, programmable thermostats
- Perform an inspection, recommend measures to be installed, educate the customer on proper usage, and schedule installation
- The initiative could be paired with facilitating financing to provide a turnkey solution for the customer

### Target Customer Segment

- Small/Medium sized businesses (non-account managed accounts)
- Customers who lack awareness, skills/ time to implement efficiency initiatives themselves

### Customer Value Proposition

- One stop shop for efficiency
- Utility acts as energy advisor
- Little time and upfront resources required for customer

### Measures Included

- Weatherization
- Water heating efficiency and tune-ups
- Programmable thermostats

## Key Success Factors

- Clear and easy to understand value statement for target customers
- Ensure process is simple

## Considerations

- Higher cost of acquisition for small to medium businesses
- Potential concept integration with behavioural peer benchmarking, retrocommissioning and financing



## Concept Summary

Design assistance and incentives for energy-saving measures that exceed building code requirements by X% for new commercial buildings.

## Concept Details

- Technical assistance provided to customers and design teams to identify, model and analyze efficient designs and measures.
- Technical assistance is provided on a cost shared basis. Incentives offset a portion of the incremental cost between new equipment and systems as compared to equipment and systems that meet baseline requirements.
- Provide recognition opportunities for customers who design and construct higher efficient buildings

### Target Customer Segment

- Commercial
- Industrial

### Customer Value Proposition

- Differentiated building with lower utility bills for tenants
- Increased property value and potential for sale

### Measures Included

- Technical assistance and training
- Building envelope
- Heating systems
- Building energy management controls
- Ventilation

## Key Success Factors

- Aggressive outreach and discussions supported by case studies
- Savings targets aggressively beyond existing building codes
- Early involvement for projects to maximize opportunities for savings

## Considerations

- Potential linkage with fuel switching applications away from natural gas to maximize resource savings
- Provides foundational support to expand to higher LEED and Green Globe certification



## Concept Summary

A continuous improvement approach to reduce energy intensity and/or increase energy efficiency over time, characterized by a demonstrated customer commitment, assessment and planning activities, and systematic measurement.

## Concept Details

- Holistic approach to energy management, working to foster business practice changes, improving operational capacity and developing organization skill and culture.
- Following the Plan-Do-Check-Act philosophy, build capacity for sustained and measurable energy savings.
- Multi-year initiative, requiring continuous customer education and interaction.
- Full participation can aid customers in introducing an energy-efficiency framework from which ISO 50001 certification can occur.

### Target Customer Segment

- Industrial – Small to mid size

### Customer Value Proposition

- Identify and map input energy as a value stream
- Incorporate energy into everyday decisions
- Allow for measurement of efficiencies

### Measures Included

- Education
- New equipment & processes
- Operations & Maintenance
- Behaviour
- Advanced Energy Management Systems

## Key Success Factors

- Introducing energy management and techniques to customers with little to no awareness.
- Expanding focus from just technical or project centric, to equipping and enabling industrial customers – management & staff, to impact energy consumption.

## Considerations

- Can have higher transactional costs than conventional resource acquisition based programs.
- Need to drive demand for these systems due to low awareness.
- Requires development of new partnerships and analysis of software included in program.
- Must be targeted to the right customers.



## Concept Summary

Streamline the application and completion of certain custom projects to expand the number of customers served and provide a more holistic approach. Investigate a construct to streamline the custom project process for certain project types – could be based on project size (e.g. projects less than X m3 per year = simplified custom approach).

## Concept Details

- Assess appropriate process for application, measurement & verification for smaller projects to streamline process for customers (i.e. ensure alignment of customer time/data requirements with project size) and backend process – currently one-size fits all approach.
- Scale the program to include new types of technologies that may be specific to certain sectors.
- Would allow Union Gas to reach more customers, while keeping costs manageable.

### Target Customer Segment

- Commercial
- Industrial
- Low-income Multi-Family

### Customer Value Proposition

- Simplified process for custom rebates

### Measures Included

- Custom projects or threshold deemed suitable for this approach

## Key Success Factors

- Ability to reduce complexity for customers.
- Ability to reduce the processing time and resources required for smaller custom projects.
- Ability to ensure requirements and level of assessment is aligned with project size and level of savings/customer value

## Considerations

- Ensuring accuracy of savings from simplified custom approach, balancing assessment requirements with level of resource savings.
- Education and awareness of process for target customers.

# Home Labeling



## Concept Summary

Support the uptake of home energy ratings at time of resale by working with the real estate market. In turn this educates consumers about home energy performance, and is intended to increase the market value of energy efficiency in real estate and stimulate the demand for energy upgrades. The Enbridge program model aims to include the efficiency ratings within promotional materials for homes and buildings for sale in order to increase transparency of the building's efficiency and empower buyers.

## Concept Details

Enbridge program targets real estate agents to include a home's EnerGuide rating on MLS / in the sales materials.

- Brokers receive customized incentive packages to help offset Realtor education and marketing costs
- Realtors receive a \$100 Lowe's gift card and Energy Savings Kits to pass onto their clients when they display their home's energy ratings on MLS listings and other marketing materials

### Target Customer Segment

- Residential

### Customer Value Proposition

- Increased transparency of building efficiency for buyers
- Potential differentiator for building sellers and real estate agents

### Measures Included

- Insulation
- Air sealing
- Window replacement
- Heating and water heating systems

## Key Success Factors

- Effective partnerships with real estate brokers.
- Widespread knowledge, approval and support of rating system.
- Compelling decision criteria for home buyers.

## Considerations

- Little incentive for real estate agents and building owners to include poor ratings on sales materials
- Objective:- Encourage home sellers to have the home inspected, rated, labelled and include in listing information, and/or  
- For energy rating to become a standard condition of sale requested by the buyer (similar to home inspection)
- Potential compliment to Home Reno Rebate program
- Rating systems mandated/scaled by government entities

# Holistic Low-Income Multi-Family Retrofit



## Concept Summary

Provide comprehensive retrofit services for multifamily buildings to ensure buildings are treated as a system as opposed to individual one-off measures. Services include initial energy assessments, education on energy savings opportunities, direct installation of low-cost measures and the opportunity to install major measures to achieve optimal savings for the building as a holistic system.

## Concept Details

- Conduct a complete energy assessment, including an examination of utility bills and a building audit, to compile recommendations.
- Financial guidance and help with obtaining grants, rebates, and loans.
- Construction support and oversight, including plan development, monitoring and inspections.
- Monitoring, training, education, and continuing engagement to ensure long term building management, maintenance, and savings.

### Target Customer Segment

- Low-Income Multifamily building owners- municipal housing corporations and independent (non-profits & co-ops)

### Customer Value Proposition

- Deeper retrofits
- Lower the share of wallet energy represents for low-income segment

### Measures Included

- Energy assessments
- Low-cost measures (direct install) - low flow shower heads, programmable thermostats
- Building envelope, insulation
- Heating and water heating systems

## Key Success Factors

- One-stop-shop resource hub for technical assistance, rebates, and construction oversight.
- Less complex technical assessment reports, with more emphasis on cost savings.
- Relationship building with building owners as well as trusted information sources for program outreach.
- Individual attention to ensure high conversation rate from assessment stage to implementing upgrades.

## Considerations

- Higher cost for deeper retrofits
- 0.7 TRC ratio



## Concept Summary

Offer Residential homes, Low Income, Commercial and Industrial facilities incentives for switching to natural gas appliances, equipment and processes (where measurable reduction in total energy usage can be accomplished at the site/from the source).

## Concept Details

- Offer rebates to customers for energy saving fuel switching (e.g. from electricity to gas where it leads to reductions in total energy usage).
- Offer study incentives for commercial & industrial customers to investigate potential energy and cost savings.
- Promote the adoption of new technologies, typically having higher first costs, but lower lifetime operating costs.
- Energy savings can be considered from both the site (incrementally efficient equipment against standards) and from the source (i.e. gas savings from reduced MW output from peaking natural gas fired power plants – or avoiding building new generation)

### Target Customer Segment

- All markets

### Customer Value Proposition

- Total utility bill savings per month

### Measures Included

- Heating & cooling systems
- Water heating systems
- Stoves/Cookers
- Pumps, fans and motors

## Key Success Factors

- Would require regulatory approval of fuel switching as DSM
- Potential collaboration with other utilities, linkage between DSM and CDM
- Expanding energy-efficiency from site benefits to source benefits

## Considerations

- Source based measurement - electricity savings associated back to peaking plants.
- Large cost and invasiveness of retrofitting a home's/building's heating/ventilation system.
- Market need - receive letters, emails from residential customers on a regular basis whose electric heating bills are very high seeking assistance to convert to natural gas.





## September 11, 2014 – Low Income Consultation

### Low Income Stakeholder Invite List

	Organization	Representative
1	A Place Called Home	Jennifer Lopinski
2	Advocacy Centre for Tenants Ontario (ACTO)	Mary Todorow
3	Building Owners & Management Association (BOMA)	Marion Fraser
4	Canadian Environmental Law Association (CELA)	Theresa McClenaghan
5	Canadian Mortgage & Housing Corporation (CMHC)	Arlene Etchen
6	Canadian Mortgage & Housing Corporation (CMHC)	Lorella Sahakia
7	City of Toronto Tower Renewal Office	Aderonke Akande
8	City of Toronto Tower Renewal Office	Elise Hug
9	City of Toronto Tower Renewal Office	Eleanor McAteer
10	City of Toronto, Social Housing Unit	Arlene Rawson
11	City of Toronto, Social Housing Unit	Jim Kroesen
12	Cooperative Housing Federation of Canada (CHFC)	Keith Moyer
13	Enbridge	Brandon Ott
14	Enbridge	Deborah Bullock
15	Enbridge	Erika Lontoc
16	Enbridge	Jennifer Cittadini
17	Enbridge	Matthew Marozzo
18	Enbridge	Rodney Idenouye
19	Enbridge	Suzette Mills
20	Enbridge	Michael Lister
21	Enbridge	Ravi Sigurdson
22	Enerlife Consulting Inc	Ian Jarvis
23	FRPO	Dwayne Quynn
24	Greater Toronto Apt Assn	Daryl Chong
25	Green Energy Coalition (GEC)	Chris Neme
26	Housing Services Corporation (HSC)	Lisa Oliveira
27	Housing Services Corporation (HSC)	Kerrie Michelutti
28	Housing Services Corporation (HSC)	Sarah Baker
29	LIEN	Kathleen Cooper
30	LIEN	Zeenat Bhanji
31	London Service Manager Office	Stephen Giustizia
32	Low Income Energy Network (LIEN)	Judy Simon
33	Ministry of Energy	Yvonne DiTullio
34	MMAH	Ian Russell
35	MMAH	Patrick Roulstone
36	OEB	Josh Wasyluk
37	OEB	Michael Bell
38	OEB	Takis Plagiannakos
39	Ontario Non-profit housing association (ONPHA)	Sharad Kerur
40	Ontario Non-Profit Housing Association (ONPHA)	Emma Lander
41	Ontario Power Authority (OPA)	Evelyn Lundhild
42	Ontario Power Authority (OPA)	Katie Fotheringham

43	Salvation Army Centre of Hope	Debra Johnston
44	Toronto Community Housing	Boyd Dyer
45	Toronto Hydro	Mike Mulqueen
46	United Way Chatham	Helen Heath
47	United Way Toronto	Steve Lavery
48	Vulnerable Energy Coalition (VECC)	Roger Higgin

**From:** Dawodu, Ayo

**Sent:** August-14-14 12:03 PM

**To:** [sgiustizia@london.ca](mailto:sgiustizia@london.ca); [Isahakia@cmhc-schl.gc.ca](mailto:Isahakia@cmhc-schl.gc.ca); [hcooper@chfcanda.coop](mailto:hcooper@chfcanda.coop); [loliveira@hscorp.ca](mailto:loliveira@hscorp.ca); [sbaker@hscorp.ca](mailto:sbaker@hscorp.ca); [sharad.kerur@onpha.org](mailto:sharad.kerur@onpha.org); [Yvonne.DiTullio@ontario.ca](mailto:Yvonne.DiTullio@ontario.ca); [Katie.Fotheringham@powerauthority.on.ca](mailto:Katie.Fotheringham@powerauthority.on.ca); [jennifer@apch.ca](mailto:jennifer@apch.ca); [djohnston@centreofhope.ca](mailto:djohnston@centreofhope.ca); [ugww@wack.ca](mailto:ugww@wack.ca); [slavery@uwgt.org](mailto:slavery@uwgt.org); [emcatee@toronto.ca](mailto:emcatee@toronto.ca); [aakande@toronto.ca](mailto:aakande@toronto.ca); [arawson@toronto.ca](mailto:arawson@toronto.ca); [jkroesen@toronto.ca](mailto:jkroesen@toronto.ca); [dchong@gtaaonline.com](mailto:dchong@gtaaonline.com); [aetchen@cmhc-schl.gc.ca](mailto:aetchen@cmhc-schl.gc.ca); [ian.russell@mah.gov.on.ca](mailto:ian.russell@mah.gov.on.ca); [boyd.dyer@torontohousing.ca](mailto:boyd.dyer@torontohousing.ca); [drquinn@rogers.com](mailto:drquinn@rogers.com); [cneme@energyfuturesgroup.com](mailto:cneme@energyfuturesgroup.com); [ian.jarvis@enerlife.com](mailto:ian.jarvis@enerlife.com); [spainc@rogers.com](mailto:spainc@rogers.com); [judysimon@jsimon.net](mailto:judysimon@jsimon.net); [theresa@cela.ca](mailto:theresa@cela.ca); [marion.fraser@rogers.com](mailto:marion.fraser@rogers.com); [tdorom@lao.on.ca](mailto:tdorom@lao.on.ca)

**Cc:** [deborah.bullock@enbridge.com](mailto:deborah.bullock@enbridge.com); [takis.plagiannakos@ontarioenergyboard.ca](mailto:takis.plagiannakos@ontarioenergyboard.ca); [michael.bell@ontarioenergyboard.ca](mailto:michael.bell@ontarioenergyboard.ca); [Josh.Wasylyk@ontarioenergyboard.ca](mailto:Josh.Wasylyk@ontarioenergyboard.ca)

**Subject:** Enbridge/Union Gas Low Income Stakeholder Consultative Meeting - Thursday, September 11th 2014

**Importance:** High

Good afternoon,

Union Gas Ltd. and Enbridge Gas Distribution will be holding a Low-Income Demand Side Management (DSM) Consultative meeting to engage and consult with stakeholders on our energy conservation programs delivered to Low-Income energy consumers.

This consultation will provide an opportunity to learn about and provide input on our Low Income DSM program planning and implementation, as well as future program direction.

On behalf of Union Gas and Enbridge, we invite you to participate in this Low Income consultation being held on:

**DATE:** Thursday, September 11<sup>th</sup> 2014

**TIME:** 10:30 am - 3:30 pm

**LOCATION:** Best Western Roehampton Hotel & Suites, 808 Mt Pleasant Road Toronto ([Map of Location](#)), Eglinton Room located on the 2nd floor

Kindly RSVP to this email by **September 1, 2014** to [ADawodu@uniongas.com](mailto:ADawodu@uniongas.com) or (416)-496-4456.

If you have any questions, please do not hesitate to contact me.

Thank you,

**Ayo Dawodu**

DSM Strategy

Union Gas Limited | A Spectra Energy Company

777 Bay Street, Suite 2901 | Toronto, ON M5G 2C8

**Tel: 416-491-3030 ext. 5184456**

**Cell: 647-879-2961**

Fax: 416-496-5331

Email: [ADawodu@uniongas.com](mailto:ADawodu@uniongas.com)

Filed: 2015-04-01

EB-2015-0029

Exhibit A

Tab 3

Appendix B

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## September 11, 2014 - Consultation

### Attendees

	Organization	Representative
1	A Place Called Home	Jennifer Lopinski
2	Building Owners & Management Association (BOMA)	Marion Fraser
3	City of Toronto Tower Renewal Office	Aderonke Akande
4	City of Toronto Tower Renewal Office	Elise Hug
5	City of Toronto Tower Renewal Office	Eleanor McAteer
6	City of Toronto, Social Housing Unit	Arlene Rawson
7	City of Toronto, Social Housing Unit	Jim Kroesen
8	Cooperative Housing Federation of Canada (CHFC)	Keith Moyer
9	Enbridge	Deborah Bullock
10	Enbridge	Erika Lontoc
11	Enbridge	Jennifer Cittadini
12	Enbridge	Matthew Marozzo
13	Enbridge	Rodney Idenouye
14	Enbridge	Suzette Mills
15	Enbridge	Michael Lister
16	Enbridge	Ravi Sigurdson
17	FRPO	Dwayne Quynn
18	Green Energy Coalition (GEC)	Chris Neme
19	Housing Services Corporation (HSC)	Kerrie Michelutti
20	LIEN	Kathleen Cooper
21	LIEN	Zeenat Bhanji
22	London Service Manager Office	Stephen Giustizia
23	Low Income Energy Network (LIEN)	Judy Simon
24	MMAH	Patrick Roulstone
25	Ontario Non-Profit Housing Association (ONPHA)	Emma Lander
26	Ontario Power Authority (OPA)	Evelyn Lundhild
27	Ontario Power Authority (OPA)	Katie Fotheringham
28	Toronto Hydro	Mike Mulqueen
29	Vulnerable Energy Coalition (VECC)	Roger Higgin

## **Union Gas and Enbridge Low-Income Consultation**

---

**Date:** September 11<sup>th</sup>, 2014

**Location:** Best Western Roehampton Hotel, 808 Mount Pleasant Road Toronto  
(One block west of Yonge & Eglinton)

Start / Time Allotment		Item	Discussion Lead
10:30	:15	DSM Landscape Opening Remarks	Enbridge
10:45	:30	CDM Collaboration Update	Union
11:15	:45	Union Gas Low-Income Program Update	Union
12:00	:15	Break	
12:15	:45	Enbridge Low-Income Program Update	Enbridge
1:00	:45	Lunch	All
1:45	:90	2015 & Beyond Program Opportunity Panel	Union / Enbridge
3:15	:15	End of Broader Consultative Meeting Break Prior to Union Gas Low-Income Working Group Meeting	
3:30	:30	2015 & Beyond Program Screening	Union
4:00	:90	Union Gas LIMFMR Working Group Meeting	Union
5:30		Adjourn	All



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# 2015 & Beyond Program Screening

## Current State, Limitations and Recommendations



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# Single Family Home Weatherization Program



## Current State

- Minimal municipal social housing remaining post 2016, Shifting focus to private market

Year	Social Housing Participant %	Private Market Participant %
2012	80	20
2014 - forecasted	35	65
2015+ - forecasted	20	80

- Success in private market requires increased
  - Marketing/ promotional spend on market intelligence, geographic expansion, new market channels and targeted messaging
  - Incentive spend due to geographical expansion (northern & rural communities) and expected increase in material cost
- Certain project types do not qualify and are turned away: attic only homes, small social row housing
- Exploring new additional measures for 2015+ framework

## Limitation

- 0.7 TRC threshold requirement means that we can't address all single family opportunity

# Multi Family Affordable Housing Conservation Program



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## Current State

- Union is not actively pursuing all custom projects due to TRC threshold and is actively monitoring overall LI TRC to determine what custom is possible
- Unable to actively pursue a holistic approach in all multifamily buildings

## Limitation

- 0.7 TRC threshold requirement means that we can't address all multi family custom opportunity



- Declining TRC ratio, Trend expected to continue

Year	TRC
2012	1.32
2013	0.78
2014 <i>forecast</i>	0.75
2015+ <i>projection</i>	0.50

### **Potential Remedy:**

- Lower TRC threshold for LI portfolio in order to:*
  - ✓ *Increase focus on SF Private market*
  - ✓ *Address SF low TRC projects – attic only, small footprint homes*
  - ✓ *Introduce additional SF measures*
  - ✓ *Actively pursue all custom projects, to be holistic in MF market*
- Other Alternatives:
  - Other metrics relevant to the LI program



Q&A

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# **Joint Union/Enbridge Low-Income DSM Consultative Meeting**

## **2015 & Beyond LI Program Opportunity Panel Discussion**

# Single Family Weatherization



## Overview

Provides Low Income customers residing in single family dwellings with a whole home retrofit offering, which currently includes; free home energy audit, insulation upgrades and draft-proofing measures . In addition, basic measures including showerheads, aerators and programmable thermostats are also provided to qualified customers.

### Target Customer

- Income at or below 135% LICO
- Social housing & Private homes
- Single detached & Part 9 buildings
- Pay their own bills (private market)

### Program Offering

- Free Home energy assessment
- Free Insulation & air-sealing upgrades
- Free Basic measures
- Health & Safety initiative

## Proposed Changes for 2015 & Beyond



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- Increased focus on private market 2015+
- Implement new market channels, partnerships models
- Expand geographical reach to rural communities
- Explore new measures based on market insights & cost-effectiveness



**ENBRIDGE**

- Introduction of new measures based on cost effectiveness, e.g. heat reflector panels, hot water heaters, furnace replacement , DWHR
- Market focus on energy education/awareness

## Feedback required

- What other measures could we offer to those LI customers that do not qualify for our current offering?
- What more can we be doing to promote energy efficiency awareness/energy education and literacy to support our programs?



# Multi-Residential Social & Assisted Housing



## Overview

Provides Social and Assisted housing providers with a building assessment and incentives upon completion of energy efficiency projects, including installation of a prescriptive measure or completion of a custom project.

### Target Customer

- Part 3 buildings as defined by OBC
- Social and Assisted Housing
- Non profits and Co-ops
- Shelters and Supportive Housing

### Program Offering

- Building assessment
- Incentives for prescriptive and custom projects
- Direct install for in-suite measures

## Proposed Changes for 2015 & Beyond



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- Increased focus on non profits/ co-ops housing providers
- Implement new markets approach strategy and marketing toolkit (messaging/ channels)



**ENBRIDGE**

- Tiered incentives to encourage multi-measure retrofits
- Focused marketing efforts towards shelters and supportive housing
- Marketing and education literature will consider building and neighborhood demographics

## Feedback required

- What other social housing networks could be engaged to increase uptake in the program – traditional and non-traditional?
- What is the best approach for tenant engagement to support education/awareness and ultimately a call to action?



# Multi-Residential Private Market



## Overview

- Promotes energy efficiency improvements and practices in privately owned multi-residential buildings for low income households. The program offering will include a building assessment; enhanced financial incentives towards project implementation; and technical and information services directed to building staff and residents.

## Rationale for Program Concept

- High incidence and concentration of low income consumers residing in privately owned apartment buildings, with concentration in urban areas.
- Low participation rate in commercial multi-residential program – low motivation to spend on these buildings; competing priorities.
- Low income tenants will realize indirect financial benefits, as well as non-energy benefits such as improved comfort, quality of life and health conditions, and increased energy awareness.
- Overarching government policy drivers: energy conservation, affordable housing and poverty.
- Energy education, tenant and building staff engagement are critical components to sustainable savings.

### Target Customer

- Building owners
- Property managers

### Program Offering / Market Approach

- Enhanced financial incentives
- Collaborative partnerships, eg. Landlord organizations, municipalities, social planning agencies and CBOs
- Resident and building staff engagement strategies
- Program delivered by Sales

### Proposed Timing

- Enbridge: January 2015
- Union: Pilot in 2015, subsequent launch post pilot

## Feedback Required

- Other data sources that could be utilized – example poverty reports or other Information?
- What is the best approach/model for resident and building operator engagement to support education/awareness in private multi-res buildings/communities ?

# Benchmarking Program



## Overview

Provides Social and Assisted housing providers with benchmarking services which includes free enrollment in benchmarking tool, active monitoring of energy usage, regular reporting on how their usage compares with similar buildings, and identifying areas of improvements.

## Rationale for Program Concept

- Increase Energy Management awareness
- Provide tools and resources to assist social housing building owners/ operators in active monitoring of energy usage and saving potential
- Drive change in behavior towards energy efficiency through comparative analysis of energy usage/ cost against similar buildings
- Assist in identifying potential opportunities to reduce consumption and building operational savings.

### Target Customer

- Social Housing Multifamily - Municipal & Non-profits/ Co-ops
- Both Gas & Electrically heated

### Program Offering

- Free enrollment in Benchmarking
- Active monitoring/ reporting
- Identifying areas of improvement

### Proposed Timing

- Union: Launch in 2015
- Enbridge: Launched in 2013; Enhanced offering in 2015+

## Feedback Required

- Are there other data sources that could be utilized to further confirm the number of social housing buildings?
- What barriers are social housing providers facing with regards to benchmarking and how can this program help?
- What other complementary tools could be leveraged to assist housing providers to adopt energy efficiency action and behaviours?

# Aboriginal Conservation Program



## Overview

Provides the Home Weatherization Program to low income single family customers in aboriginal communities within Union's franchise. Income & home qualified customers to receive free home energy audit, insulation upgrades and draft proofing measures. Basic measures will be offered to all applicants, if they have a natural gas water heater.

### Rationale for Program Concept

- Since launch of HWP in 2012, no participation from on-reserve customers
- Aboriginal customers (both on and off-reserve) respond better to community based marketing through band council and friendship centres
- Union can leverage existing strong relationships to educate and get buy-in for energy conservation measures

#### Target Customer

- SF in aboriginal communities
- HWP - Income at or below 135% LICO
- Basic measures – All SF customers
- Home has natural gas furnace

#### Program Offering & Approach

- Measures offered same as HWP
- Utilize First Nations delivery agent
- Collaborate with band council
- Community energy conservation session
- Door-to-door canvassing

#### Proposed Timing

- Pre-launch activities in 2015-16
- Launch program in 2017

### Key Considerations

- Little data exists on number of on-reserve customers that will qualify from income and home perspective
- Decision on how many/ which communities would depend on geographical proximity and band council election dates
- Number of on-reserve communities also limited by resources/ time required to leverage existing band council relationships, gain buy-in, train local canvassers, hold community events and collaborate with friendship centers
- Collaborate with OPA's aboriginal conservation program in gas heated communities within Union's franchise

*Note: Enbridge will not be offering this program*

# Affordable Housing New Construction

## Program Concept Overview

- Provides affordable housing builders and developers with incentives and services to encourage the construction, renovation and rehabilitation of high-performing, energy efficient affordable housing buildings. Municipalities and affordable housing networks will be engaged to promote the program offering.

## Rationale for Program Concept

- Prevents lost opportunities and promotes sustainable affordable housing
- Supports the low income strategy: To provide a comprehensive suite of energy efficiency program offerings to meet the energy needs of buildings and residents in the affordable housing continuum.
- Leverages long term sustainability and affordable housing municipal plans and targets.
- Reduces energy operating costs for affordable housing residents.

### Target Customer

- Developers & builders of new construction affordable housing projects – single/ multi-res buildings

### Program Offering

- Financial incentives to exceed building code requirements
- Provide technical support services
- Work with municipal planners, developers, builders & construction trade

### Proposed Timing

- Soft launch late Q2 2015
- Full launch in 2016

## Key Considerations

- The program leverages the 10-year municipal affordable housing plans. How can we fully engage municipalities to support the program?
- How do we identify and reach out to affordable housing builders and developers? Other stakeholders in this sector that will need to be engaged.

*Note: Union Gas currently offers the AHCP program to new affordable housing market.*



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# Q&A

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# Low-Income Consultative

Cara-Lynne Wade - Manager, LI Marketing

Priyanka Gupta - Program Manager, LI Marketing

September 11, 2014



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## 1. Single Family Offering

- Home Weatherization Program (HWP)

## 2. Multi-Family Offering

- Affordable Housing Conservation Program (AHCP)

## 3. Co-Delivery of HWP and CDM/HAP

- Partnership with Burlington and Halton Hills Hydro





# Single-Family Offering

## Home Weatherization Program (HWP)



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## Program Overview

All available at no charge to the customer:

- Home energy assessment by a Certified Energy Auditor
- Insulation for basement, walls and attic as well as air sealing measures based on the home's needs
- Water saving components - showerheads, kitchen and bathroom aerators, and foam pipe wrap
- Programmable thermostat installed by a certified gas fitter

**WE PAY. YOU SAVE.**

That's the Home Weatherization Program from Union Gas.

**MAKE YOUR HOME MORE ENERGY EFFICIENT, ON US.** We're working with the Ontario Energy Board to improve the energy efficiency of homes throughout the province. Find out if you're eligible for the program that provides – and pays for – upgrades that will save you up to 30 per cent in energy costs: the Home Weatherization Program from Union Gas.

**WON'T COST YOU A CENT**

**WE WILL INSTALL INSULATION IN YOUR BASEMENT, WALLS AND ATTIC**

**SAVE UP TO 30% ON YOUR GAS BILL EVERY YEAR**

**INCREASE COMFORT WINTER & SUMMER**

**GET AN ENERGY EFFICIENT SHOWERHEAD AND PROGRAMMABLE THERMOSTAT**

**MORE THAN 3,000 HOMES HAVE ALREADY BENEFITED**

**CALL OUR AUTHORIZED CONTRACTOR ENVIROCENTRE TOLL-FREE AT 1-877-580-2582, OPTION 1 TO QUALIFY AND APPLY FOR THE HOME WEATHERIZATION PROGRAM**

Union Gas pays all costs associated with this program as part of our conservation measure.

FOR MORE INFORMATION VISIT [uniongas.com/WEATHERIZATION](http://uniongas.com/weatherization)

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# Single Family – HWP Update



## Market/ Participation Overview

Year	Social Housing Participant %	Private Market Participant %
2012	80	20
2013	70	30
2014 - forecasted	35	65
2015 / 2016 - forecasted	25	75
2017+ - forecasted	15	85

Year	Social Housing LTm3 %	Private Market LTm3 %
2012	65	35
2013	50	50
2014 - forecasted	25	75
2015 / 2016 - forecasted	15	85
2017+ - forecasted	10	90



## 2014 Successes

- **Social Housing**

- Municipal: Leveraged strong relationships to identify remaining eligible homes and to plan their completion by 2016
- Non-Profit/Co-op: Building relationships within fragmented market to identify eligible homes – limited opportunity expected

- **Private Housing** - a shift in focus

- Rebranding/creative to target private market
- Implementing new market channels/approaches
- Continued investment in private market customer intelligence
- Continued geographical expansion
- Identification/targeting a secondary target market

# Single Family – HWP Update



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## Rebranded Single Family Offering

- New program name and material/web creative to better reflect target market, better communicate program details and optimize online search
- \*Refined application process to ensure seamless application/participation

*\*input received from 2013 consultative*

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YOU SAVE.**

That's the Home Weatherization Program  
from Union Gas.

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## Implementing New Market Channels

- Continued use of targeted direct mails, door hangers and lawn signs
- \*Increasing presence at Winter Warmth agencies: emails/presentations to staff, video for clients intended for Q4
- \*Forming SMO relationships, to ensure HWP is promoted where relevant (211 & Ontario Renovates web pages, community living partnership and local community outreach presentations etc)
- Launched advertorials in local community weekly newspapers
- \*Investigating additional new channels to be implemented in 2015 +

\*input received from 2013 consultative

### Union Gas helps McKellar resident stay warm.

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## WE PAY. YOU SAVE.

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**MAKE YOUR HOME MORE ENERGY EFFICIENT, ON US.** We're working with the Ontario Energy Board to improve the energy efficiency of homes throughout the province. Find out if you're eligible for the program that provides – and pays for – upgrades that will save you up to 30 per cent in energy costs: the Home Weatherization Program from Union Gas.

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## Continued Geographic Expansion

- Total of ~20 areas/communities now served
- New 2014 markets include: Goderich, Orillia, Timmins, Owen Sound (Grey/Bruce), Belleville
- Expanded geographic reach has allowed Union to target all municipal providers, and begin to target non-profit/co-op providers



## Continued Investment in Private Market Customer Intelligence

- Maintained existing database, which includes the following data at the FSA level:
  - Likelihood to be Low Income (135% of LICO)
  - Energy intensity per square foot
  - Age of home
- New 'Need Based Segmentation Research' planned for all of 2014 - objective is to:
  - Identify LI segments, based on psychographic and attitudinal trends
  - Create segment profiles to be used when creating targeted messaging
  - Map new segmentation data and existing demographic information to determine new market channels





## Identification of a Secondary Target Market

- “Caregivers” of the primary market – They are:
  - Supporting aging parents/family, and >77% are women and 70% are 45+ yrs old
  - Comfortable online, and use it to actively look for resources (>15,000 monthly searches in ON)
- Piloting online campaigns : Kijiji and Weather Network
  - Initially focusing on Hamilton, London and Thunder Bay, Oakville

The screenshot shows the Weather Network website interface for Oakville, ON. The main content area displays the current weather as -1°C with a 'Feels like -8' and a forecast of 'Record breaking winter so far. Will it continue?'. The website includes navigation links for Forecasts, Severe Weather, Maps, Roads, Beat The Traffic, News, TV, Photos & Videos, and Outdoors. A search bar is located at the top right. The Uniongas advertisement is prominently displayed on the right side, featuring the text 'WE PAY. YOU SAVE. THE HOME WEATHERIZATION PROGRAM' and a 'LEARN MORE' button. The advertisement also includes the Uniongas logo and a small graphic of a family. The left side of the page features a green sidebar with the text 'FIND OUT IF YOU' and a graphic of two people.



## Looking Forward – 2015+

- Minimal municipal social housing remaining post 2016
- To maintain and grow success in the private market, an increased focus on targeted creative/messaging, new market channels, geographic expansion, and customer intelligence will continue 2015+
- To effectively execute on required private market activities, the cost/LTm<sup>3</sup> rose in 2014 and is expected to continue to increase 2015+, resulting in a lower TRC ratio



## Multi-Family Offering

# Affordable Housing Conservation Program (AHCP)



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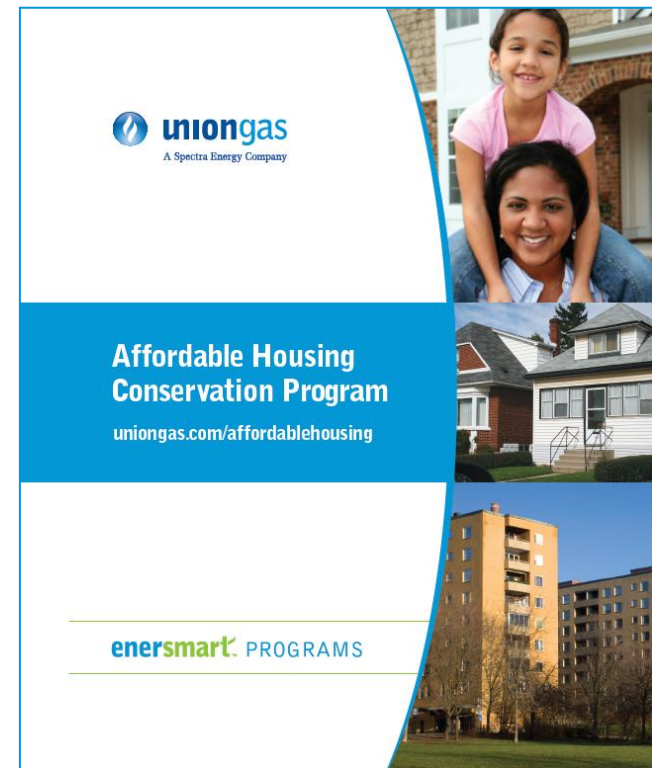


## Target Market

- Social and Assisted Housing Managers who own and operate high-rise and low-rise multi family buildings

## Program Overview

- Prescriptive & Custom measures
  - Incentives - \$0.10/lifetime m3, to a maximum of 50% of measure costs
- Building Assessments
  - Examine natural gas mechanical systems and building envelope (windows, insulation etc.)
  - Key in building customer intelligence





## Continued focus on the municipal market

- Maintaining and Leveraging strong relationships
  - Work closely with customers to proactively align work with funding/ budget timelines
- Incentives driving action/ program participation
  - Customers look to Union to identify opportunities and educate on available incentives
  - Customers are proactively planning and completing high-efficiency upgrades due to incentives
- Gaining critical customer insight / knowledge
  - Through municipal relationships, gained insight into past upgrades and remaining opportunity
  - Beginning to form Service Manager Office relationships; will be critical to understanding opportunity, specially in non-municipal segment



## Case Study – London & Middlesex Housing Corp.

### Multi-Family Building Stock

- 2012-2014: Completed energy retrofits at 8 of 24 multifamily buildings, benefits include:
  - Lower natural gas use - up to 30 per cent
  - Energy cost savings - about \$3.5 million over equipment life
  - Incentives earned - \$950,000 provided to date
- 2015-2017: 20 more projects planned addressing 7 additional buildings

### Single-Family Building Stock

- 2012-2014:
  - Weatherized 1,706 single family dwellings (all eligible stock)
  - Three of 10 townhouse complexes have completed additional energy retrofits
    - Lower natural gas use - up to 30 per cent



## Increased focus on non-profit/co-op market

- Shifting focus to include non-municipal providers, this market:
  - Is fragmented with large number of providers, decision makers and influencers
  - Will have fewer number of buildings that qualify and lower LTm3/building, as stock is newer and they've taken advantage of past provincial funding
- \*Leveraging existing and building new SMO relationships, as they oversee non-profits/co-ops and can help identify opportunity, and create awareness regarding Union's DSM programs
- \*Union will work closely with the non-profit/co-op housing provider to help identify and implement energy efficiency projects



## Additional 2014 Initiatives

- New multi-family marketing plan
  - Marketing creative
  - Testimonials
  - Sales tool kit
  - Union's website
- Exploring new channels and association strategy
- Ongoing gathering of market insights, through sales and research, to identify new technologies





# Co-Delivery of HWP and CDM/ HAP

## Partnership with Burlington / Halton Hills Hydro



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## Program Overview

- Since 2013, Union has leveraged existing relationships within the LI market to co-deliver CDM Home Assistance Program (HAP) and HWP to qualified customers within Burlington and Halton Hills

## Customer Benefits

- Customers obtain HAP & HWP information through single source (co-branded marketing)
- Customers experienced a streamlined qualification process for both programs
- Qualified customers participate in HAP & HWP by working with a single delivery agent.
- Overall increased customer experience and potentially higher participation in both gas & electric saving programs.

## Results

On track to meet 2014 goal



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# Q&A

Filed: 2015-04-01

EB-2015-0029

Exhibit A

Tab 3

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February 18, 2015 – DSM Consultation

**From:** Liang, Manyu  
**Sent:** January-30-15 4:46 PM  
**To:** 'john.beauchamp@nortonrose.com'; 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energyprobe@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'Paul.Seaman@gowlings.com'; 'jim.gruenbauer@kitchener.ca'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nruzycki@justenergy.com'; 'mluymes@hrai.ca'  
**Cc:** Lynch, Tracy; Brooks, Tracey; Innis, Vanessa; Kitchen, Mark  
**Subject:** Hold the Date - Union Gas DSM Consultation Meeting

Good Afternoon,

Please hold the following date for the first discussion around Union's multi-year DSM Plan:

**DATE:** Wednesday, February 18<sup>th</sup> 2015

**TIME:** 9:00a.m.-5:00p.m.

**LOCATION:** To be determined

Please RSVP to Manyu Liang [Mliang@uniongas.com](mailto:Mliang@uniongas.com) indicating:

- name of attendee(s) and organization
- in person or remote attendance (teleconference number will be provided)

Additional details and agenda will be provided shortly. We hope you will be available to join us and we look forward to engaging in a productive discussion.

**Manyu Liang**

DSM Strategy Coordinator

Union Gas Limited | A Spectra Energy Company

777 Bay St., Suite 2901 | Toronto, ON M5G 2C8

Tel: (416) 595-4457

email: [mliang@uniongas.com](mailto:mliang@uniongas.com)





**From:** Liang, Manyu  
**Sent:** February-09-15 9:42 AM  
**To:** 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energyprobe@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'Paul.Seaman@gowlings.com'; 'jim.gruenbauer@kitchener.ca'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nruzycki@justenergy.com'; 'mluymes@hrai.ca'; 'jaya.chatterjee@kitchener.ca'; 'Grant.Cockburn@ontario.ca'  
**Cc:** Lynch, Tracy; Brooks, Tracey; Innis, Vanessa; Kitchen, Mark  
**Subject:** Update on Union Gas DSM Consultation Meetings

Good Morning,

Please see below for the Consultation session dates for discussion around Union's multi-year DSM Plan:

**SESSION 1**

**DATE:** Wednesday, February 18<sup>th</sup> 2015

**TIME:** 9:00a.m.-5:00p.m.

**LOCATION:** Park Hyatt Toronto, 4 Avenue Rd.

**SESSION 2**

**DATE:** Wednesday, March 4<sup>th</sup> 2015

**TIME:** 9:00a.m.-5:00p.m.

**LOCATION:** Intercontinental Toronto Yorkville, 220 Bloor St. W.

**SESSION 3**

**DATE:** Wednesday, March 11<sup>th</sup> 2015

**TIME:** 9:00a.m.-5:00p.m.

**LOCATION:** Intercontinental Toronto Yorkville, 220 Bloor St. W.

Please RSVP to Manyu Liang [Mliang@uniongas.com](mailto:Mliang@uniongas.com) indicating:

- name of attendee(s) and organization

- date(s) attending
- in person or remote attendance (dial-in number will be provided)

Additional details and agenda will be provided shortly. We hope you will be available to join us and we look forward to engaging in a productive discussion.

**Manyu Liang**

DSM Strategy Coordinator

Union Gas Limited | A Spectra Energy Company

777 Bay St., Suite 2901 | Toronto, ON M5G 2C8

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**From:** Dawodu, Ayo  
**Sent:** February-18-15 8:58 AM  
**To:** 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energyprobe@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'mark.crane@gowlings.com'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nruzycki@justenergy.com'; 'mluymes@hrai.ca'; 'jaya.chatterjee@kitchener.ca'; 'Grant.Cockburn@ontario.ca'; Malena.Mendez@ontario.ca  
**Cc:** Brooks, Tracey; Brooks, Tracey; Innis, Vanessa; Kitchen, Mark; Liang, Manyu  
**Subject:** Union Gas Consultation Presentation and Updated Agenda - Session 1  
**Attachments:** Feb18\_DSM Consultative-FINAL.pdf; Agenda - Union Gas DSM Consultative Meeting Feb 18, 2015.docx

Good Morning,

Please see attached for the presentation for today's consultation and the updated agenda.

