

November 30, 2018

Ms. Kirsten Walli
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON
M4P 1E4

Dear Ms. Walli:

Re: EB-2015-0245 - Union Gas Limited -2017 Draft Demand Side Management Evaluation Report

On October 30, 2018 the Ontario Energy Board (“OEB”) issued a letter (the “Letter”) to Union Gas Limited (“Union”), Enbridge Gas Distribution Inc., the Evaluation Advisory Committee and other stakeholders together with the 2016 Natural Gas Demand Side Management (“DSM”) Annual Verification Report. The Letter states that the deadline for the gas utilities to submit their respective 2017 Draft DSM Evaluation Reports is Friday, November 30, 2018 – one month from the release of the 2016 DSM results report.

Accordingly, please find attached Union’s 2017 Draft Demand Side Management Evaluation Report.

If you have any questions concerning this submission please contact me at (519) 436-4558.

Yours truly,

[Original Signed by]

Adam Stiers
Specialist, Regulatory Initiatives

cc: Josh Wasylyk (OEB)
Leslie Kulperger (Union)

2017 Demand Side Management Draft Annual Report

November 30, 2018

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GLOSSARY OF TERMS

This glossary serves as a reference to provide guidance to a broad audience on terminology used throughout this report. More detailed definitions may apply to specific terms when used by DSM practitioners.

<i>Audit</i>	The audit is an annual Evaluation, Measurement and Verification (“EM&V”) process to assess Union’s reported DSM results. OEB Staff is responsible for retaining the auditor, also known as the Evaluation Contractor (“EC”), whom ultimately serves to protect the interests of ratepayers with respect to Union’s DSM claims.
<i>Avoided Costs</i>	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.
<i>Base Case</i>	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.
<i>Building Envelope</i>	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.
<i>Channel Partner</i>	A Channel Partner is a company that, in the course of its business, can influence consumers to choose gas over competing fuels, or one method of increasing energy efficiency over another. Examples of Channel Partners include appliance retailers, HVAC contractors, engineers and architects.
<i>Cost Effectiveness</i>	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.

Demand Side Management (“DSM”)

DSM is the modification in end-use customer demand for natural gas through conservation programs. While the focus of Union’s DSM activities is natural gas savings and the reduction in greenhouse gas emissions, it may also result in the saving of a number of other resources such as electricity, water, propane and heating fuel oil.

Demand Side Management Incentive Deferral Account (“DSMIDA”)

The account used to record the DSM Shareholder Incentive amount earned by Union as a result of its DSM programs.

Demand Side Management Variance Account (“DSMVA”)

The account used to track the variance between actual DSM spending by rate class versus the OEB-approved 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.

Discount Rate

The interest rate used to calculate the net present value of expected yearly benefits and costs.

DSM Shareholder Incentive

The incentive available to Union for achieving OEB-approved performance targets.

Effective Useful Life (“EUL”)

EUL is the length of time that a piece of equipment or measure is anticipated to last and perform as expected.

Evaluation and Audit Committee (“EAC”)

As part of the new 2015-2020 evaluation governance structure, the EAC provides input and advice to OEB Staff on the evaluation and audit of DSM results. The EAC consists of representatives from Union, Enbridge,

non-utility stakeholders, independent experts and observers, all working with OEB Staff. The EAC replaces the ACs and TEC from the previous DSM framework.

Evaluation Contractor (“EC”)

As part of the new 2015-2020 evaluation governance structure, the EC is a third party who carries out the evaluation and audit processes of Union’s DSM programs. The EC, also known as the auditor, is retained by OEB Staff.

Evaluation, Measurement & Verification (“EM&V”)

EM&V is the collection of methods and processes used to assess the implementation and performance of energy efficiency activities. The main objective of EM&V is to assess the performance of a program and to measure (through data collection, analysis, and reporting of data) and verify program impacts to ensure the expected level of savings are being achieved. EM&V data, in addition to various evaluation studies, such as Net-to-Gross (“NTG”) or persistence studies, inform recommendations for improvements in program performance.

Free Ridership

Free Riders are program participants who would have installed an 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. Free Rider rates are estimated based on research, market penetration studies, through negotiations in prior evaluation processes or by surveying participants. The Free Rider rates are applied to the gross program savings results to derive savings generated by the program.

Incentive

An incentive is a payment from Union to DSM participants to encourage participation in a DSM program.

- Incremental Cost*** The incremental cost is the difference in price between the high efficiency case and the base case.
- Input Assumptions*** Assumptions such as operating characteristics and associated units of resource savings for DSM technologies and measures. These cover a range of DSM activities, measures and technologies used in residential, low-income, commercial and industrial applications.
- Lifetime Cumulative cubic meters (“cumulative m³”)***
- 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 Variance Account (“LRAMVA”)***
- The LRMVA captures the differences between the actual contract market margin reductions (distribution revenues) related to Union’s DSM plans and the contract market margin reduction included in gas delivery rates as approved by the Board.
- 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. 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 where decisions impacting multiple property locations are made using a top-down centralized approach

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 $1 - (\text{free ridership ratio}) + (\text{spillover ratio})$.

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. home retrofit measures or custom equipment/process improvements) or where support is delivered through a suite of services (e.g. customer engagement, site energy assessments, etc.).

Prescriptive Offering

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.

Program A program is the utility specific approach to providing one or more DSM offerings to customers.

Program Costs DSM program costs include the following components:

- Development and Start-up
- Promotion
- Delivery
- Evaluation, Measurement and Verification (“EM&V”) and Monitoring
- Administration

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 deliveries 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.

Resource Acquisition

Programs that seek to achieve direct, measurable savings customer-by-customer through the incenting or promoting of specific energy efficiency upgrades.

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 utility's program.

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.

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.

Units

Units provided within report tables can represent different items, such as the number of measures installed or homes retrofitted, depending on the program being reported on. Units are not equivalent to the number of participants since a single participant can install several units.

ACRONYMS

	ACRONYM	FULL NAME
A	AFUE	Annual fuel utilization efficiency
C	CBS	Canadian Boiler Society
	CEA	Certified Energy Auditor
	CEE	Consortium for Energy Efficiency
	CFM	Cubic feet per minute
	C/I	Commercial/Industrial
	CSBD	Commercial Savings by Design
D	DA	Direct Access offering
	DCKV	Demand control kitchen ventilation
	DCV	Demand control ventilation
	DSM	Demand side management
	DSMVA	Demand side management variance account
E	EAC	Evaluation advisory committee
	EC	Evaluation contractor
	EEP	Energy efficiency plan
	EM&V	Evaluation, measurement, and verification
	ERV	Energy recovery ventilation
G	GIF	Green Investment Fund
H	HRR	Home Reno Rebate offering
	HRV	Heat recovery ventilation
	HSC	Housing Services Corporation
	HVAC	Heating, ventilation and air conditioning
I	IDP	Integrated design process
	IESO	Independent Electricity System Operator
L	LICO	Low-income cut-offs
	LRAMVA	Lost revenue adjustment mechanism variance account
N	NRCan	Natural Resource Canada
	NTG	Net-to-gross study
O	OBC	Ontario building code
	OEB	Ontario Energy Board
	OH	Optimum Home
	OHBA	Ontario Home Builders Association
	ONPHA	Ontario Non-Profit Housing Association
Q	QA/QC	Quality assurance/quality control
S	SEM	Strategic energy management
	SO	Service organization
T	TRC-Plus	Total resource cost plus
	TRM	Technical reference manual

EXECUTIVE SUMMARY

For over 20 years, Union Gas Limited (“Union”) has contributed to a sustainable energy future in Ontario by helping to raise energy efficiency awareness and generating significant energy savings through successful Demand Side Management (“DSM”) programming. Union is pleased to provide the following summary of 2017 results and DSM account balances.

Table ES.1 2017 DSM Results Summary

2017 DSM Results Summary*	
Net Cumulative Natural Gas Savings (m ³)	1,292,804,261
DSM Shareholder Incentive amount recoverable from Ratepayers	\$6,280,328
DSM Variance amount recoverable from Ratepayers**	\$5,933,037
Lost Revenue Adjustment Mechanism amount recoverable from Ratepayers	\$189,500

* Pre-audit, pre-verification

** The DSMVA represents the difference between the OEB-approved 2017 budget included in rates and the 2017 incremental program spend

New offerings in 2017 demonstrated Union’s commitment to finding innovative ways to provide energy solutions that help customers control energy costs and embrace a culture of conservation. The commercial Direct Install offering launched, providing energy savings to typically hard-to-reach small commercial customers; the Commercial Savings by Design offering had its first full year in market and exceeded targets in enrolling commercial developers and builders to design new construction buildings at least 15% above current building code; and the Indigenous offering provided DSM programming to Indigenous communities for the first time through a unique market approach that respects Union’s strong relationships with Indigenous partners.

The residential Home Reno Rebate offering has proven that through collaborative partnerships existing DSM programs can promote and further the unique objectives and goals of multiple entities targeting energy efficiency in Ontario. Bolstered by agreements with both the Government of Ontario and the Independent Electricity System Operator, the Home Reno Rebate offering nearly doubled in size, both in participants and lifetime savings, as compared to 2016, offering residential customers across the province the opportunity to better manage their energy use while maintaining home comfort.

In the 2017 DSM program year, Union's DSM portfolio generated total net annual natural gas savings of 72.6 million cubic metres (m³) or 1,293 million net lifetime (cumulative) cubic metres. Market Transformation and Performance-Based programs, which are not solely measured on the basis of cubic metres (m³), further contributed to the overall breadth and depth of DSM offerings. All programs met or exceeded the cost-effectiveness thresholds set forth in the framework, i.e. Total Resource Cost (the TRC-Plus) test and the Program Administrator Cost (PAC) test. Portfolio Results are shown below in Table ES.2.

Table ES.2 2017 DSM Portfolio Results

	Net Annual Natural Gas Savings (m ³)	Net Cumulative Natural Gas Savings (m ³)	OEB-approved 2017 Budget	2017 Spending	TRC-Plus Ratio	PAC Ratio
Scorecard						
Resource Acquisition						
Residential Program						
Home Reno Rebate	8,356,595	208,914,880	\$9,880,000	\$21,375,224	1.02	1.18
Overheads			\$1,488,828	\$2,659,037		
Commercial/Industrial Program						
C/I Prescriptive	10,167,581	194,339,424	\$6,763,000	\$5,202,184	1.69	5.52
C/I Direct Install	1,922,435	28,836,528	\$2,500,000	\$1,449,230		
C/I Custom	42,813,966	714,752,252	\$7,808,000	\$9,216,161		
Overheads			\$4,964,334	\$4,338,478		
Total Resource Acquisition	63,260,577	1,146,843,084	\$33,404,162	\$44,240,314	1.45	3.16
Low-Income Program						
Home Weatherization	1,212,177	30,191,664	\$6,136,000	\$6,432,937	0.99	0.75
Furnace End-of-Life Upgrade	24,570	442,260	\$784,000	\$168,790		
Indigenous	18,332	446,706	\$419,000	\$212,185		
Multi-Family	1,381,012	29,517,632	\$3,359,000	\$2,939,186		
Overheads			\$1,644,841	\$1,129,624		
Total Low-Income	2,636,091	60,598,262	\$12,342,841	\$10,882,721	0.99	0.75
Large Volume Program						
Direct Access	6,536,294	84,986,654	\$3,150,000	\$2,127,205	1.44	3.56
Overheads			\$850,000	\$495,557		
Total Large Volume	6,536,294	84,986,654	\$4,000,000	\$2,622,762	1.44	3.56
Market Transformation Program						
Optimum Home	NA	NA	\$841,000	\$685,326	NA	NA
Commercial Savings by Design	NA	NA	\$1,000,000	\$628,158		
Overheads			\$497,070	\$306,762		
Total Market Transformation	-	-	\$2,338,070	\$1,620,246	-	-
Performance-Based Program						
RunSmart	72,252	376,261	\$200,000	\$162,052	NA	NA
Strategic Energy Management	NA	NA	\$392,000	\$193,887		
Overheads			\$251,000	\$176,837		
Total Performance-Based	72,252	376,261	\$843,000	\$532,776	-	-
Portfolio Overheads			\$5,642,000	\$7,218,224		
Union's Total DSM Portfolio	72,508,214	1,292,804,261	\$58,570,073	\$67,117,043	1.38	2.55

While there are several accomplishments to highlight, 2017 was not without some notable challenges. The low-income Home Weatherization offering saw fewer participants and savings than previous years due to a shortage of energy advisors resulting from more stringent re-certification requirements under NRCan's Energuide Rating System v15. This was particularly evident in Union's northern service area. Different delivery strategies have been deployed to address and mitigate this in the future. Further, participation and energy saving projects from Union's largest customers, rate T2/rate100, continued to be impacted by changing provincial and federal carbon programs and policies as well as the economic priorities of the customers themselves. This, combined with relatively low natural gas commodity pricing (compared with rising electricity prices), continued to impact investments from these customers in natural gas conservation.

An additional challenge in the overall functioning of DSM programs is the accumulative delay in the annual audit process. While improvements have been made, a significant coordinated effort is required to bring the audit timeline current and create a sustainable timeline moving forward. Union remains committed to supporting this effort. This delay significantly impacts Union's ability to adapt to any continuous improvement recommendations in a timely manner, clear accounts at regular intervals with ratepayers, as well as finalize targets for the following year. For example, the targets presented in this report are based on the results of the 2016 final DSM audit, which concluded in October 2018, almost a full year after the 2017 program year closed.

Union is proud of its accomplishments in DSM to date and will continue to deliver a comprehensive set of programs and offerings, detailed in this report, to help customers save money and energy, and help the province build a sustainable energy future.