Regards,

**Ayo Dawodu**

DSM Strategy Coordinator

Union Gas Limited | A Spectra Energy Company

Tel: 416-491-3030 ext 5184456

Email: [ADawodu@uniongas.com](mailto:ADawodu@uniongas.com)

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**February 18, 2015 - Consultation****Attendees****Attendees**

	<b>Organization</b>	<b>Representative</b>	<b>In Person/Dial-in</b>
1	APPrO	John Wolnik	Dial-in
2	BOMA	Marion Fraser	In person
3	City of Kitchener	Jaya Chatterjee	Dial-in
4	City of Kitchener	Michele Kamphuis	Dial-in
5	CME	Vincent DeRose	Dial-in
6	Energy Probe	Norman Rubin	In person
7	Environmental Defence	Jack Gibbons	In person
8	FRPO/OGVG	Dwayne Quinn	In person
9	GEC	Chris Neme	In person
10	GEC	David Poch	In person
11	GEC	Kai Millyard	In person
12	IGUA	Ian Mondrow	In person
13	LIEN	Matt Gardner	In person
14	London Property Management Association	Randy Aiken	Dial-in
15	Ministry of Energy	Grant Cockburn	In person
16	Ministry of Energy	Malena Mendez	In person
17	Natural Resource Gas Limited	Brian Lippold	Dial-in
18	Ontario Energy Board	Takis Plagiannakos	In person
19	SEC	Jay Shepherd	In person (afternoon)

## Union Gas DSM Consultation Meeting

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**Date:** February 18, 2015  
**Location:** Park Hyatt Toronto  
 4 Avenue Road  
 2<sup>nd</sup> Floor, North Tower, University Room  
**Time:** 8:30a.m.-4:30p.m.

Start	End	Item	Discussion Lead
8:30	9:00	<b>Breakfast/Registration</b>	
9:00	9:05	Opening Remarks	<b>Tracy Lynch</b>
9:05	9:15	Purpose/Goals and Stakeholder Process	<b>Tracey Brooks</b>
9:15	9:45	2015 Review	<b>Tracey Brooks</b>
9:45	10:45	Residential	<b>Tracey Brooks</b>
10:45	11:00	<b>Break</b>	
11:00	12:00	Residential Continued	<b>Tracey Brooks</b>
12:00	12:30	<b>Lunch</b>	
12:30	2:30	Low Income	<b>Tracey Brooks</b>
2:30	2:45	<b>Break</b>	
2:45	3:45	C/I Prescriptive	<b>Tracey Brooks</b>
3:45	4:15	Scorecard Approach	<b>Ehsan Dibaji</b>
4:15	4:30	Next Steps	<b>Tracey Brooks</b>
		<b>Adjourn</b>	



## 2015-2020 DSM Plan Consultation – Residential, Low Income, C/I Prescriptive

*Program proposals included for discussion purposes only*

February 18<sup>th</sup>, 2015

# Agenda

1. Purpose and Goals
2. Stakeholder Process
3. Portfolio Approach
4. Summary of 2015 DSM Plan proposal changes
5. 2016-2020 Program Proposals
  1. Residential
  2. Low Income
  3. C/I Prescriptive
  4. Market Transformation



# Purpose & Goals

## Purpose:

To review Union's 2015-2020 program proposals and to seek input from our stakeholders for consideration in our final 2015-2020 DSM Plan development

## Goals:

1. To provide Union's stakeholders with a sound understanding of the current state of our program proposals
2. To have meaningful dialogue with our stakeholders on our program proposals for consideration in our final 2015-2020 DSM Plan



# Union's Stakeholdering Process

Date	Objectives
February 18 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review Union's Residential, Low-Income and C/I Prescriptive program proposals</li> <li>• Receive input from stakeholders</li> </ul>
March 4 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review C/I custom program proposal and additional framework items (CDM, IRP, etc)</li> <li>• Review changes implemented from the February 18<sup>th</sup> session</li> <li>• Review Portfolio scorecards, budgets and targets</li> </ul>
March 11 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review changes implemented from March 4<sup>th</sup> session</li> <li>• Receive input from stakeholders</li> <li>• Discuss process around any follow-up items if required</li> </ul>
April 1 <sup>st</sup> , 2015	Union to file our 2015-2020 DSM Plan



# Portfolio Approach

- Continue to deliver Union's successful programs to our Residential, Commercial and Industrial customers
- Implement new programs and initiatives based on the key priorities outlined by the Board in the 2015-2020 DSM Framework and Guidelines
  - Development of new and innovative programs
  - Ensure programs take a holistic approach throughout a customer's home and business
  - Increase collaboration and integration of CDM/DSM
  - Expand the delivery of low-income offerings across the province
  - Implement DSM programs that are evidence based and rely on customer specific data
  - Implement programs that reduce and/or defer future infrastructure investments





## Summary of Changes to the 2015 Plan

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*Based on feedback from our January 14<sup>th</sup>  
DSM consultation session*



## 2015 Plan

### Final DSM Framework Direction:

- Gas Utilities should roll-forward their 2014 DSM Plans, including all programs and parameters (i.e. budget, targets, incentive structure) into 2015
- On January 14<sup>th</sup>, Union held a consultative and reviewed our approach to the 2015 Plan and sought feedback from our stakeholders
- Union has made adjustments to our 2015 Plan Scorecards based on Stakeholder feedback



# Residential – Home Reno Rebate

- Changed our upper and lower band from -50/+50 homes to -25%/+25%
- Maintained the 11,000 m3 threshold for program participation
- Maintained the existing furnace as the base case in the modeling of the home

Metric	Metric Target Levels			Weighting
	Lower Band	Target	Upper Band	
Original Proposal				
Deep Savings – Residential Homes	2015 target minus 50 homes	2014 Actual times 1.25	2015 target plus 50 home	5%*
Revised Proposal				
Deep Savings – Residential Homes	75% of 2015 target	2014 Actual times 1.25	125% of 2015 target	5%

Increased our upper band target by over 300 homes

\*5% of the overall resource acquisition scorecard

# Market Transformation – Optimum Home

- Maintained focus on existing pool of home builders (Top 50 builders)
- Concentrated focus on the number of homes built by participating builders
- Increased the percentage of required market share achievement across target levels

Metrics		Metric Target Levels			Weighting
		Lower Band	Target	Upper Band	
Original Proposal					
OH 1	Homes Built (>20% above OBC 2012) by participating builder	2014 Actual + 3%	2014 Actual + 6%	2014 Actual + 9%	40%
OH 2	New participating builders	4	8	15	40%
	Prototype Homes Built	20% of incremental participants	30% of incremental participants	40% of incremental participants	20%
Revised Proposal					
OH 1	Homes Built (>20% above OBC 2012) by participating builder	2014 Actual + 10%	2014 Actual + 15%	2014 Actual + 20%	100%



# 2015 Revised Incremental Budget

## Original Proposal

Key DSM Priorities	2015 Incremental Initiatives	Budget (\$000)
Holistic Approach	Home Reno Rebate	\$700
Evidence Based/Customer Specific Data	Behavioural	\$3,300
Expand Low-Income	Low-income Market Rate Eligibility	--
Reduce/Defer Infrastructure Investments	DSM in Systems Planning Study	\$200
Requirement of Framework	Achievable Potential Study	\$250
Other	Additional Transition Elements	\$438
<b>Total</b>		<b>\$4,888</b>

## Revised Proposal

Key DSM Priorities	2015 Incremental Initiatives	Budget (\$000)
Reduce/Defer Infrastructure Investments	DSM in Systems Planning Study	\$200
Requirement of Framework	Achievable Potential Study	\$250
<b>Total</b>		<b>\$450</b>



## 2016-2020 Residential Program Proposal

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*Residential program proposal included for  
discussion purposes only*

# Overview of Residential Program

- Focus on comprehensive home treatment while providing broad access for customers to understand their energy use and achieve savings. This will be achieved by the delivery of the following offerings:
  - Home Reno Rebate
  - Behavioural Offering
  - Energy Savings Kits





# Home Reno Rebate

- Provides customers with rebates towards home insulation and water/space heating system replacements
- Provides customers with rebates towards their home energy audits
- Opportunity to cross-promote with the electric Heating & Cooling Program

## Market Approach

### Service Organization

- Assess home performance and guide homeowner through process

### Contractors

- Key channel for referrals

### Direct Promotion

- Targeted communication and promotional campaigns

## Education

### Professional Energy Assessment

- Promotes energy literacy and helps bridge the gap between awareness and action
- Expand support through:
  - \$200 incentive per assessment, increases for retrofit participants
  - Promotion of EnerGuide ratings to build awareness –align with change to rating system anticipated in 2016





# Summary of Changes to Home Reno Offering

	Current	2016 - 2020
<b>Incentives</b>	<ul style="list-style-type: none"> <li>Up to \$2,500 in rebates</li> <li>Rebates are based on m3 savings and incremental cost, with relatively less support for furnace and water heaters</li> <li>Customer receives \$500 rebate on audits once work is completed</li> </ul>	<ul style="list-style-type: none"> <li>Up to \$5,000 in rebates</li> <li>Consistent rebate levels per measure, with \$250 bonus for measures beyond first 2</li> <li>Provide \$200 towards initial audit regardless of work being completed</li> </ul>
<b>Target Market/ Eligibility Requirements</b>	<ul style="list-style-type: none"> <li>Central &amp; Southwestern Ontario</li> <li>Minimum 2 measures</li> <li>Detached or semi-detached</li> <li>Minimum savings per participant</li> <li>25% savings in aggregate</li> </ul>	<ul style="list-style-type: none"> <li>Franchise wide</li> <li>Minimum 2 measures</li> <li>More flexibility around dwelling type</li> <li>No per-participant m<sup>3</sup> threshold</li> <li>15% savings in aggregate</li> </ul>
<b>Market Approach</b>	<ul style="list-style-type: none"> <li>Emphasis on promotion, service organizations and establishing relationships with insulation contractors</li> </ul>	<ul style="list-style-type: none"> <li>Additional emphasis on channel engagement with insulation contractors, general contractors and other market actors</li> </ul>
<b>Input Assumptions</b>	<ul style="list-style-type: none"> <li>BASE CASE: Current equipment</li> <li>EUL: 15/25 years</li> <li>FREE RIDER: 15%</li> </ul>	<ul style="list-style-type: none"> <li>BASE CASE: 90% AFUE furnace assumed in all homes (except where current &gt; 90%)</li> <li>EUL: 25 years</li> <li>FREE RIDER: 5%</li> </ul>

# Home Reno Rebate – Preliminary/Directional Budgets and Targets



## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$6.0	\$8.5	\$10.0	\$10.0	\$10.0
Program Costs	\$1.5	\$1.5	\$2.0	\$2.0	\$2.0
Total	\$8.0	\$10.0	\$12.0	\$12.0	\$12.0

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	80	105	130	130	130
Home Reno Rebate Participants	3,000	4,000	5,000	5,000	5,000



# New Offering - Behavioural Platform

- Educates and empowers customers to actively monitor and manage gas usage
- Provides targeted, customized information to customers based on internal and third-party data
- Lead generation channel for other offerings
- Reflects desire for more information on how to conserve energy from Union Gas

## Description

- Comparative reports with suggested energy saving actions
- Online energy portal

## Target Market

- 500,000 highest natural gas consuming customers (eg. > 2,200m<sup>3</sup>/year)

## Market Approach

- Energy use reports mailed four times during the fall/winter

## Measurement & Tracking

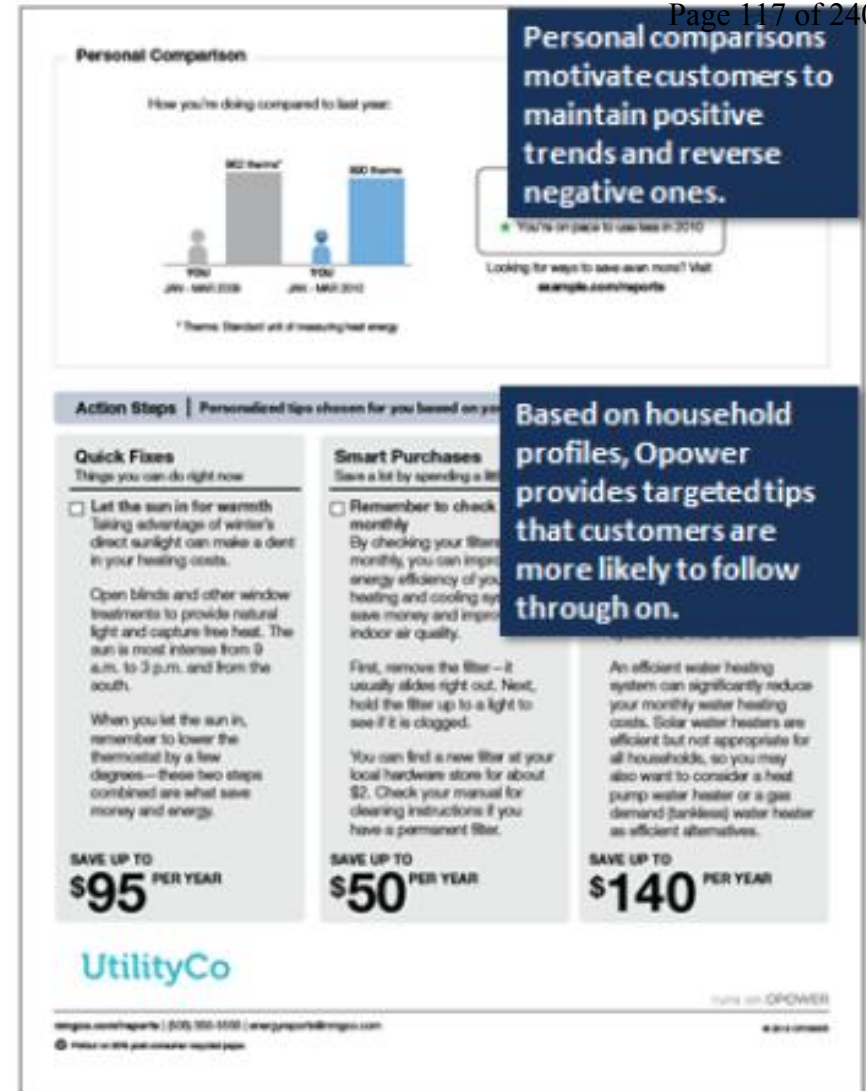
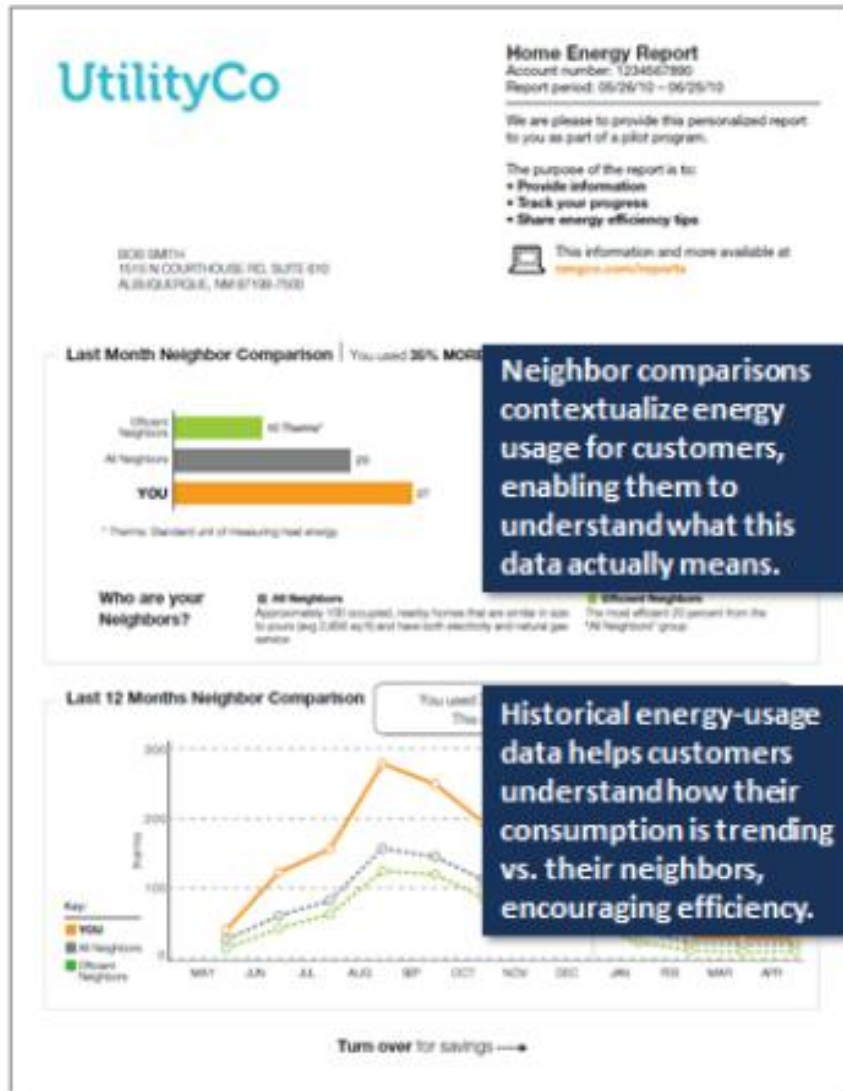
- Savings measured by comparing actual usage of treatment and control group

## Key Call Outs

- Evidence based offering that quantifies savings at the meter
- EM&V utilizing a treatment vs. control group
- Reports target customers with the greatest potential for savings
- Online energy portal to reach all residential customers
- Anticipate launch in late 2016 – significant lead-time required for RFP process and to fully integrate with systems

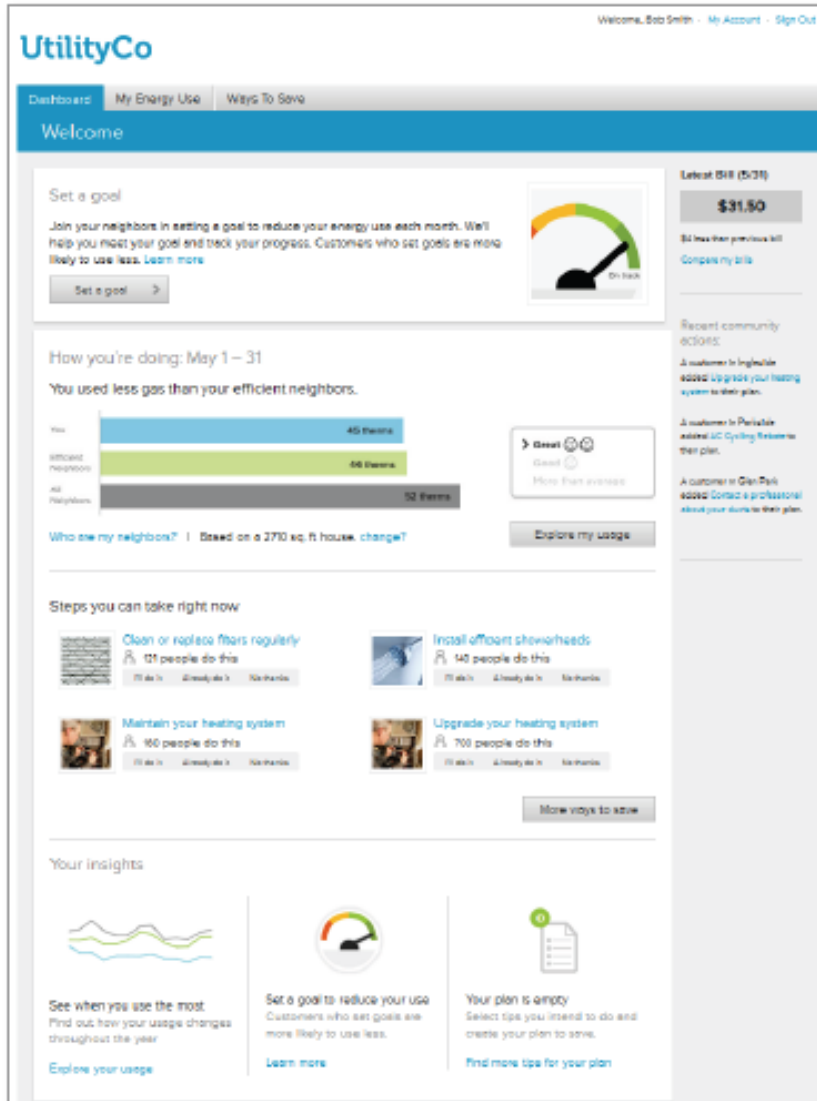


# Sample Home Energy Report





# Sample Online Energy Portal



## System Integration

- Integrate into MyAccount, Union's online account management system

## MPAC Data

- Size and vintage of home data to ensure meaningful comparisons for customers and relevant suggestions

# Behavioural – Preliminary/Directional Budgets & Targets



## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	-	-	-	-	-
Program Costs	\$3.5*	\$4.5	\$4.5	\$4.5	\$4.5
Total	\$3.5*	\$4.5	\$4.5	\$4.5	\$4.5

\*Program costs include Development/Start Up costs

## Targets

Target	2016	2017	2018	2019	8.0
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	-	10.5	10.5	10.5	10.5

# Energy Savings Kits - Preliminary/Directional Budgets and Targets



- Provides free efficient showerhead, aerators, pipe insulation and programmable thermostat coupon
- Online and door-to-door delivery – compliment for home energy reports, online energy portal and home energy assessment channels
- Targeting 15,000 customers annually across the term of the plan
- Opportunity to cross-promote the IESO's coupons

## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Program Costs	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Total	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4

## Targets

Target	2016	2017	2018	2019	8.0
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	8.5	8.5	8.5	8.5	8.5

# Residential - Preliminary/Directional Targets

Residential Resource Acquisition Targets						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
ESK	30.0	8.5	8.5	8.5	8.5	8.5
Home Reno Rebate	27	80	105	130	130	130
Behavioural			10.5	10.5	10.5	10.5
Total Cumulative m <sup>3</sup> Target	58	90	125	150	150	150
Deep Savings Homes (#)	997	3,000	4,000	5,000	5,000	5,000



# Residential Preliminary/Directional 100% Budgets & TRC



Budget (\$ M)						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
ESK	\$1.0	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4
Home Reno Rebate	\$2.0	\$8.0	\$10.0	\$12.0	\$12.0	\$12.0
Behavioural		\$3.5	\$4.5	\$4.5	\$4.5	\$4.5
<b>Total</b>	<b>\$3.0</b>	<b>\$12.0</b>	<b>\$14.5</b>	<b>\$17.0</b>	<b>\$17.0</b>	<b>\$17.0</b>

\* Budgets do not include EM&V and Administration Costs

TRC						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
ESK	N/A	34	34	34	34	34
Home Reno Rebate	N/A	1.6	1.6	1.6	1.6	1.6
Behavioural			0.6	0.6	0.6	0.6
<b>Total TRC</b>	<b>2.7</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>



## 2016-2020 Low Income Program Proposal

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*Low Income program proposal included for  
discussion purposes only*



## Overview of Low Income Program

- Continue to drive deep gas savings to reduce the energy burden of Union's low income (LI) customer base
- Increase adoption of current single family (SF) and multi family (MF) offerings by improving reach and addressing customer barriers
- Improve LI customer program accessibility and impact through new market-rate multi-family, SF Furnace Upgrade and Aboriginal offerings.
- The above will be achieved by delivering the following offerings:
  - Home Weatherization (HW)
  - SF Furnace End-of-Life Upgrade
  - Affordable Housing Conservation (AHCP)
    - New Market Segment - Multi-Family Market Rate
  - Aboriginal Conservation



# Home Weatherization Offering

- Provides qualifying low income customers residing in SF dwellings with a whole home retrofit offering - free home energy audit, insulation upgrades and both draft-proofing and basic measures
- Targets low income customers (135% LICO) who reside in a SF dwelling that requires insulation, including; social housing SF dwellings AND private SF dwellings that pay own gas bill
- Opportunity to collaborate with LDCs to deliver HAP offering in DSM weatherized homes

## Market/Participation Overview

- Municipal opportunity depleted by 2016; Private market still exists.
- From a savings perspective, 85% of LTm3 will be from the private market vs. 20% in 2012
- Participation rates illustrate a similar picture:

Year	Social Housing Participant %	Private Market Participant %
2012	80	20
2013	70	30
2014	35	65
2015-16	25	75
2017+ forecasted	15	85

## Market Approach

### Social Housing Market Approach

- Municipal: maintain housing provider relationships to ensure all remaining opportunities are addressed
- Non-Profit/Co-op: Leverage relationships with municipalities, organizations and associations to identify/address all eligible homes

### Private Market Approach

- Increased focus on Private market
- Rebranded to better reflect target market, and optimize online search
- Continue to reach customers through targeted direct mail, advertorials & traditional marketing channels
- Continue to build/leverage social service agency relationships to further penetrate communities



# Summary of Changes to HW Offering

	Current	2016-2020
<b>Incentives</b>	<ul style="list-style-type: none"> <li>Free home energy assessment</li> <li>Insulation for basement, walls and attic; and air sealing measures</li> <li>Water saving components - showerheads, kitchen /bathroom aerators, foam pipe wrap</li> <li>Programmable thermostat installed by a certified gas fitter</li> </ul>	<ul style="list-style-type: none"> <li>Current incentives plus: <ul style="list-style-type: none"> <li>Furnace end-of-life upgrade program offered to social housing providers or private market customers that are participating in HW</li> <li>Free carbon monoxide detector to all HWP participants</li> </ul> </li> </ul>
<b>Target Market/ Eligibility Requirements</b>	<ul style="list-style-type: none"> <li>Income at or below 135% LICO</li> <li>Social housing &amp; private homes</li> <li>Single detached &amp; Part 9 buildings</li> <li>Pay their own bills (private market)</li> </ul>	<ul style="list-style-type: none"> <li>Increased focus on private market</li> <li>Expand geographical reach to rural communities</li> <li>Franchise wide marketing &amp; delivery (10+ homes required per community to deliver HW)</li> <li>Broader access due to increased offering cost effectiveness</li> </ul>
<b>Market Approach</b>	<ul style="list-style-type: none"> <li>Primarily direct mails &amp; advertorials</li> <li>Initial partnerships formed with social service agencies</li> </ul>	<ul style="list-style-type: none"> <li>Enhance market understanding through research</li> <li>Implement new marketing channels</li> <li>Partnership model with social service agencies</li> <li>Leverage internal Customer Care team</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>Leverage opportunity to educate customer while audits &amp; basic measure installation</li> </ul>	<ul style="list-style-type: none"> <li>Leverage additional channels to educate customers regarding energy conservation</li> </ul>

# HW Offering - Preliminary/Directional Budgets and Targets



Filed: 2015-04-01  
EB-2015-0029  
Exhibit A  
A Spectra Energy Company  
Tab 3

Appendix B

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## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$4.0	\$4.0	\$5.5	\$6.0	\$6.0
Program Costs	\$2.0	\$2.0	\$2.0	\$2.5	\$2.5
Total	\$6.5	\$6.0	\$7.5	\$8.5	\$8.5

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	35.0	30.0	35.0	40.0	40.0



# Furnace End-of-Life Upgrade Offering

- Incentive for customers with a furnace at its end-of-life moving from 90% base case to 95%: Incent 50% of incremental cost for social housing; and 100% of incremental cost for private market
- Offering available to:
  - Social housing SF dwellings that have already participated in HW, those that are new HW participants and those that are not eligible for HW
  - Private market SF dwellings that are participating in HW and those that are within select 'trial' communities (to be expanded dependent on learnings/budget)

## Rationale and LI Budget Allocation

### Rationale

- Improve LI customer program accessibility and impact - Market insights demonstrate need for furnace offering (social service agencies, Service Manager Offices etc.)

### Budget Allocation

- ~\$0.8M/year throughout 2016-2020 framework
  - ~\$400k/year allocated to social housing, and
  - ~\$400k/year allocated to private market

## Market Approach and Timeline

### Market Approach

- Social Housing: Offering promoted/delivered through Union sales team to housing providers
- Private Market: Offering promoted while in homes participating in HW, and promoted through multiple channels in trial private markets (e.g, social service agencies and HVACs)

### Timing

- Program launch in 2016

# Furnace Upgrade - Preliminary/Directional Budgets and Targets



## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$0.70	\$0.70	\$0.80	\$0.80	\$0.85
Program Costs	\$0.05	\$0.05	\$0.05	\$0.04	\$0.01
Total	\$0.75	\$0.75	\$0.85	\$0.85	\$0.85

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	1.5	1.5	1.5	1.5	1.2



# Aboriginal Conservation Offering

- Provides HW Offering to low income SF customers living in an eligible home that is part of an aboriginal community with residential gas connection
- Offering includes free home energy audit, insulation upgrades and draft proofing measures.
- Basic measures will be offered to all applicants, if they have a natural gas water heater.

## Rationale

- Since launch of HWP in 2012, no participation from on-reserve customers
- Aboriginal customers (both on and off-reserve) respond better to community based marketing through band council and friendship centres
- Union has strong existing relationships with these communities through Aboriginal Affairs team; and can leverage these to educate band council and gain buy-in/uptake for energy conservation measures

## Market Approach and Timeline

### Market Approach

- Leverage existing relationship to collaborate with band council and get buy-in
- Utilize First Nations delivery agent to deliver the program
- Hold community energy conservation sessions to create awareness and generate interest in the program
- Recruit and work with local residents for door-to-door canvassing
- Collaborate with friendship centres to promote HWP to aboriginal customers living off-reserve

### Timing

- Pre-launch activities in 2016
- Program launch in 2017

# Aboriginal Preliminary/Directional Budgets and Targets



## Budgets

Budget (M \$)	2016	2017	2018	2019	2020
Program Costs	-	\$0.3	\$0.3	\$0.3	\$0.3
Total	-	\$0.1	\$0.1	\$0.1	\$0.1
Incentives	-	\$0.4	\$0.4	\$0.4	\$0.4

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	-	1.5	1.5	1.5	1.5



# Affordable Housing Conservation Offering

- Provides Social and Assisted housing providers with enhanced incentives for building assessments and energy efficiency upgrades, including the installation of a prescriptive measure or the completion of a custom project.

## Market Approach

### Continued focus on the Municipal market:

- Maintain strong Municipal relationships to continue assisting in identification of opportunities & proactive planning/budgeting of upgrades
- Leverage Municipal relationships to continue gaining critical customer/building insights and knowledge

### Increased focus on non-profits/coop market:

- Build & leverage Service Manager office relationships to understand the market, create awareness and influence market
- Build & leverage partnerships with key associations to promote and influence market

### Market Rate Offering Launch:

- Demonstration project in 2015
- Program Launch based on the demonstration project learnings

## NEW- Benchmarking & Energy Management

### Offering:

- Provides Social & Assisted housing providers with benchmarking services – free enrollment in tool, active monitoring & reporting for two subsequent years, identify areas of improvement

### Rationale:

- Increase Social & Assisted housing providers awareness of energy measurement & management and to assist in identifying areas of improvement

### Timing:

- Promote/enroll beginning in 2016



# Summary of Changes to ACHP

	Current		2016-2020
<b>Incentives</b>	<ul style="list-style-type: none"> <li>Funding for building assessment - up to \$5000 per building and up to \$25,000 per housing entity</li> <li>\$0.10 per LTm3, to a maximum of 50% of fully installed cost of the project</li> </ul>		<ul style="list-style-type: none"> <li>Funding for building assessment - up to \$5000 per building and up to \$25,000 per housing entity</li> <li>\$0.10 per LTm3, to a maximum of 50% of fully installed cost of the project</li> <li>\$1,000 per living unit (apartment/town home) for window projects, up to 50% of fully installed project cost</li> </ul>
<b>Target Market/ Eligibility Requirements</b>	<ul style="list-style-type: none"> <li>Social and assisted housing providers, including; municipals, non-profits and co-ops, market rate (2015 –demonstration, 2016 - market launch)</li> </ul>		<ul style="list-style-type: none"> <li>Social and assisted housing providers, including; municipals, non-profits and co-ops, market rate (2016 - market launch)</li> </ul>
<b>Market Approach</b>	<ul style="list-style-type: none"> <li>Account managed through Union sales team</li> </ul>		<ul style="list-style-type: none"> <li>Continued account management</li> <li>Increased focus on non-profit/ Coops</li> <li>Association marketing strategy</li> <li>New marketing channels &amp; sales toolkit</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>Work closely with customers to identify conservation opportunities, align funding/budget timelines &amp; educate on available incentives</li> </ul>		<ul style="list-style-type: none"> <li>Continue working with customers</li> <li>Tenant education through third-party</li> <li>Benchmarking &amp; Energy Management</li> </ul>

# AHCP - Preliminary/Directional Budgets and Targets



## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$2.5	\$3.0	\$2.5	\$3.0	\$3.5
Program Costs	\$0.1	\$0.1	\$0.2	\$0.1	\$0.1
Total	\$2.5	\$3.0	\$3.0	\$3.0	\$3.5

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	17	19	18	20	20

# Low Income - Preliminary/Directional Targets



Low Income Targets (M m <sup>3</sup> )						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
Single Family	36.0	34.0	34.0	37.5	40.0	40.0
Multi-Family	24.0	17.0	19.0	18.0	20.0	20.0
<b>Total Cumulative m<sup>3</sup> Target</b>	<b>60.0</b>	<b>50.0</b>	<b>55.0</b>	<b>55.0</b>	<b>60.0</b>	<b>60.0</b>

# Low Income Preliminary/Directional 100% Budgets & TRC



Budget (\$M)						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
Single Family*	\$5.0	\$7.0	\$7.5	\$9.0	\$9.5	\$10.0
Multi-Family **	\$2.0	\$2.5	\$3.0	\$3.0	\$3.0	\$3.5
<b>Total</b>	<b>\$7.5</b>	<b>\$9.5</b>	<b>\$10.5</b>	<b>\$12.0</b>	<b>\$12.5</b>	<b>\$13.5</b>

\* Includes Aboriginal

\*\* Includes Market Rate

\*\*\* Budgets do not include EM&V and Administration Costs

TRC						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
Single Family	1.0	1.5	1.5	1.5	1.6	1.7
Multi-Family	1.1	4.5	3.5	3.5	4.0	3.0
<b>Total TRC</b>	<b>0.8</b>	<b>1.7</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.6</b>



## C/I Prescriptive Program Proposal

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*C/I Prescriptive program proposal included for discussion purposes only*





## Overview of C/I Prescriptive Program

- Continue to deliver incentives that support our C/I customer base to achieve energy savings
- Expand our reach to the market through offerings that target smaller commercial customers
- Increase customers awareness and knowledge of energy efficient practices, and provide education on how to operate in an energy efficient manner
- This will be achieved by the delivery of the following offerings:
  - Standard Prescriptive Program
  - Direct Install Pilot
  - Behavioural Program



# C/I Standard Prescriptive Offering

- Provides C/I customers with incentives that support the installation of high-efficiency measures
- Increasing incentive amounts and promotional support to broaden our reach in the market
- Creating a broader portfolio of measure offerings

## Market Approach

Union will continue to deliver programs using a segmented market approach, with emphasis on new and enhanced market approaches to broaden our reach in the market.

Key areas of focus:

1. Mass Market Approach
  - Direct and indirect marketing strategies to reach non account-managed customers in commercial sectors
  - Emphasis on enhancing existing business website into an online resource for non-managed customers
  - Event focused – workshops, tradeshow; digital and in-person
2. Channel Partner Approach
  - Strategy in development to reach non account-managed customers
3. Account Management Approach
  - National Account strategy to reach decision makers
  - Sales tools to target market opportunities; limited time offers

# Summary of Changes to C/I Prescriptive Program



	Current	2016-2020
<b>Incentives</b>	<p>Incentive levels for measures in the prescriptive offering are established based on the following criteria:</p> <ul style="list-style-type: none"> <li>• The m3 savings generated</li> <li>• Both the incremental and total cost of the energy-efficient technology (as compared to base case)</li> <li>• Effective useful lifetime of the equipment</li> <li>• The effectiveness of the incentive to increase uptake in the marketplace</li> <li>• Return on investment of the equipment</li> </ul> <p>Incentive based primarily on percentage of incremental cost, typically 25%</p>	<p>The criteria to establish incentive levels will remain consistent, with one variance:</p> <ul style="list-style-type: none"> <li>• The effectiveness of the incentive to increase equipment adoption down market (commercial non-managed customers)</li> </ul> <p>Incentive based primarily on percentage of incremental cost, targeting 40%</p>
<b>Target Market</b>	<ul style="list-style-type: none"> <li>• All Commercial, Institutional and Industrial customers</li> </ul>	<ul style="list-style-type: none"> <li>• Current , with increased focus on reaching smaller Commercial customers</li> </ul>
<b>Market Approach</b>	<ul style="list-style-type: none"> <li>• Account Management delivery – targeted approaches such as national accounts; direct to customer and indirect through channel partners</li> <li>• Marketing Strategies – targeted and mass market communication approaches</li> </ul>	<ul style="list-style-type: none"> <li>• Additional emphasis on marketing approaches to reach non-managed customers</li> </ul>

# C/I Prescriptive Preliminary/Directional Budgets and Targets



## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$4.5	\$5.0	\$5.5	\$5.5	\$5.5
Program Costs	\$2.5	\$2.0	\$2.0	\$2.0	\$2.0
Total	\$7.0	\$7.0	\$7.5	\$7.5	\$7.5

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	270	280	290	290	290



# Direct Install Pilot

- Need to better assess the small business market to identify and address key barriers to program entry
- Phased approach including research and pilot in market
- Targeting small commercial customers, using less than 50,000 m3 annually
- Opportunity to coordinate and/or integrate with LDCs

## Phase 1: Survey

Market survey to address market knowledge gaps:

- Interest and applicability of technologies that are:
  - Not essential to the operation of the business; as a small business customer could potentially see the upfront cost as unnecessary
  - Essential to the operation of the facility; to ensure the higher efficient option is financially viable to a small business customer
- Suitable incentive levels to drive program adoption
- Additional market barriers to program participation such as customer time constraints, resource limitations and decision making process (i.e., rent vs. own)

## Phase 2: Pilot – Test in market

The program pilot will be implemented in one market:

- Survey outcomes will inform pilot design
- Pilot will explore potential collaboration with an LDC; assessing design and/or delivery of common Direct Install offering
- The pilot will inform potential for market expansion beyond test market
- Notional Pilot budget of \$1M over 2016-2017



# New Offering - Behavioural

- Educates and empowers customers to actively monitor and manage gas usage; offering for commercial customers is designed to educate and influence customer's on their energy usage using comparative data of like businesses
- Provides targeted information based on internal and third-party data using a customized report process for targeted business sectors and an online energy portal
- Acts as a lead generation channel for prescriptive offerings
- Collaboration opportunity with LDC

Description	<ul style="list-style-type: none"> <li>• Up to 7 comparative reports with customized tips by business type</li> <li>• Online energy portal</li> </ul>
Target Market	<ul style="list-style-type: none"> <li>• All C/I sectors, approximately 110k customers</li> <li>• Expected participation from commercial customers</li> </ul>
Market Approach	<ul style="list-style-type: none"> <li>• Targeted energy use reports mailed 7 times during the fall/winter heating season</li> </ul>
Measurement & Tracking	<ul style="list-style-type: none"> <li>• Savings in 2016 + measured by comparing actual usage of treatment and control group</li> </ul>

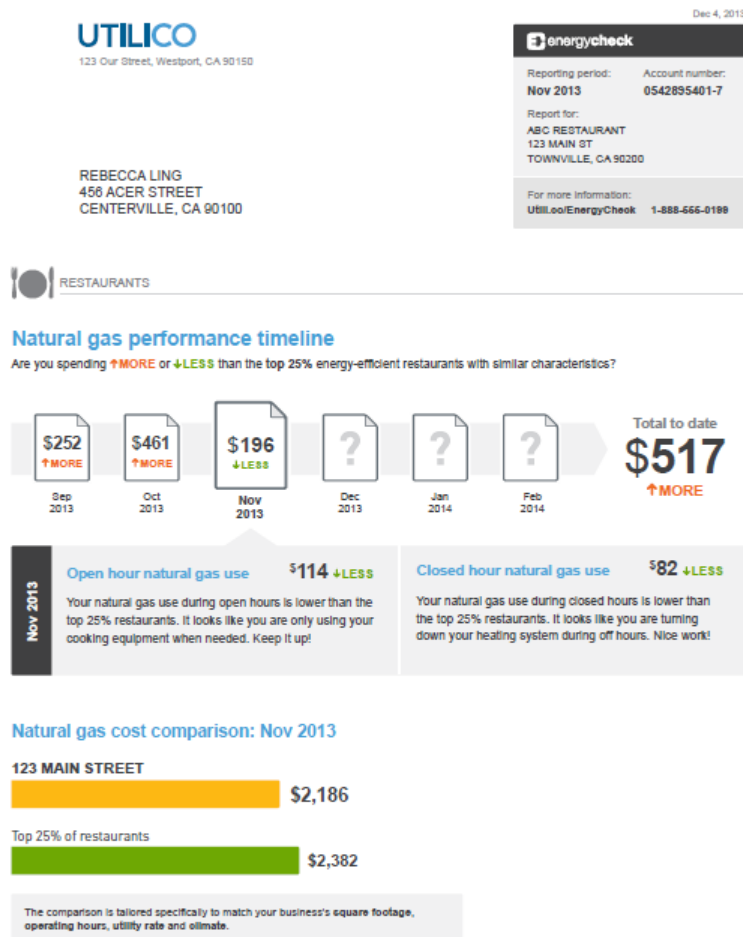
## Key Call Outs

- Report Details
  - ❖ Targeted to specific business segment
  - ❖ Tailored efficiency tips and recommendations
  - ❖ Comparison to similar businesses
- Customer Data
  - ❖ Post data transfer obtain missing information such as business type (NAICS) codes, floor area, etc.
  - ❖ Use of predictive analytics to fill in remaining gaps to determine floor area, heating loads, operating hours, etc
  - ❖ Address data quality issues (missing data, unexpected data formats, anomalies, very high/low consumption, etc)

# Sample Business Energy Report

## Appendix B

Page 144 of 240



www UTILICO/EnergyCheck 1-888-666-0199

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## FOCUS ON Heating

### Cost of heating:

- You currently spend about **\$4,573/year** on natural gas for heating.
- Heating costs come from equipment such as: furnaces, space heaters, boilers, and heat pumps.