1. INTRODUCTION

The Ontario Energy Board's ("OEB") first regulatory framework¹ for natural gas DSM programs was introduced more than 20 years ago. Union has been promoting DSM and pursuing opportunities to help customers reduce their natural gas energy consumption ever since. Between 1997 and 2017², Union's DSM programs have saved an estimated \$3.2 billion in total resource costs and 13.4 billion in cubic meters of natural gas. These gas savings translate to a reduction of 25 million³ metric tonnes of greenhouse gas emissions, roughly equal to removing 4.9 million cars⁴ from Ontario's roads for a year.

The current framework⁵ governs DSM activities from 2015 to 2020 and reflects the changing environment and commitment to energy conservation in the province. It is informed by the March 31, 2014 Directive to the OEB from the Minister of Energy (the "Conservation Directive") and incorporates the government's policy of putting "conservation first"⁶ into distributor planning processes for both electricity and natural gas utilities. The framework sets out specific goals and guiding principles for DSM programs to achieve all cost-effective DSM, provide opportunities for all customers to better manage their energy consumption, promote a culture of energy conservation and potentially avoid, delay or defer building additional natural gas infrastructure.

Union has demonstrated considerable success delivering energy efficiency programs and helping customers to realize energy savings and adopt lasting conservation behaviours. Union is pleased to continue offering DSM programming through its OEB-approved 2015-2020 DSM Plan (EB-2015-0029); to remain a trusted advisor to customers in helping them reduce their energy bills as well as supporting putting "conservation first" in the province.

Subject to audit and evaluation, as coordinated by OEB staff, this DSM Annual Report presents Union's performance in 2017 and the resulting balances of the DSM Shareholder

¹ E.B.O. 169-III Report of the Board, July 23, 1993

² 2017 results are unaudited and subject to change

³ Assumes 1.875kg of CO₂e emitted for each m³ gas that is consumed

⁴ Assuming the average automobile produces 5.1 tonnes of CO₂ per year

⁵ Report of the Board: DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134

⁶ Achieving Balance, Ontario's Long-Term Energy Plan, December 2013, Conservation First, pg. 21

Incentive Deferral Account and DSM Variance Account (“DSMVA”) as well as the amount to be added to the Lost Revenue Adjustment Mechanism Variance Account for recovery.

This report accomplishes the following objectives:

- Provides an overview of key elements of the DSM framework and evaluation structure (section 2);
- Satisfies reporting requirements established in section 14.2 of the filing guidelines⁷ (section 3);
- Summarizes savings achieved and budget spent (section 4);
- Describes in detail the scorecards, programs and offerings included in the DSM portfolio (section 5 to 9);
- Outlines the shareholder incentive (section 10), DSMVA (section 11) and lost revenue (section 12) amounts resulting from the 2017 performance that will be submitted for OEB approval for disposition and recovery; and,
- Discusses how DSM will continue in 2018.

The following section delves into the specifics of the current framework, Union’s DSM portfolio structure and OEB-approved 2015-2020 DSM Plan, and the method of evaluating DSM results.

⁷Filing Guidelines to the DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, pp.44-45.

2. DEMAND SIDE MANAGEMENT FRAMEWORK

The purpose of this section is to outline the OEB-approved plan that sets the parameters for 2017 DSM programming, lay out the portfolio at the scorecard level, and discuss the related evaluation activities that impact DSM results.

2.1 2017 DSM Plan

On December 22nd, 2014 the OEB released its multi-year framework and guidelines (EB-2014-0134). Given the timing, the OEB instructed that 2015 should be treated as a transition year and the utilities should “roll-forward their 2014 DSM plans” while new and expanded offerings in response to the new framework should be proposed for 2016-2020. Union filed its 2015-2020 DSM Plan (EB 2015-0029) on April 1, 2015.⁸

The OEB released its EB-2015-0029/49 Decision on Union and Enbridge Gas Distribution Inc. (“Enbridge”) 2015-2020 DSM Plans (“2015-2020 DSM Plan Decision”) on January 20, 2016, and published an update to the Decision and Order on February 24, 2016. As part of this Decision, the OEB approved many of Union’s programs, scorecards, metrics, targets, incentives and budgets but also directed certain changes to be made.

The following major amendments to Union’s proposed 2016-2020 DSM Plan were made as a result of the Decision:

- The residential energy savings kit offering was not approved and concluded at the end of 2015;
- The new residential behavioural offering was not approved and, therefore, not launched as planned in 2016;
- The proposed Direct Install pilot in the Commercial/Industrial program was modified to fully launch as a new offering (i.e. not a pilot) on the resource acquisition scorecard;
- The OEB directed Union to continue its large volume self-direct program offering with cumulative m³ savings targets rather than adopt a program focused solely on technical support and training;

⁸ The plan was amended July 3, 2015 to capture minor corrections

- The OEB directed Union to establish a new market transformation offering targeting commercial and industrial new construction; and,
- Union’s Optimum Home residential Market Transformation program was planned to conclude at the end of 2016 but the OEB decided this offering should be re-launched and continue from 2017 to 2020.

The OEB designed the DSM framework with the flexibility to allow gas utilities to adapt and change with the market, the stability to ensure programs remain in place so customers can participate, and to provide continuity to manage DSM programs in a changing environment.⁹

With these goals in mind, Union may introduce, change or discontinue activities in response to changing market conditions and customer needs, within the constraints of the OEB-approved DSM budgets and scorecards and the terms of the 2015-2020 DSM framework and associated filing guidelines. Any changes will be discussed through this annual report.

2.2 Portfolio Design

The structure of Union’s DSM portfolio is depicted in Figure 2.0. Each scorecard contains one or more programs and each program provides one or more DSM offerings to customers. Offerings are bundles of energy efficiency measures, enhancements or support.

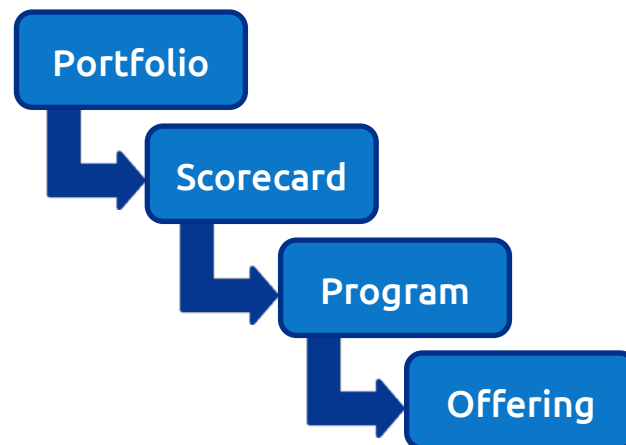


Figure 2.0 – Union’s DSM Portfolio

⁹ Report of the Board, DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, Section 1.2, p.3

A detailed description of how Union’s 2017 portfolio is organized is shown below in Table 2.0.

Table 2.0 Union’s 2017 DSM Portfolio by Scorecard, Program and Offering

Scorecards	Programs	Offerings
Resource Acquisition Scorecard	Residential Program	Home Reno Rebate Offering
	Commercial/Industrial Program	<ul style="list-style-type: none"> • C/I Prescriptive Offering • C/I Direct Install Offering • C/I Custom Offering
Low-Income Scorecard	Low-Income Program	<ul style="list-style-type: none"> • Home Weatherization Offering • Furnace End-of-Life Upgrade Offering • Indigenous Offering • Multi-Family Offering
Large Volume Scorecard	Large Volume Program	<ul style="list-style-type: none"> • Large Volume Direct Access Offering
Market Transformation Scorecard	Market Transformation Program	<ul style="list-style-type: none"> • Optimum Home Offering • Commercial Savings by Design Offering
Performance-Based Scorecard	Performance-Based Program	<ul style="list-style-type: none"> • RunSmart Offering • Strategic Energy Management Offering

This annual report outlines Union’s achievements in 2017 throughout the DSM portfolio. Sections five through 9 provide a comprehensive overview of the scorecards, programs, and offerings as well as performance in delivering DSM for the program year.

2.3 Cost Effectiveness Screening

The OEB mandates cost effectiveness screening as the means for determining the economic value of a DSM program. Cost effectiveness screening for the new framework has adopted an enhanced Total Resource Cost test, called the “TRC-Plus” test, which includes a 15% adder to account for positive corollary effects of DSM, such as improvements to the environment, economy and society.

The TRC-Plus test is used to screen for cost effectiveness at the program and portfolio level.

TRC benefits include the avoided costs associated with natural gas, electricity, and water savings over the life of the energy-efficient equipment. TRC costs include the incremental

equipment costs¹⁰ associated with the energy-efficient equipment in relation to its less-efficient equivalent, as well as any program, administrative, and evaluation costs attributed directly to the program.¹¹ For programs measured by cumulative m³ natural gas savings, excluding the low-income program, the program is considered cost effective if the ratio of the present value of the TRC benefits to the TRC costs exceeds 1.0. To recognize that the low-income program may result in significant benefits not captured by the TRC-Plus test, this program is screened using a TRC threshold of 0.7. The Market Transformation program is assessed based on the objectives of the program.

As a reference tool, Union has also shown the results of the Program Administrator Cost (“PAC”) Test in Table ES.2 in the Executive Summary and in Table 3.0 in section 4 - 2017 DSM Program Results Summary. The PAC Test measures the avoided costs and the costs of DSM programs experienced by the utility. PAC Test benefits are similar to the TRC-Plus benefits except only the avoided costs associated with natural gas are used. PAC Test costs include all costs incurred by the program administrator (including incentive costs) and exclude the incremental equipment costs incurred by the participant.

2.4 Program Evaluation

There are two broad categories of evaluations: impact evaluation and process evaluation. Impact evaluations focus on participation and related savings resulting from DSM programs. Process evaluations focus on the effectiveness of program design and delivery, and assess why program outcomes occur.

As part of the 2015-2020 DSM framework, OEB staff has taken over coordinating the impact evaluation of Union’s DSM programs and have engaged DNV GL to be the Evaluation Contractor (“EC”) to undertake that work for the 2017 program year.¹² Impact evaluation activities proposed by the EC are provided in its 2016-2018 Natural Gas DSM Evaluation,

¹⁰ Incremental costs include capital, cost of removal less salvage value, installation, operating and maintenance and/or fuel costs.

¹¹ By definition of the TRC test, incentive costs provided to program participants are benefits to participants and are not included as TRC costs.

¹² OEB letter, 2015-2020 DSM Evaluation Process of Program Results, EB-2015-0245, August 21, 2015

Measurement, and Verification (“EM&V”) Plan available on the OEB’s DSM Evaluation webpage.¹³ These activities may change depending on prioritization, time and budget. OEB staff is coordinating the implementation of elements in the plan, including preparing the scope of work and selecting vendors.

Process evaluations are planned and managed by the utilities.

2.5 Evaluation Advisory Committee

An Evaluation Advisory Committee (“EAC”) was established, as outlined in a memo from the OEB dated August 21, 2015, to provide input and advice for DSM evaluation activities coordinated by OEB staff. The EAC is comprised of:

- Experts representing non-utility stakeholders, with demonstrated experience and expertise in the evaluation of DSM technologies and programs, natural gas energy efficiency technologies, multi-year impact assessments, net-to-gross (“NTG”) studies, free ridership analysis and natural gas energy efficiency persistence analysis;
- Expert(s) retained by the OEB;
- Representatives from the Independent Electricity System Operator (“IESO”);
- Representatives from each natural gas utility; and,
- Representatives from the Ministry of Energy and the Environmental Commissioner of Ontario, who will participate as observers.

The OEB appointed the following non-utility stakeholders as members of the EAC:

- Chris Neme, Energy Futures Group
- Jay Shepherd, Shepherd Rubenstein Professional Corporation
- Marion Fraser, Fraser & Company

¹³ oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm-evaluation

On May 5, 2016, two additional independent experts were added to the EAC:

- Ted Kesik, Knowledge Mapping Inc.
- Robert Wirtshafter, Wirtshafter Associates Inc.

Non-utility and independent stakeholders are expected to provide input and advice based on their experience and technical expertise and not to advocate for the position of parties they have represented before the OEB in various proceedings.

2.6 Audit of the 2017 DSM Results

Union's DSM results are subject to an independent external audit. The intention of the audit is to have the EC provide an opinion on whether the claimed DSM Shareholder Incentive amount, amount to be added to the Lost Revenue Adjustment Mechanism Variance Account, and Demand Side Management Variance Account have been correctly calculated using reasonable assumptions. The EAC, as described in Section 2.5, is intended to provide input and advice throughout the audit to facilitate the achievement of the audit objectives.

2.7 Input Assumptions for 2017 Scorecard Targets and Results

Scorecard targets in 2017 were derived formulaically using the best available information resulting from the 2016 annual evaluation process, i.e. input assumptions and NTG factors used to determine the final audited 2016 LRAM results were used to calculate the 2017 scorecard targets. However, the Optimum Home metrics (Participating Builders and Prototype Homes Built) as well as the RunSmart Savings Percentage metric are new in 2017 and not formulaically based on the previous year's results. These metrics were established through the revised 2015-2020 DSM Plan Decision, February 24, 2016.

The OEB-approved scorecards and target calculation methodology for 2017 can be found in the Schedule C of the revised 2015-2020 DSM Plan Decision. Union will be requesting modifications to this methodology for 2018 scorecards through the DSM Mid-Term Review.

Savings claims presented in this report, for the purpose of determining the 2017 DSM Incentive, use the same input assumptions and similar NTG factors used in 2017 target setting as this is the best information available at this time.

For prescriptive measures, input assumptions and NTG factors were taken from the joint utility input assumptions filing (EB-2016-0246), filed with the OEB on December 21, 2016. The Commercial/Industrial Custom offering uses a 40% custom project NTG factor and the Large Volume offering uses a 9% custom project NTG factor. This is the average NTG in 2016 after applying the 2015 NTG study.¹⁴ Actual 2017 NTG will vary based on the measure mix in results or change if a NTG study is undertaken as part of the 2017 audit. For the purpose of this draft report, Union has chosen to use the average from 2016 as a reasonable estimate of NTG.