### More efficient heating:

- Requires less maintenance
- Reduces peak demand
- Increases occupant comfort
- Reduces downtime
- Requires less space in mechanical rooms

Heating  
**16%**  
of annual energy cost



We've analyzed your energy use and recommend the following actions:

### Maintain heating system



Regular maintenance of the heating system will increase its energy efficiency and your comfort.

Have a licensed HVAC contractor check your heating and duct system for leaks.

Sealing and insulating ducts can improve the efficiency of your heating system by 20%.

#### NEXT STEP

- Contact an approved HVAC contractor.

### Close blinds at night



In the winter, closing the blinds at night can reduce heat loss by about 10%.

Closing the blinds creates an air space between the blinds and the window that helps insulate the building.

Try to remember to close all your blinds before it gets dark at the end of the day.

#### NEXT STEP

- Download the printable reminder notice.

### Optimize heating set points



Save money by setting the heat to a maximum of 68°F when your office is open.

When it's closed, turn down the heat by 10-15°F.

If you can do this for 8 hours per day, you can save up to 10% a year on your heating costs.

#### NEXT STEP

- Adjust your thermostat.

### Approved contractors

Details at [www UTILICO/Contractors](http://www UTILICO/Contractors)

CUT ENERGY COSTS BY UP TO

**\$910 /YEAR**

### Reminder notice

Available at [www UTILICO/notices](http://www UTILICO/notices)

CUT ENERGY COSTS BY UP TO

**\$460 /YEAR**

### Low cost

Quick way to get started

CUT ENERGY COSTS BY UP TO

**\$460 /YEAR**

### Closed hours

Cutting energy waste during closed hours is a great way to save money without impacting your business. Learn more in your next report.

In your mailbox:  
Jan 2014

UTILICO

© 2013 Pulse Energy Inc. The comparisons and dollar savings displayed here were prepared by a third-party. Savings are estimated for typical premises in the Utilico service area and your actual savings may vary. Utilico cannot guarantee the amount of money or energy you may save by implementing the recommended actions. These savings are funded by Utilico utility customers and administered by Utilico.



# CI Prescriptive - 100% Targets

C/I Prescriptive - Resource Acquisition Targets (M m <sup>3</sup> )						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
Standard Offer	215	270	280	290	290	290
<b>Total Cumulative m<sup>3</sup> Target</b>	<b>215</b>	270	280	290	290	290





# CI Prescriptive - 100% Budget

Budget (\$M)						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
Standard Offer	\$4.0	\$7.0	\$7.0	\$7.5	\$7.5	\$7.5
<b>Total</b>	<b>\$4.0</b>	\$7.0	\$7.0	\$7.5	\$7.5	\$7.5

\* Budgets do not include EM&V and Administration Costs

TRC						
Offering	2014 Preliminary (Pre-Audit)	2016	2017	2018	2019	2020
Standard Offer	2.0	3.5	3.5	3.5	3.5	3.5
<b>Total TRC</b>	<b>2.0</b>	3.5	3.5	3.5	3.5	3.5



## 2016 Market Transformation Program Proposal

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*Market Transformation program proposal included  
for discussion purposes only*

# Optimum Home

- Continue to support builders and address barriers faced to build to Optimum home standards
- 2016: Conclude support and host forum to disseminate key learnings in anticipation of 2017 code change
- Continue to monitor Residential New Construction programs as OBC changes in 2017

## Budgets

Budget (\$ M)	2016
Incentives	0.3
Program Cost	0.5
Total	0.8

## Targets

Metric	Metric Target Levels			Weighting
	Lower Band	Target	Upper Band	
Homes Built (>20% above OBC 2012) by participating builder	2015 Actuals + 15%	2015 Actuals + 20%	2015 Actuals + 25%	100%



## Scorecard Approach

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*Scorecard proposals included for  
discussion purposes only*

# Resource Acquisition Scorecard - Preliminary/Directional Proposal



Metric	Metric Target Levels			Weighting
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m3)	75% of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget x 1.02	125% of Target	xx %
Home Reno Rebate Participants	75% of Target	Previous Year's Post-Audit C/E (Homes per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target	xx %

## Additional Metrics for Consideration:

- CDM collaboration metric
- Participant metric targeting smaller commercial customers

# Low Income Scorecard - Preliminary/Directional Proposal



Metric	Metric Target Levels			Weighting
	Lower Band	Target	Upper Band	
Single Family Cumulative Gas Savings (m3)	75% of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target	xx %
Multi Family Cumulative Gas Savings (m3)	75% of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target	xx %
Aboriginal Home Weatherization Participants	75 Homes	100 Homes	125 Homes	xx %

## Additional Metrics for Consideration:

- CDM collaboration metric
- Franchise wide Home Weatherization delivery



## Next Steps

- Union to summarize and consider all input received from today's session
- Union to follow-up on any information requests from the day
- Union to present changes to our program proposal's in response to our stakeholder's feedback at our next session on Wednesday March 4<sup>th</sup>



**uniongas**

A Spectra Energy Company

Q&A



CONNECT WITH US





March 4, 2015 – DSM Consultation

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**From:** Liang, Manyu  
**Sent:** March-04-15 9:10 AM  
**To:** 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energyprobe@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'mark.crane@gowlings.com'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nruzycki@justenergy.com'; 'mluymes@hrai.ca'; 'jaya.chatterjee@kitchener.ca'; 'Grant.Cockburn@ontario.ca'; 'Malena.Mendez@ontario.ca'; 'ian.malpass@HydroOne.com'  
**Cc:** Lynch, Tracy; Brooks, Tracey; Innis, Vanessa; Kitchen, Mark  
**Subject:** Union Gas DSM Consultation Documents - Mar 4, 2015  
**Attachments:** Agenda - Union Gas DSM Consultation Mar 4, 2015.pdf; Union 2012-2014 DSM Program Results.pdf; March4\_DSM Consultative\_FINAL.pdf

Good Morning,

Please see attached for the presentation and supporting documents for today's Consultation.

[Manyu Liang](#)

DSM Strategy Coordinator

Tel: (416) 595-4457

## March 4, 2015 - Consultation

### Attendees

	Organization	Representative	In Person/Dial-in
1	APPrO	John Wolnik	Dial-in
2	BOMA	Marion Fraser	In person
3	City of Kitchener	Jaya Chatterjee	Dial-in
4	City of Kitchener	Michele Kamphuis	Dial-in
5	Consumers Council of Canada	Julie Girvan	In person
6	Energy Probe	Norm Rubin	In person
7	FRPO/OGVG	Dwayne Quinn	In person
8	GEC	Chris Neme	Dial-in
9	GEC	David Poch	In person
10	GEC	Kai Millyard	In person
11	HRAI	Martin Luymes	Dial-in
12	Hydro One	George Katsuras	In person
13	Hydro One	Ian Malpass	In person
14	IGUA	Ian Mondrow	In person
15	LIEN	Judy Simon	Dial-in
16	Ministry of Energy	Grant Cockburn	In person
17	Natural Resources Gas Ltd.	Brian Lippold	Dial-in
18	Ontario Energy Board	Takis Plagiannakos	In person
19	SEC	Jay Shepherd	In person
20	London Property Management Association	Randy Aiken	Dial-in
21	Toronto and Region Conservation Authority	Ian Jarvis	In person
22	VECC	Shelley Grice	Dial-in

## Union Gas DSM Consultation Meeting

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**Date:** March 4<sup>th</sup>, 2015  
**Location:** Intercontinental Yorkville Toronto (220 Bloor Street West)  
 Willard Meeting Room, 2<sup>nd</sup> Floor  
**Time:** 8:30a.m.-3:00p.m.  
**Presenters:** Tracey Brooks and Ehsan Dibaji

Start	End	Item
8:30	9:00	<b>Breakfast/Registration</b>
9:00	9:05	Opening Remarks
9:05	9:15	Purpose/Goals
9:15	9:45	Program Proposal Updates <ul style="list-style-type: none"> <li>• Residential, Low Income, Commercial/Industrial Prescriptive</li> </ul>
9:45	10:45	Commercial/Industrial Custom Offering
10:45	11:00	<b>Break</b>
11:00	12:00	Large Volume Custom Offering
12:00	1:00	<b>Lunch</b>
1:00	2:00	Budgets/Scorecard/Shareholder Incentive/Rate Impacts
2:00	3:00	Additional DSM Framework Items <ul style="list-style-type: none"> <li>• CDM</li> <li>• DSM and Infrastructure Planning</li> <li>• DSM Tracking and Reporting - System Requirements</li> </ul>
		<b>Adjourn</b>



## 2015-2020 DSM Plan Consultation

*Information included for discussion purposes only*

March 4<sup>th</sup>, 2015



# Agenda

1. Purpose and Goals
2. Stakeholdering Process
3. Program Proposal Updates
  - Residential, Market Transformation, Low Income, Commercial/Industrial Prescriptive
4. 2016-2020 Program Proposals
  - Commercial/Industrial (C/I) Custom
  - Large Volume
5. Budgets/ Scorecards/ Shareholder Incentive/Rate Impacts
6. Additional Framework Items
  - CDM
  - DSM and Infrastructure Planning
  - DSM Tracking and Reporting - System Requirements



# Purpose and Goals

## Purpose:

To review proposals on elements of Union's 2015-2020 DSM Plan and to seek input from our stakeholders for consideration in our Plan development.

## Goals:

1. To provide stakeholders with a sound understanding of the current state of elements within Union's 2015-2020 DSM Plan
2. To have meaningful dialogue with our stakeholders on our proposals for consideration in our 2015-2020 DSM Plan



# Union's Stakeholdering Process

Date	Objectives
February 18 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review Union's Residential, Low-Income and C/I Prescriptive Program proposals</li> <li>• Receive input from stakeholders</li> </ul>
March 4 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review C/I Custom Program proposal and additional framework items</li> <li>• Update on Union's program proposals (Residential, Market Transformation, Low Income, C/I Prescriptive)</li> <li>• Review portfolio scorecards, budgets and targets</li> </ul>
March 11 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Update on Union's DSM Plan proposal implemented from March 4<sup>th</sup> session</li> <li>• Receive input from stakeholders</li> <li>• Discuss process around any follow-up items if required</li> </ul>
April 1 <sup>st</sup> , 2015	Union to file our 2015-2020 DSM Plan





# Program Proposal Updates

## **Residential:**

- Confirming assumptions around proposed Home Reno Rebate (HRR) targets
- Confirming scale of Union's Behavioural Offering

## **Market Transformation:**

- Assessing the viability of the next phase of Optimum Home to inform mid-term review
- Investigating opportunities around a Commercial New Construction Offering



# Program Proposal Updates

## Low Income:

- Updating the residential furnace sub-doc through the TRM process to confirm incremental cost
- Engage Enbridge to better understand the savings assumptions for Novitherm panels

## Commercial/Industrial Prescriptive:

- Proposing to perform a detailed assessment of equipment potential on a segment by segment basis
- Assessing upstream incentive approach



# 2016-2020 Commercial/Industrial Custom Offering Proposal

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*Proposal included for discussion purposes only*



## Overview of C/I Custom Program

- Focus on energy savings opportunities with commercial and industrial customers with an emphasis on continuous improvement
- Enable energy conservation to play a role in customer operations and system planning
- This will be achieved through the delivery of the following offerings:
  - Standard C/I Custom
  - Strategic Energy Management



## C/I Custom Offering – Eligibility

- Rate T1 customers will be offered Union's Commercial/Industrial programs within the Resource Acquisition Scorecard
- Although Rate T1 currently reside on the Large Volume scorecard, their offering is consistent with the C/I Custom Offering on our Resource Acquisition scorecard
  - Rate T1 currently reside on Union's Large Volume scorecard due to the timing around splitting Rate T1 into a mid-size Rate T1 class and a large Rate T2 class
- The customer composition in the new Rate T1 is more similar to Rate M4 and Rate M7 than it is to Rate T2:

		Rate M4	Rate M7	Rate T1	Rate T2
Annual Firm Volume (m <sup>3</sup> )	AVG	2,652,236	15,392,376	12,795,770	199,721,065
	MED	1,950,010	10,844,140	10,726,120	146,616,000



# Standard C/I Custom Offering

- Provides customers incentives for non-prescriptive energy savings projects, incorporating sub-metering, completing studies for future energy savings projects, and RunSmart
- Opportunity to integrate CDM collaboration within the various C/I program elements

## Market Approach

Technical support through account managed relationships

- Assess and advise customers on eligible custom DSM opportunities

Direct promotion

- Targeted communications of energy conservation opportunities

Channel partners

- Work with equipment suppliers to promote non-prescriptive new equipment opportunities

## RunSmart

- Program offered to commercial customers with demand > 100,000 m<sup>3</sup>/yr and static baseline usage (e.g. Not previously a DSM participant)
- Site evaluation provided to participants – identifying low/no-cost savings opportunities
- Savings evaluated by metered performance (post-commissioning vs pre-commissioning)
- Site evaluations and savings opportunity identification supported by a 3<sup>rd</sup> party

# Summary of Changes to C/I Custom

	Current	2016 - 2020
<b>Project Incentives</b>	<ul style="list-style-type: none"> <li>• \$0.10 per annual m3 saved                             <ul style="list-style-type: none"> <li>• O&amp;M – up to \$20k or 50% cost</li> <li>• Equip. – up to \$40k or 50% cost</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• \$0.10 per annual m3 saved                             <ul style="list-style-type: none"> <li>• Up to \$100k or 50% cost</li> </ul> </li> </ul>
<b>Study Incentives</b>	<p><b>Commercial</b></p> <ul style="list-style-type: none"> <li>• Eng. study – up to \$4k or 30% cost</li> <li>• Trap survey – up to \$6k or 50% cost</li> <li>• Process study – up to \$20k or 66% cost</li> </ul> <p><b>Industrial</b></p> <ul style="list-style-type: none"> <li>• Eng. study – up to \$10k or 50% cost</li> <li>• Trap survey – up to \$6k or 50% cost</li> <li>• Process study – up to \$20k or 66% cost</li> </ul>	<ul style="list-style-type: none"> <li>• Consistent with current incentive approach</li> </ul>
<b>Metering Incentives</b>	<ul style="list-style-type: none"> <li>• Up to \$1k or 50% cost (per meter, installed)</li> </ul>	<ul style="list-style-type: none"> <li>• Up to \$3.5k or 50% cost (per meter, installed)</li> </ul>
<b>RunSmart Incentives</b>	<ul style="list-style-type: none"> <li>• Site opportunity checklist provided to customer</li> <li>• \$0.10 per annual m3 saved</li> </ul>	<ul style="list-style-type: none"> <li>• Site assessment provided at no charge to customer</li> <li>• \$0.10 per annual m3 saved</li> </ul>



# Summary of Changes to C/I Custom

	Current	2016 - 2020
<b>Target Market/ Eligibility Requirements</b>	<ul style="list-style-type: none"> <li>Commercial/Industrial customers (Banner and Contract)</li> <li>RunSmart                             <ul style="list-style-type: none"> <li>Customers &gt; 200,000 m3</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Commercial/Industrial customers (Banner and Contract)                             <ul style="list-style-type: none"> <li>Including rate T1</li> </ul> </li> <li>RunSmart                             <ul style="list-style-type: none"> <li>Customers &gt;100,000 m3</li> </ul> </li> </ul>
<b>Market Approach</b>	<ul style="list-style-type: none"> <li>Account managed relationships</li> <li>Internal and 3<sup>rd</sup> party technical support</li> <li>Service providers and equipment suppliers</li> <li>RunSmart delivered through AM approach</li> </ul>	<ul style="list-style-type: none"> <li>Consistent market approach</li> <li>RunSmart delivered through 3<sup>rd</sup> party engineering firms</li> </ul>
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>Free-Ridership                             <ul style="list-style-type: none"> <li>Currently using 54% (2008 Attribution study)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Free-Ridership                             <ul style="list-style-type: none"> <li>Union to conduct a Net-to-Gross study to be completed in 2015</li> </ul> </li> <li>Retain 3<sup>rd</sup> party to conduct a process evaluation around Union's approach to advancement and baselines</li> </ul>



# Standard C/I Custom – Preliminary/Directional Budgets & Targets



## Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Incentives	\$9.4	\$9.4	\$9.4	\$9.4	\$9.4
Program Costs	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Total	\$9.6	\$9.6	\$9.6	\$9.6	\$9.6

## Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	915	915	915	915	915

\* C/I Targets and Budgets will be incorporated into the Resource Acquisition Scorecard.

\* Scorecard proposals will be based on formulaic target setting methodology



# Strategic Energy Management Offering

- Offered to industrial contract customers without an established energy management system
- Focus on assessing system or site baseline energy performance metrics, and implementing continuous energy monitoring and reporting
- Savings opportunities may be identified through system monitoring and reporting

## Market Approach

Customer engagement through account managed relationships

- Participant identification and eligibility confirmed with account management and internal technical resources

3<sup>rd</sup> party technical support

- Site assessment, suggested metering and data integration, and baseline development to be supported by a 3<sup>rd</sup> party

Direct promotion

- Targeted communications of energy conservation opportunities

Budget

- Approx. \$650,000/year



## 2016-2020 Large Volume Program Proposal

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*Proposal included for discussion purposes only*



# Large Volume Offering

- Provide Rate T2 and Rate 100 customers with access to Union's internal technical expertise
- Focus on customer education and promotion of best practices
- No targets or customer incentives associated with this offering

## Market Approach

Technical support through account managed relationships

- Advise customers on improvements to specific equipment in their plants
- Counsel on types of project to pursue
- Recommend research projects and/or share known research from other facilities

Education and awareness workshops

- Technical training sessions provided by 3<sup>rd</sup> party education resources
- Tailored to customers needs and held in close proximity to customer's facility

# Summary of Changes to Large Volume (Rate T2/R100)

	Current		2016 - 2020
<b>Incentives</b>	<ul style="list-style-type: none"> <li>• Direct Access                             <ul style="list-style-type: none"> <li>• O&amp;M - \$0.08 per annual m3 (up to \$20k or 50% cost)</li> <li>• Equipment - \$0.08 per annual m3 (up to \$40k or 50% cost)</li> <li>• Ag. Pool - \$0.05 per annual m3 (up to \$20k or 50% cost)</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• No project incentives</li> <li>• Education and awareness through on-site technical training workshops</li> </ul>
<b>Target Market/Eligibility Requirements</b>	<ul style="list-style-type: none"> <li>• Rate T2 and R100 customers</li> </ul>		<ul style="list-style-type: none"> <li>• Rate T2 and R100 customers</li> </ul>
<b>Market Approach</b>	<ul style="list-style-type: none"> <li>• Account managed relationships</li> <li>• Internal and 3<sup>rd</sup> party technical support</li> <li>• Service providers and equipment suppliers</li> </ul>		<ul style="list-style-type: none"> <li>• Account managed relationships</li> <li>• Internal technical resources</li> <li>• 3<sup>rd</sup> party supported education / awareness training</li> </ul>
<b>Budget</b>	<ul style="list-style-type: none"> <li>• \$3.5M (excluding T1)</li> </ul>		<ul style="list-style-type: none"> <li>• \$0.8 M</li> </ul>



# 2016-2020 DSM Budget, Shareholder Incentive, Rate Impacts

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*Information included for discussion purposes only*

# 2015-2020 DSM Budget (\$M) – Preliminary/Directional



Budget Items	Year					
	2015	2016	2017	2018	2019	2020
<b>Residential</b>	\$3.4	\$12.6	\$15.4	\$17.9	\$17.9	\$17.9
<b>Commercial/Industrial</b>	\$11.6	\$21.3	\$22.4	\$22.9	\$22.9	\$22.6
<b>Low Income</b>	\$7.3	\$11.2	\$12.1	\$13.3	\$13.9	\$14.8
<b>Market Transformation</b>	\$1.5	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0
<b>Large Volume</b>	\$4.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8
<b>Portfolio Costs</b>						
Evaluation & Research	\$3.5	\$5.6	\$5.5	\$5.5	\$5.5	\$5.5
Administration						
<b>Incremental Requirements</b>						
<b>Studies</b>	\$0.5	\$0.5	-	-	-	-
<b>Direct Install Pilot</b>	-	\$0.5	\$0.5	-	-	-
<b>CDM Collaboration</b>	-	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0
<b>DSM Tracking and Reporting System</b>	\$1.0	\$5.0	-	-	-	-
<b>Total Budget</b>	<b>\$33.6</b>	<b>\$59.3</b>	<b>\$57.7</b>	<b>\$61.4</b>	<b>\$62.0</b>	<b>\$62.6</b>

## Consideration:

- Low Income budget to be recovered by all rate classes
- Inflation not considered in the above budget schedule

# 2015-2020 Evaluation Budget (\$M) – Preliminary/Directional



Filed: 2015-04-01  
EB-2015-0029  
Exhibit A  
A Spectra Energy Company  
Tab 3

Appendix B

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Budget Item	2015	2016	2017	2018	2019	2020
Evaluation Budget	\$1.2	\$2.5	\$2.7	\$2.8	\$2.8	\$2.9
% of Total Budget	3.6%	4.3%	4.7%	4.6%	4.5%	4.6%

## Evaluation Budget Items:

- Impact Evaluation
- Verification
- DSM Audit
- Process Evaluation
- TRM Updates
- Stakeholder Expenses





## Scorecards - Preliminary/Directional

- Union to propose the following scorecards:
  - Resource Acquisition
  - Low Income
  - Market Transformation (2016 only)
- Metrics to include:
  - Cumulative natural gas savings
  - HRR participants
- Where applicable Union will propose a formulaic approach – consistent with Union’s 2012-2014 DSM scorecards
- Additional Metrics: Are there any other metrics that Union should explore for its various scorecards?

# Projected Rate Impacts for Residential Customers



- The DSM Framework indicates that a typical residential customer's DSM bill impact should be no greater than approximately \$2/month
- The tables below indicate the approximate impact for an average residential customer in the 2020 program year

Rate Class	100% Budget and Incentive Impact
Rate 01	2.24
Rate M1	2.00
Average "Residential"	2.05

Rate Class	150% Budget and Incentive Impact
Rate 01	2.72
Rate M1	2.47
Average "Residential"	2.53

# DSM Incentive (\$M) – Preliminary/Directional



Scorecard	2015			2020		
	% of Program Budget	100% Utility Incentive	150% Utility Incentive	% of Program Budget	100% DSM Incentive	150% DSM Incentive
Resource Acquisition	52%	\$2.305	\$5.762	73%	\$3.060	\$7.650
Low Income	26%	\$1.124	\$2.810	27%	\$1.120	\$2.800
Market Transformation	5%	\$0.227	\$0.567	0%	-	-
Large Volume	17%	\$0.745	\$1.863	0%	-	-
<b>Total</b>	<b>100%</b>	<b>\$4.401</b>	<b>\$11.002</b>	<b>100%</b>	<b>\$4.180</b>	<b>\$10.450</b>

## Considerations:

- Utility Incentive allocated to scorecards based on % of program spend
- Utility Incentive to be recovered based on spend by rate class
- Large Volume not eligible for shareholder incentives
- 2016-2020 - 100% and 150% incentives determined by Board to be \$4.180M and \$10.450M respectively



## DSM-CDM Collaboration

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*Information included for discussion purposes only*



# Overall Approach to CDM Collaboration

- Work with LDCs to investigate collaboration opportunities through existing programs or pilots
- Collaboration will span all markets and largely focus on:
  - Leveraging planned DSM promotion/delivery to include CDM
  - Engaging with the IESO and LDCs on pilot project opportunities
  - Participation in LDC Working Groups/Subgroups
- Take a leading and proactive role in collaboration
- Allocate budget and resources to this priority



# Coordination/Integration Opportunities

## Approach to DSM/CDM Integration:

- Looking at developing standard offers for all markets
  - For example: HRR/Heating & Cooling rebates, Home Weatherization Program/Home Assistance Program

## Approach to DSM/CDM Coordination:

- Identifying and participating in pilot opportunities for new programs
  - For example: C/I Direct Install, Performance Based Conservation

# DSM Collaboration Fund Proposal

	Description	Annual	2016-2020
Collaboration Fund	<ul style="list-style-type: none"> <li>Resources required to facilitate collaboration opportunities.</li> <li>Participation in approximately 3-5 pilot projects/year with LDCs and IESO.</li> </ul>	\$1.0 M	\$5.0 M



## DSM and Infrastructure Planning

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*Information included for discussion purposes only*





## DSM and Infrastructure Planning

- The DSM Framework requires a study be completed to determine the appropriate role that DSM may serve in future system planning
- Timeline – must be complete in time to inform the mid-term review of the DSM Framework
- Estimated budget - \$450k



# DSM and Infrastructure Planning

- Union's planning of its distribution system is based on instantaneous peak requirements
- Union plans to study the following to determine whether DSM can be considered an alternative to infrastructure:
  - Can targeted DSM have an impact on the instantaneous peak requirement?
  - What peak-related load reductions would lead to deferral of infrastructure?
  - How should the potential of DSM measures that would impact peak requirements be assessed?
  - Could DSM programs be designed and implemented to achieve the necessary impact?
  - How would targeted DSM be integrated with Union's planning and regulatory processes?
  - What is the appropriate cost effectiveness test to compare the demand and supply options for targeted areas?



## DSM Tracking & Reporting - System Requirements

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*Information included for discussion purposes only*



# DSM Tracking & Reporting – System Requirements

- Current IT system
  - Over 10 years old
  - Remediated for two previous DSM Frameworks in 2007 and 2012
  - Constraints of the architecture make it difficult to support new programs and additional reporting requirements
- New System - Key Objectives
  - Meet the reporting requirements of the new DSM Framework
  - Maintain data integrity and provide confidence in results
  - Enhance flexibility to meet future requirements
  - Decrease manual work and duplication of effort
  - Centralize DSM contact information, interactions and identification of future opportunities

# DSM Tracking & Reporting –System Requirements

- Proposed approach
  - Currently completing an assessment of system needs
  - System requirement will be included in our DSM Plan filing
    - Plan to purchase packaged software where available to meet key system needs
    - Incremental resources will be required to put the new system in place
  - Project will take 12-18 months to complete

## 2012 Program Results

Program	Annual Net Gas Savings (m3)	Cumulative Net Gas Savings (m3)	Units	Expenditures					Net TRC	TRC Ratio	Incentive Achieved
				Total	Administration	Evaluation	Promotion	Incentives			
Residential	2,686,138	28,940,613	62,737	\$3,053,693	\$515,269	\$31,190	\$1,364,900	\$1,142,334	\$11,305,039	5.07	\$3,496,862
Energy Savings Kits (ESKs)	2,596,169	27,141,243	62,641								
Home Reno Rebate (HRR)	89,969	1,799,370	96								
Commercial/Industrial	49,127,369	858,362,003	27,144	\$11,314,294	\$2,405,403	\$81,363	\$1,330,780	\$7,496,748	\$82,480,234	3.07	
C/I Prescriptive	10,366,742	202,274,442	26,377								
C/I Custom	38,760,627	656,087,561	767								
Low-Income	2,842,901	56,116,032	40,646	\$7,702,047	\$893,499	\$188,205	\$1,277,628	\$5,342,715	\$2,488,180	1.32	\$2,725,227
Single Family	2,241,775	44,244,213	33,890								
Multi Family	601,126	11,871,819	6,756								
Large Industrial (Rate T1, Rate T2, Rate 100)	82,782,080	1,392,931,990	341	\$5,043,295	\$838,114	\$37,549	\$118,033	\$4,049,599	\$139,118,713	6.33	\$1,806,595
Rate T1(based on 2013 Reallocation)		227,624,423									
Rate T2/Rate 100 (based on 2013 Reallocation)		1,165,307,567									
Market Transformation	NA	NA	NA	\$434,823	\$158,090	\$0	\$219,923	\$56,810	NA	NA	\$181,734
Top 10 Builders Participating	NA	NA	3								
Top 50 Builders Participating	NA	NA	8								
Program Total	192,094,896	4,672,701,276	261,395	\$27,548,152	\$4,810,375	\$338,307	\$4,311,264	\$18,088,206	\$235,392,166	4.07	
Portfolio Costs				\$3,774,064							
Total 2012 Spend				\$31,322,216					\$235,392,166	3.91	
Total 2012 Shareholder Incentive Earned											\$8,210,418

Program	Annual Net Gas Savings (m3)	Culmulative Net Gas Savings (m3)	Units	Expenditures					Net TRC	TRC Ratio	Shareholder Incentive Achieved
				Total	Administration	Evaluation	Promotion	Incentives			
Residential	3,162,690	35,725,799	43,285	\$3,372,157	\$484,214	\$60,350	\$1,803,033	\$1,024,560	\$12,832,397	4.40	\$3,143,206
Energy Savings Kits (ESKs)	2,859,018	29,652,362	43,078								
Home Reno Rebate (HRR)	303,672	6,073,437	207								
Commercial/Industrial	51,833,431	885,049,151	7,056	\$12,587,008	\$2,554,405	\$127,592	\$1,491,586	\$8,413,425	\$66,604,696	2.01	
C/I Prescriptive	14,207,995	272,204,417	6,558								
C/I Custom	37,625,436	612,844,734	498								
Low-Income	2,551,934	55,504,533	12,303	\$8,042,873	\$768,319	\$219,938	\$853,703	\$6,200,913	-\$2,305,267	0.77	\$2,728,501
Single Family	1,618,601	40,236,650	4,658								
Multi Family	933,333	15,267,883	7,645								
Large Industrial (Rate T1, Rate T2, Rate 100)	122,418,509	1,844,554,921	484	\$4,738,953	\$750,796	\$32,045	\$38,899	\$3,917,213	\$252,262,463	8.74	\$1,362,407
Rate T1	10,488,841	180,388,329	333								
Rate T2/Rate 100	111,929,668	1,664,166,593	151								
Market Transformation	NA	NA	NA	\$944,661	\$365,383	\$0	\$211,078	\$368,200	NA	NA	\$550,259
Top Builders Signed in 2013	NA	NA	8								
Prototype Homes Built in 2013	NA	NA	12								
Program Total	179,966,564	2,820,834,405		\$29,685,652	\$4,923,117	\$439,925	\$4,398,299	\$19,924,311	\$329,394,289	3.93	
Portfolio Costs				\$3,153,274							
Total 2013 Spend				\$32,838,926					\$326,341,359	3.83	
Total 2013 Shareholder Incentive Earned											\$7,784,373

**2014 Program Results (Preliminary\*)**

<u>Program</u>		<u>Annual Net Gas Savings (m3)</u>	<u>Culmulative Net Gas Savings (m3)</u>	<u>Units</u>	<u>Expenditures</u>					<u>Net TRC</u>	<u>TRC Ratio</u>	<u>Shareholder Incentive Achieved</u>
				<u>Total</u>	<u>Administration</u>	<u>Evaluation</u>	<u>Promotion</u>	<u>Incentives</u>				
<i>Residential</i>		<b>4,135,925</b>	<b>61,763,699</b>	<b>46,967</b>								<b>\$5,666,634</b>
<i>Energy Savings Kits (ESKs)</i>		2,788,541	35,141,167	45,967	<b>\$3,687,750</b>	<b>\$532,284</b>	<b>\$173,300</b>	<b>\$1,280,974</b>	<b>\$1,701,192</b>	<b>\$7,506,743</b>	<b>1.98</b>	
<i>Home Reno Rebate (HRR)</i>		1,347,383	26,622,531	1,000								
<i>Commercial/Industrial</i>		<b>59,504,475</b>	<b>1,030,170,396</b>	<b>3,914</b>								
<i>C/I Prescriptive</i>		11,275,675	216,057,244	3,326	<b>\$12,741,393</b>	<b>\$2,786,916</b>	<b>\$103,687</b>	<b>\$1,184,752</b>	<b>\$8,666,038</b>	<b>\$31,640,502</b>	<b>1.32</b>	
<i>C/I Custom</i>		48,228,800	814,113,151	588								
<i>Low-Income</i>		<b>2,829,460</b>	<b>59,655,123</b>	<b>1,947</b>								<b>\$2,763,699</b>
<i>Single Family</i>		1,446,863	36,105,327	1,805	<b>\$8,529,346</b>	<b>\$825,767</b>	<b>\$243,580</b>	<b>\$1,235,066</b>	<b>\$6,224,933</b>	<b>-\$2,125,537</b>	<b>0.76</b>	
<i>Multi Family</i>		1,382,596	23,549,797	142								
<i>Large Industrial (Rate T1, Rate T2, Rate 100)</i>		<b>83,299,422</b>	<b>1,105,607,526</b>	<b>207</b>								<b>\$0</b>
<i>Rate T1</i>		5,893,002	94,788,072	53	<b>\$4,101,725</b>	<b>\$771,923</b>	<b>\$108,595</b>	<b>\$3,446</b>	<b>\$3,217,761</b>	<b>\$101,502,581</b>	<b>4.80</b>	
<i>Rate T2/Rate 100</i>		77,406,420	1,010,819,454	154								
<i>Market Transformation</i>		NA	NA	NA								<b>\$557,358</b>
<i>Top Builders Signed in 2014</i>				3	<b>\$1,262,958</b>	<b>\$400,117</b>	<b>\$0</b>	<b>\$114,717</b>	<b>\$748,124</b>	<b>\$0</b>	<b>N/A</b>	
<i>Prototype Homes Built in 2014</i>				86.4%								
<i>Homes built &gt;20% OBC</i>				14.7%								
<b>Program Total</b>		<b>149,769,282</b>	<b>2,257,196,744</b>		<b>\$30,323,172</b>	<b>\$5,317,007</b>	<b>\$629,162</b>	<b>\$3,818,955</b>	<b>\$20,558,048</b>	<b>\$138,524,289</b>	<b>1.98</b>	
<i>Portfolio Costs</i>					<b>\$3,390,624</b>							
<b>Total 2014 Spend</b>					<b>\$33,713,796</b>					<b>\$135,274,885</b>	<b>1.94</b>	
<b>Total 2014 Shareholder Incentive Earned</b>												<b>\$8,987,691</b>

\*2014 program results are preliminary and reflect pre-audit results



March 11, 2015 – DSM Consultation

**From:** Liang, Manyu  
**Sent:** March-09-15 5:28 PM  
**To:** 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energyprobe@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'mark.crane@gowlings.com'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nruzycki@justenergy.com'; 'mluymes@hrai.ca'; 'jaya.chatterjee@kitchener.ca'; 'Grant.Cockburn@ontario.ca'; 'Malena.Mendez@ontario.ca'; 'ian.malpass@HydroOne.com'  
**Cc:** Lynch, Tracy; Brooks, Tracey; Innis, Vanessa; Kitchen, Mark  
**Subject:** Union Gas DSM Consultation - Mar 11, 2015  
**Attachments:** Agenda - Union Gas DSM Consultation Mar 11, 2015.pdf

Good Afternoon,

Please find the attached agenda for the Consultation on Wed. March 11<sup>th</sup>. Please note the time change below.

**LOCATION:** Intercontinental Toronto Yorkville, 220 Bloor St. W., Willard Meeting Room (2<sup>nd</sup> floor)

**TIME:** 9:00a.m.-11:30a.m.

For those of you who are dialing in:

- 1) To follow the presentation, please go to <https://spectraenergy.webex.com/spectraenergy/j.php?J=807336837>
- 2) For audio:
  - Teleconference: 1-866-826-8611
  - Conference Code: 0301638

For those that have not done so, please RSVP to Manyu Liang [Mliang@uniongas.com](mailto:Mliang@uniongas.com) indicating:

- name of attendee(s) and organization
- in person or remote attendance

We look forward to the discussions.

**Manyu Liang**

**DSM Strategy Coordinator**

Union Gas Limited | A Spectra Energy Company

777 Bay St., Suite 2901 | Toronto, ON M5G 2C8

Tel: (416) 595-4457

email: [mliang@uniongas.com](mailto:mliang@uniongas.com)



Filed: 2015-04-01

EB-2015-0029

Exhibit A

Tab 3

Appendix B

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**From:** Liang, Manyu  
**Sent:** March-11-15 8:52 AM  
**To:** 'David.Butters@appro.org'; 'jwolnik@elenchus.ca'; 'tbrett@foglers.com'; 'Marion.Fraser@rogers.com'; 'cconway@bomatoronto.org'; 'jgirvan@uniserve.com'; 'paul.clipsham@cme-mec.ca'; 'nancy.coulas@cme-mec.ca'; 'pthompson@blg.com'; 'vderose@blg.com'; 'Normrubin.energyprobe@gmail.com'; 'DavidMacIntosh@nextcity.com'; 'Corey@enerquality.ca'; 'drquinn@rogers.com'; 'dpoch@eelaw.ca'; 'kai@web.ca'; 'cneme@energyfuturesgroup.com'; 'regulatory@HydroOne.com'; 'srahbar@igua.ca'; 'ian.mondrow@gowlings.com'; 'mark.crane@gowlings.com'; 'jabouchar@willmsshier.com'; 'mgardner@willmsshier.com'; 'jsimon@elenchus.ca'; 'randy.aiken@sympatico.ca'; 'Miriam.Heinz@powerauthority.on.ca'; 'murray.klippenstein@klippensteins.ca'; 'kent.elson@klippensteins.ca'; 'jack@cleanairalliance.org'; 'wmcnally@opsba.org'; 'jay.shepherd@canadianenergylawyers.com'; 'mrb@mrb-law.com'; 'spainc@rogers.com'; 'shelley.grice@rogers.com'; 'ric.forster@directenergy.com'; 'howley@nrgas.on.ca'; 'ian.jarvis@enerlife.com'; 'brian\_kelly@transcanada.com'; 'TCE\_Regulatory@transcanada.com'; 'josh.wasylyk@ontarioenergyboard.ca'; 'takis.plagiannakos@ontarioenergyboard.ca'; 'michael.bell@ontarioenergyboard.ca'; 'nrzycki@justenergy.com'; 'mluymes@hrai.ca'; 'jaya.chatterjee@kitchener.ca'; 'Grant.Cockburn@ontario.ca'; 'Malena.Mendez@ontario.ca'; 'ian.malpass@HydroOne.com'  
**Cc:** Lynch, Tracy; Brooks, Tracey; Innis, Vanessa; Kitchen, Mark  
**Subject:** Union Gas DSM Consultation Documents - March 11, 2015  
**Attachments:** Union Gas 2012-2014 Scorecard Summary.pdf; Union Gas DSM 2015 Scorecard.pdf; Union Gas DSM Directional 2015-2020 Budget.pdf; March11\_DSM Consultative\_Presentation.pdf

Good Morning,

Please see attached for the presentation and supporting documents for today's Consultation.