The following section provides the evaluation report reporting elements set out in DSM guidelines.

¹⁴ 2015 Natural Gas Demand Side Management Custom Savings Verification and Free-Ridership Evaluation, October 16, 2017, <https://www.oeb.ca/sites/default/files/2015-DSM-Custom-Savings-Verification-Report.pdf>

3. OEB DATA REPORTING REQUIREMENTS

This section of the Annual Report is dedicated to tabulating required elements outlined in section 14.2 of the DSM guidelines as follows:

Key Element	Table Number
Annual and long-term DSM budgets (\$/year and \$/6 years)	Table 3.0
Actual annual total DSM costs (including DSM budget ¹⁵ , overheads, evaluation, shareholder incentive, lost revenues) for each rate class dating back to 2007	Table 3.1
Historic actual annual DSM spending dating back to 2007	Table 3.2
DSM spending as a percent (%) of distribution revenue	Table 3.3
Historic annual DSM Shareholder Incentive amounts available and earned dating back to 2007	Table 3.4
DSM Shareholder Incentive earned as a percent (%) of DSM budget ¹⁶	Table 3.5
Annual and long-term natural gas savings targets (m ³ /year and m ³ /6 years)	Table 3.6
Total annual and cumulative gross and net natural gas savings (m ³) for each year of the DSM framework (2015 to 2020)	Table 3.7
Total historic annual and cumulative gross and net natural gas savings (m ³) dating back to 2007	Table 3.8 – Table 3.9
Total annual and cumulative gross and net natural gas savings (m ³) from 2007 to the reporting year as a percent (%) of total annual natural gas sales	Table 3.10 – Table 3.11
Actual annual gas operating revenue (\$/year)	Table 3.12
Actual annual operating revenue less cost of natural gas commodity (\$/year)	Table 3.12
Total cost of gas (\$million/year)	Table 3.12
Total natural gas sales (m ³ /year)	Table 3.13
Number of customers, broken out by rate class and by customer type (i.e. residential, low-income, commercial and industrial, relative to the DSM programs offered by the gas utility) per year	Table 3.14 – Table 3.15

¹⁵ As the request is for actual costs, Union interprets this to be ‘DSM Spending’ rather than ‘DSM budget’

¹⁶ Union interprets this request as a percentage of ‘DSM Spending’ rather than ‘DSM budget’

Table 3.0 Annual and Long-Term DSM Budgets (\$ millions)

Program	2015*	2016**	2017**	2018**	2019**	2020**	Total (\$/6 years)
Residential	\$ 3.163	\$ 8.612	\$ 11.369	\$ 13.908	\$ 13.908	\$ 13.908	\$ 64.867
Commercial / Industrial	\$ 10.859	\$ 19.316	\$ 22.035	\$ 22.726	\$ 22.403	\$ 22.403	\$ 119.743
Low-Income	\$ 6.839	\$ 11.407	\$ 12.343	\$ 13.571	\$ 14.145	\$ 15.005	\$ 73.310
Large Volume	\$ 4.534	\$ 4.000	\$ 4.000	\$ 4.000	\$ 4.000	\$ 4.000	\$ 24.534
Market Transformation	\$ 1.379	\$ 1.703	\$ 2.338	\$ 2.338	\$ 2.338	\$ 2.338	\$ 12.434
Performance-Based Conservation	NA	\$ 0.548	\$ 0.843	\$ 1.088	\$ 0.833	\$ 1.053	\$ 4.365
Portfolio Level Research, Evaluation and Administration* **	\$ 4.717	\$ 11.235	\$ 5.642	\$ 5.642	\$ 5.642	\$ 5.642	\$ 38.520
Inflation	\$ 2.497						\$ 2.497
Total	\$ 33.988	\$ 56.821	\$ 58.570	\$ 63.272	\$ 63.269	\$ 64.350	\$ 340.270

* 2015 includes budget amounts for the Achievable Potential Study, Future Infrastructure Planning Study, and DSM Tracking and Reporting System Upgrades

** 2016-2020 includes budget amounts for pilots and DSM Tracking and Reporting System Upgrades

Table 3.1 Actual Annual Total DSM Costs (\$ millions)
(including DSM spending, overheads, evaluation, shareholder incentive, lost revenues)

Rate Class	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*	Draft 2017
M1	NA	\$ 12.107	\$ 12.743	\$ 11.348	\$ 11.498	\$ 13.502	\$ 13.657	\$ 15.415	\$ 16.752	\$ 23.338	\$ 38.998
M2	\$ 11.619	\$ 2.487	\$ 2.022	\$ 2.118	\$ 4.097	\$ 4.968	\$ 5.818	\$ 6.728	\$ 4.958	\$ 6.505	\$ 8.497
M4	\$ 1.488	\$ 1.353	\$ 0.828	\$ 1.098	\$ 1.817	\$ 3.319	\$ 3.244	\$ 3.296	\$ 3.645	\$ 3.808	\$ 6.185
M5	\$ 0.295	\$ 1.044	\$ 1.226	\$ 1.086	\$ 3.150	\$ 2.660	\$ 3.484	\$ 2.394	\$ 1.421	\$ 2.453	\$ 1.524
M7	\$ 0.886	\$ 0.116	\$ 0.256	\$ 1.474	\$ 1.304	\$ 0.538	\$ 0.571	\$ 2.143	\$ 3.370	\$ 3.760	\$ 1.321
T1	\$ 3.147	\$ 3.988	\$ 5.596	\$ 3.964	\$ 7.749	\$ 6.111	\$ 2.265	\$ 1.078	\$ 0.889	\$ 1.409	\$ 2.707
T2	NA	NA	NA	NA	NA	NA	\$ 3.365	\$ 2.875	\$ 2.673	\$ 3.758	\$ 3.127
Rate 01	\$ 2.229	\$ 2.162	\$ 2.093	\$ 1.869	\$ 3.050	\$ 3.532	\$ 3.560	\$ 4.161	\$ 3.555	\$ 4.447	\$ 6.499
Rate 10	\$ 1.612	\$ 1.371	\$ 2.293	\$ 0.510	\$ 1.109	\$ 1.939	\$ 1.637	\$ 1.613	\$ 0.953	\$ 1.322	\$ 2.250
Rate 20	\$ 0.323	\$ 0.496	\$ 0.771	\$ 0.881	\$ 1.030	\$ 1.607	\$ 1.573	\$ 1.791	\$ 1.005	\$ 0.806	\$ 1.639
Rate 100	\$ 1.535	\$ 4.542	\$ 3.950	\$ 4.471	\$ 1.614	\$ 2.305	\$ 1.828	\$ 1.517	\$ 0.799	\$ 0.541	\$ 0.841
Total	\$ 23.134	\$ 29.666	\$ 31.778	\$ 28.819	\$ 36.418	\$ 40.481	\$ 41.002	\$ 43.011	\$ 40.019	\$ 52.146	\$ 73.587

* Based on Audit-Adjusted 2016 balances as requested in Union's 2016 DSM Deferral and Variance Account Disposition. Pending OEB approval.