[Manyu Liang](#)

DSM Strategy Coordinator

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Tel: (416) 595-4457

email: [mliang@uniongas.com](mailto:mliang@uniongas.com)



**March 11, 2015 - Consultation****Attendees**

	<b>Organization</b>	<b>Representative</b>	<b>In Person/Dial-in</b>
1	APPrO	John Wolnik	Dial-in
2	BOMA	Marion Fraser	In person
3	City of Kitchener	Jaya Chatterjee	Dial-in
4	City of Kitchener	Michele Kamphuis	Dial-in
5	Consumers Council of Canada	Julie Girvan	In person
6	Energy Probe	Norm Rubin	In person
7	FRPO/OGVG	Dwayne Quinn	In person
8	GEC	Chris Neme	Dial-in
9	GEC	David Poch	In person
10	GEC	Kai Millyard	In person
11	HRAI	Martin Luymes	Dial-in
12	Hydro One	George Katsuras	In person
13	Hydro One	Ian Malpass	In person
14	IGUA	Ian Mondrow	In person
15	LIEN	Judy Simon	Dial-in
16	Ministry of Energy	Grant Cockburn	In person
17	Natural Resources Gas Ltd.	Brian Lippold	Dial-in
18	Ontario Energy Board	Takis Plagiannakos	In person
19	SEC	Jay Shepherd	In person
20	London Property Management Association	Randy Aiken	Dial-in
21	Toronto and Region Conservation Authority	Ian Jarvis	In person
22	VECC	Shelley Grice	Dial-in

Program	Annual Net Gas Savings (m3)	Culmulative Net Gas Savings (m3)	Units	Expenditures					Net TRC	TRC Ratio	Incentive Achieved
				Total	Administration	Evaluation	Promotion	Incentives			
Residential	2,686,138	28,940,613	62,737	\$3,053,693	\$515,269	\$31,190	\$1,364,900	\$1,142,334	\$11,305,039	5.07	\$3,496,862
Energy Savings Kits (ESKs)	2,596,169	27,141,243	62,641								
Home Reno Rebate (HRR)	89,969	1,799,370	96								
Commercial/Industrial	49,127,369	858,362,003	27,144	\$11,314,294	\$2,405,403	\$81,363	\$1,330,780	\$7,496,748	\$82,480,234	3.07	
C/I Prescriptive	10,366,742	202,274,442	26,377				\$1,084,745	\$2,356,394			
C/I Custom	38,760,627	656,087,561	767				\$246,035	\$5,140,354			
Low-Income	2,842,901	56,116,032	40,646	\$7,702,047	\$893,499	\$188,205	\$1,277,628	\$5,342,715	\$2,488,180	1.32	\$2,725,227
Single Family	2,241,775	44,244,213	33,890				\$1,189,219	\$4,053,228			
Multi Family	601,126	11,871,819	6,756				\$88,409	\$1,289,487			
Large Industrial (Rate T1, Rate T2, Rate 100)	82,782,080	1,392,931,990	341	\$5,043,295	\$838,114	\$37,549	\$118,033	\$4,049,599	\$139,118,713	6.33	\$1,806,595
Rate T1(based on 2013 Reallocation)	8,919,419	227,624,423	199								
Rate T2/Rate 100 (based on 2013 Reallocation)	73,862,661	1,165,307,567	142								
Market Transformation	NA	NA	NA	\$434,823	\$158,090	\$0	\$219,923	\$56,810	NA	NA	\$181,734
Top 10 Builders Participating	NA	NA	3								
Top 50 Builders Participating	NA	NA	8								
Program Total	137,438,488	2,336,350,638	130,868	\$27,548,152	\$4,810,375	\$338,307	\$4,311,264	\$18,088,206	\$235,392,166	4.07	
Portfolio Costs				\$3,774,064							
DWHR Sunset				\$477,142							
Research				\$770,057							
Evaluation				\$489,102							
Administration				\$2,037,763							
Total 2012 Spend				\$31,322,216					\$235,392,166	3.91	
Total 2012 Shareholder Incentive Earned											\$8,210,418

Program	Annual Net Gas Savings (m3)	Culmulative Net Gas Savings (m3)	Units	Expenditures					Net TRC	TRC Ratio	Shareholder Incentive Achieved
				Total	Administration	Evaluation	Promotion	Incentives			
Residential	3,162,690	35,725,799	43,285	\$3,372,157	\$484,214	\$60,350	\$1,803,033	\$1,024,560	\$12,832,397	4.40	\$3,143,206
Energy Savings Kits (ESKs)	2,859,018	29,652,362	43,078								
Home Reno Rebate (HRR)	303,672	6,073,437	207								
Commercial/Industrial	51,833,431	885,049,151	7,056	\$12,587,008	\$2,554,405	\$127,592	\$1,491,586	\$8,413,425	\$66,604,696	2.01	
C/I Prescriptive	14,207,995	272,204,417	6,558				\$1,291,312	\$3,350,437			
C/I Custom	37,625,436	612,844,734	498				\$200,274	\$5,062,988			
Low-Income	2,551,934	55,504,533	12,303	\$8,042,873	\$768,319	\$219,938	\$853,703	\$6,200,913	-\$2,305,267	0.77	\$2,728,501
Single Family	1,618,601	40,236,650	4,658				\$777,085	\$4,710,652			
Multi Family	933,333	15,267,883	7,645				\$76,618	\$1,490,261			
Large Industrial (Rate T1, Rate T2, Rate 100)	122,418,509	1,844,554,921	484	\$4,738,953	\$750,796	\$32,045	\$38,899	\$3,917,213	\$252,262,463	8.74	\$1,362,407
Rate T1	10,488,841	180,388,329	333				\$38,899	\$1,264,531			
Rate T2/Rate 100	111,929,668	1,664,166,593	151				\$0	\$2,652,682			
Market Transformation	NA	NA	NA	\$944,661	\$365,383	\$0	\$211,078	\$368,200	NA	NA	\$550,259
Top Builders Signed in 2013	NA	NA	8								
Prototype Homes Built in 2013	NA	NA	12								
Program Total	179,966,564	2,820,834,405		\$29,685,652	\$4,923,117	\$439,925	\$4,398,299	\$19,924,311	\$329,394,289	3.93	
Portfolio Costs				\$3,153,274							
Research				\$835,349							
Evaluation				\$464,788							
Administration				\$1,853,137							
Total 2013 Spend				\$32,838,926					\$326,341,359	3.83	
Total 2013 Shareholder Incentive Earned											\$7,784,373

**2014 Program Results (Preliminary\*)**

<u>Program</u>	<u>Annual Net Gas Savings (m3)</u>	<u>Cumulative Net Gas Savings (m3)</u>	<u>Units</u>	<u>Expenditures</u>					<u>Net TRC</u>	<u>TRC Ratio</u>	<u>Shareholder Incentive Achieved</u>
				<u>Total</u>	<u>Administration</u>	<u>Evaluation</u>	<u>Promotion</u>	<u>Incentives</u>			
<i>Residential</i>	<b>4,135,925</b>	<b>61,763,699</b>	<b>46,967</b>	<b>\$3,687,750</b>	<b>\$532,284</b>	<b>\$173,300</b>	<b>\$1,280,974</b>	<b>\$1,701,192</b>	<b>\$7,506,743</b>	<b>1.98</b>	<b>\$5,666,634</b>
<i>Energy Savings Kits (ESKs)</i>	2,788,541	35,141,167	45,967								
<i>Home Reno Rebate (HRR)</i>	1,347,383	26,622,531	1,000								
<i>Commercial/Industrial</i>	<b>59,504,475</b>	<b>1,030,170,396</b>	<b>3,914</b>	<b>\$12,741,393</b>	<b>\$2,786,916</b>	<b>\$103,687</b>	<b>\$1,184,752</b>	<b>\$8,666,038</b>	<b>\$31,640,502</b>	<b>1.32</b>	
<i>C/I Prescriptive</i>	11,275,675	216,057,244	3,326				\$981,905	\$2,770,400			
<i>C/I Custom</i>	48,228,800	814,113,151	588				\$202,847	\$5,895,638			
<i>Low-Income</i>	<b>2,829,460</b>	<b>59,655,123</b>	<b>1,947</b>	<b>\$8,529,346</b>	<b>\$825,767</b>	<b>\$243,580</b>	<b>\$1,235,066</b>	<b>\$6,224,933</b>	<b>-\$2,125,537</b>	<b>0.76</b>	<b>\$2,763,699</b>
<i>Single Family</i>	1,446,863	36,105,327	1,805				\$1,123,311	\$4,115,570			
<i>Multi Family</i>	1,382,596	23,549,797	142				\$111,755	\$2,109,363			
<i>Large Industrial (Rate T1, Rate T2, Rate 100)</i>	<b>83,299,422</b>	<b>1,105,607,526</b>	<b>207</b>	<b>\$4,101,725</b>	<b>\$771,923</b>	<b>\$108,595</b>	<b>\$3,446</b>	<b>\$3,217,761</b>	<b>\$101,502,581</b>	<b>4.80</b>	<b>\$0</b>
<i>Rate T1</i>	5,893,002	94,788,072	53				\$3,446	\$663,927			
<i>Rate T2/Rate 100</i>	77,406,420	1,010,819,454	154				\$0	\$2,553,834			
<i>Market Transformation</i>	NA	NA	NA	<b>\$1,262,958</b>	<b>\$400,117</b>	<b>\$0</b>	<b>\$114,717</b>	<b>\$748,124</b>	<b>\$0</b>	<b>N/A</b>	<b>\$557,358</b>
<i>Top Builders Signed in 2014</i>			3								
<i>Prototype Homes Built in 2014</i>			86.4%								
<i>Homes built &gt;20% OBC</i>			14.7%								
<b>Program Total</b>	<b>149,769,282</b>	<b>2,257,196,744</b>		<b>\$30,323,172</b>	<b>\$5,317,007</b>	<b>\$629,162</b>	<b>\$3,818,955</b>	<b>\$20,558,048</b>	<b>\$138,524,289</b>	<b>1.98</b>	
<i>Portfolio Costs</i>				<b>\$3,390,624</b>							
<i>Research</i>				\$834,986							
<i>Evaluation</i>				\$398,782							
<i>Administration</i>				\$2,156,856							
<b>Total 2014 Spend</b>				<b>\$33,713,796</b>					<b>\$135,274,885</b>	<b>1.94</b>	
<b>Total 2014 Shareholder Incentive Earned</b>											<b>\$8,987,691</b>

\*2014 program results are preliminary and reflect pre-audit results



2015 Resource Acquisition Scorecard				
METRIC	METRIC TARGET LEVELS			WEIGHT
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings (m3)	75% of Target	2014 Post-Audit Scorecard Cost Effectivness (m3 per Promo and Incentive) times \$10.684 times 1.02	125% of Target	90%
Deep Savings - Residential (Homes)	75% of Target	2014 Actual x 1.25	125% of Target	5%
Deep Savings - Commercial/Industrial	<i>The Higher of:</i> 1. 2014 Actual 2. 4.5%	<i>The Higher of:</i> 1. 2014 Actual + 1% 2. 5.5%	<i>The Higher of:</i> 1. 2014 Actual + 2% 2. 6.5%	5%

2015 Low Income Scorecard				
METRIC	METRIC TARGET LEVELS			WEIGHT
	Lower Band	Target	Upper Band	
Cumulative Natural Gas Savings from Single Family (m3)	19,500,000	26,000,000	32,500,000	60%
Cumulative Natural Gas Savings from Multi Family (m3)	13,200,000	17,600,000	22,000,000	40%

2015 Large Volume Scorecard				
METRIC	METRIC TARGET LEVELS			WEIGHT
	Lower Band	Target	Upper Band	
Rate T2/Rate 100 Cumulative Natural Gas Savings (m3)	75% of Target	2012-2014 Average Post-Audit T2/R100 Cost effectiveness (m3 per Incentive x (\$2.383M)	125% of Target	40%
Rate T1 Cumulative Natural Gas Savigns (m3)	75% of Target	2012-2014 Average Post-Audit T1 Cost effectiveness (m3 per Incentive x (\$1.104M)	125% of Target	60%

2015 Market Transformation Scorecard				
METRIC	METRIC TARGET LEVELS			WEIGHT
	Lower Band	Target	Upper Band	
Homes Built (>20% above OBC 2012) by participating builder	2014 Actual + 10%	2014 Actual + 15%	2014 Actual + 20%	100%

2015-2020 DSM Budget

\*All 2015-2020 budget values provided are in millions

Budget Item	2015 Budget (\$)	2016 Budget (\$)	2017 Budget (\$)	2018 Budget (\$)	2019 Budget (\$)	2020 Budget (\$)
Residential Program Budget						
Customer Incentives/Promotion	2.7	10.9	13.6	15.9	15.9	15.9
Evaluation	0.0	0.6	0.7	0.9	0.9	0.9
Administration	0.6	0.9	1.0	1.0	1.0	1.0
Total Residential	3.4	12.4	15.2	17.7	17.7	17.7
C/I Program Budget						
Customer Incentives/Promotion	8.6	14.5	15.0	15.7	15.7	15.7
Evaluation	0.1	0.2	0.2	0.2	0.2	0.2
Administration	2.9	4.0	4.1	4.1	4.1	4.1
Total C/I	11.6	18.7	19.4	20.0	20.0	20.0
Low Income Program Budget						
Customer Incentives/Promotion	6.2	9.7	10.6	11.9	12.4	13.3
Evaluation	0.0	0.2	0.2	0.2	0.2	0.3
Administration	1.0	1.2	1.2	1.2	1.2	1.2
Total Low-Income	7.3	11.2	12.1	13.3	13.9	14.8
Large Volume Program Budget						
Customer Incentives/Promotion	3.8	0.4	0.4	0.4	0.4	0.4
Evaluation	0.0	0.0	0.0	0.0	0.0	0.0
Administration	1.0	0.4	0.4	0.4	0.4	0.4
Total Large Volume	4.8	0.8	0.8	0.8	0.8	0.8
Market Transformation Program Budget						
Customer Incentives/Promotion	1.3	0.8	0.0	0.0	0.0	0.0
Evaluation	0.0	0.0	0.0	0.0	0.0	0.0
Administration	0.2	0.2	0.0	0.0	0.0	0.0
Total Market Transformation	1.5	1.0	0.0	0.0	0.0	0.0
Program Sub-Total	28.5	44.1	47.5	51.9	52.5	53.3
Portfolio Budget						
Research	0.8	1.5	1.5	1.5	1.5	1.5
Evaluation	1.0	1.5	1.5	1.5	1.5	1.5
Administration	1.7	2.7	2.6	2.6	2.6	2.6
Total Portfolio Budget	3.5	5.7	5.6	5.6	5.6	5.6
Incremental DSM Framework Requirements						
Studies	0.4	0.5	0.0	0.0	0.0	0.0
Pilot Budget	0.0	1.0	1.0	0.5	0.5	0.5
I.T System Upgrade	1.0	5.0	0.0	0.0	0.0	0.0
Total Incremental Budget	1.4	6.5	1.0	0.5	0.5	0.5
Total DSM Budget Pre-Inflation	33.4	56.3	54.1	58.0	58.6	59.5
Inflation	0.0	0.9	1.8	3.0	4.0	5.2
Total DSM Budget Post-Inflation	33.4	57.2	56.0	61.0	62.6	64.6

# Agenda

## Union Gas DSM Consultation Meeting

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**Date:** March 11<sup>th</sup>, 2015  
**Location:** Intercontinental Yorkville Toronto (220 Bloor Street West)  
 Willard Meeting Room, 2<sup>nd</sup> Floor  
**Time:** 9:00a.m.-11:30a.m.  
**Presenters:** Tracey Brooks and Ehsan Dibaji

Start	End	Item
9:00	9:30	<b>Breakfast/Registration</b>
9:30	11:30	2015-2020 DSM Plan Update <ul style="list-style-type: none"> <li>• Program Proposals</li> <li>• Portfolio Budget</li> <li>• Scorecards</li> <li>• Shareholder Incentive</li> <li>• Rate Impact</li> </ul>
		<b>Adjourn</b>



## 2015-2020 DSM Plan Consultation

*Information included for discussion purposes only*

March 11<sup>th</sup>, 2015



# Agenda

1. Purpose and Goals
2. Stakeholdering Process
3. Program Proposal Updates
4. Portfolio Budget
5. 2016-2020 Scorecards
6. Shareholder Incentive
7. Rate Impacts



# Purpose & Goals

## Purpose:

To review proposal updates around key areas within Union's 2015-2020 DSM Plan and to seek input from our stakeholders for consideration in our Plan development.

## Goals:

1. To provide stakeholders with an update on the current state of elements within Union's 2015-2020 DSM Plan
2. To have meaningful dialogue with our stakeholders on our proposals for consideration in our 2015-2020 DSM Plan



# Union's Stakeholdering Process

Date	Objectives
February 18 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review Union's Residential, Low-Income and C/I Prescriptive program proposals</li> <li>• Receive input from stakeholders</li> </ul>
March 4 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Review C/I custom program proposal and additional framework items</li> <li>• Update on Union's program proposals (Residential, Market Transformation, Low Income, C/I Prescriptive)</li> <li>• Review portfolio scorecards, budgets and targets</li> </ul>
March 11 <sup>th</sup> , 2015	<ul style="list-style-type: none"> <li>• Update on Union's DSM Plan proposal implemented from March 4<sup>th</sup> session</li> <li>• Receive input from stakeholders</li> <li>• Discuss process around any follow-up items if required</li> </ul>
April 1 <sup>st</sup> , 2015	Union to file our 2015-2020 DSM Plan



## 2016-2020 Program Proposals

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*Proposal included for discussion purposes only*





# Directional Residential Program Proposal

Union's Residential Program will include the following offerings:

- Home Reno Rebate (HRR)
- Behavioural Offering
- Energy Saving Kits (ESK)

## Further Assessments

- Evaluating the approach to upfront audit incentives for HRR participants
- Determining the channels for ESK delivery

# Directional Residential Program Targets and Budgets



## 2016-2020 Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Promotion	5.0	5.6	6.1	6.1	6.1
Incentives	6.0	7.9	9.9	9.9	9.9
Administration	0.9	1.0	1.0	1.0	1.0
Evaluation	0.6	0.7	0.9	0.9	0.9
Total	12.4	15.2	17.7	17.7	17.7

## 2016-2020 Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	95	127	157	157	157
HRR Participants	3,000	4,000	5,000	5,000	5,000



# Directional Low Income Program

Union's Low Income Program will include the following offerings:

- Home Weatherization
- Single Family Furnace End-of-Life Upgrade
- Affordable Housing Conservation
  - Including Multi-Family Market Rate
- Aboriginal Conservation

## Further Assessments

- Enhance market understanding through research

# Directional Low Income Program Targets and Budgets



## 2016-2020 Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Promotion	2.5	2.6	2.8	2.7	2.7
Incentives	7.2	8.0	9.1	9.7	10.4
Administration	1.2	1.2	1.2	1.2	1.2
Evaluation	0.2	0.2	0.2	0.2	0.3
Total	11.1	12.0	13.3	13.8	14.6

## 2016-2020 Targets

Target	2016	2017	2018	2019	2020
Single Family Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	34	34	38	40	41
Multi Family Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	15	14	14	14	14
Market Rate Multi-Family Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	2	5	5	6	6



# Directional Market Transformation Program

- Union's Market Transformation Program will continue to focus on supporting builders to build to Optimum Home standards through 2015 and 2016

## Further Assessments

- Monitor the activity in the residential home builder market (i.e. OBC 2017 implementation date)
  - Consider the viability of an offering to inform the midterm review
- Investigate opportunities around a Commercial New Construction Offering
  - Perform market research in 2016 to better understand the market channels and influencers

# Directional Market Transformation Program

## Targets and Budgets



### 2016 Budgets

Budget (\$ M)	2016
Promotion	0.3
Incentives	0.5
Administration	0.2
Evaluation	0
Total	1.0

### 2016 Targets

Target	2016
Homes Built (>20% above OBC 2012) by participating builder	2015 Actuals + 20% <sup>1</sup>

<sup>1</sup>The 100% target of the 2015 and 2016 scorecards are based on the previous year achievement +15% and +20% (percentage points) respectively. Therefore, a 2014 achievement of 14.7% equates to a 2015 target of 29.7% and a 2016 target of 49.7%.



## Directional C/I Prescriptive Program

Union's C/I Prescriptive Program will include the following offerings:

- Standard Prescriptive
- Direct Install Pilot

### Further Assessments

- Considering testing 1-2 measures in market with an upstream incentive approach
- Performing a detailed evaluation of equipment potential on a segment by segment basis

# Directional C/I Prescriptive Offering Targets and Budgets



## 2016-2020 Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Promotion	2.5	2.2	2.4	2.3	2.3
Incentives	4.6	4.9	5.1	5.1	5.1
Total	7.1	7.1	7.5	7.5	7.5

## 2016-2020 Targets

Target	2016	2017	2018	2019	2020
Cumulative m <sup>3</sup> (1M m <sup>3</sup> )	268	278	289	289	289





## Directional C/I Custom Program

Union's C/I Custom Program will include the following offerings:

- Standard C/I Custom
- RunSmart
- Strategic Energy Management

### Further Assessments

- Considering a tiered incentive structure for the standard custom offering
- Evaluating incentives based on % of savings for Strategic Energy Management and RunSmart
- Proposing a separate scorecard for Strategic Energy Management and RunSmart

# Directional C/I Custom Offering Targets and Budgets



Filed: 2015-04-01  
EB-2015-0029  
Exhibit A  
A Spectra Energy Company  
Tab 3

Appendix B

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## 2016-2020 Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Program Costs	0.8	0.8	0.8	0.8	0.8
Incentives	6.6	7.2	7.4	7.5	7.5
Total	7.4	7.9	8.2	8.2	8.3

## 2016-2020 Targets

- The 2016-2020 targets are currently in development based on the budgets noted in the table above.

# Directional C/I Program Targets and Budgets

## 2016-2020 Budgets

Budget (\$ M)	2016	2017	2018	2019	2020
Program Costs	3.3	3.0	3.1	3.1	3.1
Incentives	11.4	12.2	12.7	12.7	12.7
Administration	4.0	4.1	4.1	4.1	4.1
Evaluation	0.2	0.2	0.2	0.2	0.2
Total	18.7	19.4	20.0	20.0	20.0

## 2016-2020 Targets

- The C/I program targets are currently in development pending a review of the C/I Custom Offering.



## Directional Large Volume Program

- Provide Rate T2 and Rate 100 customers with access to Union's internal technical expertise
  - Focus on customer education and promotion of best practices
- Annual budget of \$800k
- No targets or shareholder incentive tied to this offering



## 2015-2020 Portfolio Budget

---

*Proposal included for discussion purposes only*



# Directional Portfolio Budget

## 2015-2020 Budgets

Budget Items	Year					
	2015	2016	2017	2018	2019	2020
<b>Residential</b>	\$3.4	\$12.4	\$15.2	\$17.7	\$17.7	\$17.7
<b>Commercial/Industrial</b>	\$11.6	\$18.7	\$19.4	\$20.0	\$20.0	\$20.0
<b>Low Income</b>	\$7.3	\$11.2	\$12.1	\$13.3	\$13.9	\$14.8
<b>Market Transformation</b>	\$1.5	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Large Volume</b>	\$4.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8
<b>Portfolio Costs</b>						
Evaluation & Research	\$3.5	\$5.7	\$5.6	\$5.6	\$5.6	\$5.6
Administration						
<b>Incremental Requirements</b>						
<b>Studies</b>	\$0.4	\$0.5	-	-	-	-
<b>Pilots</b>	-	\$1.0	\$1.0	\$0.5	\$0.5	\$0.5
<b>Total Program Budget – Pre Inflation</b>	<b>\$32.4</b>	<b>\$51.3</b>	<b>\$54.1</b>	<b>\$58.0</b>	<b>\$58.6</b>	<b>\$59.5</b>
<b>DSM Tracking and Reporting System</b>	\$1.0	\$5.0	-	-	-	-
<b>Total Budget – Pre Inflation</b>	<b>\$33.4</b>	<b>\$56.3</b>	<b>\$54.1</b>	<b>\$58.0</b>	<b>\$58.6</b>	<b>\$59.5</b>
<b>Inflation</b>	<b>\$0</b>	<b>\$0.9</b>	<b>\$1.8</b>	<b>\$3.0</b>	<b>\$4.0</b>	<b>\$5.2</b>
<b>Total Budget - Post Inflation</b>	<b>\$33.4</b>	<b>\$57.2</b>	<b>\$56.0</b>	<b>\$61.0</b>	<b>\$62.6</b>	<b>\$64.6</b>



## 2016-2020 Scorecards

---

*Proposal included for discussion purposes only*

# Directional 2016-2020 Resource Acquisition Scorecard



Metric	Metric Target Levels		
	Lower Band	Target	Upper Band
Cumulative Natural Gas Savings (m3)	75% Of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget x 1.02	125% of Target
Home Reno Rebate Participants	75% Of Target	Previous Year's Post-Audit C/E (Homes per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target
SMB Customer Participation (%)	xx	% of participating customers consuming less than XXXXXX m3/year	xx

- The 2016 targets will be reset to fixed values with the formulaic approach applying to the 2017-2020 scorecard



# Directional 2016-2020 Low Income Scorecard



Metric	Metric Target Levels		
	Lower Band	Target	Upper Band
Single Family Cumulative Gas Savings (m3)	75% of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target
Multi Family Cumulative Gas Savings (m3)	75% of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target
Market Rate Multi Family Cumulative Gas Savings (m3)	75% of Target	Previous Year's Post Audit C/E (m3 per Promotion and Incentive Dollar Spent) x Current Year's Promotion and Incentive Budget	125% of Target

- The 2016 targets will be reset to fixed values with the formulaic approach applying to the 2017-2020 scorecard



# Market Transformation 2016 Scorecard

Metric	Metric Target Levels		
	Lower Band	Target	Upper Band
<b>2016</b>			
Homes Built (>20% above OBC 2012) by participating builder	2015 Actuals + 15%	2015 Actuals + 20%	2015 Actuals + 25%



# Directional Performance Based Scorecard

- Assessing a Performance Based scorecard
  - Responsive to the Board's key priority to, "Implement DSM programs that are evidence-based and rely on detailed customer data"
  - Scorecard would include Strategic Energy Management (SEM) and RunSmart offerings
  - Looking at a multi-year path for SEM participants
  
- Potential RunSmart metrics
  - Average overall consumption savings (i.e. 5% consumption reduction)
  - % of completed recommended activities
  - Lifetime m3's resulting from projects



# Directional Performance Based Scorecard

- Potential SEM metrics
  - Number of participants who have completed a baseline
  - Number of customers who have signed an MOU
  - Number of projects resulting from monitoring and reporting (post baseline)
  - Average % of consumption reduction from projects resulting from monitoring and reporting (post baseline)
  - Lifetime m<sup>3</sup>'s resulting from projects



## 2015/2020 Shareholder Incentive

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*Proposal included for discussion purposes only*

# Directional 2015/2020 Shareholder Incentive

Scorecard	2015			2020		
	% of Program Budget	100% Utility Incentive	150% Utility Incentive	% of Program Budget	100% DSM Incentive	150% DSM Incentive
Resource Acquisition	52%	\$2.305	\$5.762	69%	\$2.869	\$7.173
Low Income	26%	\$1.124	\$2.810	28%	\$1.174	\$2.936
Market Transformation	5%	\$0.227	\$0.567	--	--	--
Large Volume	17%	\$0.745	\$1.863	--	--	--
Performance Based Offerings	--	--	--	3%	\$0.136	\$0.341
<b>Total</b>	<b>100%</b>	<b>\$4.401</b>	<b>\$11.002</b>	<b>100%</b>	<b>\$4.180</b>	<b>\$10.450</b>

## Considerations:

- Utility Incentive allocated to scorecards based on % of program spend
- Utility Incentive to be recovered based on spend by rate class
- Large Volume not eligible for shareholder incentives
- 2016-2020 - 100% and 150% incentives determined by Board to be \$4.180M and \$10.450M respectively



## 2015/2020 Rate Impacts

---

*Proposal included for discussion purposes only*

# Projected Rate Impacts for Residential Customers



- The DSM Framework indicates that a typical residential customer's DSM bill impact should be no greater than approximately \$2/month
- The tables below indicate the approximate impact for an average residential customer in the 2020 program year

Rate Class	2020 100% Budget and Incentive Impact <sup>1</sup>
Rate 01	2.19
Rate M1	1.95
Average "Residential"	2.01

Rate Class	2020 150% Budget and Incentive Impact <sup>1 2</sup>
Rate 01	2.67
Rate M1	2.43
Average "Residential"	2.49

<sup>1</sup> The DSM Budget includes inflation

<sup>2</sup> 150% Budget and Incentive Impact analysis represent the 100% Budget, 15% Overspend and 150% Shareholder Incentive forecasts





# Projected Rate Impacts for all Rate Classes

Rate Class	2015 100% DSM Budget Allocation (%)	2020 100% DSM Budget Allocation Forecast (%)
<b><u>Union North</u></b>	24%	24%
Rate 01	12%	16%
Rate 10	4%	4%
Rate 20	3%	2%
Rate 100	6%	1%
<b><u>Union South</u></b>	76%	76%
Rate M1	33%	45%
Rate M2	12%	16%
Rate M4	5%	4%
Rate M5	9%	3%
Rate M7	3%	3%
Rate T1	6%	3%
Rate T2	8%	2%



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Q&A



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## Low Income Market Rate Multi-Family (LI MR MF) Working Committee

A Low Income Market Rate Multi-Family (LI MR MF) Working Committee was established to address specific issues related to offering DSM for this group. Five sessions were held in 2014 in conjunction with Enbridge. The table below lists all parties involved in the working committee.

Session	Date	Union Attendees	Enbridge Attendees	External Attendees <sup>1</sup>
Working Session # 1	Jan. 21, 2014	<ul style="list-style-type: none"> <li>• Ayo Dawodu</li> <li>• Priyanka Gupta</li> <li>• Alison Moore</li> <li>• Cara-Lynne Wade</li> </ul>	<ul style="list-style-type: none"> <li>• Erika Lontoc</li> <li>• Matthew Marozzo</li> </ul>	<ul style="list-style-type: none"> <li>• Roger Higgin</li> <li>• Judy Simon</li> <li>• Dwayne Quinn</li> </ul>
Working Session #2	Feb 19, 2014	<ul style="list-style-type: none"> <li>• Ayo Dawodu</li> <li>• Priyanka Gupta</li> <li>• Alison Moore</li> <li>• Cara-Lynne Wade</li> </ul>	<ul style="list-style-type: none"> <li>• Erika Lontoc</li> <li>• Matthew Marozzo,</li> <li>• Brandon Ott</li> </ul>	<ul style="list-style-type: none"> <li>• Roger Higgin</li> <li>• Judy Simon (phone)</li> <li>• Dwayne Quinn</li> </ul>
Conference Session # 1	April 8, 2014	<ul style="list-style-type: none"> <li>• Ayo Dawodu</li> <li>• Priyanka Gupta</li> <li>• Alison Moore</li> <li>• Cara-Lynne Wade</li> </ul>	<ul style="list-style-type: none"> <li>• Erika Lontoc</li> </ul>	<ul style="list-style-type: none"> <li>• Roger Higgin</li> <li>• Judy Simon</li> <li>• Dwayne Quinn</li> </ul>
Conference Session # 2	April 25, 2015	<ul style="list-style-type: none"> <li>• Ayo Dawodu</li> <li>• Priyanka Gupta</li> <li>• Cara-Lynne Wade</li> </ul>	<ul style="list-style-type: none"> <li>• Erika Lontoc</li> </ul>	<ul style="list-style-type: none"> <li>• Judy Simon</li> <li>• Dwayne Quinn</li> </ul>
Working Session #3	September 11, 2014	<ul style="list-style-type: none"> <li>• Ayo Dawodu</li> <li>• Priyanka Gupta</li> <li>• Tracy Lynch</li> <li>• Cara-Lynne Wade</li> </ul>	<ul style="list-style-type: none"> <li>• Deborah Bullock</li> <li>• Erika Lontoc</li> <li>• Matthew Marozzo</li> <li>• Brandon Ott</li> <li>• Ravi Sigurdson</li> </ul>	<ul style="list-style-type: none"> <li>• Judy Simon</li> <li>• Dwayne Quinn</li> </ul>

<sup>1</sup> Roger Higgin represents Vulnerable Energy Coalition (VECC), Judy Simon represents LIEN, Dwayne Quinn represents FRPO

All Day Union / Enbridge DSM Alignment Session Ivey Tangerine Leadership Centre 130 King st. West, Toronto, On												
Time	Page											
8:30-9:00	Breakfast / Networking											
9:00-9:30	Meeting Purpose Expected Outcomes High Level OEB Update High Level OPA Update											
	Residential			Low Income			Commercial			Industrial		
	Offering	EGD	Union	Offering	EGD	Union	Offering	EGD	Union	Offering	EGD	Union
9:30 - 12:00	- Home Reno / CEC - New construction - Basic measures (ESK)	- Shannon Bertuzzi - Corrie Morton - Scott Hicks - Marc Hull-Jacquin	- Karen Jeans - Karen Sweet - Eric Buan - Alison Moore (Facilitator)	- Single family Weatherization - Multi-res custom	- Erika Lontoc - Deborah Bullock - Brandon Ott (Facilitator)	- Cara-Lynne Wade - Priyanka Gupta - Tina Nicholson - Ayo Dawodu	- Prescriptive - Direct install	- Gillian Lind - Rob Kennedy - Ed Reimer - Marie Crowder	- Johanna Lucas - Jeff Blunt - Chris Chetley - Ehsan Dibaji (Facilitator)	- Energy management - Large Volume Direct Access - Custom	- Lawrence Tsuji - Damir Naden - Leonardo Bonilla - Maria Mora - Suzette Mills (Facilitator)	- Drew Everett - Jordan Meunier - Meredith Lamb
12:00-12:30	Lunch											
12:30-2:30	- Behavioural - Adaptive thermostats	- Shannon Bertuzzi - Corrie Morton - Scott Hicks - Marc Hull-Jacquin	- Karen Jeans - Karen Sweet - Eric Buan - Alison Moore (Facilitator)	- Private/market rate multi-res - Benchmarking	- Erika Lontoc - Deborah Bullock - Brandon Ott (Facilitator)	- Cara-Lynne Wade - Priyanka Gupta - Tina Nicholson - Ayo Dawodu	- Retrocommissioning - Performance-based conservation	- Gillian Lind - Rob Kennedy - Ed Reimer - Marie Crowder - Suzette Mills	- Drew Everett - Jordan Meunier - Johanna Lucas - Jeff Blunt - Chris Chetley - Meredith Lamb - Ehsan Dibaji (Facilitator)	No Session		
2:30-2:45	Break											
2:45-4:15	- Home labelling - Water heaters	- Shannon Bertuzzi - Corrie Morton - Scott Hicks - Marc Hull-Jacquin	- Karen Jeans - Karen Sweet - Eric Buan - Alison Moore (Facilitator)	- Aboriginal: single family - New construction: multi-res	- Erika Lontoc - Deborah Bullock - Brandon Ott (Facilitator)	- Cara-Lynne Wade - Priyanka Gupta - Tina Nicholson - Ayo Dawodu	- New construction - Custom	- Gillian Lind - Rob Kennedy - Ed Reimer - Marie Crowder - Suzette Mills	- Drew Everett - Jordan Meunier - Johanna Lucas - Jeff Blunt - Chris Chetley - Meredith Lamb - Ehsan Dibaji (Facilitator)	No Session		
4:15-4:30	Next Steps Wrap Up											
	Additional Attendees: Tracy Lynch - Roaming Jeff Okrucky - Optional Bryan Goulden - Optional Bruce Walker - Optional Fiona Oliver-Glasford - Roaming Kevin Mark - Roaming Chris Hamilton - Roaming											

**SUMMARY OF CHANGES TO UNION'S 2016-2020 DSM PLAN  
BASED ON STAKEHOLDER FEEDBACK**

## Appendix B: Incorporating Stakeholder Feedback into Union's 2016-2020 DSM Plan

Union met with stakeholders on February 18, March 4, and March 11, 2015 to share Union's approach for the 2016-2020 DSM Plan. The following is a summary of the changes incorporated into Union's DSM Plan based on comments and feedback received. While the summary does not reflect stakeholder consensus, it demonstrates the changes Union made to take stakeholder feedback into account.

Item	Union's Original Proposal	Stakeholder Comments and Feedback <sup>1</sup>	Incorporated Changes to Union's DSM Plan
<b>C/I Custom Standard Offer Incentive</b>	Continue to offer \$0.10 an annual m <sup>3</sup> incentive but increase the incentive cap from \$40k to \$100k.	Felt that \$0.10 an annual m <sup>3</sup> may not be rich enough to attract smaller customers to participate.	Moved to a tiered incentive level. All contract customers will receive \$0.10 an annual m <sup>3</sup> with a cap of \$100k and all banner customers will receive \$0.20 an annual m <sup>3</sup> with a cap of \$40,000.
<b>C/I Custom – RunSmart Eligibility</b>	Commercial customers with demand >100,000 m <sup>3</sup> /yr and static baseline usage (e.g. not previously a DSM participant)	Lower the threshold to account for a wider customer base. There are many customers that can benefit from this program.	Threshold has been lowered by 50,000 m <sup>3</sup> /yr. Program is now offered to commercial customers with demand >50,000 m <sup>3</sup> /yr and static baseline usage (e.g. Not previously a DSM participant)
<b>C/I Custom – RunSmart Customer Incentive</b>	Customers would receive a site assessment at no charge and would receive \$0.10 an annual m <sup>3</sup> for all m <sup>3</sup> savings	Should provide a richer incentive with a focus on deep savings	Union's updated proposal continues to provide customers with a site assessment at no charge but the customer incentive for all m <sup>3</sup> savings is as follows: <ul style="list-style-type: none"> <li>• Savings demonstrated between 5% and 10% improvement from baseline will receive \$0.20 per annual m<sup>3</sup> saved</li> <li>• An incremental deep savings bonus of \$0.05 is applied to customers demonstrating greater than 10% improvement (but less than 15%)</li> <li>• An incremental deep savings bonus of \$0.10 is applied to customers demonstrating greater than 15% improvement</li> </ul>
<b>C/I Custom – Strategic Energy Management Design</b>	The proposed offering focused on assessing system or site baseline energy performance metrics, and implementing continuous energy monitoring and reporting.	Proposed that Union should take a longer term approach with participating customers by continuing to work with them beyond the establishment of a baseline and the implementation	Union's updated proposal takes customers through a multi-year approach, including; assessing system or site baseline, implementing continuous energy monitoring and reporting, annual performance reports and targeted deep savings through enhanced incentives.

<sup>1</sup> List is not inclusive of all comments and feedback provided during the Consultation.

		of an energy monitoring and reporting system.	
<b>C/I Custom – Performance Based Scorecard</b>	Union proposed that savings resulting from RunSmart and Strategic Energy Management would be captured within the Resource Acquisition scorecard.	Union heard positive feedback from stakeholders on the value of comprehensive offerings such as RunSmart and Strategic Energy Management.	In addition to the offering elements adjusted for RunSmart and Strategic Energy Management, as noted above, Union is proposing a Performance Based scorecard to emphasize the focus Union is putting in to these holistic offerings that measure results at the meter.
<b>C/I Prescriptive Standard Offering - Market Potential</b>	Union had not proposed a specific market potential research project for C/I measures. Discussions around Union's target generated discussion on market potential with stakeholders.	Suggested that there would be value in taking a deeper dive to assess the true market potential for commercial prescriptive technologies.	Union is proposing to perform a detailed assessment of equipment potential on a segment by segment basis.
<b>C/I Prescriptive Standard Offering – Incentive Structure</b>	Union's proposal included end-use customer incentives only.	It was brought forward that other jurisdictions have found success by focusing on upstream incentives.	Union will explore upstream incentive models for consideration in the C/I prescriptive offering.
<b>Residential – Behavioural</b>	Union's proposal assumed targeting 500,000 participants to with a Behavioural offering.	Stakeholders were generally supportive of the Behavioural offering but questioned whether the scale of the offering was appropriate.	Union scaled back the proposal to targeting 300,000 customers with a Behavioural offering. All customers will continue to have access to the web portal.
<b>Low Income Scorecard</b>	The original Low Income scorecard Union proposed had three metrics, including; single family lifetime m <sup>3</sup> 's, multi-family lifetime m <sup>3</sup> 's and Aboriginal Conservation participants	A metric for market rate was proposed to ensure that Union focuses on this new segment of the market.	A multi-family market rate metric is being proposed within the Low Income Scorecard.

# 2016 – 2020 Evaluation Plans

Union Gas Limited

March 2015



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# Evaluation Plan

## Residential

## Home Reno Rebate Offering

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## OFFERING OVERVIEW

### Offering Description

The Residential Home Reno Rebate offering has been designed to encourage homeowners to install two or more measures in their home to achieve energy and cost savings, and to improve indoor home comfort. Customers can take advantage of incentives available for insulation, air sealing, furnace/boiler, water heater, window, door and skylight measures, and must undertake pre and post-renovation assessments to assess energy savings.

### Goals and Objectives

The overall objectives for the Residential Home Reno Rebate offering are:

- 1) Maximization of cost effective natural gas savings;
- 2) Pursuit of deep energy savings
- 3) Avoiding lost opportunities; and
- 4) Customer satisfaction.

### Target Market

The target market for the Home Reno Rebate (HRR) offering is Union Gas Limited (Union) residential customers living in detached, semi-detached, townhouses and individually metered row houses.

### Eligibility Criteria

To be eligible for the HRR offering, Union customers must have a natural gas furnace or boiler. Additionally, customers must install at least two eligible measures.

### Key Offering Elements

The offering will involve the following activities:

- *Mass marketing to eligible customers:* Union will implement mass marketing and communication activities (e.g., radio, newspaper, billboard ads, outdoor signs) to build widespread awareness of the HRR offering. Campaigns will provide customers with information about the offering, the potential savings and how to participate.
- *Targeted promotion:* Union will implement targeted promotions (e.g., direct mail, door hangers) to promote the HRR offering to older homes with higher than average natural gas consumption, and to neighbours of HRR participants whose homes are likely to be of the same vintage.
- *Channel partner engagement:* Union will work with a network of service organizations and contractors that can generate participant leads and guide customers through each stage of the offering. This activity will involve identifying, pursuing and screening service organizations and contractors for participation in the offering.
- *Training sessions for service organizations and contractors:* Union will provide ongoing training and coaching to help the service organizations and contractors understand the structure of the HRR offering, how to sell energy efficiency, and how to provide a positive customer experience.
- *Assessment funding:* Union will provide a rebate for the pre and post-renovation assessments (\$500), provided all eligibility criteria and program rules have been met.
- *Project incentives:* Union will provide prescriptive incentives to customers for each installed measure.

## Offering Timing

The Residential HRR offering is an existing offering that will continue to run between 2016 and 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will increase the level of customer awareness about the HRR offering and its benefits. Service organizations and contractors will promote the offering to prospective participants. Service organizations will increase their capacity to complete assessments and contractors will understand the structure of the offering and be prepared to install measures. Customer awareness and service organization capacity will lead to completed pre-assessments, during which potential measures will be identified.
- In the medium-term, participants will make the decision to install measures. Contractors will install these measures.
- In the long-term, the offering will generate natural gas savings and customer satisfaction.

## PREVIOUS EVALUATIONS

Union has evaluated offering savings using baseline and post-retrofit energy modelling software (HOT2000 in EnerGuide mode). The following external resource has also been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the modelled impact of offering activities on energy consumption? (Impact)
- 2) How effective is the offering design at addressing market barriers? (Process)
- 3) Are the offering's procedures and delivery process effective? (Process)
- 4) How effectively is the offering staff implementing the offering? (Process)
- 5) How satisfied are participants with the offering? (Process)
- 6) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

## Process Evaluation

A process evaluation should ideally take place at the end of the first year of the new offering cycle (in 2017 for the 2016 offering year). By conducting a process evaluation early in the new cycle, Union will be able to improve the offering mid-course by acting on important findings and recommendations. The process evaluation would ideally involve four main tasks:

- 1) Reviewing the accuracy of the offering's design and validating the offering theory
- 2) Establishing the effectiveness of the offering's procedures and delivery process
- 3) Investigating how effectively the offering staff are implementing the offering
- 4) Determining whether participants are satisfied with the offering

To accomplish these tasks, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of participants and non-participants
- Face-to-face interviews with service organization and contractor partners
- Face-to-face interviews with offering managers and administrative staff

The analysis would determine if:

- Market barriers are being addressed sufficiently by the offering and if there is a clear link between offering activities (e.g., the assessment and measure incentive levels) and desired objectives
- The offering's procedures and delivery process flows are adequate and efficient
- If the data being tracked is complete and valid, if offering procedures are being followed; and if there is evidence of supervision and quality control of the implementation process
- Applicants are satisfied with the achieved energy savings, and increased energy awareness

## Impact Evaluation

An impact evaluation should take place over the course of each offering year. This will allow impact findings to be tracked on an annual basis. The impact evaluation involves two primary tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

As part of the HRR offering delivery, Union should collect data and complete the analysis required for the gross impact evaluation:

- Pre-retrofit site visits should be conducted to obtain the parameters required to model the home's baseline energy use using Natural Resource Canada (NRCAN) HOT2000 software in EnerGuide mode (transition to EnerGuide Rating System version 15 when implemented with an adequate transition period<sup>1</sup>).
- Post-retrofit site visits should be conducted to obtain the parameters required to model the home's post-retrofit energy use using HOT2000 software in EnerGuide mode.

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<sup>1</sup> EnerGuide will undergo a transition during 2015 or 2016 (detailed schedule still forthcoming from NRCAN).

- Modelled post-retrofit energy use should be subtracted from modelled baseline energy use to determine gross savings for each participant.
- Savings for each participant should be aggregated on an annual basis to determine the offering's total gross impact.

Union will use the Residential/Low Income Effective Useful Life Guide as filed in Union's 2015-2020 DSM Plan. Where applicable, Union will use the list of input assumptions as filed in Union 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating the input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134)*.

For the purpose of determining the baseline furnace and boiler input for EnerGuide rating system home modeling, Union will follow the guideline in Appendix A: Furnace/Boiler Baseline Determination (2016-2020).

### Net-to-Gross Calculation

Union will use its free-ridership and spill-over values from the list of input assumptions as filed in Union 2015-2020 DSM Plan to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the net-to-gross ratio to the verified gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134)*.

### Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union plans to undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## DATA COLLECTION RESPONSIBILITIES

Union and its service providers will be responsible for tracking offering data. All tracking data will be provided to the EM&V contractor, including:

- Modelled baseline whole home energy use (Impact Evaluation)
- Modelled post-retrofit whole home energy use (Impact Evaluation)
- Customer information for the customers participating in the offering, including installed measures (Process Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)

- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)



# APPENDIX A: FURNACE/BOILER BASELINE DETERMINATION (2016-2020)

Existing Heating System	Existing Heating System Efficiency	Heating System Baseline	Effective Useful Life	Free-Ridership	Spillover
Furnace	Less than 90% AFUE	90% efficiency	25 years	5%	0%
Furnace	Greater than or equal to 90% AFUE	Existing furnace efficiency	25 years	5%	0%
Boiler	Less than 82% AFUE	82% efficiency	25 years	5%	0%
Boiler	Greater than or equal to 82% AFUE	Existing boiler efficiency	25 years	5%	0%

# Evaluation Plan

## Residential

## Energy Savings Kit Offering

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## OFFERING OVERVIEW

### Offering Description

The Residential Energy Savings Kit (ESK) offering has been available since 2000 and provides Union Gas Limited (Union) customers with broad access to demand side management (DSM). Each ESK contains a pre-packaged set of measures designed to reduce customers' energy and water consumption: energy-efficient showerhead, kitchen faucet aerator, bathroom faucet aerator, pipe wrap, and Teflon tape (for ease of showerhead installation). The ESK also includes a \$25 programmable thermostat rebate coupon. ESKs are delivered door-to-door via a third party delivery agent, and can also be ordered online from Union's website. This offering serves as a complement to Union's other planned offerings in the Residential Program, and Union intends to undertake cross-promotional activities with the Home Reno Rebate and Behavioural offerings.

### Goals and Objectives

The overall objectives for the ESK offering are:

- 1) Maximization of cost effective natural gas savings;
- 2) Complement to other offerings; and
- 3) Customer satisfaction.

### Target Market

The target market for the ESK offering is Union's residential customers who have not received an ESK in the past.

### Eligibility Criteria

To be eligible for the ESK offering, residential customers must live in a detached house, semi-detached house, townhouse or individually metered row townhouse and have a natural gas fired water heater. To be eligible for the programmable thermostat rebate customers must have a natural gas furnace. Each home is eligible to receive one ESK; homes that have received an ESK in the past are not eligible to receive a second ESK.

### Key Offering Elements

The offering will involve the following activities:

- *Online ESK orders delivered by mail:* Customers ordering an ESK online may have been informed of the offer through a variety of supporting activities, such as cross-promotional activities with the Home Reno Rebate and Behavioural offerings or traditional mass market tactics (i.e. advertisement of Union Gas website or bill insert).
- *Door-to-door ESK delivery:* A third party delivery agent will offer ESKs to customers in communities with pre-identified eligible homes. Only homes that have not received a kit in the past are targeted through this channel. The third party delivery agent will leave a door hanger if nobody is home at the time of the door-to-door visit. The door hanger directs customers to order an ESK online.

### Offering Timing

The ESK offering is an existing offering that will continue to run between 2016 and 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will lead to customers ordering an ESK online or receiving one through door-to-door delivery.
- In the medium-term, customers will install the ESK products.
- In the long-term, the offering will generate natural gas savings and customer satisfaction.

## PREVIOUS EVALUATIONS

Union has conducted annual impact evaluations for the ESK offering. The impact evaluation involves a telephone survey to determine the number of ESK measures that were installed and remained installed, the portion of showering in the household that was attributable to the ESK showerhead, and the percentage of ESK recipients whose homes had natural gas-fired water heaters.

The following additional resource has also been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) Are installation rates accurate? (Impact)
- 2) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Impact Evaluation

An impact evaluation should take place at the end of each offering year. This will allow impact findings to be tracked on an annual basis. The impact evaluation involves two primary tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

Ideally, an EM&V contractor should undertake data collection activities and analyses under the following sub-tasks:

- Conduct phone surveys for a representative sample of participants to:
  - Verify installation rates and continued usage of energy-efficient showerheads, kitchen faucet aerators, bathroom faucet aerators, and pipe wrap; and

- Verify two key prescriptive input assumptions: percentage of household showering time under the energy efficient showerhead, and type of water heater.

- Calculate an overall adjustment factor for each measure within each household
- Calculate the aggregate adjustment factor by measure type for the sample set (the gross-to-gross impact adjustment factor)
- Apply the gross-to-gross impact adjustment factor for each measure to the project population

Additional energy savings assumptions for the ESK measures are outlined in the list of prescriptive input assumptions as filed in Union 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

### Net-to-Gross Calculation

Union will use its free-ridership and spill-over values from the approved list of input assumptions, as filed in Union's 2015-2020 DSM Plan, to determine the net-to-gross ratio (1 - free ridership + spill-over). The overall analysis should involve calculating the offering's net savings by applying the net-to-gross ratio to the verified gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

### Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union plans to undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## DATA COLLECTION RESPONSIBILITIES

Union will be responsible for tracking program data. All tracking data will be provided to the EM&V contractor, including:

- Customer information for the customers participating in the offering, including installed measures (Impact Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)



# Evaluation Plan

## Residential

## Behavioural Offering



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## OFFERING OVERVIEW

### Offering Description

The Residential Behavioural offering has been designed to encourage customers to reduce their energy consumption by modifying their behaviour (i.e., changing their energy use decisions and actions). Participants receive information about how their energy consumption compares to similar households through Home Energy Reports (HERs) and an online portal, and are compelled to determine how they can reduce consumption. After reviewing recommendations on energy savings opportunities, participants modify their behaviour to consume less energy.

### Goals and Objectives

The overall objectives for the Residential Behavioural offering are:

- 1) Increasing customer awareness of their natural gas usage and offer meaningful advice about how to improve their efficiency;
- 2) Increased participation in other Union Gas Limited (Union) DSM offerings; and
- 3) Customer satisfaction

### Target Market

All Residential customers (both those enrolled in HERs and those not) will have access to the Online Portal. The HER platform is being implemented as a randomized controlled trial (RCT). Initiation will involve screening Union's residential customer base to identify the study population who will receive HERs.

### Eligibility Criteria

All residential customers will be eligible to access the Online Portal. HERs participation will operate on an "opt out" basis, with participants automatically signed up for the treatment group based on their consumption.

### Key Offering Elements

The offering involves the following activities:

- *Home Energy Reports:* A targeted customer group with higher-than-average energy consumption will be selected to automatically receive HERs. Customers have the ability to opt-out if they choose. Participants will receive reports over the course of the heating season that present their customized information (Example: 2 reports during the October – December period, and two reports in the January – March period).
- *Online Portal:* An online portal will be available to all residential customers. It includes information similar to what is being provided in the participant reports. Union will investigate integrating the content into MyAccount, Union's existing online account management tool. Union will also seek to include an energy assessment questionnaire to refine messaging and ensure the information provided to the customer is relevant and meaningful.
- *Analyze Data & Develop Customized Information:* Customer energy consumption will be analyzed, compared to historic consumption, benchmarked against other households, and used to develop recommendations on energy savings goals and opportunities. Union will also use available external data, such as data purchased from the Municipal Property Assessment Corporation and information

provided by the customer through an online assessment questionnaire, to ensure that information presented to the customer is meaningful and relevant, and benchmarks are realistic.

## Offering Timing

The Residential Behavioural offering will start in late 2016 and be offered through 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will encourage participants to remain in the offering and increase the level of participant awareness about their energy consumption relative to other households. When participants understand that their energy consumption is higher than it could be, they will be compelled to take action to reduce their energy consumption.
- In the medium-term, participants will modify their behaviour to consume less energy.
- In the long-term, the offering will generate natural gas savings, create Union DSM program uplift (customers will identify opportunities to participate in other Residential offerings), and customer satisfaction.

## PREVIOUS EVALUATIONS

As a new offering, Union has not conducted previous program evaluations. Several external resources have been referenced in developing this EM&V plan. Notable resources include:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

Ontario Power Authority. *Protocols for Evaluating Behavioral Programs*

Stewart, J., Todd, A. (2015). *Chapter 17: Residential Behavior Protocol. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures.* Prepared for the U.S. Department of Energy's National Renewable Energy Laboratory.

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the direct impact of offering activities on energy consumption? (Impact)
- 2) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Impact Evaluation

An impact evaluation should take place at the end of each offering year. Impact evaluation for this offering will include a randomized control trial (RCT) and ex-post measurement – rather than ex-ante deemed savings – to measure savings. This involves the creation of sets of household groups that will receive the

HERs (“treatment groups”) and groups that will not (“control groups”). An initial set of eligible customers will be selected and, through random selection, will be assigned into either the treatment group or the control group. Through careful design of the RCT, any difference in energy use between the treatment and control groups will be the result of exposure to the HERs. Random assignment is important for a true RCT as it ensures that the offering’s savings are measured with precision and without bias.

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union plans to undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## DATA COLLECTION RESPONSIBILITIES

Union and its behavioural offering vendor will be responsible for tracking offering data. All tracking data will be provided to the EM&V contractor, including but not limited to:

- Customer information for the customers in the treatment and control groups, including billing data (Impact Evaluation)
- Gas savings claims for measures installed under Union’s other Residential and Low-Income offerings for customers in the treatment and control groups (Impact Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs (Cost Effectiveness Evaluation)

# Evaluation Plan

## Market Transformation

### Optimum Home Program

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## PROGRAM OVERVIEW

### Program Description

The Optimum Home program seeks to address barriers to the wider adoption of high efficiency homes in residential new construction, thereby avoiding lost opportunities and setting the stage for long-term energy savings in the residential market. Optimum Home examines all aspects of the builder's business in an attempt to create fundamental change toward energy efficient building practices. Using a whole-home approach, the program influences participants to build homes to the Optimum Home specification of at least 20% above Ontario Building Code (OBC) 2012.

As the 2017 Ontario Building Code approaches, Union Gas Limited (Union) will use the final years of the program to support participating builders in growing the number of homes built to the Optimum Home standard, addressing any remaining challenges and barriers within their building practices. Union will also seek to eliminate barriers to the widespread adoption of high efficiency homes by nurturing customer demand through education and outreach and encouraging spillover amongst other builders.

### Goals and Objectives

The overall objectives for the Optimum Home program are to:

- 1) Increase builders' capacity to construct energy efficient homes
- 2) Increase the number of Optimum Home housing starts in the Union franchise area
- 3) Achieve sustained natural gas savings compared to houses built to base code

### Target Market

The Optimum Home program targets the residential new build market, both single family detached homes as well as individually metered town-homes. The rate classes targeted are Rate M1 and Rate 01.

There are three primary audiences for the program:

- *Participating Builders:* The primary target market is the 22 existing Optimum Home participants. These participants were enrolled throughout the 2012-2014 and are among the fifty largest builders in Union's franchise area.
- *Non-Participating Builders:* Builders that are not participating in the Optimum Home program, but that build homes in the Union franchise area. Union is engaging with this group to encourage spillover.
- *Consumers:* In order for builders to fully embrace the program and build a significant number of housing starts to the Optimum Home standard, home buyers need to be willing to purchase them. Union is working to help home buyers understand the value of higher efficiency homes.

### Eligibility Criteria

The builders enrolled in the program were eligible as they were among the fifty largest builders in Union's service territory based on the previous year's housing starts.

### Key Program Elements

The program will involve the following activities:

- *Builder Support:* Supply-side efforts will be delivered by providing consultant support through partnering building scientists, as coordinated through a third party vendor. Union's residential sales team also plays a role by monitoring builder engagement and helping to troubleshoot issues as needed,

as well as leveraging manufacturing and channel partner relationships to provide product knowledge and education.

- *Consulting Services for Participating Builders:* The program provides financial incentives in the form of consulting services, education and training:
  - Phase 1 – \$30,000 per builder
  - Phase 2 – \$30,000 per builder
  - Phase 3 – \$15,000 per builder
  - Incremental engagement (after the completion of Phase 3) – up to \$17,500 per builder
- *Marketing Assistance for Sales Offices:* Participating builders can leverage incremental consulting support after completing Phase 3, and use this support to teach their sales staff to more effectively “sell” higher efficiency homes.
- *Marketing for Non-Participating Builders:* To encourage spillover Union intends to disseminate best practices and host “forums” for non-participating builders to learn about the program and be inspired to build high efficiency homes.
- *Awareness for Home Buyers:* Mass-media promotion to support consumer demand may include activities such as advertising through radio, newspaper, and billboards/outdoor signs to build widespread awareness of the benefits of high efficiency homes.

### Program Timing

The program is currently in place, and serving 22 participants. Optimum Home will conclude at the end of 2016, as the Ontario Building Code 2017 is introduced.

Union will investigate the possibility of introducing a new version of Optimum Home at the Mid-Term Review.

### Program Theory

In summary, the program theory is as follows:

- In the short-term, the program elements will allow builders to learn to overcome barriers associated with high-performance construction through the discovery home process and on-going consultation and support from expert building sciences professionals. These lessons learned will serve to optimize builders’ production practices and specification option packages. Further, through both targeted and broad-market based approaches, builders’ sales teams will be supported both on the supply side to help sell high-performance houses, and on the demand side by helping buyers understand the benefits of Optimum Homes.
- In the medium-term, through more broad-based promotions, both consumers and smaller, non-participating builders, will have a better understanding of the benefits of high-performance homes and be more inclined to build and buy higher-efficiency homes. More participating builders’ houses will be constructed to high-performance specifications.
- In the long-term, the program will generate natural gas savings, will increase market penetration and adoption of high-performance building practices and will increase customer satisfaction.



## PREVIOUS PROGRAM EVALUATIONS

Union has not completed any previous program evaluations for the Optimum Home program. The following external resource has been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What lessons can be learned about the effectiveness of the program during the 2012-2016 program cycle? (Process)
- 2) What barriers to high-performance new construction exist? (Market Effects)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Process Evaluation

A formative process evaluation should ideally take place at the end of the last year of the program (in 2017 for the 2016 program year). The focus of this process evaluation would be to ascertain lessons learned from the 2012-2016 program cycle in preparation for a potential program to address new code requirements. The study will focus on whether or not the interventions, tools, and processes offered to builders and consumers were effective at overcoming previous program barriers, as well as whether or not participants were satisfied with the program.

To determine lesson learned, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of consumers
- Interviews with participating and non-participating builders
- Interviews with program staff and consultants

The study should present results of the data collection process, and should provide lesson learned about:

- Program interventions and their effectiveness,
- How well participating builders received the interventions, and
- What interventions may require adjustments in a future program beyond 2017.

## Market Effects Evaluation

A market effects evaluation should ideally take place at the end of the last year of the program (in 2017 for the 2016 program year). The focus of this market effects evaluation would be to determine the degree to which barriers to high-performance new home construction exist following the current program cycle.

To identify and assess these barriers, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of consumers
- Interviews with participating and non-participating builders, contractors/installers, consultants, and home builder associations
- Interviews with subject matter experts
- Secondary research, including a literature review, a jurisdictional scan of similar programs, and an examination of new code requirements

The study should present results of the data collection process, and should provide direction on the kind of program interventions that might be required.

## Other Considerations

One of the outcomes of the program is to demonstrate that participating homes are built at least 20% above OBC 2012. This will be accomplished through of four compliance paths, as outlined in Table 1 below.

**Table 1: Optimum Home Compliance Paths<sup>2</sup>**

Compliance Path	Activities to Qualify	Evaluation Activities <sup>3</sup>
ENERGY STAR (Prescriptive)	<ul style="list-style-type: none"> <li>On-site inspection</li> <li>Blower door test</li> <li>Energy Star for New Homes (ESNH) Version 12 Building Options Package (BOP), no modelling required</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
ENERGY STAR (Performance)	<ul style="list-style-type: none"> <li>On-site inspection</li> <li>Blower door test</li> <li>Model with HOT2000 in EnerGuide for New Houses mode                             <ul style="list-style-type: none"> <li>Model the baseline house using any package from OBC SB-12</li> <li>Model the as-built house using the upgrade package to meet ESNH Version 12 requirements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
EnerGuide Rating System (ERS) 83	<ul style="list-style-type: none"> <li>On-site inspection</li> <li>Blower door test</li> <li>Model with HOT2000 in EnerGuide for New Houses mode</li> <li>Model the baseline house using any package from OBC SB-12</li> <li>Model the as-built house using the upgrade package to meet ERS83</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
20% > OBC 2012	<ul style="list-style-type: none"> <li>On-site inspection</li> <li>Model with HOT2000 in General mode                             <ul style="list-style-type: none"> <li>Model the baseline using any package from OBC SB-12</li> <li>Model the as-built house using the upgrade package to demonstrate at least 20% decrease in energy consumption (GJs)<sup>4</sup></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection and HOT2000 modeling in General mode of 10% of each builder's Optimum Home building stock claimed under this path (minimum 1 home)</li> </ul>

<sup>2</sup> Compliance paths require modeling, which currently determine EnerGuide ratings using Natural Resource Canada's (NRCan) HOT2000 modeling software. EnerGuide will undergo an unprecedented transition during 2015 or 2016 (detailed schedule still forthcoming from NRCan). Billed as 'EnerGuide v15.0', the revised system will include several changes, including a shift away from a score from 0 to 100 to a rating scale based on the actual GJ/year energy use of the home. Dependent on the EnerGuide implementation schedule, Union may transition to EnerGuide Rating System v15.0 with an adequate transition period where applicable.

<sup>3</sup> ENERGY STAR labeled and ERS83 rated homes are 20% above OBC 2012

<sup>4</sup> The blower door test for this path is optional. Where a blower door test is conducted the actual air tightness value will be used. Where it is not conducted, a consistent air tightness value as the baseline of 3.0 air changes per hour (ACH) for attached or 2.5 ACH for detached will be used (i.e. the home will not receive credit for improved air tightness).

## DATA COLLECTION RESPONSIBILITIES

Union and its service providers will be responsible for tracking program data. All tracking data will be provided to the EM&V contractor, including:

- Builder information for the participants in the program (Process Evaluation)
- Builder, address, file number and Certified Service Organization associated with each home built to the Optimum Home standard (Process Evaluation)

# Evaluation Plan

## Low Income

## Home Weatherization & Furnace End-of-Life Offerings

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## OFFERING OVERVIEW

### Offering Description

The Low Income Home Weatherization and Furnace End-of-Life offerings have been designed to reduce energy costs and improve indoor home comfort for low income homeowners, and tenants who pay their own gas bills, by installing energy-saving measures in their home.

Customers can take advantage of free installation of air sealing, attic, wall, and basement insulation, as well as an incentive for a furnace upgrade for end-of-life units. Participants also receive a carbon monoxide detector, and installation of up to two energy efficient showerheads, two meters of pipe wrap and a programmable thermostat. Kitchen and bathroom aerators are left behind for self-installation. Participants must participate in pre- and post-renovation assessments to assess savings.

Offering participants can also receive a Health and Safety incentive to remedy qualifying health and safety issues that may impede installation of measures, such as basement or attic clutter. The incentive level varies by home, as it is dependent on the overall cost-effectiveness of a given project. These levels are outlined in the Health & Safety Policy that is provided to the contracted Delivery Agent.

### Goals and Objectives

The overall objectives for the Home Weatherization and Furnace End-of-Life offerings are:

- 1) Reducing energy costs for low income customers;
- 2) Providing non-energy benefits (e.g., improved indoor home comfort) for low income customers; and
- 3) Customer satisfaction.

### Target Market

The target market for Home Weatherization and Furnace End-of-Life offerings are Union Gas Limited (Union) customers living in detached, semi-detached, townhouses and row houses, either as part of the private market or within social and assisted housing. Because the offering is targeting low income customers, offering participants must demonstrate that their income meets eligibility requirements as presented in the following section.

### Eligibility Criteria

To be eligible for the Home Weatherization and Furnace End-of-Life offerings, homeowners and tenants must meet the following eligibility criteria:

#### Social and Assisted Housing Market

- A household income at or below 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs ("LICO") for communities of 500,000 or more, as updated from time to time (income eligibility to be confirmed by the housing provider).
- Occupant of either a:
  - Single family detached home, semi-detached home, row home or town home
  - OR
  - Part 9 building (as defined by Part 9 of the Ontario Building Code)

#### Private Market

- Customer is an occupant (owner or renter) of either a:
  - Single family detached home, semi-detached home, row home or town home
  - OR
  - Part 9 building (as defined by Part 9 of the Ontario Building Code)
- Customer pays their own gas bill
- Customer has either:
  - A household Income at or below 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs ("LICO") for communities of 500,000 or more, as updated from time to time
  - OR
  - Received one of the following social benefits within the last twelve months:
    - The National Child Benefit (NCB)
    - Allowance for the Survivor
    - Guaranteed Income Supplement (GIS)
    - Allowance for Seniors
    - Healthy Smiles Ontario Child Dental Program
    - Ontario Works
    - Ontario Disability Support Programs (ODSP)
    - LEAP Emergency Financial Assistant Grant
    - Participants of Union's End-of-Life Furnace Upgrade program, or
    - Participants of electric CDM Home Assistance Program

### Key Offering Elements

The offering will involve a mix of the following activities:

- *Support via Social and Assisted Housing Associations:* Union will work closely, and form partnerships, with key associations and organizations, including but not limited to Ontario Non-Profit Housing Association (ONPHA), Ontario Municipal Social Services Association (OMSSA), and Institute of Housing Management (IHM). Through these partnerships, Union gains key insights and contacts, and influences housing providers with single family furnace end-of-life upgrade potential.
- *Private Channel Partner Engagement and Partnerships:* Union will continue to leverage existing relationships and build new relationships with social service agencies such as United Way, Ontario 211 and other Winter Warmth intake agencies. Union will ensure that agencies are both informed of and promoting the Home Weatherization and Furnace End-of-Life offerings to their clients. Union will assess and provide the support agencies required to promote the Home Weatherization and Furnace End-of-Life offerings, such as continued education sessions for their front line staff and supporting their community outreach.
- *Direct Marketing to Private Market:* Union will look to deliver direct mails to targeted communities and places advertorials in targeted communities' local newspapers. It will also look to run radio advertising in targeted communities, and continue to explore and leverage other channels, such as online/digital advertising and grass-roots community promotion.



- *Union Customer Contact Centre Collaboration:* Union will leverage the internal Customer Care Contact Centre team to promote the Home Weatherization and Furnace End-of-Life offerings on both in-bound and out-bound calls.
- *Assessment Activities:* Union will provide a pre-assessment that must be completed before offering measures are installed. Union will also provide a post-retrofit assessment, which must take place after measures are installed. All assessments are provided free of charge to participants.
- *Direct Install:* Union will install all weatherization measures at no cost to the customers.
- *Furnace End-of-Life Incentive:* Social and Assisted Housing Providers will be provided with an incentive amount that is equal to half of the incremental cost<sup>5</sup> of upgrading to a 95% or greater efficiency rating (AFUE) furnace. Only half of the incremental costs will be covered within this market to reflect that Social and Assisted Housing Providers can gain access to additional funds, whereas private market customers do not have this option. Private market customers, including those on Aboriginal reserves, will be provided with an incentive equal to the incremental cost<sup>5</sup> of upgrading to a 95% or greater efficiency rating (AFUE) furnace.

### Offering Timing

Home Weatherization is an existing offering that will continue to run between 2016 and 2020. Furnace End-of-Life is a new offering that will be delivered throughout the 2016-2020 DSM Plan.

### Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will increase the level of customer awareness about Home Weatherization and Furnace End-of-Life and their benefits. Associations and community organizations will help to promote the offering to prospective participants. Customer care agents will help to identify potential participants.
- In the medium-term, customer awareness will lead to completed pre-assessments, during which participant eligibility will be identified, and potential measures will be identified. Participants will make the decision to install measures. Contractors will install these measures.
- In the long-term, the offering will generate natural gas savings and customer satisfaction.

## PREVIOUS EVALUATIONS

Union has evaluated offering savings using pre and post energy modelling software (HOT2000 in EnerGuide mode). The following external resource has been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

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<sup>5</sup> The incremental cost is currently valued at \$1,400. This is based on an existing new build furnace upgrade substantiation document on current market insights. This value is being evaluated through the Technical Evaluation Committee and should a new incremental cost be determined, new incentive values will be implemented in both the Social and Assisted Housing and Private market to reflect the findings.

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the modelled impact of offering activities on energy consumption? (Impact)
- 2) How effective is the offering design at addressing market barriers? (Process)
- 3) Are the offering procedures and delivery process effective? (Process)
- 4) How effectively is the offering staff implementing the offering? (Process)
- 5) How satisfied are participants with the offering? (Process)
- 6) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Process Evaluation

A process evaluation should ideally take place in 2018 for the 2017 offering year to align with the Aboriginal offering. The Aboriginal offering is a targeted delivery of the Home Weatherization and Furnace End-of-Life offerings to the First Nations community that starts in 2017. To the extent possible, process evaluation activities for both offerings should be undertaken as one evaluation effort, with the Aboriginal offering segmented as a particular study stratum to investigate the effectiveness of delivery within the First Nations reserves<sup>6</sup>.

By conducting a process evaluation early in the new cycle, Union will be able improve the offering mid-course by acting on important findings and recommendations. The process evaluation would ideally involve four main tasks:

- 1) Reviewing the accuracy of the offering's design and validating the offering theory
- 2) Establishing the effectiveness of the offering's procedures and delivery process
- 3) Investigating how effectively the offering staff are implementing the offering
- 4) Determining whether participants are satisfied with the offering

To accomplish these tasks, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of participants and non-participants
- Face-to-face interviews with channel partners and delivery agents
- Face-to-face interviews with offering managers and administrative staff

The analysis would determine if:

- Market barriers are being addressed sufficiently by the offering and if there is a clear link between offering activities and desired objectives
- The offering's procedures and delivery process flows are adequate and efficient

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<sup>6</sup> Refer to the Low Income Aboriginal EM&V plan for further detail

- If the data being tracked is complete and valid, if offering procedures are being followed; and if there is evidence of supervision and quality control of the implementation process
- Applicants are satisfied with the achieved energy savings, and increased energy awareness

## Impact Evaluation

An impact evaluation should take place over the course of each offering year for the Home Weatherization offering. This will allow impact findings for Home Weatherization to be tracked on an annual basis. The impact evaluation involves two primary tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

As part of the Home Weatherization offering delivery, Union should collect data and complete the analysis required for the gross impact evaluation:

- Pre-retrofit site visits should be conducted to obtain the parameters required to model the home's baseline energy use using Natural Resource Canada (NRCan) HOT2000 software in EnerGuide mode (transition to EnerGuide Rating System version 15 when implemented with an adequate transition period<sup>7</sup>).
- Post-retrofit site visits should be conducted to obtain the parameters required to model the home's post-retrofit energy use using HOT2000 software in EnerGuide mode (transition to EnerGuide Rating System version 15 when implemented with an adequate transition period).
- Modelled post-retrofit energy use should be subtracted from modelled baseline energy use to determine gross savings for each participant.
- Savings for each participant should be aggregated on an annual basis to determine the offering's total gross impact.

Union will use the Residential/Low Income Effective Useful Life Guide as filed in Union's 2015-2020 DSM Plan. Where applicable, Union will use the list of input assumptions as filed in Union 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating the input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134)*.

For the purpose of determining the baseline furnace and boiler input for EnerGuide rating system home modeling, Union will follow the guideline in Appendix A: Furnace/Boiler Baseline Determination (2016-2020).

### Net-to-Gross Calculation

Union will use its free-ridership and spill-over values from the list of input assumptions as filed in the 2015-2020 DSM Plan to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the net-to-gross ratio to the verified gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134)*.

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<sup>7</sup> EnerGuide will undergo a transition during 2015 or 2016 (detailed schedule still forthcoming from NRCan).

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual assessment process, to assess its findings.

Union should ideally undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## DATA COLLECTION RESPONSIBILITIES

Union and its service providers will be responsible for tracking offering data. All tracking data will be provided to the EM&V contractor, including:

- Modelled baseline whole home energy use (Impact Evaluation)
- Modelled post-retrofit whole home energy use (Impact Evaluation)
- Customer information for the customers participating in the offering, including installed measures (Process Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)

## APPENDIX A: FURNACE/BOILER BASELINE DETERMINATION (2016-2020)

## Home Weatherization Offering

Existing Heating System	Existing Heating System Efficiency	Heating System Baseline	Effective Useful Life	Free-Ridership	Spillover
Furnace	Less than 90% AFUE	90% efficiency	25 years	0%	0%
Furnace	Greater than or equal to 90% AFUE	Existing furnace efficiency	25 years	0%	0%
Boiler	Less than 82% AFUE	82% efficiency	25 years	0%	0%
Boiler	Greater than or equal to 82% AFUE	Existing boiler efficiency	25 years	0%	0%

# Evaluation Plan

## Low Income

## Aboriginal Offering

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## OFFERING OVERVIEW

### Offering Description

The Low Income Aboriginal offering brings the Home Weatherization and Furnace End-of-Life offerings to First Nations communities. It has been designed to reduce energy costs and improve indoor home comfort for on reserve First Nations low income homeowners, and tenants who pay their own gas bills, by installing energy-saving measures in their home.

Customers can take advantage of free installation of air sealing, attic, wall, and basement insulation, as well as an incentive for a furnace upgrade for end-of-life units. Participants also receive a carbon monoxide detector, and installation of up to two energy efficient showerheads, two meters of pipe wrap and a programmable thermostat (Energy Savings Kit measures). Kitchen and bathroom aerators are left behind for self-installation. Participants must participate in pre- and post- upgrade assessments to assess savings.

Offering participants can also receive a Health and Safety incentive to remedy qualifying health and safety issues that may impede installation of measures, such as basement or attic clutter. The incentive level varies by home, as it is dependent on the overall cost-effectiveness of a given project. These levels are outlined in the Health & Safety Policy that is provided to the contracted Delivery Agent.

### Goals and Objectives

The overall objectives for the Aboriginal offering are:

- 1) Reducing energy costs for low income First Nations customers
- 2) Providing non-energy benefits (e.g., improved indoor home comfort) for low income First Nations customers
- 3) Customer satisfaction

### Target Market

There are 13 First Nations reserves with residential gas service in Union's franchise area. Select reserves will be targeted each year based on the following criteria: band council election dates; time required to engage with the community, proximity and existing relationships amongst reserves, and Union's internal constraints. Because the offering is targeting low income customers, offering participants must demonstrate that their income meets eligibility requirements as presented in the following section. All on reserve homes will be eligible for a carbon monoxide detector and an Energy Savings Kit, regardless of whether they qualify and/or participate in the Home Weatherization or Furnace End-of-Life offerings.

### Eligibility Criteria

The same eligibility requirements exist for the Aboriginal offering as the Home Weatherization and Furnace End-of-Life offerings<sup>8</sup>

### Key Offering Elements

The offering involves the following activities:

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<sup>8</sup> See the Low Income Home Weatherization and Furnace End-of-Life Offerings evaluation plan for further detail



- *First Nation Band Council and Delivery Partner Engagement:* Union will approach each reserve's Band Council to ensure existing relationships are leveraged when discussing and agreeing upon the promotion and delivery of the Aboriginal offering within their community.
- *Community-Based Marketing:* Union will seek to employ, and work closely with, a First Nations delivery agent that has experience working with Aboriginal communities. Within each community, the delivery agent will complete the following:
  - Host a Community Launch Event - Union will collaborate with Band Council to hold an on-reserve "launch", where the Aboriginal offering will be promoted and the community will be educated about energy conservation.
  - Hire local reserve members to be 'Community Canvassers' - These individuals will go door-to-door on the reserve canvassing for Aboriginal offering participants. The in person offering promotion will build trust and, therefore, increase buy-in and take-up of the offering. During canvassing, Aboriginal offering participants will be identified, and Free Energy Savings Kits and carbon monoxide detectors will be offered, regardless of whether they qualify.
  - Hire a local reserve member to act as a 'Project Lead' - This includes overseeing the canvassing and application process to ensure a seamless participation experience.
- *Assessment Activities:* Union will provide a pre-assessment that must be completed before offering measures are installed. Union will also provide a post-retrofit assessment, which must take place after measures are installed. All assessments are provided free of charge to participants.
- *Direct Install:* Union will install all weatherization measures at no cost to the customers.
- *Furnace End-of-Life Incentive:* Social and Assisted Housing Providers will be provided with an incentive amount that is equal to half of the incremental cost<sup>9</sup> of upgrading to a 95% or greater efficiency rating (AFUE) furnace. Only half of the incremental costs will be covered within this market to reflect that Social and Assisted Housing Providers can gain access to additional funds, whereas private market customers do not have this option. Private market customers, including those on Aboriginal reserves, will be provided with an incentive equal to the incremental cost of upgrading to a 95% or greater efficiency rating (AFUE) furnace.

## Offering Timing

The Aboriginal offering will start in 2017 and be offered through 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will increase the level of customer awareness about Union's available DSM Low Income programs and their benefits to on-reserve customers. Band Council and community organizations/members will help to promote the offering to prospective participants.

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<sup>9</sup> The incremental cost is currently valued at \$1,400. This is based on an existing new build furnace upgrade substantiation document and on current market insights. This value is being evaluated through the Technical Evaluation Committee and should a new incremental cost be determined, new incentive values will be implemented in both the Social and Assisted Housing and Private market to reflect the findings.

- In the medium-term, customer awareness will lead to completed pre-assessments, during which participant eligibility will be identified, and potential measures will be identified. Participants will make the decision to install measures. Contractors will install these measures.
- In the long-term, the offering will generate natural gas savings and customer satisfaction.

## PREVIOUS EVALUATIONS

As a new offering, Union has not conducted previous evaluations. Union has evaluated Home Weatherization offering savings using pre and post energy modelling software (HOT2000 in EnerGuide mode). The following external resource has been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

The following presents the goals and objectives of the recommended evaluation.

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the modelled impact of offering activities on energy consumption? (Impact)
- 2) How effectively is the offering being delivered to First Nations reserves? (Process)
- 3) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Process Evaluation

A process evaluation should ideally take place at the end of the first year of operation (in 2018 for the 2017 offering year). Since the Aboriginal offering is a targeted delivery of the Home Weatherization and Furnace End-of-Life offerings to the First Nations community, to the extent possible, process evaluation activities for both offerings should be undertaken as one evaluation effort, with the Aboriginal offering segmented as a particular study stratum to investigate the effectiveness of delivery within the First Nations reserves<sup>10</sup>.

To determine delivery effectiveness, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of participants and non-participants
- Face-to-face interviews with Band Council and delivery agents
- Face-to-face interviews with offering managers and administrative staff

The analysis would determine if:

- The offering is being delivered effectively to First Nations reserves

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<sup>10</sup> See the Low Income Home Weatherization and Furnace End-of-Life Offerings EM&V plan for further detail

## Impact Evaluation

An impact evaluation should take place over the course of each offering year for the Home Weatherization component of the Aboriginal offering. This will allow impact findings to be tracked on an annual basis for these measures. The impact evaluation involves two primary tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

As part of the Home Weatherization component of the Aboriginal offering delivery, Union should collect data and complete the analysis required for the gross impact evaluation:

- Pre-retrofit site visits should be conducted to obtain the parameters required to model the home's baseline energy use using Natural Resource Canada (NRCan) HOT2000 software in EnerGuide mode (transition to EnerGuide Rating System version 15 when implemented with an adequate transition period<sup>11</sup>).
- Post-retrofit site visits should be conducted to obtain the parameters required to model the home's post-retrofit energy use using HOT2000 software in EnerGuide mode (transition to EnerGuide Rating System version 15 when implemented with an adequate transition period).
- Modelled post-retrofit energy use should be subtracted from modelled baseline energy use to determine gross savings for each participant.
- Savings for each participant should be aggregated on an annual basis to determine the offering's total gross impact.

Union will use the Residential/Low Income Effective Useful Life Guide as filed in Union's 2015-2020 DSM Plan. Where applicable, Union will use the list of input assumptions as filed in Union's 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating the input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

For the purpose of determining the baseline furnace and boiler input for EnerGuide rating system home modeling, Union will follow the guideline in Appendix A: Furnace/Boiler Baseline Determination (2016-2020).

### Net-to-Gross Calculation

Union will use its free-ridership and spill-over values from the list of input assumptions, as filed in Union's 2015-2020 Plan, to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the net-to-gross ratio to the verified gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

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<sup>11</sup> EnerGuide will undergo a transition during 2015 or 2016 (detailed schedule still forthcoming from NRCan).

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual assessment process, to assess its findings.

Union should ideally undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## DATA COLLECTION RESPONSIBILITIES

Union and its service providers will be responsible for tracking offering data. All tracking data will be provided to the EM&V contractor, including:

- Modelled baseline whole home energy use (Impact Evaluation)
- Modelled post-retrofit whole home energy use (Impact Evaluation)
- Customer information for the customers participating in the offering, including installed measures (Process Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)

# APPENDIX A: FURNACE/BOILER BASELINE DETERMINATION (2016-2020)

## Aboriginal Offering

Existing Heating System	Existing Heating System Efficiency	Heating System Baseline	Effective Useful Life	Free-Ridership	Spillover
Furnace	Less than 90% AFUE	90% efficiency	25 years	0%	0%
Furnace	Greater than or equal to 90% AFUE	Existing furnace efficiency	25 years	0%	0%
Boiler	Less than 82% AFUE	82% efficiency	25 years	0%	0%
Boiler	Greater than or equal to 82% AFUE	Existing boiler efficiency	25 years	0%	0%

# Evaluation Plan

## Low-Income

## Multi-Family Offering

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## OFFERING OVERVIEW

### Offering Description

The Low-Income Multi-Family offering provides the social and assisted housing and low-income market rate multi-family housing segments with prescriptive and custom incentives to encourage energy efficient upgrades. The offering also provides funding for energy audits, as well as education for housing providers, building operators and tenants about their building's energy usage and ways to achieve energy efficiency.

### Goals and Objectives

The overall objectives for the Low-Income Multi-Family offering are to:

- 1) Reduce energy costs for low income customers
- 2) Provide non-energy benefits (e.g., improved indoor home comfort) for low income customers
- 3) Customer satisfaction

### Target Market

The target market for the offering are social and assisted housing providers that operate Part 3 buildings per the Ontario Building Code and low-income market rate multi-family housing providers that operate privately owned buildings.

### Eligibility Criteria

The eligibility criteria are as follows:

#### Social and Assisted Housing

Social and Assisted Housing Providers that meet the following criteria will be eligible:

- Operate Part 3 buildings with tenants who have a household income at or below 135% of the most recent Statistics Canada Pre-Tax Low-Income Cut-Offs ("LICO") for communities of 500,000 or more, as updated from time to time (income eligibility to be confirmed by the housing provider).