Table 3.2 Historic Actual Annual DSM Spending

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Draft 2017
Total DSM Spending*	\$ 16.13	\$ 20.26	\$ 22.04	\$ 21.61	\$ 27.97	\$ 31.32	\$ 32.84	\$ 33.71	\$ 32.39	\$ 47.84	\$ 67.12

* Total DSM Spending includes direct, indirect, incremental projects and DSMVA where applicable

Table 3.3 DSM Spending as a Percent (%) of Distribution Revenue

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Draft 2017
Total DSM Spending*	\$ 16	\$ 20	\$ 22	\$ 22	\$ 28	\$ 31	\$ 33	\$ 34	\$ 32	\$ 48	67
Total Distribution Revenue**	\$ 655	\$ 675	\$ 658	\$ 699	\$ 713	\$ 727	\$ 772	\$ 778	\$ 800	\$ 812	834
DSM Spending as % of Distribution Revenue	2%	3%	3%	3%	4%	4%	4%	4%	4%	6%	8%

* Total DSM Spending includes direct, indirect, incremental projects and DSMVA where applicable

** Distribution revenue is equal to the gas distribution margin and is the gas sales and distribution revenue less the cost of gas; where gas sales and distribution revenue is the sum of the delivery revenue and gas supply revenue (and earning sharing, if applicable)

Table 3.4 Historic Annual DSM Shareholder Incentive Amounts Available and Earned

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*	Draft 2017
DSM Shareholder Incentive Earned*	\$ 6.23	\$ 8.70	\$ 8.75	\$ 6.58	\$ 7.63	\$ 8.21	\$ 7.78	\$ 8.99	\$ 7.47	\$ 4.12	6.28
DSM Shareholder Incentive Available	\$ 8.50	\$ 8.70	\$ 8.92	\$ 8.94	\$ 9.24	\$ 10.45	\$ 10.68	\$ 10.82	\$ 11.00	\$ 10.45	10.45

* Based on Audit-Adjusted 2016 balances as requested in Union's 2016 DSM Deferral and Variance Account Disposition. Pending OEB approval.

Table 3.5 DSM Shareholder Incentive Earned as a Percent (%) of DSM Spending

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*	Draft 2017
DSM Shareholder Incentive Earned*	\$ 6.23	\$ 8.70	\$ 8.75	\$ 6.58	\$ 7.63	\$ 8.21	\$ 7.78	\$ 8.99	\$ 7.47	\$ 4.12	6.28
Total DSM Spending**	\$ 16.13	\$ 20.26	\$ 22.04	\$ 21.61	\$ 27.97	\$ 31.32	\$ 32.84	\$ 33.71	\$ 32.39	\$ 47.84	67.12
Shareholder Incentive Earned as a % of DSM Spending	39%	43%	40%	30%	27%	26%	24%	27%	23%	9%	9%

* Based on Audit-Adjusted 2016 balances as requested in Union's 2016 DSM Deferral and Variance Account Disposition. Pending OEB approval.

** Total DSM Spending includes direct, indirect, incremental projects and DSMVA where applicable

Table 3.6 Annual and Long-Term Natural Gas Savings Targets*

Scorecard	2015	2016**	2017	2018†	2019	2020
Resource Acquisition	816,561,818	1,120,259,599	1,005,614,776			
Low-Income	43,600,000	59,238,065	81,957,527	<i>Targets are formulaic based on past year's performance.</i>		
Large Volume	1,236,097,404	890,890,721	463,549,872			

* Values are cumulative m³ natural gas savings at the target (100%) band

** Based on Audit-Adjusted 2016 balances as requested in Union's 2016 DSM Deferral and Variance Account Disposition. Pending OEB approval.

† 2018 targets require OEB-approved 2017 DSM audited results

Table 3.7 Total Annual and Cumulative Natural Gas Savings for 2017 (Gross and Net)

10 ³ m ³	Draft Annual Gas Savings		Draft Cumulative Gas Savings	
	Gross	Net	Gross	Net
Resource Acquisition	128,937	63,261	2,247,849	1,146,843
Low-Income	2,708	2,636	62,130	60,598
Large Volume	72,625	6,536	944,296	84,987
Performance-Based	151	75	753	376
Total	204,420	72,508	3,255,028	1,292,804

Table 3.8 Total Historic Annual Natural Gas Savings (Gross and Net)

10 ³ m ³	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Draft 2017
Net Annual Natural Gas Savings	55,854	61,852	92,604	121,116	139,027	137,438	179,967	131,825	125,077	55,970	72,508
Gross Annual Natural Gas Savings	Not reported for 2007 – 2011					282,177	370,474	267,465	255,169	188,741	204,420

Table 3.9 Total Historic Cumulative Natural Gas Savings (Gross and Net)

10 ³ m ³	2007-2011	2012	2013	2014	2015	2016	Draft 2017
Net Cumulative Natural Gas Savings	Not reported for 2007-2011	2,336,351	2,820,834	1,889,459	1,750,765	959,435	1,292,804
Gross Cumulative Natural Gas Savings	Not reported for 2007-2011	4,777,826	5,752,390	3,752,366	3,482,496	2,758,895	3,255,028

Table 3.10 Total Annual Natural Gas Savings as a Percent (%) of Total Annual Natural Gas Sales (Gross and Net)

10 ³ m ³	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Draft 2017
Net Annual Natural Gas Savings	55,854	61,852	92,604	121,116	139,027	137,438	179,967	131,825	125,077	55,970	72,508
Net Annual Natural Gas Savings as a % of Natural Gas Sales	0.42%	0.47%	0.75%	0.95%	1.02%	1.03%	1.29%	0.93%	0.93%	0.43%	0.58%
Gross Annual Natural Gas Savings	Not reported for 2007 – 2011					282,177	370,474	267,465	255,169	188,741	204,420
Gross Annual Natural Gas Savings as a % of Natural Gas Sales						2.11%	2.65%	1.88%	1.90%	1.46%	1.65%
Total Natural Gas Sales*	13,158,018	13,231,158	12,327,846	12,778,870	13,654,990	13,396,120	13,992,688	14,204,104	13,404,980	12,935,767	12,408,726

* Total Natural Gas Sales only includes rate classes eligible for DSM and subject to DSM costs

Table 3.11 Total Cumulative Natural Gas Savings as a Percent (%) of Total Annual Natural Gas Sales (Gross and Net)

10^3 m^3	2007-2011	2012	2013	2014	2015	2016	Draft 2017
<u>Net</u> Cumulative Natural Gas Savings	Not reported for 2007-2011	2,336,351	2,820,834	1,889,459	1,750,765	959,435	1,292,804
Net Cumulative Natural Gas Savings as a % of Natural Gas Sales		17.44%	20.16%	13.30%	13.06%	7.42%	10.42%
<u>Gross</u> Cumulative Natural Gas Savings	Not reported for 2007-2011	4,777,826	5,752,390	3,752,366	3,482,496	2,758,895	3,255,028
Gross Cumulative Natural Gas Savings as a % of Natural Gas Sales		35.67%	41.11%	26.42%	25.98%	21.33%	26.23%
Total Natural Gas Sales*		13,396,120	13,992,688	14,204,104	13,404,980	12,935,767	12,408,726

* Total Natural Gas Sales only includes rate classes eligible for DSM and subject to DSM costs

Table 3.12 Actual Annual Gas Operating Revenue

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Draft 2017
Gas Sales and Distribution Operating Revenue	\$ 1,811	\$ 1,852	\$ 1,684	\$ 1,493	\$ 1,468	\$ 1,365	\$ 1,621	\$ 1,755	\$ 1,675	\$ 1,529	\$ 1,873
Less Total Cost of Gas	\$ 1,156	\$ 1,177	\$ 1,026	\$ 794	\$ 755	\$ 638	\$ 849	\$ 977	\$ 875	\$ 717	\$ 1,039
Total Distribution Revenue*	\$ 655	\$ 675	\$ 658	\$ 699	\$ 713	\$ 727	\$ 772	\$ 778	\$ 800	\$ 812	\$ 834

* Distribution revenue is equal to the gas distribution margin and is the gas sales and distribution revenue less the cost of gas; where gas sales and distribution revenue is the sum of the delivery revenue and gas supply revenue (and earning sharing, if applicable)

Table 3.13 Total Natural Gas Sales (Volumes)*

10^3 m^3	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Draft 2017
Total Natural Gas Sales	13,158,018	13,231,158	12,327,846	12,778,870	13,654,990	13,396,120	13,992,688	14,204,104	13,404,980	12,935,767	12,408,726

* Total Natural Gas Sales only includes rate classes eligible for DSM and subject to DSM costs

Table 3.14 Number of Customers by Customer Type

Customer Type	# of Customers in 2017
Residential	1,055,421
Low-Income*	297,683
Commercial	121,357
Industrial	476
Wholesale	7
Total	1,474,944

* Low-income customers are estimated to be 22% of all Residential customers

Table 3.15 Number of Customers by Rate Class

Customer Type	# of Customers in 2017
<u>General Service</u>	
M1	1,118,149
M2	7,387
O2	346,687
10	2,238
Total	1,474,461
<u>Contract</u>	
M4	204
M5	38
M7	30
T1	38
T2	23
20	44
100	0
Total	377
<u>Non-DSM Rate Classes</u>	
M9	3
M10	3
T3	1
25	88
30	11
77	0
Total	1,474,944

4. 2017 DSM PROGRAM RESULTS SUMMARY

Section four provides a summary of the performance of Union's DSM portfolio in 2017, including scorecards and achievement, cumulative m³ natural gas savings broken down by program and offering as well as an outline of DSM spending.

The 2017 scorecards and achievement are presented in Table 4.0. A total of \$6.28M in DSM Shareholder Incentive results from this program performance.

Table 4.0 2017 Scorecards and Achievements

	Offering	Metric	Weight	Targets			2017 Results
				Lower Band	Target	Upper Band	
Resource Acquisition	Home Reno Rebate C/I Prescriptive C/I Direct Install C/I Custom	Cumulative Natural Gas Savings (m ³)*	75%	754.2	1,005.6	1,508.4	1,146.8
	Home Reno Rebate	Participants	25%	5,145	6,859	10,289	13,729
Low-Income	Home Weatherization Furnace End-of-Life Upgrade Indigenous	Cumulative Natural Gas Savings (m ³)*	60%	33.8	45.0	67.6	31.1
	Social and Assisted Housing Multi-Family	Cumulative Natural Gas Savings (m ³)*	35%	15.8	21.1	31.7	25.1
	Market Rate Multi-Family	Cumulative Natural Gas Savings (m ³)*	5%	11.9	15.8	23.7	4.4
Large Volume	Direct Access	Cumulative Natural Gas Savings (m ³)*	100%	347.7	463.5	695.3	85.0
Market Transformation	Participating Builders		20%	8	10	15	10
	Optimum Home	Homes Built	30%	22.5%	30%	45%	60%
	Commercial Savings by Design	New Developments	50%	6	8	12	12
Performance-Based	RunSmart	Participants	20%	57	76	113	35
		Savings (%)	60%	7.5%	10%	15%	1.61%
	Strategic Energy Management	Participants	20%	24	32	48	0

* Cumulative natural gas savings (m³) expressed in millions

Table 4.1 provides a further look at the natural gas savings achieved through Union’s DSM portfolio (excludes programs and offerings not measured on the basis of cubic meters of natural gas). Gross savings are the savings of measures and projects prior to accounting for attribution effects. Net savings are the savings attributed to DSM activities.

Table 4.1 2017 Gross and Net Natural Gas Savings

Program	Offering	Units	Gross Annual Natural Gas Savings (m ³)	Net Annual Natural Gas Savings (m ³)	Gross Cumulative Natural Gas Savings (m ³)	Net Cumulative Natural Gas Savings (m ³)
Residential	Home Reno Rebate	13,729	8,796,416	8,356,595	219,910,400	208,914,880
Residential Total		13,729	8,796,416	8,356,595	219,910,400	208,914,880
Commercial/ Industrial	C/I Prescriptive	4,540	11,081,672	10,167,581	210,703,466	194,339,424
	C/I Custom	581	107,034,914	42,813,966	1,786,880,630	714,752,252
	C/I Direct Install	228	2,023,616	1,922,435	30,354,240	28,836,528
Commercial/Industrial Total		5,349	120,140,202	54,903,981	2,027,938,336	937,928,204
Low-Income	Home Weatherization	1,611	1,212,271	1,212,177	30,192,888	30,191,664
	Furnace End-of-Life Upgrade	464	24,570	24,570	442,260	442,260
	Indigenous	68	18,341	18,332	446,817	446,706
	Multi-Family	210	1,452,433	1,381,012	31,048,189	29,517,632
Low-Income Total		2,353	2,707,615	2,636,091	62,130,154	60,598,262
Large Volume	Direct Access	48	72,625,488	6,536,294	944,296,159	84,986,654
Large Volume Total		48	72,625,488	6,536,294	944,296,159	84,986,654
Performance-Based	RunSmart	NA	150,504	75,252	752,522	376,261
Performance-Based Total			150,504	75,252	752,522	376,261
Portfolio Total		21,479	204,420,226	72,508,214	3,255,027,571	1,292,804,261

The DSM guidelines dictate that the TRC-Plus test should be used to screen for cost effectiveness at the program and portfolio level¹⁷ while the PAC test can be used as secondary reference tool to measure the net costs of a DSM program incurred by the program administrator. All of Union’s programs met the required TRC-Plus thresholds and the portfolio as a whole had a positive TRC-Plus ratio of 1.38. The TRC-Plus and PAC ratios by program and for the portfolio are presented in Table 4.2.