#### Low-Income Market Rate Multi-Family

Privately owned multi-family buildings that meet all of the following criteria will be eligible:

- Privately owned multi-family, Part 3, buildings
- Privately owned multi-family buildings that have a high propensity of low-income tenants, as determined by the following criteria;
  1. Building is located in a low-income neighbourhood, as determined by one of the following data sources:
    - a. A "forward sortation area" (FSA - the first 3 digits of a postal code) with 70% or greater likelihood of being low-income, as determined by data sourced from Statistics Canada Low Income Cut-Off (LICO) information
    - b. Census tract data that shows that there is a 40% or greater likelihood of being low income, as determined by data sourced from Low Income Measure (LIM)
    - c. A poverty or other neighbourhood report indicating that it is low income
    - d. A high percentage of Ontario Works (OW) recipients, as determined by data sourced from Municipal OW recipient postal code maps

OR



- e. Any neighbourhood or building identification method as agreed upon through consultation with Low-income Stakeholders

**AND**

2. Average rents of the building are at or below the Average Market Rent for that municipality as determined by one of:
  - a. Rent roll review, demonstrating average rent levels
  - b. Existence of Rent Geared to Income (RGI) or rent supplement contract(s) with the Service Manager Office (SMO)
  - c. Building has participated in Ontario Renovates or Canadian Housing and Mortgage Corporation's (CHMCs) Residential Rehabilitation Assistance Program (RRAP) in the last five years

**Key Offering Elements**

The offering involves the following activities:

- *Relationships with service managers in municipal offices (social and assisted housing):* Union's Account Managers will form and leverage relationships with service managers in municipal offices, as they are key influencers in social and assisted housing providers' energy efficiency decisions.
- *Association partnerships (social and assisted housing and low-income market rate multi-family):* Union will continue to work closely and form partnerships with key associations and organizations such as Ontario Non-Profit Housing Association (ONPHA), Ontario Municipal Social Services Association (OMSSA), Institute of Housing Management (IHM), Housing Services Corporation (HSC), Federation of Rental Housing Providers of Ontario (FRPO), and Municipal Property Management Associations. Union will gain key insights and contacts through these partnerships, increasing exposure to and influence of housing providers, building owners and property managers.
- *Account Manager direct sales (social and assisted housing and low-income market rate multi-family):* Union Account Managers will collaborate directly with housing providers and building owners to assess the energy needs of their buildings and to provide support for the development of a 5-year energy conservation plan.
- *Benchmarking enrollment (social and assisted housing):* Union will provide social and assisted housing providers with benchmarking services, including free enrollment in a benchmarking tool and active monitoring and reporting for two years. Benchmarking enrollment increases housing providers' awareness of their building's energy performance relative to similar other buildings and provides them with tips and information about offerings that might help their buildings achieve energy savings.
- *Tenant Education (social and assisted housing and low-income market rate multi-family):* Union will offer tenant education tools appropriate to the size of the building to increase tenants' understanding of and accountability for energy use in the building.
- *Energy audits (social and assisted housing and low-income market rate multi-family):* Union will provide free, comprehensive energy audits (up to \$5,000/site for up to five sites) to social and assisted housing providers and to low-income market rate multi-family housing providers. As part of the free energy audit service, Union will review the audit report with the customer to support the identification of potential retrofit opportunities.

- *Incentives (social and assisted housing and low-income market rate multi-family):* Union will provide incentives for offering participants to install prescriptive and custom measures. The prescriptive measures include all of the measures offered to the multi-family segment within the standard Commercial portfolio, but at a higher incentive level. Custom incentives are also provided for cost effective measures: \$0.10/m<sup>3</sup> of lifetime savings, up to 50% of eligible project costs. Housing providers may take advantage of the free energy audits; however, this is not required.

## Offering Timing

The social and assisted housing component of the Low-Income Multi-Family offering began in 2012 and will continue to be offered between 2016 and 2020. The low-income market rate multi-family component of the Low-Income Multi-Family offering is new and will be offered as a demonstration offering in 2016. A full low-income market rate multi-family launch will take place in 2017 and the offering is planned to run through to 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will lead social and assisted housing providers and low-income market rate multi-family housing providers to participate in the offering. The housing providers will learn about the offering and understand its benefits, and will request an energy audit and/or identify prescriptive and custom measures for implementation in their buildings.
- In the medium-term, prescriptive and custom measures will be installed in social and assisted housing and low-income market rate multi-family buildings.
- In the long-term, the offering will generate natural gas savings and customer satisfaction.

## PREVIOUS EVALUATIONS

The offering currently undergoes an annual impact evaluation to verify claimed savings for a representative stratified sample of custom projects. The objectives of the custom project savings verification (CPSV) are to determine the reasonableness of the natural gas savings calculations in the project applications, based on information available at the time of the verification, and recommend adjustment factors based on the variance between the claimed and verified savings.

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) Are low-income tenants in market rate buildings benefitting from the offering? (Process)
- 2) What is the direct impact of custom offering activities on energy consumption? (Impact)
- 3) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

## Process Evaluation

A process evaluation should ideally take place at the end of the pilot year of the low-income market rate multi-family segment of the offering (in 2017 for the 2016 offering year). The focus of this process evaluation would be to ascertain lessons learned from the pilot delivery period in preparation for continued delivery between 2017 and 2020. The process evaluation will focus on whether low-income tenants in market rate buildings are benefitting from the offering.

To determine whether or not tenants benefitted from the offering, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of tenants
- Interviews with participating building owners/managers
- Review market data on rent levels pre and post-retrofits

The study should present results of the data collection process, and should provide recommendations about how the offering could be adjusted to improve benefits for LI tenants.

## Impact Evaluation

An impact evaluation should take place at the end of each offering year. This will allow impact findings to be tracked on an annual basis. The impact evaluation involves two primary tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

For custom projects, gross impacts will be assessed according to the methodology that will be outlined in the *CPSV Terms of Reference*. In summary, EM&V contractors should undertake the following tasks:

- Sample design methodology
- Engineering review of custom project savings
- Provide an independent report on individual custom project findings
- Calculate a realization rate (Verified Savings ÷ Claimed Savings) for each sampled project
- Calculate a weighted realization rate for each strata within the sample set
- Apply weighted realization rates to the entire project population

### Persistence

For custom projects, persistence will be assessed according to the methodology that will be outlined in the *CPSV Terms of Reference*. In summary, EM&V contractors should consider the following:

- 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
- The impact of technical degradation
- The impact of potential changes in usage patterns resulting from economic uncertainties

## Net-to-Gross Calculation

Union will use its free-ridership and spillover values from the list of input assumptions, as filed in Union's 2015-2020 DSM Plan, to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the net-to-gross ratio to the verified gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union should ideally undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## Other Considerations

Union will use the Commercial/Industrial Custom Effective Useful Life Guide as filed in Union's 2015-2020 DSM Plan. Where applicable, Union will use the list of input assumptions as filed in Union 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating the input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

## DATA COLLECTION RESPONSIBILITIES

Union will be responsible for tracking offering data. All tracking data will be provided to the EM&V contractor, including:

- Customer information for the customers participating in the offering, including custom project files (Impact & Process Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)

# Evaluation Plan

## Commercial/Industrial

## Prescriptive Offering

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## OFFERING OVERVIEW

### Offering Description

The Commercial/Industrial Prescriptive offering provides customers with a list of recommended technologies that have pre-determined incentive and savings amounts, defined by facility type and equipment size. The application process for the offering promotes ease of participation as no additional analysis or savings calculations are required. This also allows customers with multiple facilities the option of rolling out technologies to an entire portfolio of buildings in an efficient way. The offering initiatives target space heating, water heating, ventilation, building controls, heat recovery and efficient equipment (for cooking, cleaning and laundry) applications.

### Goals and Objectives

The overall objectives for the Commercial/Industrial Prescriptive offering are:

- 1) Maximization of cost effective natural gas savings for all CI customers;
- 2) Achieving long term energy savings in commercial, institutional and industrial facilities; and
- 3) Customer satisfaction

### Target Market

Union Gas Limited (Union) offers prescriptive and quasi-prescriptive measures to more than 100,000 Commercial/Industrial General Service and Commercial/Industrial Contract customers.

Target markets include, but are not limited to:

- Manufacturing, Industrial Processing and Refining, Agriculture
- Municipalities, Universities, Schools, Hospitals, Long-term Care
- Warehouse, Multi-Residential, Office, Retail, Lodging, Food Service

### Eligibility Criteria

Participants must be a Union customer with an account under Rate M1, Rate M2, Rate 01, Rate 10, Rate M4, Rate M5, Rate M7, Rate T1, or Rate 20.

Additional eligibility criteria by technology may apply.

### Key Offering Elements

The offering involves the following activities:

- *Marketing:*
  - Mass Marketing: Union will market its offering through traditional and digital media
  - Targeted Marketing: Union will maintain direct relationships with targeted customers through account managers and through direct provision of marketing material via mail and email.
- *Service Provider Engagement*: Union will work with a network of service providers that can generate participant leads and guide customers through each stage of the offering. This activity involves engaging with service providers to ensure that they are up-to-date on promoted technologies and available incentives.

*Incentive Payments:* Incentives will be provided directly to customers, with limited-time bonus offers and multi-unit installation bonus offers available in special cases.

## Offering Timing

The Commercial/Industrial Prescriptive offering is an existing offering that will continue to run between 2016 and 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will lower barriers that hinder the adoption of energy-efficient equipment (for example, the higher incremental cost of energy-efficient equipment).
- In the medium-term, customers will be encouraged to adopt energy efficient behaviour more broadly.
- In the long-term, the offering will generate natural gas savings and increase customer satisfaction.

## PREVIOUS EVALUATIONS

Recent evaluation activities pertinent to the Commercial/Industrial Prescriptive offering include:

Energy & Resource Solutions (ERS), Ongoing. *Technical Resource Manual Update/Development*

In addition, the following external resource has been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) Are limited time offers and multi-unit installation bonuses effectively driving participation? (Process)
- 2) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Process Evaluation

A process evaluation should ideally take place at the end of first year of the new offering cycle (in 2017 for the 2016 offering year). The focus of this process study would be to determine the effectiveness of limited time offers and multi-unit incentives at addressing barriers and achieving desired offering objectives. By conducting a process evaluation early in the new cycle, Union will be able improve the offering mid-course by acting on important findings and recommendations.



To assess the effectiveness of limited time offers and multi-unit installation incentives, an EM&V contractor would ideally undertake the following additional data collection activities:

- Phone surveys of a representative sample of participants and non-participants
- Interviews with service providers and offering staff

The analysis would involve reviewing internally tracked data, offering theory and offering evidence documents, as well as answers to survey questions. The study should provide recommendations on whether the incentive design requires adjustment (e.g., structure, amount).

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union plans to undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## Other Considerations

Union will use the list of prescriptive input assumptions as filed in Union 2015-2020 DSM Plan. Union will also use the free-ridership values from the list of input assumptions to determine the net-to-gross ratio (1 - free ridership + spill-over) for each measure. The overall analysis should involve calculating a measure's net savings by applying the net-to-gross ratio to the gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating these input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

## DATA COLLECTION RESPONSIBILITIES

Union will be responsible for tracking offering data. All tracking data will be provided to the EM&V contractor, including:

- Customer information for the customers participating in the offering, including installed measures (Process Evaluation)
- Customer information for the customers participating in the offering as a result of limited-time offers (Process Evaluation)
- Customer information for the customers participating in the offering as a result of multi-installation bonuses (Process Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)

- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)

# Evaluation Plan

## Commercial/Industrial

## Custom Offering

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## OFFERING OVERVIEW

### Offering Description

The Commercial/Industrial Custom offering has been designed to encourage customers to reduce their energy consumption by providing financial incentives, technical expertise, and guidance with respect to energy related decision making and business justification, including helping customers to prioritize energy efficiency projects against their own internal competing factors and demonstrate the competitive advantage customers can gain through efficiency upgrades.

### Goals and Objectives

The overall objectives for the Commercial/Industrial Custom offering are:

- 1) Maximization of cost effective natural gas savings;
- 2) Pursuit of deep energy savings; and
- 3) Customer satisfaction

### Target Market

The Commercial/Industrial Custom offering targets commercial and industrial customers within the following rate classes: Rate M2, Rate M4, Rate M5, Rate M7, Rate 10, Rate 20, Rate T1

### Eligibility Criteria

Eligible participants must be located in Union's franchise area and must be a customer within one of the targeted rate classes.

### Key Offering Elements

The offering involves the following activities:

- *Customer Engagement:* Union will continue to employ an account management strategy focused on developing and maintaining long term business relationships
- *Channel Partner Engagement:* Union will continue to establish and maintain relationships with key industry partners including Canadian Manufacturers and Exporters, Ontario Ministry of Small Business and Consumer Services, Consortium for Energy Efficiency, Energy Solutions Centre, and Natural Resources Canada.
- *Marketing:* Union staff will attend trade shows to distribute information on various programs, including the Commercial/Industrial Custom offering.
- *Education:* Participants will receive information regarding industry trends and new technologies (examples, the Gasworks newsletter, EnerSmart brochures, EnerCase reports, etc). Union will also hold regular workshops on relevant topics.
- *Study and Metering Support:* In order to facilitate project identification, Union will fund studies including engineering feasibility studies and process improvement studies. Metering support will also be offered to assist customers with the cost of natural gas sub-meters to better measure natural gas use.
- *Project Incentives:* Incentives will be provided directly to the customer based on estimated energy savings in order to offset the cost of implementation.

### Offering Timing

The Commercial/Industrial Custom offering will continue to be available through 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will result in greater knowledge of program offering, increased awareness of energy efficiency opportunities, project identification, and project implementation.
- In the medium-term, participants will increase their capacity to effectively manage energy.
- In the long-term, the offering will generate natural gas savings, non-energy benefits, and customer satisfaction.

## PREVIOUS EVALUATIONS

The offering currently undergo an annual impact evaluation to verify claimed savings for a representative stratified sample of custom projects. The objectives of the custom project savings verification (CPSV) are to determine the reasonableness of the natural gas savings calculations in the project applications, based on information available at the time of the verification, and to recommend adjustment factors based on the variance between the claimed and verified savings.

There is also a net-to-gross study currently in progress which is expected to be completed in 2015.

The following additional resource has also been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the direct impact of offering activities on energy consumption? (Impact)
- 2) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Impact Evaluation

An impact evaluation should take place at the end of each offering year. This will allow impact findings to be tracked on an annual basis. The impact evaluation involves two primary tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

For custom projects, gross impacts will be assessed according to the methodology that will be outlined in the *CPSV Terms of Reference*. In summary, EM&V contractors should undertake the following tasks:

- Sample design methodology

- Engineering review of custom project savings
- Provide an independent report on individual custom project findings
- Calculate a realization rate (Verified Savings ÷ Claimed Savings) for each sampled project
- Calculate a weighted realization rate for each strata within the sample set
- Apply weighted realization rates to the entire project population

### Persistence

For custom projects, persistence will be assessed according to the methodology that will be outlined in the *CPSV Terms of Reference*. In summary, EM&V contractors should consider the following:

- 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
- The impact of technical degradation
- The impact of potential changes in usage patterns resulting from economic uncertainties

### **Net-to-Gross Calculation**

Union will use its free-ridership and spillover values from the list of input assumptions, as filed in Union's 2015-2020 DSM Plan, to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the offering's net-to-gross ratio to the verified gross savings. Union plans to use the findings from the 2015 net-to-gross study when available. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

### **Cost Effectiveness Evaluation**

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union should ideally undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

### **Other Considerations**

Union will use the Commercial/Industrial Custom Effective Useful Life Guide as filed in Union's 2015-2020 DSM Plan. Where applicable, Union will use the list of input assumptions as filed in Union 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating the input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

Similarly, for the purpose of determining the custom baselines, Union will follow the guidelines in Appendix A: Custom Baseline Determination.

## DATA COLLECTION RESPONSIBILITIES

Union will be responsible for tracking program data. All tracking data will be provided to the EM&V contractor, including:

- Customer information for the for the customers participating in the program, including custom project files (Impact Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)



## APPENDIX A: CUSTOM BASELINE DETERMINATION

## MEASURE DECISION TYPE

Code	Description	Comment
NC	New Construction	Measure applied during construction design phase as an alternative to a code-compliant standard design
R	Retrofit	Retrofit to existing equipment without replacement
NR	Natural Replacement	Measure applied when existing equipment fails or requires replacement
ER	Early Replacement	Measure applied while existing equipment still operable

## BASELINE DETERMINATION

Code	Baseline	Baseline Technology	Duration
NC	First	Code or standard practice	Full EUL
	Second	N/A	N/A
R	First	Existing technology	Full EUL
	Second	N/A	N/A
NR	First	Code or standard practice	Full EUL
	Second	N/A	N/A
ER	First	Existing technology	RUL or 1/3*EUL <sup>12</sup>
	Second	Code or standard practice	EUL - RUL

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<sup>12</sup> Where remaining useful life (RUL) of the existing equipment is unknown, 1/3 of the efficient equipment useful life (EUL) will be used

# Evaluation Plan

## Performance Based Conservation

### RunSmart Offering

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## OFFERING OVERVIEW

### Offering Description

The RunSmart (RunSmart) offering covers the full cost of retrocommissioning (RCx) studies for general service commercial customers who use greater than 50,000 m<sup>3</sup> of natural gas annually at one location and have not recently implemented energy conservation measures at their site (e.g. not currently active participants in Union Gas Limited's (Union) existing DSM program). Participants interact with the offering through approved contractors that assess participant facilities using a 22-point RCx checklist to identify low- or no-cost energy efficiency improvements. Once implemented, natural gas savings are measured by Union using a whole-building energy analysis approach and participants receive an incentive. By participating in the offering, customers increase their capacity to manage energy, generate natural gas savings by implementing low-cost energy efficiency projects, and identify opportunities to participate in other Union DSM offerings upon completion of RunSmart participation.

### Goals and Objectives

The overall objectives for the RunSmart offering are:

- 1) Generation of low- and no-cost natural gas savings;
- 2) Facilitate participation in other Union DSM offerings; and
- 3) Customer satisfaction

### Target Market

The RunSmart offering targets general service commercial customers who use greater than 50,000 m<sup>3</sup> of natural gas annually at one location and have not recently implemented energy conservation measures at their site (e.g. are not currently active participants in Union's existing DSM program).

### Eligibility Criteria

To be eligible, participants must be located in Union's franchise area, must be general service commercial customers, must consume more than 50,000 m<sup>3</sup> of natural gas annually, and must not have recently implemented energy conservation measures at their site (e.g. not currently active participants in Union's existing DSM program).

### Key Offering Elements

The offering involves the following activities:

- *Direct Marketing:* Union will target customers who have not participated in DSM offerings.
- *Technical Support:* A 22-point RunSmart checklist is used by contractors to identify low- and no-cost energy efficiency opportunities. Further support is provided in establishing a baseline model to enable comparison of pre-retrofit and post-retrofit energy consumption using a whole-facility measurement and verification approach (Option C of the International Performance Measurement and Verification Protocol)
- *Offering Incentives:* Savings that result post-recommissioning will be incented following the custom project incentive structure (\$0.20 per annual m<sup>3</sup> saved) with a deep savings performance bonus available:
  - Savings demonstrated less than the minimum threshold of 5% improvement from baseline will not receive an incentive

- Savings demonstrated between 5% and 10% improvement from baseline will receive \$0.25 per annual m3 saved
- An incremental deep savings bonus of \$0.05 is applied to customers demonstrating greater than 10% improvement (but less than 15%)
- An incremental deep savings bonus of \$0.10 is applied to customers demonstrating greater than 15% improvement

## Offering Timing

A version of the RunSmart offering has been in the market since 2012. The offering will be available through 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering elements will result in the completion of the RunSmart assessment
- In the medium-term, participants will implement the low- and no-cost measures identified during the assessment.
- In the long-term, the offering will generate natural gas savings, create Union DSM program uplift (customers will identify opportunities to participate in other offerings), and customer satisfaction.

## PREVIOUS EVALUATIONS

The following additional resource has been referenced in developing this EM&V plan:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the direct impact of offering activities on energy consumption? (Impact)
- 2) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Impact Evaluation

An impact evaluation should take place at the end of each offering year. The impact evaluation involves two main tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

## Gross Impact Evaluation

Gross impacts will be assessed by an independent verifier. The verifier should undertake the following tasks:

- Sample design methodology
- Desktop review of project files
- Provide an independent report on the findings

## Net-to-Gross Calculation

Union will use its free-ridership and spillover values from the list of input assumptions, as filed in Union's 2015-2020 DSM Plan, to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the offering's net-to-gross ratio to the verified gross savings. Union plans to use the findings from the 2015 net-to-gross study when available. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union should ideally undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## Other Considerations

Union will use the Commercial/Industrial Custom Effective Useful Life Guide as filed in Union's 2015-2020 DSM Plan. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating the input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

## DATA COLLECTION RESPONSIBILITIES

Union will be responsible for tracking program data. All tracking data will be provided to the EM&V contractor, including:

- Customer information for the for the customers participating in the program, including project files (Impact Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)

- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)

# **Evaluation Plan**

## **Performance Based Conservation**

### **Strategic Energy Management Offering**



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## OFFERING OVERVIEW

### Offering Description

The Strategic Energy Management (SEM) offering has been designed to influence customers to adopt a culture of conservation and continuous energy improvement through embedding the ISO 50001 energy management system principles into their plant operations and processes. Participants in the offering receive technical support and financial incentives to facilitate the development of an energy performance baseline and ongoing monitoring and tracking. SEM is a multiyear offering and will measure results and progressive savings over five years.

### Goals and Objectives

The overall objectives for the SEM offering are:

- 1) Increased customer capacity to monitor energy performance and achieve natural gas savings;
- 2) Customer satisfaction

### Target Market

The SEM offering is targeting industrial customers with a minimum natural gas usage of 1,000,000 m3.

### Eligibility Criteria

To be eligible, target customers must be a contract industrial-manufacturing customer and must not have an existing energy management system (e.g., an integrated energy management system (IEMS)).

Customers also need to enter into a participation agreement with Union and commit to establishing an energy performance baseline. Customers must have a minimum natural gas usage of 1,000,000 m3.

### Key Offering Elements

The offering involves the following activities:

- *Direct Marketing:* Union will leverage existing relationships with targeted industrial contract customers to inform them of the offering.
- *Technical Support:*
  - Union's third party service provider will work with participants to complete SEM site assessments. This involves helping participants review and analyze available energy and independent variable data, define the baseline measurement boundary (e.g., whole facility, or a specific process or system within the facility), determine data gaps, and identify equipment (e.g., metering) and software requirements.
  - Union's third party service provider will help participants develop an energy performance baseline regression model by leveraging data from newly installed metering equipment and data collection software.
- *Incentives:* Incentives are provided directly to the participant and cover the full cost of equipment and software required to monitor, collect and analyze energy data (with a cap of \$25,000). Customers need to submit a report showing that they have developed a baseline in order to be reimbursed for equipment and software costs. Performance incentives will also be provided to customers based on annual savings.

## Offering Timing

The SEM offering will start in 2016 and be offered through 2020.

## Offering Theory

In summary, the offering theory is as follows:

- In the short-term, the offering activities will include SEM site assessments and an increased capacity for customers to analyze their baseline data.
- In the medium-term, participants will install equipment and software, develop an energy performance baseline, begin routinely monitoring energy performance, and start taking action to continuously improve performance.
- In the long-term, the offering will generate natural gas savings and customer satisfaction.

## PREVIOUS EVALUATIONS

Union has not previously offered the SEM offering. Notable external resources include:

Ontario Power Authority. *Conservation First 2015-2020 – Evaluation, Measurement and Verification (EM&V) Protocols and Requirements v. 2.0.*

## EVALUATION GOALS AND OBJECTIVES

### Research Questions

The following research questions have been selected for inquiry:

- 1) What is the direct impact of offering activities on energy consumption? (Impact)
- 2) How cost effective was the offering? (Cost Effectiveness)

## EVALUATION APPROACH

The following presents a recommended approach to EM&V. Prospective EM&V contractors may present alternative options for the evaluation elements requested by Union in order to maximize value for ratepayers.

### Impact Evaluation

An impact evaluation should take place at the end of each year that includes SEM performance reporting. The impact evaluation involves two main tasks:

- 1) Gross Impact Evaluation
- 2) Net-to-Gross Calculation

### Gross Impact Evaluation

Gross impacts will be assessed by an independent verifier. The verifier should undertake the following tasks:

- Sample design methodology
- Desktop review of project files
- Provide an independent report on the findings

## Net-to-Gross Calculation

Union will use its free-ridership and spillover values from the list of input assumptions as filed in Union's 2015-2020 DSM Plan to determine the net-to-gross ratio (1 - free ridership + spillover). The overall analysis should involve calculating the offering's net savings by applying the net-to-gross ratio to the verified gross savings. Throughout the program cycle, the Ontario Energy Board will coordinate the process of regularly updating input assumptions as indicated in *The Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020)* (EB-2014-0134).

## Cost Effectiveness Evaluation

The Ontario Energy Board has determined that natural gas utilities should screen DSM programs at the program and portfolio level using the Total Resource Cost-Plus (TRC-Plus) test, which measures the costs and benefits for DSM programs for as long as the costs and benefits persist, and applies an additional 15% to the sum of the quantified benefits to account for the value of unquantified non-energy benefits (the non-energy benefit adder).

Union plans to evaluate cost-effectiveness internally and engage a third party, as part of the annual audit process, to assess its findings.

Union plans to undertake the following three tasks at the end of each offering year so that cost effectiveness can be assessed on an annual basis:

1. Calculate benefits
2. Calculate costs
3. Calculate TRC-Plus ratio

## DATA COLLECTION RESPONSIBILITIES

Union will be responsible for tracking program data. All tracking data will be provided to the EM&V contractor, including:

- Customer information for the customers participating in the offering, including project files (Impact Evaluation)
- Avoided energy costs (Cost Effectiveness Evaluation)
- Program administrator costs and net participants costs (Cost Effectiveness Evaluation)

APPENDIX D: INPUT ASSUMPTIONS

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type

Residential Space Heating

Residential	Existing	Attic Insulation	upgrade to R-40	R-10		105	105	0	20	\$ 580.00	33%	UG	Retrofit
Residential	Existing	Basement Wall Insulation	upgrade to R-12	R-1		261	145	0	25	\$ 1,654.00	33%	UG	Retrofit
Residential	Existing	Draft Proofing Kit	(1) Spray Foam, can (1) Caulk, tube (30 ft) Foam Tape (4) Energy Saver Gasket with 2 child safety inserts	No Draft Proofing Kit		236	27	0	1	\$ 20.00	55%	UG	Retrofit
Residential	New	Energy Star Home	version 3	Home built to OBC 2006		1,018	1,450	0	25	\$ 3,200.00	48%	EGD	New
Residential	Existing	Fireplace intermittent ignition control retrofit		Natural gas fireplace with a pilot		104	-31	0	8	\$ 150.00	1%	UG	Retrofit
Residential	Existing	High Efficiency Condensing Furnace	AFUE 96	High-Efficiency Furnace	AFUE 90	129	0	0	18	\$ 1,767.00	0%	EGD	Replacement
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Freestanding, Minimum 70% EnerGuide Rating	Freestanding fireplace	65% median efficiency	110	-31	0	20	\$ 135.00	17%	EGD	New
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Insert, Minimum 60% EnerGuide Rating	Insert	55% median efficiency	109	-31	0	20	\$ 135.00	17%	EGD	New
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, >= 40 kBtu.h =Minimum 60% EnerGuide Rating	Zero Clearance		122	-31	0	20	\$ 135.00	17%	EGD	New
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, < 40 kBtu.h =Minimum 70% EnerGuide Rating	Zero Clearance		108	-31	0	20	\$ 135.00	17%	EGD	New
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Freestanding, Minimum 70% EnerGuide Rating	Freestanding fireplace	65% median efficiency	110	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Insert, Minimum 60% EnerGuide Rating	Insert	55% median efficiency	109	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, >= 40 kBtu.h =Minimum 60% EnerGuide Rating	Zero Clearance		122	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, < 40 kBtu.h =Minimum 70% EnerGuide Rating	Zero Clearance		108	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	New	Programmable Thermostat		Standard Thermostat		53	54	0	15	\$ 25.00	10%	UG	New
Residential	Existing	Programmable Thermostat		Standard Thermostat		53	54	0	15	\$ 25.00	43%	UG	Retrofit
Residential	New	Programmable Thermostat		Standard Thermostat		53	54	0	15	\$ 53.22	10%	EGD	New
Residential	Existing	Programmable Thermostat		Standard Thermostat		53	54	0	15	\$ 50.00	43%	EGD	Retrofit
Residential	Existing	Reflector Panels		No reflector panels		143	0	0	18	\$ 229.00	0%	UG	Retrofit
Residential	Existing	Reflector Panels		Radiant heat w/o reflector panels		143	0	0	18	\$ 238.00	0%	EGD	Retrofit

Residential Water Heating

Residential	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	31%	EGD	New/Retrofit
Residential	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	31%	EGD	New/Retrofit
Residential	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	12	0	4,516	10	\$ 1.14	33%	UG	New/Retrofit

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Residential	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	31%	EGD	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	12	0	4,516	10	\$ 1.14	31%	EGD	New/Retrofit
Residential	New	Low-flow showerhead	1.25 & 1.5 GPM (Per Household)	Average Existing Stock	2.5 GPM	48	0	14,391	10	\$ 16.76	10%	EGD	New
Residential	Existing	Low-flow showerhead	1.25 GPM	Replace existing 2.0 GPM	2.0 GPM	33	0	11,584	10	\$ 3.79	10%	UG	Retrofit
Residential	New	Low-flow showerhead	1.25 GPM (Per household)	Average Existing Stock	2.5 GPM	53	0	17,187	10	\$ 4.26	10%	EGD	New
Residential	New	Low-flow showerhead	1.5 GPM (Per Household)	Average Existing Stock	2.5 GPM	43	0	11,596	10	\$ 12.50	10%	EGD	New
Residential	Existing	Low-flow showerhead (Contractor Installed)	1.25 GPM	2.0 -2.5 GPM Showerhead	2.25 GPM	46	0	14,294	10	\$ 3.79	10%	UG	Retrofit
Residential	Existing	Low-flow showerhead (Contractor Installed)	1.25 GPM	2.6 + GPM Showerhead	3.0 GPM	88	0	22,580	10	\$ 3.79	10%	UG	Retrofit
Residential	Existing	Low-flow showerhead (Distributed)	1.25 GPM	2.6 + GPM Showerhead	3.07 GPM	82	0	23,374	10	\$ 4.26	10%	EGD	Retrofit
Residential	Existing	Low-flow showerhead (Distributed)	1.25 GPM	2.0 -2.5 GPM Showerhead	2.45 GPM	50	0	16,631	10	\$ 4.26	10%	EGD	Retrofit
Residential	New/Existing	Low-flow showerhead (Distributed)	1.25 GPM	Average existing stock	2.2 GPM	44	0	13,885	10	\$ 3.79	10%	UG	New/Retrofit
Residential	Existing	Low-flow showerhead (Installed)	1.25 GPM	2.0 -2.5 GPM Showerhead	2.45 GPM	50	0	16,631	10	\$ 19.00	10%	EGD	Retrofit
Residential	Existing	Low-flow showerhead (Installed)	1.25 GPM	2.6 + GPM Showerhead	3.07 GPM	82	0	23,374	10	\$ 19.00	10%	EGD	Retrofit
Residential	Existing	Pipe Wrap	R-3.75	No pipe wrap	R-0.43	4.72 m3/ft	0	0	15	\$0.25/ft	4%	Both	Retrofit
Residential	Existing	Solar Pool Heaters		Natural gas pool heater		1,116	-57	0	20	\$ 1,450.00	10%	Both	Retrofit
Residential	New/Existing	Tankless Water Heater	EF 0.82	Storage Tank Water Heater		142	0	0	18	\$ 750.00	2%	UG	New/Replacement
Residential	Existing	Tankless Water Heater		Storage Tank Water Heater		130	0	0	18	\$ 750.00	2%	EGD	Replacement
Residential	New	High Efficiency Gas Storage Water Heaters	High efficiency storage tank water heater (Energy Factor of 0.80)	ENERGY STAR power vented storage tank water heater	Energy factor of 0.67	68.3	0	0	16	\$ 540.00		Both	New

Low-Income Space Heating

Low-Income	Existing	Early Furnace Replacement - 60% AFUE	90% AFUE Furnace	60% AFUE Furnace		781	0	0	3	\$ 518.00	0%	UG	Retrofit
Low-Income	Existing	Early Furnace Replacement - 70% AFUE	90% AFUE Furnace	70% AFUE Furnace		466	0	0	3	\$ 518.00	0%	UG	Retrofit
Low-Income	Existing	Programmable Thermostat		Standard manual thermostat		53	54	0	15	\$ 26.95	1%	UG	Retrofit
Low Income	Existing	Programmable Thermostat		Standard Thermostat		53	54	0	15	\$ 69.18	0%	EGD	Retrofit

Low-Income Water Heating

Low-Income	Existing	Early Hot Water Heater Replacement (0.575 to 0.62 EF)	0.62 EF Water Heater	0.575 EF Water Heater		80	0	0	3	\$ 168.00	1%	UG	Retrofit
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	1%	UG	New/Retrofit

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	12	0	4,516	10	\$ 1.14	1%	UG	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	0%	EGD	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	0%	EGD	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	0%	EGD	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	0%	EGD	New/Retrofit
Low Income	Existing	Low-flow showerhead	1.25 GPM (Installed)	2.0 -2.5 GPM Showerhead	2.45 GPM	50	0	16,631	10	\$ 18.71	0%	EGD	Retrofit
Low Income	Existing	Low-flow showerhead	1.25 GPM (Installed)	2.6 + GPM Showerhead	3.07 GPM	82	0	23,374	10	\$ 18.71	0%	EGD	Retrofit
Low income	Existing	Low-flow showerhead	2.0 GPM	2.0 -2.5 GPM Showerhead	2.45	20	0	3418	10	\$ 18.71	0%	EGD	Retrofit
Low income	Existing	Low-flow showerhead	2.0 GPM	2.6 + GPM Showerhead	3.07	52	0	7938	10	\$ 18.71	0%	EGD	Retrofit
Low-Income	Existing	Low-flow showerhead (Contractor installed)	1.25 GPM	Average existing stock	2.25 GPM	46	0	14,294	10	\$ 3.79	1%	UG	Retrofit
Low-Income	Existing	Low-flow showerhead (Contractor installed)	1.25 GPM	Average existing stock	3.0 GPM	88	0	22,580	10	\$ 3.79	1%	UG	Retrofit
Low-Income	Existing	Pipe Wrap	R 3 - 3.75	No pipe wrap	R-0.43	3.97 m3/ft	0	0	15	\$0.25/ft	UG 1%, EGD 0%	Both	Retrofit
Low-Income	Existing	Low-flow showerhead	1.25 GPM	Replace existing 2.0 GPM	2.0 GPM	33	0	11,584	10	\$ 3.79	1%	UG	Retrofit

Low-Income Multi-Family Water Heating

Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	12	0	4,516	10	\$ 1.14	1%	UG	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	0%	EGD	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	0%	EGD	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	0%	EGD	New/Retrofit
Low Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	0%	EGD	New/Retrofit
Low-Income	Existing	Low-flow showerhead (Distributed)	1.25 GPM	Average existing stock	2.21 GPM	32	0	9,585	10	\$ 3.79	1%	UG	Retrofit
Low-Income	Existing	Low-flow showerhead	1.25 GPM	2.0-2.5 GPM showerhead	2.25 GPM	33	0	9,892	10	\$ 3.79	1%	UG	Retrofit
Low-Income	Existing	Low-flow showerhead	1.25 GPM	> 2.6 GPM showerhead	3.0 GPM	64	0	15,549	10	\$ 3.79	1%	UG	Retrofit
Low-Income	Existing	Low-flow showerhead	1.25 GPM	Replace existing 1.5 GPM	1.5 GPM	8	0	3,846	10	\$ 3.79	1%	UG	Retrofit
Low-Income	Existing	Low-flow showerhead	1.25 GPM	Replace existing 2.0 GPM	2.0 GPM	24	0	7,933	10	\$ 3.79	1%	UG	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	2.0 -2.5 GPM showerhead	2.25 GPM	21	0	5,931	10	\$ 12.50	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	2.6 -3.0 GPM GPM showerhead	2.8 GPM	40	0	10,036	10	\$ 12.50	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	3.1 - 3.5 GPM showerhead	3.3 GPM	58	0	13,621	10	\$ 12.50	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	3.6 GPM and above	3.6 GPM	69	0	15,705	10	\$ 12.50	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	2.0 -2.5 GPM showerhead	2.25 GPM	7.6	0	1913	10	\$ 18.71	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	2.6 -3.0 GPM GPM showerhead	2.8 GPM	26	0	5996	10	\$ 18.71	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	3.1 - 3.5 GPM showerhead	3.3 GPM	44	0	9559	10	\$ 18.71	0%	EGD	Retrofit
Low Income	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	3.6 GPM and above	3.6 GPM	55	0	11628	10	\$ 18.71	0%	EGD	Retrofit

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type

Low-Income Multi-Family Space Heating

Low income	New	Condensing Boiler - Space Heating (<100 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 1,475.00	Union 5%, EGD 0%	Both	New
Low income	New	Condensing Boiler - Space Heating (100 to 199 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,414.00	Union 5%, EGD 0%	Both	New
Low income	New	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,227.00	Union 5%, EGD 0%	Both	New
Low income	Existing	Condensing Boiler - Space Heating (<100 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,045.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Condensing Boiler - Space Heating (100 to 199 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,984.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,797.00	Union 5%, EGD 0%	Both	Replacement
Low income	New/Existing	Condensing Boilers - Space Heating, 300 and above MBTUH	88% seasonal efficiency	Non-condensing boiler	76% estimated seasonal efficiency	0.0104 m3/Btu/hr	0	0	25	\$12/Kbtu/hr	5%	UG	New/Replacement
Low income	New	High Efficiency Boiler - Space Heating (<100 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,238.00	Union 5%, EGD 0%	Both	New
Low income	New	High Efficiency Boiler - Space Heating (100 to 199 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,544.00	Union 5%, EGD 0%	Both	New
Low income	New	High Efficiency Boiler - Space Heating (200 to 299 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,388.00	Union 5%, EGD 0%	Both	New
Low income	Existing	High Efficiency Boiler - Space Heating (<100 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,808.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	High Efficiency Boiler - Space Heating (100 to 199 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 2,114.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	High Efficiency Boiler - Space Heating (200 to 299 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,958.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Prescriptive High Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Prescriptive High Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	Union 5%, EGD 0%	Both	Replacement
Low income	New	Prescriptive High Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	Union 5%, EGD 0%	Both	New
Low income	New	Prescriptive High Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	Union 5%, EGD 0%	Both	New

Commercial Cooking

Commercial	New/Existing	Energy Star Fryer	Energy Star Rated Fryer	Non-Energy Star rated Fryer		1408	0	0	12	\$ 3,405.00	20%	Both	New/Replacement
Commercial	New/Existing	Energy Star Convection Ovens - Full Size	Energy Star Rated Convection Oven (Full Size)	Conventional Convection Oven (Full Size)		856	0	0	12	\$ 875.00	20%	Both	New/Replacement
Commercial	New/Existing	Energy Star Steam Cookers	Energy Star Rated Steam Cooker	Boiler-based steam cooker		8889	0	340142	12	\$ 1,035.00	20%	Both	New/Replacement
Commercial	New/Existing	High Efficiency Under-Fired Broilers - 3 foot	pre-heat =< 40,500 Btu and cooking energy rate =< 72,000 Btu/hr	Conventional Efficiency Under-Fired Broiler	pre-heat =< 48,000 Btu and cooking energy rate =< 96,000 Btu/hr	2,511	0	0	12	\$ 1,900.00	20%	Both	New/Replacement
Commercial	New/Existing	High Efficiency Under-Fired Broilers - 4 foot	pre-heat 40,501 to 54,000 Btu and a cooking energy rate 72,001 to 96,000 Btu/hr	Conventional Efficiency Under-Fired Broiler	pre-heat 48,001 to 64,000 Btu and a cooking energy rate 96,000 to 128,000 Btu/hr	3,347	0	0	12	\$ 1,900.00	20%	Both	New/Replacement
Commercial	New/Existing	High Efficiency Under-Fired Broilers - 5 foot	pre-heat 54,001 to 67,500 Btu and cooking energy rate 96,001 to 120,000 Btu/hr	Conventional Efficiency Under-Fired Broiler	pre-heat 64,001 to 80,000 Btu and cooking energy rate 128,001 to 160,000 Btu/hr	4,184	0	0	12	\$ 1,900.00	20%	Both	New/Replacement
Commercial	New/Existing	High Efficiency Under-Fired Broilers - 6 foot	pre-heat 67,501 to 81,000 Btu and cooking energy rate 120,001 to 144,000 Btu/hr	Conventional Efficiency Under-Fired Broiler	pre-heat 80,001 to 96,000 Btu and cooking energy rate 160,001 to 192,000 Btu/hr	5,021	0	0	12	\$ 1,900.00	20%	Both	New/Replacement

Commercial Space Heating

Commercial	Existing	Air Curtains	Double door	Non-air curtain doors		1,529	1,023	0	15	\$ 2,500.00	5%	Both	Retrofit
Commercial	New/Existing	Air Curtains	Shipping and Receiving Doors (10 x 10)	Non-air curtain doors		20,605	-936	0	15	\$ 10,170.00	5%	Both	New/Retrofit
Commercial	New/Existing	Air Curtains	Shipping and Receiving Doors (8 x 10)	Non-air curtain doors		9,457	-5,220	0	15	\$ 8,242.00	5%	Both	New/Retrofit



Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Commercial	New/Existing	Air Curtains	Shipping and Receiving Doors (8 x 8)	Non-air curtain doors		7,565	-5,380	0	15	\$ 8,242.00	5%	Both	New/Retrofit
Commercial	Existing	Air Curtains	Single door	Non-air curtain doors		667	172	0	15	\$ 1,650.00	5%	Both	Retrofit
Commercial	New	Condensing Boiler - Space Heating (<100 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 1,475.00	5%	Both	New
Commercial	New	Condensing Boiler - Space Heating (100 to 199 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,414.00	5%	Both	New
Commercial	New	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,227.00	5%	Both	New
Commercial	Existing	Condensing Boiler - Space Heating (<100 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,045.00	5%	Both	Replacement
Commercial	Existing	Condensing Boiler - Space Heating (100 to 199 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,984.00	5%	Both	Replacement
Commercial	Existing	Condensing Boiler - Space Heating (200 to 299 Mbtu/h)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,797.00	5%	Both	Replacement
Commercial	New/Existing	Condensing Boilers - Space Heating, 300 and above MBTUH	88% seasonal efficiency	Non-condensing boiler	76% estimated seasonal efficiency	0.0104 m3/Btu/hr	0	0	25	\$12/Kbtu/hr	5%	UG	New/Replacement
Commercial	New/Existing	Condensing Make Up Air Unit - MR and LTC		Conventional MUA with constant speed drive		.84 m3/cfm - 2.92 m3/cfm	(0.00-1.48) kwh/cfm		15	\$870 + (.66 - 1.02) per cfm	5%	Both	New/Replacement
Commercial	New/Existing	Condensing Make Up Air Unit - Retail and Comm		Conventional MUA with constant speed drive		.41 m3/cfm - 2.07 m3/cfm	(0.00-1.09) kwh/cfm		15	\$870 + (.66 - 1.02) per cfm	5%	Both	New/Replacement
Commercial	New/Existing	Condensing Unit Heater		% Sales Weighted Average model	78% Annually Efficient	0.00631 m3/Btu/hr	(-)0.00186 kwh/Btu/hr	0	18	\$0.0129 /Btu/hr	0%	Both	New/Replacement
Commercial	New/Existing	Demand Control Kitchen Ventilation	0 - 4,999 CFM	Kitchen ventilation without DCKV		4,801	13,521	0	15	\$ 10,000.00	5%	Both	New/Replacement
Commercial	New/Existing	Demand Control Kitchen Ventilation	10,000 - 15,000 CFM	Kitchen ventilation without DCKV		18,924	49,102	0	15	\$ 20,000.00	5%	Both	New/Replacement
Commercial	New/Existing	Demand Control Kitchen Ventilation	5,000 - 9,999 CFM	Kitchen ventilation without DCKV		11,486	30,901	0	15	\$ 15,000.00	5%	Both	New/Replacement
Commercial	New/Existing	Destratification Fans		No destratification fans		0.5 m3/ft²	(-)0.0034 kwh/ft²	0	15	\$ 7,021.00	10%	Both	New/Retrofit
Commercial	New	Energy Recovery Ventilation (Multi-Family, Health Care, Nursing Home)	Ventilation with ERV	Ventilation without ERV		5.77 m3/CFM	0	0	14	\$3.18/CFM	5%	Both	New
Commercial	Existing	Energy Recovery Ventilation (Multi-Family, Health Care, Nursing Home)	Ventilation with ERV	Ventilation without ERV		6.12 m3/CFM	0	0	14	\$3.18/CFM	5%	Both	Retrofit
Commercial	New	Energy Recovery Ventilation (Hotel, Restaurant, Retail)	Ventilation with ERV	Ventilation without ERV		3.21 m3/CFM	0	0	14	\$3.18/CFM	5%	Both	New
Commercial	Existing	Energy Recovery Ventilation (Hotel, Restaurant, Retail)	Ventilation with ERV	Ventilation without ERV		3.4 m3/CFM	0	0	14	\$3.18/CFM	5%	Both	Retrofit
Commercial	New	Energy Recovery Ventilation (Office, Warehouse, School)	Ventilation with ERV	Ventilation without ERV		2.05 m3/CFM	0	0	14	\$3.18/CFM	5%	Both	New
Commercial	Existing	Energy Recovery Ventilation (Office, Warehouse, School)	Ventilation with ERV	Ventilation without ERV		2.17 m3/CFM	0	0	14	\$3.18/CFM	5%	Both	Retrofit
Commercial	New	Heat Recovery Ventilation (Multi-Family, Health Care, Nursing Home)	Ventilation with HRV	Ventilation without HRV		4.28 m3/CFM	0	0	14	\$3.61/CFM	5%	Both	New
Commercial	Existing	Heat Recovery Ventilation (Multi-Family, Health Care, Nursing Home)	Ventilation with HRV	Ventilation without HRV		4.70 m3/CFM	0	0	14	\$3.61/CFM	5%	Both	Retrofit
Commercial	New	Heat Recovery Ventilation (Hotel, Restaurant, Retail)	Ventilation with HRV	Ventilation without HRV		2.38 m3/CFM	0	0	14	\$3.61/CFM	5%	Both	New
Commercial	Existing	Heat Recovery Ventilation (Hotel, Restaurant, Retail)	Ventilation with HRV	Ventilation without HRV		2.61 m3/CFM	0	0	14	\$3.61/CFM	5%	Both	Retrofit
Commercial	New	Heat Recovery Ventilation (Office, Warehouse, School)	Ventilation with HRV	Ventilation without HRV		1.52 m3/CFM	0	0	14	\$3.61/CFM	5%	Both	New
Commercial	Existing	Heat Recovery Ventilation (Office, Warehouse, School)	Ventilation with HRV	Ventilation without HRV		1.67 m3/CFM	0	0	14	\$3.61/CFM	5%	Both	Retrofit
Commercial	New	High Efficiency Boiler - Space Heating (<100 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,238.00	5%	Both	New
Commercial	New	High Efficiency Boiler - Space Heating (100 to 199 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,544.00	5%	Both	New
Commercial	New	High Efficiency Boiler - Space Heating (200 to 299 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,388.00	5%	Both	New
Commercial	Existing	High Efficiency Boiler - Space Heating (<100 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,808.00	5%	Both	Replacement
Commercial	Existing	High Efficiency Boiler - Space Heating (100 to 199 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 2,114.00	5%	Both	Replacement
Commercial	Existing	High Efficiency Boiler - Space Heating (200 to 299 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,958.00	5%	Both	Replacement
Commercial	Existing	High Efficiency Condensing Furnace	96% AFUE	AFUE 90%		1.7/kBtu/hr	0	0	18	\$8.4/kBtu/hr	17.5%	Both	Replacement
Commercial	New/Existing	Single Stage & High Intensity Infrared Heaters	0 - 49,999 BTU/hr	Regular Unit Heater		0.0144 /Btu/hr	16	0	20	\$0.0122 /BTUh	33%	Both	New/Replacement

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Commercial	New/Existing	2-Stage Infrared Heaters	0 - 49,999 BTU/hr	Regular Unit Heater		0.0242 /Btu/hr	16	0	20	\$0.0122 /BTUh	33%	Both	New/Replacement
Commercial	New/Existing	Single Stage & High Intensity Infrared Heaters	165,000 - 300,000 BTU/hr	Regular Unit Heater		0.0144 /Btu/hr	873	0	20	\$0.0122 /BTUh	33%	Both	New/Replacement
Commercial	New/Existing	2-Stage Infrared Heaters	165,000 - 300,000 BTU/hr	Regular Unit Heater		0.0242 /Btu/hr	873	0	20	\$0.0122 /BTUh	33%	Both	New/Replacement
Commercial	New/Existing	Single Stage & High Intensity Infrared Heaters	50,000 - 164,999 BTU/hr	Regular Unit Heater		0.0144 /Btu/hr	409	0	20	\$0.0122 /BTUh	33%	Both	New/Replacement
Commercial	New/Existing	2-Stage Infrared Heaters	50,000 - 164,999 BTU/hr	Regular Unit Heater		0.0242 /Btu/hr	409	0	20	\$0.0122 /BTUh	33%	Both	New/Replacement
Commercial	Existing	Prescriptive Higher Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	10/12/20%	Both	Replacement
Commercial	Existing	Prescriptive Higher Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	10/12/20%	Both	Replacement
Commercial	New	Prescriptive Higher Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	10/12/20%	Both	New
Commercial	New	Prescriptive Higher Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	10/12/20%	Both	New
Commercial	Existing	Prescriptive Schools - Elementary	hydronic boiler with 83%+ thermal efficiency	hydronic boiler with 80.5% thermal efficiency		12,217	0	0	25	\$ 8,646.00	27%	UG	Replacement
Commercial	Existing	Prescriptive Schools - Elementary	hydronic boiler with 83%+ thermal efficiency	hydronic boiler with 80.5% thermal efficiency		12,217	0	0	25	\$ 8,646.00	12%	EGD	Replacement
Commercial	Existing	Prescriptive Schools - Secondary	hydronic boiler with 83%+ thermal efficiency	hydronic boiler with 80.5% thermal efficiency		49,476	0	0	25	\$ 14,470.00	27%	UG	Replacement
Commercial	Existing	Prescriptive Schools - Secondary	hydronic boiler with 83%+ thermal efficiency	hydronic boiler with 80.5% thermal efficiency		49,476	0	0	25	\$ 14,470.00	12%	EGD	Replacement
Commercial	Existing	Programmable Thermostat		Standard thermostat		13 - 108**	15 - 77**	0	15	\$ 110.00	20%	UG	Retrofit
Commercial	Existing	Programmable Thermostat	Educational - School	Standard thermostat		65	8	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Educational - University/College	Standard thermostat		58	57	0	0	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Food Service - Restaurant/Tavern	Standard thermostat		69	77	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Hotel/Motel	Standard thermostat		10	11	0	0	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Large Hotel	Standard thermostat		10	14	0	0	\$ 110.00	20%	EGD	Retrofit
MultiFamily	Existing	Programmable Thermostat	Multi Family	Standard thermostat		15	13	0	15	\$ 80.00	20%	Both	Retrofit
Commercial	Existing	Programmable Thermostat	Recreation - Small Fitness / Spa	Standard thermostat		35	87	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Retail - Food	Standard thermostat		22	16	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Retail - Mall	Standard thermostat		14	19	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Retail - Strip Mall	Standard thermostat		11	19	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Small Office	Standard thermostat		39	43	0	0	\$ 110.00	20%	EGD	Retrofit
Commercial	Existing	Programmable Thermostat	Warehouse / Wholesale	Standard thermostat		132	9	0	15	\$ 110.00	20%	EGD	Retrofit
Commercial	New/Existing	Rooftop Unit	Two-stage rooftop unit	Single stage rooftop unit		255	0	0	15	\$ 375.00	5%	Both	New/Replacement
Commercial	New	Demand Control Ventilation	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	10	\$ 1,050.00	20%	Both	New/Replacement
Commercial	New	Demand Control Ventilation (with a documented maintenance plan)	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	15	\$ 1,350.00	20%	Both	New/Replacement

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Commercial	New	Demand Control Ventilation	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	10	\$ 1,050.00	20%	Both	New/Replacement
Commercial	New	Demand Control Ventilation (with a documented maintenance plan)	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	15	\$ 1,350.00	20%	Both	New/Replacement
Commercial	Existing	Demand Control Ventilation	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	10	\$ 1,350.00	5%	Both	Retrofit
Commercial	Existing	Demand Control Ventilation (with a documented maintenance plan)	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	15	\$ 1,650.00	5%	Both	Retrofit
Commercial	Existing	Demand Control Ventilation	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	10	\$ 1,350.00	5%	Both	Retrofit
Commercial	Existing	Demand Control Ventilation (with a documented maintenance plan)	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	15	\$ 1,650.00	5%	Both	Retrofit

Commercial Water Heating

Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Washer extractor =< 60 lbs	Commercial laundry with no ozone treatment system		0.0367 m3/lbs/yr	0.00213 kwh/lbs/yr	2.08L/lbs/yr	15	\$ 11,000.00	8%	Both	New/Retrofit
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Washer extractor 61 lbs to 499 lbs	Commercial laundry with no ozone treatment system		0.0367 m3/lbs/yr	0.00213 kwh/lbs/yr	2.08L/lbs/yr	15	\$ 25,000.00	8%	Both	New/Retrofit
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Washer extractor => 500 lbs	Commercial laundry with no ozone treatment system		0.0367 m3/lbs/yr	0.00213 kwh/lbs/yr	2.08L/lbs/yr	15	\$ 31,000.00	8%	Both	New/Retrofit
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Tunnel Washer <= 120 lbs	Commercial laundry with no ozone treatment system		0.0293 m3/lbs/yr	0.00150 kwh/lbs/yr	1.27 L/lbs/yr	15	\$ 50,000.00	8%	Both	New/Retrofit
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Tunnel Washer 121 lbs to 499 lbs	Commercial laundry with no ozone treatment system		0.0293 m3/lbs/yr	0.00150 kwh/lbs/yr	1.27 L/lbs/yr	15	\$ 105,000.00	8%	Both	New/Retrofit
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Tunnel Washer => 500 lbs	Commercial laundry with no ozone treatment system		0.0293 m3/lbs/yr	0.00150 kwh/lbs/yr	1.27 L/lbs/yr	15	\$ 160,000.00	8%	Both	New/Retrofit
Commercial	Existing	Condensing Boiler - DHW (<100 Mbtu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.02170 /Btu/hr	0	0	25	\$ 2,045.00	5%	Both	Replacement
Commercial	Existing	Condensing Boiler - DHW (100 to 199 Mbtu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.01332 /Btu/hr	0	0	25	\$ 2,984.00	5%	Both	Replacement
Commercial	Existing	Condensing Boiler - DHW (200 to 299 Mbtu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.00996 /Btu/hr	0	0	25	\$ 3,797.00	5%	Both	Replacement
Commercial	New	Condensing Boiler - DHW (<100 Mbtu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.02170 /Btu/hr	0	0	25	\$ 1,475.00	5%	Both	New
Commercial	New	Condensing Boiler - DHW (100 to 199 Mbtu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.01332 /Btu/hr	0	0	25	\$ 2,414.00	5%	Both	New
Commercial	New	Condensing Boiler - DHW (200 to 299 Mbtu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.00996 /Btu/hr	0	0	25	\$ 3,227.00	5%	Both	New
Commercial	New/Existing	Condensing Gas Water Heater (1,000gal/day)	95% thermal efficiency	Conventional storage tank water heater	80% efficiency, 91 gal. tank.	1,551	0	0	13	\$ 2,230.00	5%	Both	New/Replacement
Commercial	New/Existing	Condensing Gas Water Heater (100gal/day)	95% thermal efficiency	Conventional storage tank water heater	80% efficiency, 91 gal. tank.	332	0	0	13	\$ 2,230.00	5%	Both	New/Replacement

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Commercial	New/Existing	Condensing Gas Water Heater (500gal/day)	95% thermal efficiency	Conventional storage tank water heater	80% efficiency, 91 gal. tank.	873	0	0	13	\$ 2,230.00	5%	Both	New/Replacement
Commercial	New	Drain Water Heat Recovery (DWHR)	Laundromat	No DWHR		49,735	0	0	25	\$ 37,211.00	5%	Both	New
Commercial	New	Drain Water Heat Recovery (DWHR)	Entertainment, Arena	No DWHR		394 per Showerhead	0	0	25	\$776 per Showerhead	5%	Both	New
Commercial	New	Drain Water Heat Recovery (DWHR)	University/College Cafeterias - Dishwashing	No DWHR		4.6 per Meal Served/Day	0	0	25	\$3.41 per Meal Served/Day	5%	Both	New
Commercial	New	Drain Water Heat Recovery (DWHR)	Hospital - Dishwashing	No DWHR		12 per Bed	0	0	25	\$11.88 per Bed	5%	Both	New
Commercial	New	Drain Water Heat Recovery (DWHR)	Hospital - Laundry	No DWHR		295 Per Bed	0	0	25	\$250 per Bed	5%	Both	New
Commercial	New	Drain Water Heat Recovery (DWHR)	Nursing Home - Dishwashing	No DWHR		12 per Bed	0	0	25	\$16.54 per Bed	5%	Both	New
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Laundromat	No DWHR		49,735	0	0	25	\$ 40,811.00	5%	Both	Retrofit
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Entertainment, Arena	No DWHR		394 per Showerhead	0	0	25	\$1209 per Showerhead	5%	Both	Retrofit
Commercial	Existing	Drain Water Heat Recovery (DWHR)	University/College Cafeterias - Dishwashing	No DWHR		11.6 Meal Served per Day	0	0	25	\$6.26 per Meal Served per day	5%	Both	Retrofit
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Hospital - Dishwashing	No DWHR		31 per Bed	0	0	25	\$18.19 per Bed	5%	Both	Retrofit
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Hospital - Laundry	No DWHR		295 per Bed	0	0	25	\$274 per Bed	5%	Both	Retrofit
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Nursing Home - Dishwashing	No DWHR		31 per Bed	0	0	25	\$25.33 per Bed	5%	Both	Retrofit
Commercial	New/Existing	Energy Star Dishwasher	Undercounter – High Temperature	Non-Energy Star Dishwasher		142	1,790	20,371	10	120	40%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Undercounter – Low Temperature	Non-Energy Star Dishwasher		333	0	47,827	10	50	40%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Stationary Single Tank Door – High Temperature	Non-Energy Star Dishwasher		922	4,167	132,263	15	770	20%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Stationary Single Tank Door – Low Temperature	Non-Energy Star Dishwasher		2,120	0	304,205	15	0	20%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Single Tank Conveyor – High Temperature	Non-Energy Star Dishwasher		560	4,247	80,303	20	\$ 2,050.00	27%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Single Tank Conveyor - Low Temperature	Non-Energy Star Dishwasher		1,712	0	245,631	20	\$ -	27%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Multi Tank Conveyor - High Temperature	Non-Energy Star Dishwasher		2,124	9,668	304,677	20	\$ 970.00	27%	Both	New/Replacement
Commercial	New/Existing	Energy Star Dishwasher	Multi Tank Conveyor - Low Temperature	Non-Energy Star Dishwasher		2,469	0	354,276	20	\$ 970.00	27%	Both	New/Replacement
Commercial	Existing	High Efficiency Boiler - DHW (<100 Mbtu/h)	85% or greater AFUE	Non-Condensing Boiler	82% AFUE	0.00468 /Btu/hr	0	0	25	\$ 1,808.00	5%	Both	Replacement
Commercial	Existing	High Efficiency Boiler - DHW (100 to 199 Mbtu/h)	85% or greater AFUE	Non-Condensing Boiler	82% AFUE	0.00287 /Btu/hr	0	0	25	\$ 2,114.00	5%	Both	Replacement
Commercial	Existing	High Efficiency Boiler - DHW (200 to 299 Mbtu/h)	85% or greater AFUE	Non-Condensing Boiler	82% AFUE	0.00215 /Btu/hr	0	0	25	\$ 1,958.00	5%	Both	Replacement
Commercial	New	High Efficiency Boiler - DHW (<100 Mbtu/h)	85% or greater AFUE	Non-Condensing Boiler	82% AFUE	0.00468 /Btu/hr	0	0	25	\$ 1,238.00	5%	Both	New
Commercial	New	High Efficiency Boiler - DHW (100 to 199 Mbtu/h)	85% or greater AFUE	Non-Condensing Boiler	82% AFUE	0.00287 /Btu/hr	0	0	25	\$ 1,544.00	5%	Both	New
Commercial	New	High Efficiency Boiler - DHW (200 to 299 Mbtu/h)	85% or greater AFUE	Non-Condensing Boiler	82% AFUE	0.00215 /Btu/hr	0	0	25	\$ 1,388.00	5%	Both	New
Commercial	Existing	Pre-Rinse Spray Nozzle	1.24 GPM	Standard pre-rinse spray nozzle	3.0 GPM	190 - 886**	0	36,484 - 170,326**	5	\$ 60.00	12.40%	UG	Retrofit
Commercial	New	Pre-Rinse Spray Nozzle (Full Service)	0.64 GPM	Pre-rinse spray nozzle	3.0 GPM	1,286	0	252,000	5	\$ 150.00	0%	EGD	New
Commercial	Existing	Pre-Rinse Spray Nozzle (Full Service)	0.64 GPM	Pre-rinse spray nozzle	3.0 GPM	1,286	0	252,000	5	\$ 150.00	0%	Both	Retrofit
Commercial	Existing	Pre-Rinse Spray Nozzle (Full Service)	0.64 GPM	Pre-rinse spray nozzle	1.6 GPM	457	0	97,292	5	\$ 150.00	0%	Both	Retrofit
Commercial	New	Pre-Rinse Spray Nozzle (Limited)	0.64 GPM	Pre-rinse spray nozzle	3.0 GPM	339	0	66,400	5	\$ 150.00	0%	EGD	New
Commercial	Existing	Pre-Rinse Spray Nozzle (Limited)	0.64 GPM	Pre-rinse spray nozzle	3.0 GPM	339	0	66,400	5	\$ 150.00	0%	Both	Retrofit
Commercial	Existing	Pre-Rinse Spray Nozzle (Limited)	0.64 GPM	Pre-rinse spray nozzle	1.6 GPM	90	0	19,197	5	\$ 150.00	0%	Both	Retrofit
Commercial	New	Pre-Rinse Spray Nozzle (Other)	0.64 GPM	Pre-rinse spray nozzle	3.0 GPM	318	0	62,200	5	\$ 150.00	0%	EGD	New
Commercial	Existing	Pre-Rinse Spray Nozzle (Other)	0.64 GPM	Pre-rinse spray nozzle	3.0 GPM	318	0	62,200	5	\$ 150.00	0%	Both	Retrofit
Commercial	Existing	Pre-Rinse Spray Nozzle (Other)	0.64 GPM	Pre-rinse spray nozzle	1.6 GPM	109	0	23,166	5	\$ 150.00	0%	Both	Retrofit
Commercial	New	Prescriptive Higher Efficiency Boiler - DWH	83-84% Efficient, 300-1500 MBH	DWH Boiler	80.5% Thermal Efficiency	1,168-4,693	0	0	25	\$3900 -\$5900	10/12/20%	Both	New
Commercial	New	Prescriptive Higher Efficiency Boiler - DWH	85-88% Efficient, 300-1500 MBH	DWH Boiler	80.5% Thermal Efficiency	1,861-7,475	0	0	25	\$4500-\$7400	10/12/20%	Both	New
Commercial	Existing	Prescriptive Higher Efficiency Boiler - DWH	83-84% Efficient, 300-1500 MBH	DWH Boiler	80.5% Thermal Efficiency	1,168-4,693	0	0	25	\$3900 -\$5900	10/12/20%	Both	Replacement

Input Assumptions

Target Market		Equipment Details				Annual Resource Savings			Other				
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Commercial	Existing	Prescriptive Higher Efficiency Boiler - DWH	85-88% Efficient, 300-1500 MBH	DWH Boiler	80.5% Thermal Efficiency	1,861-7,475	0	0	25	\$4500-\$7400	10/12/20%	Both	Replacement
Commercial	New	Tankless Water Heater	100 USG/day, 84% thermal efficiency	Conventional Storage Tank Water Heater	80% thermal efficiency	154	0	0	18	-\$ 1,102.00	2%	Both	New
Commercial	Existing	Tankless Water Heater	100 USG/day, 84% thermal efficiency	Conventional Storage Tank Water Heater	80% thermal efficiency	154	0	0	18	-\$ 1,102.00	2%	Both	Replacement

Multi-Family Water Heating

Multi-Family	New/Existing	CEE Tier 2 Front-Loading Clothes Washer	MEF=2.20, WF=5.1	Conventional top-loading, vertical axis clothes washer	MEF=1.26, WF=9.5	117	396	58,121	11	\$ 600.00	10%	Both	New/Replacement
Multi-Family	New/Existing	Energy Star Front-Loading Clothes Washer	MEF=1.72 ,WF=8.0	Conventional top loading vertical axis washers	MEF = 1.26, WF=9.5	76	201	19,814	11	\$ 150.00	48%	UG	New/Replacement
Multi-Family	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6	0	2,501	10	\$ 0.60	10%	Both	New/Retrofit
Multi-Family	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	10%	Both	New/Retrofit
Multi-Family	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	20	0	7,742	10	\$ 1.14	10%	Both	New/Retrofit
Multi-Family	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	10%	Both	New/Retrofit
Multi-Family	New/Existing	Low-Flow Showerhead - (MF ONLY)	1.25 GPM	Replace existing 2.0 GPM	2.0 GPM	24	0	7,933	10	\$ 3.79	10%	UG	New/Retrofit
Multi-Family	New	Low-flow showerhead (Distributed)	1.25 GPM	Average existing stock	2.2 GPM	32	0	9,585	10	\$ 3.79	10%	UG	New
Multi-Family	Existing	Low-flow showerhead (Distributed)	1.25 GPM	Average existing stock	2.2 GPM	32	0	9,585	10	\$ 3.79	10%	UG	Retrofit
Multi-Family	New	Low-flow showerhead (Distributed)	1.5 GPM		2.2 GPM	33	0	5,228	10	\$ 6.00	10%	UG	New
Multi-Family	Existing	Low-flow showerhead (Distributed)	1.5 GPM	Average existing stock	2.2 GPM	33	0	5,228	10	\$ 6.00	10%	UG	Retrofit
MultiFamily	New	Low-Flow Showerhead (Per household, Installed)	1.25 GPM		2.5 GPM	36	-	11,587	10	\$ 12.50	10%	EGD	New
MultiFamily	New	Low-Flow Showerhead (Per household, Installed)	1.5 GPM		2.5 GPM	29	-	7,818	10	\$ 12.50	10%	EGD	New
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	2.0 -2.5 GPM showerhead	2.25 GPM	21	0	5,931	10	\$ 12.50	10%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	2.6 -3.0 GPM GPM showerhead	2.8 GPM	40	0	10,036	10	\$ 12.50	10%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	3.1 - 3.5 GPM showerhead	3.3 GPM	58	0	13,621	10	\$ 12.50	10%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	1.5 GPM	3.6 GPM and above	3.6 GPM	69	0	15,705	10	\$ 12.50	10%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	2.0 -2.5 GPM showerhead	2.25 GPM	7.6	0	1913	10	\$ 18.71	0%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	2.6 -3.0 GPM GPM showerhead	2.8 GPM	26	0	5996	10	\$ 18.71	0%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	3.1 - 3.5 GPM showerhead	3.3 GPM	44	0	9559	10	\$ 18.71	0%	EGD	Retrofit
MultiFamily	Existing	Low-Flow Showerhead (Per household, Installed)	2.0 GPM	3.6 GPM and above	3.6 GPM	55	0	11628	10	\$ 18.71	0%	EGD	Retrofit

\* Efficiency ratings and natural gas savings will vary by fireplace type. Please see substantiation sheet for type specific efficiency ratings and savings.  
 \*\* Savings will vary for different segments. Please see substantiation sheet for segment specific savings.

Union Gas Custom Projects	
Sector	Free Rider (%)
Agriculture	54%
Industrial	54%
Commercial	54%
Multi-Residential	54%
New Construction	54%
Runsmart	0%
Strategic Energy Management (SEM)	0%
Low-Income - Weatherization	0%
Low-Income - Custom	5%
Residential - Home Reno Rebate	15% - 2015, 5% - 2016-2020

## Union Gas Effective Useful Life (EUL)<sup>1</sup> Guide

### *Commercial/Industrial Custom Offering*

Equipment Type	Sector	EUL	
		Years	Source

#### **Boilers**

Industrial Process - greater than 2500 MBHp	Industrial	20	2
Space heating - Under 300 MBHp	Commercial & Multi-Residential	20*	4
Space heating - 300 to 2500 MBHp	Commercial & Multi-Residential	20*	4
Domestic Hot Water	Commercial & Multi-Residential	20*	4
Controls	All	20*	4
Combustion Tune-Up	Industrial & Commercial	1	
Air Makeup (line)	Industrial	20	
Oxy-Fuel	Industrial	20	
Low NOx Boiler	Industrial	20	

#### **Building Optimization**

Building Optimization Program/RunSmart - Behavioral Savings Project	Commercial	5	3
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#### **Economizers**

Conventional and condensing	Industrial & Commercial	20	9
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#### **Electronic Burner Control**

Linkage-Less Controls, Modulating Motors, Mod Motors	Industrial & Commercial	20	9, 10
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<sup>1</sup> Where site specific information or a relevant prescriptive EUL is available to support an alternate EUL value for a specific custom project, Union Gas will use the alternate value for that custom project."

**Agriculture**

IR Poly	Greenhouse	5	2
Energy Curtains	Greenhouse	10	10, 11
Grain Dryer	Commercial	20	5

**HVAC**

Air Curtains (single and double door)	Commercial	15	2
Building Automation System - New	Industrial & Commercial	20	4, 9
Cooling tower for HVAC systems	Commercial	15	1, 2
Combustion Tune-Up	Industrial & Commercial	1	5
Dessicant Cooling	Commercial	15	6
Exhaust Fan Controls	Commercial	15	5
Heat Recovery	Industrial & Commercial	Comm 15 Indust 20	9, 10
Infiltration Controls - Dock Seals, Air Doors	Commercial	15	2
Make-Up Air	All	20	12
Heat Reflector Panels	Commercial & Multi-Residential	15	
VFD retrofit on MUA	Commercial & Multi-Residential	10	
Turndown controls on Modulating Boiler	Commercial	20	5

**Heat Exchangers**

Plate - Plate or Tube-Tube	Industrial & Commercial	Comm 14 Indust 20	2, 11
Air -Air	Commercial	Comm 14 Indust 20	2

**Insulation**

Roof/Ceiling insulation	Industrial & Commercial	20	2
Outside Pipe - exposed to the environment, properly protected	Industrial & Commercial	20	10, 11
Building Weatherization - Air sealing	Commercial	15	1

Tank Exterior Insulation	Industrial & Commercial	20	5, 11
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### **Ovens and Thermal oxidizers**

Low Temperature (less than 300°C)	Industrial	20	
Medium Temperature (300°C - 1000°C)	Industrial	20	
High Temperature (>1000°C)	Industrial	20	

### **Process Controls**

Electronic Loop Controllers	Industrial	20	
PLC's	Industrial	20	
Flame Supervision (relays)	Industrial	20	

### **Steam Distribution**

Steam Traps	Industrial & Commercial	7	5, 9, 11
Steam Piping Leaks	Industrial & Commercial	20	5, 9, 10, 11
Steam Valve	Industrial Food Services	10	10, 11

### **Water Conditioners**

Reverse Osmosis (RO)	Industrial	20	
Ion Exchange	Industrial	20	

### **Industrial Equipment**

All other industrial equipment	Industrial	Up to 20 yrs	Best available info
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**References**

*	Useful Life estimates are most dependent on the application and quality of maintenance. Any equipment life that was reported higher than 20 years was reduced to 20 years to conform to Union Gas's 20 year limit.
1	2011 Commercial Opportunity Screening Report May 02 2011, Navigant for Union Gas
2	DEER EUL Summary 2014
3	Measure Life for Retro-Commissioning and Continuous Commissioning Projects, Finn Projects for Enbridge
4	ASHRAE Service Life & Maintenance Cost Database (Jan 14, 2015)
5	Union Gas 2010 DSM Audited Results
6	Enbridge Approved IA
7	2011 Commercial Hydronic Boiler System Baseline Study, ICF Marbek for Enbridge
8	Confirmation of high quality feed water required for 10 year life
9	Union Gas 2011 DSM Audited Results
10	Union Gas 2012 DSM Audited Results
11	Union Gas 2013 DSM Audited Results
12	Prescriptive TRM Sub Doc (Source ASHRAE Handbook – HVAC Applications I-P Edition, Atlanta: ASHRAE, 2008, p. 32.8)

# Union Gas Effective Useful Life (EUL) Guide *Residential and Low Income Offerings*

Offering	2015	2016-2020
Union Gas Home Reno Rebate – without furnace upgrade	25 <sup>1</sup>	25 <sup>1</sup>
Union Gas Home Reno Rebate – with furnace upgrade	15 <sup>2</sup>	25 <sup>3</sup>
Union Gas Low Income Weatherization	25 <sup>4</sup>	25 <sup>4</sup>
Residential Behavioural Offering	N/A	1

<sup>1</sup> Union Gas Independent Audit of 2012 DSM Program Results. Applies to 2014 results only.

<sup>2</sup> EB-2012-0441; Exhibit B, Tab 1, Schedule 3

<sup>3</sup> See Home Reno Rebate Evaluation Plan for details on this EUL (results from a change in the base case in 2016 and beyond).

<sup>4</sup> Endorsed by the Technical Evaluation Committee, February 13, 2014

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Allocation of DSM Budget by Rate Class

Line No.	Particulars (\$000s)	2015	2016					2017				
		Approved DSM Budget in Rates (1) (a)	DSM Program Budget (b)	Low Income Program Budget (c)	Inflation Factor Budget (d)	100% Utility Incentive (e)	Total DSM (f)	DSM Program Budget (g)	Low Income Program Budget (h)	Inflation Factor Budget (i)	100% Utility Incentive (j)	Total DSM (k)
	<u>Union North</u>											
1	Rate 01	3,843	5,181	3,304	143	496	9,124	5,258	3,189	286	517	9,251
2	Rate 10	1,222	1,933	450	40	152	2,576	1,808	434	76	146	2,464
3	Rate 20	1,004	1,681	276	33	141	2,130	1,509	266	60	133	1,969
4	Rate 100	1,852	293	292	10	-	595	274	282	19	-	575
5	Total Union North	<u>7,920</u>	<u>9,089</u>	<u>4,322</u>	<u>225</u>	<u>789</u>	<u>14,425</u>	<u>8,850</u>	<u>4,172</u>	<u>441</u>	<u>796</u>	<u>14,258</u>
	<u>Union South</u>											
6	Rate M1	10,763	15,455	7,356	383	1,943	25,137	15,676	7,100	772	2,006	25,554
7	Rate M2	4,012	7,665	965	145	610	9,385	7,146	931	274	584	8,935
8	Rate M4	1,655	3,227	237	58	277	3,800	2,887	229	106	262	3,484
9	Rate M5A	2,763	2,214	252	41	188	2,695	1,983	244	75	178	2,480
10	Rate M7	933	2,233	80	39	187	2,539	2,005	77	71	177	2,330
11	Rate T1	1,855	1,679	204	32	187	2,101	1,448	197	56	177	1,878
12	Rate T2	2,687	517	812	22	-	1,351	484	784	43	-	1,311
13	Total Union South	<u>24,668</u>	<u>32,990</u>	<u>9,908</u>	<u>721</u>	<u>3,391</u>	<u>47,009</u>	<u>31,629</u>	<u>9,562</u>	<u>1,396</u>	<u>3,384</u>	<u>45,971</u>
14	Total Union (line 5 + line 13)	<u>32,588</u>	<u>42,078</u>	<u>14,230</u>	<u>946</u>	<u>4,180</u>	<u>61,434</u>	<u>40,478</u>	<u>13,734</u>	<u>1,837</u>	<u>4,180</u>	<u>60,229</u>

Notes:  
(1) Per EB-2014-0271, Working Papers, Schedule 11. Includes inflation factor of 1.68%.

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Allocation of DSM Budget by Rate Class

Line No.	Particulars (\$000s)	2018					2019					2020				
		DSM Program Budget	Low Income Program Budget	Inflation Factor Budget	100% Utility Incentive	Total DSM	DSM Program Budget	Low Income Program Budget	Inflation Factor Budget	100% Utility Incentive	Total DSM	DSM Program Budget	Low Income Program Budget	Inflation Factor Budget	100% Utility Incentive	Total DSM
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
	Union North															
1	Rate 01	5,980	3,475	485	534	10,474	5,943	3,623	659	538	10,763	5,933	3,837	849	535	11,153
2	Rate 10	1,917	473	123	141	2,654	1,882	494	164	139	2,678	1,897	523	210	139	2,769
3	Rate 20	1,525	290	93	127	2,035	1,471	302	122	123	2,019	1,490	320	157	122	2,090
4	Rate 100	283	307	30	-	621	292	320	42	-	654	301	339	56	-	695
5	Total Union North	9,705	4,546	730	802	15,783	9,588	4,739	987	800	16,115	9,620	5,019	1,272	797	16,707
	Union South															
6	Rate M1	17,815	7,737	1,310	2,058	28,919	17,717	8,066	1,777	2,088	29,647	17,686	8,542	2,278	2,098	30,604
7	Rate M2	7,031	1,015	412	563	9,021	6,915	1,058	549	556	9,078	6,973	1,120	703	556	9,353
8	Rate M4	2,917	250	162	250	3,579	2,814	260	212	243	3,529	2,850	276	271	241	3,637
9	Rate M5A	2,004	265	116	170	2,555	1,933	277	152	165	2,526	1,957	293	195	163	2,609
10	Rate M7	2,026	84	108	169	2,387	1,954	88	141	164	2,347	1,979	93	180	163	2,415
11	Rate T1	1,467	215	86	169	1,937	1,400	224	112	164	1,899	1,423	237	144	162	1,967
12	Rate T2	499	854	69	-	1,423	515	891	97	-	1,503	530	943	128	-	1,602
13	Total Union South	33,759	10,420	2,264	3,378	49,821	33,246	10,863	3,040	3,380	50,528	33,398	11,504	3,901	3,383	52,186
14	Total Union (line 5 + line 13)	43,464	14,966	2,995	4,180	65,604	42,834	15,602	4,027	4,180	66,644	43,018	16,523	5,172	4,180	68,893

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Bill Impacts

Line No.	Rate Class	2015 DSM Budget in Rates (1)	Percent of Total Budget	2020 Proposed DSM Budget (2)	Percent of Total Budget	2015 Billing Units (1)	2015 DSM Rate In Rates	2020 Proposed DSM Rates	Change from 2015 to 2020		Representative Annual Billing Units	Total 2020 DSM Amounts in Bill		Jan 2015 QRAM Total Bill (3)	Percent of Bill
		(\$000s)	(%)	(\$000s)	(%)		(cents/m³)	(cents/m³)	(%)	(\$)		Annual Bill Impacts (\$)	Monthly Bill Impacts (\$)		
		(a)	(b)	(c)	(d)	(e)	(f) = (a / e)	(g) = (c / e)	(h)	(i) = (g - f) * (j)	(j)	(k) = (g * j)	(l) = (k / 12)	(m)	(n) = (k / m)
	Union North														
1	Rate 01	3,843	12%	11,153	16%	927,922	0.4142	1.2020	190%	17.33	2,200	26.44	2.20	1,033	2.6%
2	Rate 10	1,222	4%	2,769	4%	346,746	0.3523	0.7986	127%	1,116	250,000	1,996	166.37	76,478	2.6%
3	Rate 20	1,004	3%	2,090	3%	618,460	0.1623	0.3379	108%	26,340	15,000,000	50,682	4,223.54	3,686,149	1.4%
4	Rate 100	1,852	6%	695	1%	1,857,374	0.0997	0.0374	-62%	(149,433)	240,000,000	89,845	7,487.11	60,449,971	0.1%
5	Total Union North	7,920	24%	16,707	24%										
	Union South														
6	Rate M1	10,763	33%	30,604	44%	2,921,516	0.3684	1.0475	184%	14.94	2,200	23.05	1.92	755	3.1%
7	Rate M2	4,012	12%	9,353	14%	1,146,167	0.3501	0.8160	133%	1,165	250,000	2,040	170.00	56,836	3.6%
8	Rate M4	1,655	5%	3,637	5%	381,593	0.4337	0.9532	120%	4,545	875,000	8,340	695.03	197,728	4.2%
9	Rate M5	2,763	8%	2,609	4%	511,770	0.5399	0.5099	-6%	(1,951)	6,500,000	33,141	2,761.73	1,368,969	2.4%
10	Rate M7	933	3%	2,415	4%	139,645	0.6679	1.7292	159%	382,063	36,000,000	622,514	51,876.14	7,272,749	8.6%
11	Rate T1	1,855	6%	1,967	3%	529,553	0.3503	0.3714	6%	2,440	11,565,938	42,950	3,579.19	2,324,627	1.8%
12	Rate T2	2,687	8%	1,602	2%	4,732,620	0.0568	0.0338	-40%	(45,347)	197,789,850	66,934	5,577.81	37,503,575	0.2%
13	Total Union South	24,668	76%	52,186	76%										
14	Total Union	32,588	100%	68,893	100%										
15	Total Rate 01 & M1	14,606	45%	41,757	61%	3,849,438	0.3794	1.0848	186%	15.52	2,200	23.86	1.99		
16	Total Rate M4, M5 & M7	5,351	16%	8,661	27%	1,033,009	0.5180	0.8385							

Notes:

- (1) EB-2014-0271, Working Papers, Schedule 4. 2015 DSM Budget does not include any incentive amount in approved rates.  
(2) Proposed 2020 budget of \$64.7 million and 100% utility incentive of \$4.2 million.  
(3) Total Sales Service Bill based on EB-2014-0356 (January 2015 QRAM) excluding price adjustments.

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Bill Impacts - Including Union's Rate M7 Proposal

Line No.	Rate Class	2015 DSM Budget in Rates (1)	Percent of Total Budget	2020 Proposed DSM Budget (2)	Percent of Total Budget	2015 Billing Units (1)	2015 DSM Rate In Rates	2020 Proposed DSM Rates	Change from 2015 to 2020		Representative Annual Billing Units	Total 2020 DSM Amounts in Bill		Jan 2015 QRAM Total Bill (3)	Percent of Bill
		(\$000s)	(%)	(\$000s)	(%)		(cents/m³)	(cents/m³)	(%)	(\$)		Annual Bill Impacts (\$)	Monthly Bill Impacts (\$)		
		(a)	(b)	(c)	(d)	(e)	(f) = (a / e)	(g) = (c / e)	(h)	(i) = (g - f) * (j)	(j)	(k) = (g * j)	(l) = (k / 12)	(m)	(n) = (k / m)
	Union North														
1	Rate 01	3,843	12%	11,153	16%	927,922	0.4142	1.2020	190%	17.33	2,200	26.44	2.20	1,033	2.6%
2	Rate 10	1,222	4%	2,769	4%	346,746	0.3523	0.7986	127%	1,116	250,000	1,996	166.37	76,478	2.6%
3	Rate 20	1,004	3%	2,090	3%	618,460	0.1623	0.3379	108%	26,340	15,000,000	50,682	4,223.54	3,686,149	1.4%
4	Rate 100	1,852	6%	695	1%	1,857,374	0.0997	0.0374	-62%	(149,433)	240,000,000	89,845	7,487.11	60,449,971	0.1%
5	Total Union North	<u>7,920</u>	24%	<u>16,707</u>	24%										
	Union South														
6	Rate M1	10,763	33%	30,604	44%	2,921,516	0.3684	1.0475	184%	14.94	2,200	23.05	1.92	755	3.1%
7	Rate M2	4,012	12%	9,353	14%	1,146,167	0.3501	0.8160	133%	1,165	250,000	2,040	170.00	56,836	3.6%
8	Rate M4	1,655	5%	3,200	5%	381,593	0.4337	0.8385	93%	3,541	875,000	7,337	611.38	197,728	3.7%
9	Rate M5	2,763	8%	4,291	6%	511,770	0.5399	0.8385	55%	19,408	6,500,000	54,500	4,541.65	1,368,969	4.0%
10	Rate M7	933	3%	1,171	2%	139,645	0.6679	0.8385	26%	61,395	36,000,000	301,845	25,153.77	7,272,749	4.2%
11	Rate T1	1,855	6%	1,967	3%	529,553	0.3503	0.3714	6%	2,440	11,565,938	42,950	3,579.19	2,324,627	1.8%
12	Rate T2	2,687	8%	1,602	2%	4,732,620	0.0568	0.0338	-40%	(45,347)	197,789,850	66,934	5,577.81	37,503,575	0.2%
13	Total Union South	<u>24,668</u>	76%	<u>52,186</u>	76%										
14	Total Union	<u>32,588</u>	100%	<u>68,893</u>	100%										
15	Total Rate 01 & M1	14,606	45%	41,757	61%	3,849,438	0.3794	1.0848	186%	15.52	2,200	23.86	1.99		

Notes:

- (1) EB-2014-0271, Working Papers, Schedule 4. 2015 DSM Budget does not include any incentive amount in approved rates.  
(2) Proposed 2020 budget of \$64.7 million and 100% utility incentive of \$4.2 million.  
(3) Total Sales Service Bill based on EB-2014-0356 (January 2015 QRAM) excluding price adjustments.

UNION GAS LIMITED  
2020 DSM Plan  
Average Savings for DSM Participating Customers by Rate Class

Line No.	Rate Class	Average Annual Savings	Representative Annual	Average Variable	Annual			Monthly		
		Per Participant	Billing Units	Unit Rate (1)	Savings	Cost in Rates (2)	Difference	Savings	Cost in Rates	Difference
		(m³)	(m³)	(cents/m³)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
		(a)	(b)	(c)	(d) = (a * c)	(e)	(f) = (d - e)	(g) = (d / 12)	(h) = (e / 12)	(i) = (g - h)
Union North (3)										
1	Rate 01	65	2,200	35.2540	22.93	26.44	(3.52)	1.91	2.20	(0.29)
2	Rate 10	12,532	250,000	30.0320	3,764	1,996	1,767	314	166	147
3	Rate 20	410,796	15,000,000	24.1607	99,251	50,682	48,569	8,271	4,224	4,047
4	Rate 100	-	240,000,000	23.7043	0	89,845	(89,845)	0	7,487	(7,487)
Union South										
5	Rate M1	65	2,200	22.7024	14.76	23.05	(8.29)	1.23	1.92	(0.69)
6	Rate M2	12,366	250,000	22.3858	2,768	2,040	728	231	170	61
7	Rate M4	187,479	875,000	19.4358	36,438	7,337	29,101	3,036	611	2,425
8	Rate M5	253,108	6,500,000	20.7493	52,518	54,500	(1,982)	4,377	4,542	(165)
9	Rate M7	491,824	14,000,000	18.7845	92,387	117,384	(24,997)	7,699	9,782	(2,083)
10	Rate T1	318,583	11,565,938	18.5976	59,249	42,950	16,299	4,937	3,579	1,358
11	Rate T2	-	197,789,850	18.4632	0	66,934	(66,934)	0	5,578	(5,578)

Notes:

- (1) Derived from EB-2014-0356. Average variable unit rate excludes all monthly fixed charges.  
(2) Exhibit A, Tab 3, Appendix E, Schedule 3.  
(3) Representative bills and savings for Union North were based on Eastern Zone.

**Appendix F: AVOIDED COSTS (NATURAL GAS, WATER and ELECTRICITY)**

Inflation Factor	1.68%
Discount Rate	4.00%

Gas Avoided Costs						
	Residential/Commercial				Industrial	
	Baseload (m <sup>3</sup> )		Weather Sensitive (m <sup>3</sup> )			
	Rate	NPV	Rate	NPV	Rate	NPV
2015	0.21378	0.21378	0.22071	0.22071	0.20537	0.20537
2016	0.19684	0.40304	0.20449	0.41734	0.20114	0.39878
2017	0.19620	0.58444	0.20266	0.60471	0.19798	0.58182
2018	0.20730	0.76873	0.21387	0.79484	0.20911	0.76772
2019	0.23174	0.96682	0.23841	0.99864	0.23358	0.96739
2020	0.25035	1.17259	0.25714	1.20999	0.25222	1.17470
2021	0.24863	1.36908	0.25553	1.41194	0.25053	1.37270
2022	0.25157	1.56025	0.25859	1.60844	0.25350	1.56534
2023	0.26925	1.75699	0.27639	1.81040	0.27122	1.76351
2024	0.25862	1.93870	0.26588	1.99720	0.26063	1.94663
2025	0.27435	2.12404	0.28173	2.18753	0.27639	2.13334
2026	0.27612	2.30340	0.28363	2.37177	0.27819	2.31405
2027	0.29855	2.48987	0.30618	2.56300	0.30065	2.50184
2028	0.30166	2.67104	0.30941	2.74883	0.30380	2.68429
2029	0.32465	2.85851	0.33253	2.94086	0.32682	2.87302
2030	0.32743	3.04032	0.33545	3.12712	0.32964	3.05606
2031	0.33257	3.21788	0.34072	3.30904	0.33482	3.23482
2032	0.33925	3.39205	0.34755	3.48746	0.34154	3.41016
2033	0.35307	3.56633	0.36150	3.66591	0.35540	3.58559
2034	0.36264	3.73846	0.37122	3.84210	0.36501	3.75884
2035	0.37758	3.91078	0.38630	4.01840	0.37998	3.93226
2036	0.38851	4.08127	0.39738	4.19278	0.39096	4.10383
2037	0.39977	4.24996	0.40878	4.36527	0.40225	4.27356
2038	0.41135	4.41685	0.42052	4.53588	0.41388	4.44148
2039	0.42328	4.58198	0.43260	4.70465	0.42585	4.60762
2040	0.43556	4.74537	0.44503	4.87159	0.43817	4.77198
2041	0.44820	4.90703	0.45783	5.03673	0.45086	4.93460
2042	0.46121	5.06699	0.47101	5.20008	0.46392	5.09550
2043	0.47461	5.22526	0.48457	5.36167	0.47736	5.25468
2044	0.48840	5.38187	0.49853	5.52153	0.49120	5.41219

Water and Electricity Avoided Costs				
Residential/Commercial/Industrial				
Water (m <sup>3</sup> )		Electricity (kWh)		
Rate	NPV	Rate	NPV	
2.27294	2.27294	0.11280	0.11280	
2.31113	4.49518	0.11470	0.22309	
2.34996	6.66785	0.11663	0.33092	
2.38944	8.79205	0.11859	0.43634	
2.42958	10.86886	0.12058	0.53941	
2.47039	12.89935	0.12260	0.64018	
2.51190	14.88454	0.12466	0.73870	
2.55410	16.82544	0.12676	0.83503	
2.59701	18.72305	0.12889	0.92921	
2.64064	20.57832	0.13105	1.02128	
2.68500	22.39221	0.13325	1.11130	
2.73011	24.16564	0.13549	1.19931	
2.77597	25.89950	0.13777	1.28536	
2.82261	27.59469	0.14008	1.36950	
2.87003	29.25206	0.14244	1.45175	
2.91825	30.87246	0.14483	1.53217	
2.96727	32.45671	0.14726	1.61079	
3.01712	34.00562	0.14974	1.68766	
3.06781	35.51997	0.15225	1.76282	
3.11935	37.00055	0.15481	1.83630	
3.17175	38.44810	0.15741	1.90814	
3.22504	39.86335	0.16006	1.97838	
3.27922	41.24704	0.16274	2.04705	
3.33431	42.59985	0.16548	2.11419	
3.39033	43.92249	0.16826	2.17983	
3.44728	45.21563	0.17109	2.24400	
3.50520	46.47992	0.17396	2.30675	
3.56409	47.71600	0.17688	2.36809	
3.62396	48.92451	0.17985	2.42807	
3.68485	50.10606	0.18287	2.48671	



## APPENDIX G: SENSITIVITY ANALYSIS

### 1. Scenario Description

In Section 3.0 of the Guidelines the Board notes that the utilities should provide:

*“sensitivity analysis that shows how both annual and 2020 targets interact and increase/decrease based on different budget scenarios. The gas utilities should provide a minimum of three target scenarios based on different budget amounts”.*

In 2020 Union proposes to reach the budget guidance given by the Board of \$59.5 million excluding inflation. With the inclusion of the 15% overspend available to exceed targets and reach the Upper Band each year, spending in 2020 could reach \$68.4 million (\$59.5 million x 1.15 = \$68.5 million).

Union has outlined three scenarios below at budget levels of \$56.3 million, \$73.5 million and \$78.5 million. The sensitivity budget amounts do not include inflation. Union has conducted an extensive analysis for its 2016-2020 DSM Plan, however Scenario #2 and Scenario #3 are estimates based on best available information. Union has not completed a thorough review to understand the relationship between increased budgets above the 2020 DSM Plan proposal and market reactions, thus the scenarios are meant to be directional in nature.

**Scenario #1 – Decrease in budget**

As requested by the Board, Union's Scenario #1 is a decreased budget level from the \$59.5 million annual budget allowance outlined by the Board. Scenario #1 reflects Union's 2016 budget of \$56.3 million outlined at Exhibit A, Tab 3, Section 2. This amount represents the minimum budget that Union would require in order to put forward a DSM portfolio that incorporates the guiding principles and key priorities outlined in the Framework and Guidelines.

**Scenario #2 – Increase in budget**

The basis of this scenario is the assumption that Union can achieve its 2020 Upper Band cumulative natural gas savings targets with its proposed 2020 budget including the allowable 15% overspend. Table 1 below outlines the estimated impacts of an additional \$5 million on Union's proposed program offerings and the associated annual natural gas savings and lifetime natural gas savings. The total pre-inflation budget for Scenario #2 is \$73.5 million [(\$59.5 million x 1.15) plus \$5 million = \$73.5 million].

Table 1  
Estimated Impacts of Incremental \$5 Million Budget

<b>Offerings</b>	<b>Details</b>	<b>Incremental Budget (\$ millions)</b>	<b>Incremental Annual Natural Gas Savings (million m<sup>3</sup>)</b>	<b>Incremental Lifetime Natural Gas Savings (million m<sup>3</sup>)</b>
<u>Residential</u> Behavioural Offering	Increase Home Energy Report participants by an incremental 200,000.	\$0.9	2.0	2.0
<u>Residential</u> Home Reno Rebate Offering	Increase participants by an incremental 200 homes	\$1.3	0.2	5.0
<u>Commercial/Industrial</u> Increase Custom Offering	Assumes 30 more projects from general service customers and 45 more projects from contract customers	\$1.0	6.0	105.0
<u>Commercial/Industrial</u> Behavioural Offering	This is a new offering that Union would look to introduce. See details below.	\$0.8	Savings cannot be forecasted as the offering has not been defined.	Savings cannot be forecasted as the offering has not been defined.
<b>Total</b>		<b>\$4.0</b>	<b>\$8.2</b>	<b>113.0</b>
<b>Evaluation and Administration</b>		<b>\$1.0</b>		
<b>Grand Total</b>		<b>\$5.0</b>		

**Scenario #2 Assumptions**

**Residential - Behavioural**

- An incremental \$0.9 million is allocated to the Behavioural offering, allowing Union to expand participation from 300,000 to 500,000. At this participation level, the targeted customers will still have a higher than average consumption level.
- Consistent with the Plan Budget, all residential customers will have access to an Online Portal.

**Residential – Home Reno Rebate**

- In determining incremental participation, Union was directionally informed by the experience of other leading home retrofit program offerings. Noting that some programs were able to achieve a higher participation rate through the use of high incentives, Union first estimated budget and participation levels if rebates were doubled to cover approximately 70% of projected participant costs. Union then assumed a linear “cost per participant” relationship between the Plan proposal and estimated budget and participation at this higher rebate level. The participation levels were then estimated based on the incremental budget and this linear assumption.
- An incremental \$1.3 million translates to approximately 200 additional homes.
- This analysis is highly simplified due to the lack of more detailed information about the relationship between incentive levels and participation. For example, the relationship

may not be linear as the impact of a rebate increase may be muted until certain “tipping points” are reached.

#### Commercial Industrial - Custom Offering

- This scenario assumes an incremental \$1.0 million spend on custom projects resulting in the savings outlined in Table 2.
- No changes to the program offerings have been assumed in this scenario.

Table 2  
Estimated Custom Offering Savings

Customer	Budget (\$ millions)	Number of Projects	Incremental Annual Natural Gas Savings (million m <sup>3</sup> )	Incremental Lifetime Natural Gas Savings (million m <sup>3</sup> )
General Service	\$0.2	30	1	15
Contract	\$0.8	45	5	90
<b>Total</b>	<b>\$1.0</b>	<b>75</b>	<b>6</b>	<b>105</b>

#### Commercial/Industrial - Behavioural

Union would consider implementing a behavioural offering in the commercial market. Program elements could include:

- Through detailed analysis of utility data and customer collected data, participating customers are provided with energy saving recommendations tailored to their business.
- Market Approach:

1           ○ Energy reports and an interactive portal are designed to educate and empower  
2           customers to actively monitor and manage their energy usage through targeted  
3           information and customized tips for saving money and energy.

- 4           • Targeting smaller commercial markets.
- 5           • Anticipate a budget of \$20 -25 per participant annually.

#### 7   Evaluation and Administration

8   Union estimates that of the incremental \$5 million budget, \$1 million will be required for  
9   additional evaluation and administration support. Union performed a simple analysis of the  
10   current total evaluation and administrative costs associated with the 2020 budget and increased it  
11   by the same proportion based on the incremental \$5 million. This analysis is highly simplified as  
12   the increased efforts for the existing offerings and the addition of new offerings may require  
13   greater amount of evaluation and administration.

#### 15   **Scenario #3 – Increase in budget**

16   Consistent with Scenario #2, Union is basing Scenario #3 on the assumption that the 2020 Upper  
17   Band cumulative natural gas savings targets can be met with the 2020 budget, including the  
18   allowable 15% overspend. Table 3 below outlines estimated impacts of an additional \$10  
19   million on Union's proposed program offerings and the associated annual natural gas savings

and lifetime natural gas savings. The total pre-inflation budget for Scenario #3 is \$78.5 million  
[((\$59.5 million x 1.15) plus \$10 million = \$78.5 million].

Table 3  
Estimated Impacts of Incremental \$10 Million Budget

Offerings	Details	Incremental Budget (\$ millions)	Incremental Annual Natural Gas Savings (million m <sup>3</sup> )	Incremental Lifetime Natural Gas Savings (million m <sup>3</sup> )
<u>Residential</u> Behavioural Offering	No change from the assumptions outlined in Scenario #2	\$0.9	2.0	2.0
<u>Residential</u> Home Reno Rebate Offering	Increase participants by an incremental 600 homes	\$4.0	0.6	16.0
<u>Commercial/Industrial</u> Increase Custom Offering	Assume 145 projects from general service customers and 65 projects from contract customers.	\$2.3	12.0	200.0
<u>Commercial/Industrial</u> Behavioural Offering	No change from the assumptions outline in Scenario #2	\$0.8	Savings cannot be forecasted as the program offering has not been defined.	Savings cannot be forecasted as the program offering has not been defined.
<b>Total</b>		<b>\$8.0</b>	<b>14.6</b>	<b>218.0</b>
<b>Evaluation and Administration</b>		<b>\$2.0</b>		
<b>Grand Total</b>		<b>\$10.0</b>		

### Scenario #3 Assumptions

The incremental budget spends and offering assumptions are consistent with Scenario #2 for  
Residential Behavioural and Commercial/Industrial Behavioural.

Residential - Home Reno Rebate

- As outlined in Scenario #2, Union is assuming a linear relationship between the cost per participant at a higher incentive level and the incremental budget. Given this relationship between budgets and targets, an incremental \$4 million will translate to approximately 600 additional homes.

Commercial/Industrial Custom Offering

- This scenario assumes an incremental \$2.3 million spend on custom projects resulting in the savings outlined in Table 4.
- No changes to the program offerings have been assumed in this scenario.

Table 4  
Estimated Custom Offering Savings

Customer	Budget (\$ millions)	Number of Projects	Incremental Annual Natural Gas Savings (million m <sup>3</sup> )	Incremental Lifetime Natural Gas Savings (million m <sup>3</sup> )
General Service	\$1.1	145	4	60
Contract	\$1.2	65	8	140
<b>Total</b>	<b>\$2.3</b>	<b>210</b>	<b>12</b>	<b>200</b>

Evaluation and Administration

Similar to the process outline in Scenario #2, Union estimates that an incremental \$10 million budget will require an evaluation and administration allocation of approximately \$2 million.



1       **2. Rate Impacts**  
2

3       At Section 3.2 of the Framework the Board states:

4               *“The Board agrees that DSM target sensitivity analysis, which shows the relation of*  
5               *various natural gas savings levels at differing budget amounts, will be helpful in*  
6               *reviewing and assessing the overall multi-year DSM plans proposed by the gas utilities*  
7               *and expects this information to be included in the multi-year plan.”*  
8

9       The rate impacts for the average residential customer for each scenario are described below.  
10

11       For Scenario #1, where the DSM budget is assumed to be \$56.3 million, the average Rate M1  
12       residential customer would pay approximately \$17 per year or \$1.43 per month in DSM costs,  
13       while the average Rate 01 residential customer would pay approximately \$20 per year or \$1.68  
14       per month. Please see Exhibit A, Tab 3, Appendix G, Schedule 1 for the 2016 bill impacts of this  
15       scenario for Union’s in-franchise rate classes.  
16

17       For Scenario #2, where the DSM budget is assumed to be \$73.5 million, the average Rate M1  
18       residential customer would pay approximately \$24 per year or \$2.03 per month in DSM costs,  
19       while the average Rate 01 residential customer would pay approximately \$28 per year or \$2.36  
20       per month. Please see Exhibit A, Tab 3, Appendix G, Schedule 2 for the 2020 bill impacts of  
21       this scenario for Union’s in-franchise rate classes.

1 For Scenario #3, where the DSM budget is assumed to be \$78.5 million, the average Rate M1  
2 residential customer would pay approximately \$26 per year or \$2.18 per month in DSM costs,  
3 while the average Rate 01 residential customer would pay approximately \$30 per year or \$2.51  
4 per month. Please see Exhibit A, Tab 3, Appendix G, Schedule 3 for the 2020 bill impacts of  
5 this scenario for Union's in-franchise rate classes.

6

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Bill Impacts - Sensitivity Analysis Scenario #1

Line No.	Rate Class	2015 DSM Budget in Rates (1)	Percent of Total Budget	2016 Proposed DSM Budget (2)	Percent of Total Budget	2015 Billing Units (1)	2015 DSM Rate In Rates	2016 Proposed DSM Rates	Change from 2015 to 2016		Representative Annual Billing Units	Total 2016 DSM Amounts in Bill		Jan 2015 QRAM Total Bill (3)	Percent of Bill
		(\$000s)	(%)	(\$000s)	(%)		(cents/m³)	(cents/m³)	(%)	(\$)		Annual Bill Impacts (\$)	Monthly Bill Impacts (\$)		
		(a)	(b)	(c)	(d)	(e)	(f) = (a / e)	(g) = (c / e)	(h)	(i) = (g - f) * (j)	(j)	(k) = (g * j)	(l) = (k / 12)	(m)	(n) = (k / m)
	Union North														
1	Rate 01	3,843	12%	8,486	15%	927,922	0.4142	0.9145	121%	11.01	2,200	20.12	1.68	1,033	1.9%
2	Rate 10	1,222	4%	2,384	4%	346,746	0.3523	0.6874	95%	838	250,000	1,719	143.21	76,478	2.2%
3	Rate 20	1,004	3%	1,957	3%	618,460	0.1623	0.3164	95%	23,119	15,000,000	47,462	3,955.15	3,686,149	1.3%
4	Rate 100	1,852	6%	585	1%	1,857,374	0.0997	0.0315	-68%	(163,690)	240,000,000	75,588	6,299.02	60,449,971	0.1%
5	Total Union North	7,920	24%	13,411	24%										
	Union South														
6	Rate M1	10,763	33%	22,811	41%	2,921,516	0.3684	0.7808	112%	9.07	2,200	17.18	1.43	755	2.3%
7	Rate M2	4,012	12%	8,630	15%	1,146,167	0.3501	0.7529	115%	1,007	250,000	1,882	156.86	56,836	3.3%
8	Rate M4	1,655	5%	3,465	6%	381,593	0.4337	0.9080	109%	4,150	875,000	7,945	662.06	197,728	4.0%
9	Rate M5	2,763	8%	2,466	4%	511,770	0.5399	0.4818	-11%	(3,772)	6,500,000	31,320	2,609.99	1,368,969	2.3%
10	Rate M7	933	3%	2,314	4%	139,645	0.6679	1.6568	148%	355,981	36,000,000	596,431	49,702.60	7,272,749	8.2%
11	Rate T1	1,855	6%	1,883	3%	529,553	0.3503	0.3556	2%	613	11,565,938	41,124	3,426.97	2,324,627	1.8%
12	Rate T2	2,687	8%	1,329	2%	4,732,620	0.0568	0.0281	-51%	(56,735)	197,789,850	55,546	4,628.81	37,503,575	0.1%
13	Total Union South	24,668	76%	42,897	76%										
14	Total Union	32,588	100%	56,308	100%										

Notes:  
(1) EB-2014-0271, Working Papers, Schedule 4. 2015 DSM Budget does not include any incentive amount in approved rates.  
(2) Proposed 2016 budget of \$56.3 million pre-inflation.  
(3) Total Sales Service Bill based on EB-2014-0356 (January 2015 QRAM) excluding price adjustments.

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Bill Impacts - Sensitivity Analysis Scenario #2 +\$5M

Line No.	Rate Class	2015 DSM Budget in Rates (1) (\$000s)	Percent of Total Budget (%)	2020 Proposed DSM Budget (2) (\$000s)	Percent of Total Budget (%)	2015 Billing Units (1) (10³m³)	2015 DSM Rate In Rates (cents/m³)	2020 Proposed DSM Rates (cents/m³)	Change from 2015 to 2020		Representative Annual Billing Units (m³)	Total 2020 DSM Amounts in Bill		Jan 2015 QRAM Total Bill (3) (\$)	Percent of Bill (%)
		(a)	(b)	(c)	(d)	(e)	(f) = (a / e)	(g) = (c / e)	(%)	(i) = (g - f) * (j)	(j)	Annual Bill Impacts (\$) (k) = (g * j)	Monthly Bill Impacts (\$) (l) = (k / 12)	(m)	(n) = (k / m)
	Union North														
1	Rate 01	3,843	12%	11,949	16%	927,922	0.4142	1.2877	211%	19.22	2,200	28.33	2.36	1,033	2.7%
2	Rate 10	1,222	4%	2,968	4%	346,746	0.3523	0.8558	143%	1,259	250,000	2,140	178.30	76,478	2.8%
3	Rate 20	1,004	3%	2,270	3%	618,460	0.1623	0.3670	126%	30,702	15,000,000	55,045	4,587.04	3,686,149	1.5%
4	Rate 100	1,852	6%	736	1%	1,857,374	0.0997	0.0396	-60%	(144,215)	240,000,000	95,064	7,922.00	60,449,971	0.2%
5	Total Union North	7,920	24%	17,922	24%										
	Union South														
6	Rate M1	10,763	33%	32,306	44%	2,921,516	0.3684	1.1058	200%	16.22	2,200	24.33	2.03	755	3.2%
7	Rate M2	4,012	12%	9,989	14%	1,146,167	0.3501	0.8715	149%	1,304	250,000	2,179	181.56	56,836	3.8%
8	Rate M4	1,655	5%	3,952	5%	381,593	0.4337	1.0356	139%	5,266	875,000	9,062	755.13	197,728	4.6%
9	Rate M5	2,763	8%	2,834	4%	511,770	0.5399	0.5538	3%	903	6,500,000	35,995	2,999.58	1,368,969	2.6%
10	Rate M7	933	3%	2,632	4%	139,645	0.6679	1.8850	182%	438,145	36,000,000	678,595	56,549.62	7,272,749	9.3%
11	Rate T1	1,855	6%	2,143	3%	529,553	0.3503	0.4047	16%	6,295	11,565,938	46,806	3,900.48	2,324,627	2.0%
12	Rate T2	2,687	8%	1,695	2%	4,732,620	0.0568	0.0358	-37%	(41,459)	197,789,850	70,822	5,901.79	37,503,575	0.2%
13	Total Union South	24,668	76%	55,550	76%										
14	Total Union	32,588	100%	73,472	100%										

Notes:  
(1) EB-2014-0271, Working Papers, Schedule 4. 2015 DSM Budget does not include any incentive amount in approved rates.  
(2) Proposed 2020 budget of \$59.5 million pre-inflation, 15% overspend of \$8.9 million, plus \$5.0 million.  
(3) Total Sales Service Bill based on EB-2014-0356 (January 2015 QRAM) excluding price adjustments.

UNION GAS LIMITED  
2015 - 2020 DSM Plan  
Bill Impacts - Sensitivity Analysis Scenario #3 +\$10M

Line No.	Rate Class	2015 DSM Budget in Rates (1)	Percent of Total Budget	2020 Proposed DSM Budget (2)	Percent of Total Budget	2015 Billing Units (1)	2015 DSM Rate In Rates	2020 Proposed DSM Rates	Change from 2015 to 2020		Representative Annual Billing Units	Total 2020 DSM Amounts in Bill		Jan 2015 QRAM Total Bill (3)	Percent of Bill
		(\$000s)	(%)	(\$000s)	(%)		(cents/m³)	(cents/m³)	(%)	(\$)		Annual Bill Impacts (\$)	Monthly Bill Impacts (\$)		
		(a)	(b)	(c)	(d)	(e)	(f) = (a / e)	(g) = (c / e)	(h)	(i) = (g - f) * (j)	(j)	(k) = (g * j)	(l) = (k / 12)	(m)	(n) = (k / m)
	Union North														
1	Rate 01	3,843	12%	12,723	16%	927,922	0.4142	1.3711	231%	21.05	2,200	30.16	2.51	1,033	2.9%
2	Rate 10	1,222	4%	3,215	4%	346,746	0.3523	0.9273	163%	1,437	250,000	2,318	193.19	76,478	3.0%
3	Rate 20	1,004	3%	2,354	3%	618,460	0.1623	0.3807	135%	32,756	15,000,000	57,099	4,758.21	3,686,149	1.5%
4	Rate 100	1,852	6%	736	1%	1,857,374	0.0997	0.0396	-60%	(144,215)	240,000,000	95,064	7,922.00	60,449,971	0.2%
5	Total Union North	7,920	24%	19,028	24%										
	Union South														
6	Rate M1	10,763	33%	34,725	44%	2,921,516	0.3684	1.1886	223%	18.04	2,200	26.15	2.18	755	3.5%
7	Rate M2	4,012	12%	10,972	14%	1,146,167	0.3501	0.9573	173%	1,518	250,000	2,393	199.44	56,836	4.2%
8	Rate M4	1,655	5%	4,113	5%	381,593	0.4337	1.0779	149%	5,636	875,000	9,431	785.96	197,728	4.8%
9	Rate M5	2,763	8%	2,945	4%	511,770	0.5399	0.5755	7%	2,313	6,500,000	37,405	3,117.05	1,368,969	2.7%
10	Rate M7	933	3%	2,745	3%	139,645	0.6679	1.9655	194%	467,136	36,000,000	707,586	58,965.50	7,272,749	9.7%
11	Rate T1	1,855	6%	2,249	3%	529,553	0.3503	0.4246	21%	8,600	11,565,938	49,110	4,092.52	2,324,627	2.1%
12	Rate T2	2,687	8%	1,695	2%	4,732,620	0.0568	0.0358	-37%	(41,459)	197,789,850	70,822	5,901.79	37,503,575	0.2%
13	Total Union South	24,668	76%	59,444	76%										
14	Total Union	32,588	100%	78,472	100%										

Notes:  
(1) EB-2014-0271, Working Papers, Schedule 4. 2015 DSM Budget does not include any incentive amount in approved rates.  
(2) Proposed 2020 budget of \$59.5 million pre-inflation, 15% overspend of \$8.9 million, plus \$10.0 million.  
(3) Total Sales Service Bill based on EB-2014-0356 (January 2015 QRAM) excluding price adjustments.

## **APPENDIX H: GLOSSARY OF TERMS**

<b><i>Adjustment Factor</i></b>	The adjustment factor reflects the percentage of savings being claimed. Typically, adjustment factor inputs include the percentage of participants who installed a prescriptive measure (and kept it installed) which is determined by conducting verification studies.
<b><i>Annual Fuel Utilization Efficiency (“AFUE”)</i></b>	AFUE is the average annual thermal efficiency of equipment reflecting the seasonal and other shorter term variations in operating efficiency. It is also defined as the ratio of useful output energy to input energy.
<b><i>Audit</i></b>	The Audit is an annual process to validate Union’s DSM results. A third party auditor is hired to conduct the Audit. While hired by Union, the auditor is independent and ultimately serves to protect the interests of ratepayers with respect to Union’s DSM claims.
<b><i>Audit Committee (“AC”)</i></b>	The AC currently consists of four members: three intervenor members selected by the DSM Consultative and one representative from Union. An additional Board representative AC member is proposed in this evidence.
<b><i>Avoided Costs</i></b>	Avoided costs are a measurement of the reduction in the delivered costs of supplying all resources (natural gas, electricity and water) to customers as a consequence of a program.
<b><i>Base Case</i></b>	The base case is a projection of the future without the effects of the utility’s DSM program. The difference between the base case and the energy efficient case represents the saving attributable to the energy efficient measure.
<b><i>Building Envelope</i></b>	The building envelope refers to the exterior surfaces (such as walls, windows, roof and floor) of a building that separate the conditioned space from the outdoors.
<b><i>Channel Partner</i></b>	A Channel Partner is a company that, in the course of its business, can influence consumers to choose gas over competing fuels. Examples of Channel Partners include appliance retailers, HVAC contractors, engineers and architects.
<b><i>Conservation Demand Management (“CDM”)</i></b>	Ontario electric industry energy conservation program roughly equivalent to Ontario natural gas industry based DSM program.

<b><i>Cost Effectiveness</i></b>	Cost effectiveness refers to the analysis that determines whether or not the benefits of a project/measure are greater than the costs. It is based on the net present value of savings over the equipment life of the measures.
<b><i>Custom Offering</i></b>	A custom DSM project/ technology that is based on customer- specific information and considerations. DSM projects available to Union's larger commercial/industrial customers are categorized as either "custom" or "prescriptive".
<b><i>Custom Project Savings Verification ("CPSV")</i></b>	The annual process by which the cumulative gross savings estimates of Union's custom DSM projects are verified. A statistically significant sample of low-income, commercial/industrial, and large volume projects are verified by a third party consultant.
<b><i>CUSUM</i></b>	CUSUM analysis is a means of calculating energy savings based on actual metered data – it is a statistical method used to compare energy utilization before and after an energy savings measure is put in place.
<b><i>Demand Side Management ("DSM")</i></b>	DSM is the modification in end-use customer demand for natural gas through conservation programs. While the focus of Union's DSM is natural gas savings and the reduction in greenhouse gases emissions, it may also result in the saving of a number of other resources such as electricity, water, propane, and heating fuel oil.
<b><i>Demand Side Management Incentive Deferral Account ("DSMIDA")</i></b>	The account to record the variance between the shareholder incentive amount earned by Union as a result of its DSM programs and the amount built into rates.
<b><i>Demand Side Management Variance Account ("DSMVA")</i></b>	The account used to track the variance between actual DSM spending by rate class versus the budgeted amount included in rates by rate class. Union may record in the DSMVA in any one year, a variance amount of no more than 15% above its DSM budget for that year.
<b><i>Direct Access ("DA") Budget Mechanism</i></b>	The DA budget mechanism is offered to Union's largest industrial customers (Rate T2 and Rate 100). It provides each customer dedicated access to the customer incentive budget they pay in their rates to support energy efficiency projects and studies on an annual basis.
<b><i>Discount Rate</i></b>	The interest rate used to calculate the net present value of expected yearly benefits and costs.

<b><i>DSM Incentive</i></b>	The incentive available to Union for achieving Board-approved performance targets.
<b><i>Effective Useful Life (“EUL”)</i></b>	EUL is the length of time that a piece of equipment or measure is anticipated to last and perform as expected.
<b><i>Evaluation Advisory Forum (“EAF”)</i></b>	Union’s proposed replacement to the TEC.
<b><i>Evaluation, Measurement &amp; Verification (“EM&amp;V”)</i></b>	The activities undertaken to assess the implementation and performance of a program.
<b><i>Free Ridership</i></b>	Free riders are program participants who would have installed the energy efficient measure without the influence of Union’s DSM programs. Free rider rates are estimated based on research, market penetration studies or through negotiations in prior evaluation processes. The free rider rates are applied to the gross program savings results to derive actual savings.
<b><i>HRR</i></b>	Union’s Home Reno Rebate residential offering.
<b><i>IESO</i></b>	Ontario Independent Electricity System Operator.
<b><i>Impact Evaluation</i></b>	An evaluation of the program specific, directly or indirectly induced changes (e.g. changes in energy and/or demand use) associated with an energy efficiency program.
<b><i>Incentive</i></b>	An incentive is a payment from Union to DSM participants to encourage participation in a DSM program.
<b><i>Incremental Cost</i></b>	The incremental cost is the difference in price between the high efficiency case and the base case.
<b><i>Input Assumptions</i></b>	Assumptions such as operating characteristics and associated units of resource savings for a list of DSM technologies and measures. These cover a range of typical DSM activities, measures and technologies with residential, low-income, commercial and industrial applications.
<b><i>ISO 50001</i></b>	The International Standards Organization’s (ISO) Energy Management system standard – a framework of requirements for an organization to track, report, and improve the way it uses energy on a continuous improvement cycle.
<b><i>LDC</i></b>	Refers to electric local distribution companies in Ontario (e.g. Toronto Hydro).



***Lifetime Cumulative cubic meters (“cumulative m<sup>3</sup>”)*** Total natural gas savings over the effective useful life of a DSM measure. Frequently used at the measure or program level and can also summarize the benefits of an entire portfolio.

***Lost Revenue Adjustment Mechanism (“LRAM”)*** The LRAM is the Board’s approved method by which utilities recover the lost distribution revenues associated with DSM activity. These lost revenues are calculated for contract rate classes impacted by DSM energy efficiency programs.

***Market Transformation*** Market Transformation facilitates fundamental changes that lead to greater market shares of energy efficient products and services.

***Measure*** A measure is any particular energy efficient technology (e.g. a low-flow showerhead, an energy recovery ventilator, condensing boiler, etc).

***National Account*** National Account customers are those customers that have multiple property locations and are similar in design and use. National Account customers include retail chains, property management firms and foodservice chains.

***Net Present Value (“NPV”)*** The NPV is the sum of the discounted yearly benefits arising from an investment over the lifetime of that investment.

***Net-to-Gross Ratio*** Gross impacts are the program impacts prior to accounting for program attribution effects. These attribution effects are free ridership and spillover. Net impacts are the program impacts once program attribution effects have been accounted for. The net-to- gross ratio is defined as  $1 - (\text{free ridership ratio}) + (\text{spillover ratio})$ .

***New Equipment Project*** A custom equipment project in which a new piece of energy saving equipment is purchased and installed as an alternative to installing base case equipment.

***OBC 2012*** Refers to the most recent (2012) revision to the Ontario Building Code.

***Offering*** A DSM offering exists where there are either bundles of energy efficiency measures or performance/maintenance based enhancements to existing measures marketed together (e.g. energy savings kits, home retrofit measures, custom equipment/process/O&M) or where support is delivered through a suite of services (e.g. customer engagement, site energy assessments, etc.).

***OPA*** Ontario Power Authority, now part of the IESO.

<b><i>Optimization Project</i></b>	A custom project in which a piece of equipment or system is utilized in a more energy efficient manner.
<b><i>Part 3 Building</i></b>	The Ontario Building Code lists a Part 3 Building as exceeding 600m <sup>2</sup> in building area or greater than three storeys in height. Classified as assembly occupancies, care or detention occupancies, high hazard industrial occupancies, residential occupancies, business and personal services occupancies, mercantile occupancies, or medium and low hazard industrial occupancies.
<b><i>Part 9 Building</i></b>	The Ontario Building Code lists a Part 9 Building as three or fewer storeys in building height and having a building area not exceeding 600m <sup>2</sup> . Classified as residential occupancies, business and personal services occupancies, mercantile occupancies, or medium and low hazard industrial occupancies.
<b><i>Participants</i></b>	The units used by Union to measure participation in its DSM programs. Participant units of measurement include customers, projects and measures or technologies installed. Not all participants result in energy savings.
<b><i>Performance-Based</i></b>	A means of benchmarking a customer's energy use to evaluate energy savings potential, and to measure on-going savings using an evidence-based approach (e.g. comparing before and after metered billing data).
<b><i>Persistence</i></b>	Persistence is the extent to which a DSM measure remains installed and performing as originally predicted. Persistence of DSM savings takes into account how long a DSM measure is kept in place relative to its useful life, the net impact of the measure relative to the base case scenario, and the impact of technical degradation.
<b><i>Prescriptive Offering</i></b>	A prescriptive DSM offering is a natural gas savings measure/technology that is based on previously substantiated and pre-approved inputs. Prescriptive DSM measures apply to all of Union's customer market segments including residential, low-income, commercial and industrial.
<b><i>Program</i></b>	A program is the utility specific approach to providing one or more DSM offerings to customers.
<b><i>Program Administrator Cost ("PAC")</i></b>	As referenced in the EB-2014-0134 Framework and Guidelines, this test will measure Union's avoided costs and the associated costs to administer its DSM programs.

<b><i>Program Costs</i></b>	<p>DSM program costs include the following components:</p> <ul style="list-style-type: none"><li>• Development and Start-up</li><li>• Promotion</li><li>• Delivery</li><li>• Evaluation, Measurement and Verification (“EM&amp;V”) and Monitoring</li><li>• Administration</li></ul> <p>Of the above costs, only start-up, promotion, delivery, and a portion of the evaluation and verification costs are applicable to individual programs. Other costs related to the design and the delivery of DSM programs are appropriately considered at the DSM portfolio level. These include development, a portion of the evaluation costs, monitoring, tracking and administration costs.</p>
<b><i>Program Evaluation</i></b>	<p>Program evaluation refers to activities related to the collection, analysis, and reporting of data for purposes of measuring program impacts from past, existing or potential program impacts.</p>
<b><i>Realization Rate</i></b>	<p>A realization rate is the ratio that compares verified and audited savings to the savings originally calculated for custom projects. Realization rates are used to extrapolate verified and audited savings from a sample of projects on to all projects.</p>
<b><i>Recommissioning</i></b>	<p>Is a means of evaluating and improving how building heating or process equipment and systems function together.</p>
<b><i>Replacement Project</i></b>	<p>A custom project in which a piece of equipment has reached the end of its useful life and is replaced by equipment that is more energy efficient.</p>
<b><i>Research Costs</i></b>	<p>Research costs are Union’s costs associated with the research and evaluation of DSM programs. They are not included in direct costs because they may affect more than one program.</p>
<b><i>Resource Acquisition</i></b>	<p>Programs that seek to achieve direct, measurable savings customer-by-customer through the incenting/promotion of specific energy efficiency upgrades.</p>
<b><i>RFP</i></b>	<p>Request for Proposal</p>
<b><i>RFQ</i></b>	<p>Request for Quotation</p>
<b><i>SEM</i></b>	<p>Union’s Strategic Energy Management Commercial Industrial offering</p>

***Social and Assisted Housing*** Residential social housing includes all non-profit housing developed, acquired or operated under a federal, provincial or municipally funded program including shelters and hostels.

***Spillover*** 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.

***Technical Evaluation Committee ("TEC")*** The TEC consists of seven individuals: three intervenors members selected by intervenors, a representative from Union, a representative from Enbridge, and two independent members with technical and other relevant expertise. The goal of the TEC is to establish DSM technical and evaluation standards for natural gas utilities in Ontario. The TEC makes recommendations to the Board on the annual Technical Reference Manual ("TRM") update.

***Technical Reference Manual ("TRM")*** The TRM is a technical document that is filed with the Board, and serves as a common reference document for all stakeholders, so as to provide transparency to all parties regarding savings assumptions and the underlying sources of those assumptions and calculations.

***Total Resource Cost Test ("TRC")*** The TRC Test provides a measure of the benefits and costs that accrue as a result of the installation of a DSM measure.

***TRC-Plus*** As referenced in the EB-2014-0134 Framework and Guidelines, this 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 to the test calculation

***Trade Allies*** Trade allies include organizations (e.g. architectural and engineering firms, building contractors, appliance manufacturers and dealers, and banks) that influence the energy-related decisions of customers who might participate in DSM programs.

***Docket Numbers***

EB-2006-0021	Natural Gas DSM Generic Issues Proceeding
EB-2008-0346	DSM Guidelines for Natural Gas Distributors
EB-2011-0210	Union's 2013 Cost of Service Application
EB-2011-0327	Union's 2012-2014 DSM Plan

EB-2012-0337	Union's 2013-2014 DSM Plan for Large Volume Customers
EB-2014-0134	DSM Framework for Natural Gas Distributors (2015-2020) and Filing Guidelines to the DSM Framework for Natural Gas Distributors
EB-2014-0354	New and Updated DSM Measures - Joint Submission from Union and Enbridge
EB-2014-0356	Union's January 2015 QRAM Application
EB-2014-0271	Union's 2015 Rates Application
EB-2015-0010	Union's 2014 Deferral Disposition Proceeding