¹⁷ Filing Guidelines to the DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, Section 9.1.3, p.31

Table 4.2 2017 TRC-Plus Screening and PAC Ratios

	NPV TRC-Plus Benefits	Total TRC Costs	Net-TRC Plus	TRC-Plus Ratio	PAC Ratio*
Residential Program	\$42,334,622	\$37,064,267	\$5,270,355	1.14	1.46
<i>Program Costs**</i>		\$4,552,243			
Total Residential Program	\$42,334,622	\$41,616,510	\$718,112	1.02	1.18
Commercial/Industrial Program	\$128,817,293	\$70,011,551	\$58,805,742	1.84	7.85
<i>Program Costs**</i>		\$6,010,076			
Total Commercial/Industrial Program	\$128,817,293	\$76,021,627	\$52,795,666	1.69	5.52
Resource Acquisition Scorecard	\$171,151,915	\$117,638,137	\$53,513,778	1.45	3.16
Low-Income Program	\$10,760,815	\$6,262,677	\$4,498,138	1.72	1.30
<i>Program Costs**</i>		\$4,623,264			
Low-Income Program and Scorecard	\$10,760,815	\$10,885,942	\$(125,127)	0.99	0.75
Large Volume Program	\$10,948,079	\$7,097,862	\$3,850,217	1.54	4.42
<i>Program Costs**</i>		\$508,427			
Large Volume Program and Scorecard	\$10,948,079	\$7,606,289	\$3,341,790	1.44	3.56
Market Transformation Scorecard	NA	NA	NA		
Performance-Based Scorecard	NA	NA	NA		
Portfolio Overheads		\$4,121,384			
Union's Total DSM Portfolio	\$192,860,809	\$140,103,611	\$52,757,198	1.38	2.55

* Provided as reference only. PAC benefits and costs differ from those used in the TRC-Plus calculation.

** Program costs include development and start-up, promotion, delivery, administration, and evaluation costs. Note: costs related to the OEB staff coordinated evaluation and audit process are recorded at the portfolio level only.

DSM expenditures are detailed on a program level in Table 4.3.

Table 4.3 2017 DSM Program Costs

Program	Incentives	Promotion	Evaluation*	Administration	Total
Residential	\$19,482,017	\$1,893,206	\$2,059,500	\$599,537	\$24,034,261
Commercial / Industrial	\$14,195,978	\$1,671,598		\$4,338,478	\$20,206,054
Low-Income	\$6,259,457	\$3,493,640	\$153,900	\$975,724	\$10,882,721
Large Volume	\$2,114,335	\$12,870		\$495,557	\$2,622,762
Market Transformation	\$626,401	\$687,083		\$306,762	\$1,620,246
Performance-Based	\$118,386	\$237,553		\$176,837	\$532,776
Program Total	\$42,796,575	\$7,995,950	\$2,213,400	\$6,892,894	\$59,898,819
<i>Portfolio Costs</i>					
Research					\$555,846
Evaluation					\$654,214
Administration					\$2,911,324
Pilot Programs					\$290,675
DSM Tracking System Upgrades					\$2,613,933
Portfolio Total					\$7,025,992
Incremental DSM Project Spend*					\$192,233
Total Spend	\$42,796,575	\$7,995,950	\$2,213,400	\$6,892,894	\$67,117,043

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

** Incremental spend was on Future Infrastructure Planning Study

In the sections that follow: the scorecards, programs and offerings included in the DSM portfolio are described in detail (section 5 to 9); the shareholder incentive (section 10), DSMVA (section 11) and lost revenue (section 12) amounts resulting from the 2017 performance are presented; and expected DSM activities in 2018 are outlined (section 13).

5. RESOURCE ACQUISITION SCORECARD

Resource acquisition programs aim to achieve direct, measureable savings for customers through the installation of energy-efficient equipment and/or operation and process improvements. These programs motivate customer participation by offering rebates or financial incentives that reduce the overall cost of upgrading to more efficient technologies and equipment. Additionally, the programs promote a culture of energy conservation through education and awareness initiatives.

The resource acquisition scorecard consists of two programs, the Residential program and the Commercial/Industrial program, and is comprised of two performance metrics: Cumulative Natural Gas Savings (m³) and Home Reno Rebate (“HRR”) Participants (Homes).

The Cumulative Natural Gas Savings (m³) metric reflects the total lifetime natural gas saved for both the Residential and Commercial/Industrial resource acquisition programs delivered by Union, net of free riders.

Homes that count towards the HRR Participants (Homes) metric must meet the following two requirements:

- A homeowner must complete at least two eligible renovations as listed in Table 5.7.
- The aggregate of all the homes counted towards the metric must achieve, on average, at least a 15% reduction in annual natural gas use as determined by comparing pre and post energy assessments modelled using Natural Resource Canada (“NRCan”) HOT2000 software.

Table 5.0 presents the results of the resource acquisition scorecard, demonstrating an achievement of 136% of the overall scorecard target, resulting in a DSM Shareholder Incentive of \$5.45 million.

Table 5.0 2017 Resource Acquisition Scorecard Results

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings (m ³)	754,211,082	1,005,614,776	1,508,422,163	75%	1,146,843,084	114%	86%
Home Reno Rebate Participants (Homes)	5,145	6,859	10,289	25%	13,729	200%	50%
Total Scorecard Target Achieved							136%
Scorecard Utility Incentive Achieved							\$ 5,450,281

Table 5.1 presents the results of programs on the resource acquisition scorecard along with total program spend.

Table 5.1 2017 Resource Acquisition Scorecard Results by Program and Offering

Program	Offering	Units	Annual Net Gas Savings (m ³)	Cumulative Net Gas Savings (m ³)	Total Spend	Net TRC-Plus	Net TRC-Plus Ratio
Residential	Home Reno Rebate	13,729	8,356,595	208,914,880	\$24,034,261	\$718,112	1.02
Commercial / Industrial	C/I Prescriptive	4,540	10,167,581	194,339,424	\$20,206,054	\$52,795,666	1.69
	C/I Custom	581	42,813,966	714,752,252			
	C/I Direct Install	228	1,922,435	28,836,528			
Resource Acquisition Total		19,078	63,260,577	1,146,843,084	\$44,240,314	\$53,513,778	1.45

5.1 Residential Program

Encouraging a holistic approach to energy efficiency, the Residential program provides education and financial incentives that help offset the cost of efficiency upgrades in residential homes. Currently, the Residential program consists of a single DSM program offering, Home Reno Rebate (“HRR”). The HRR offering as proposed in Union’s 2015 – 2020 DSM Plan was enhanced through two major partnerships; one with the Government of Ontario and the other with the Independent Electricity System Operator (“IESO”). These partnerships provided the opportunity to expand the offering, increase participation

regardless of home heating fuel type and support activities to further reduce electricity consumption in the retrofit market.

Table 5.2 shows the results of the Residential DSM program and Table 5.3 breaks down the total spend into its four components.

Table 5.2 2017 Residential DSM Program Results

Program	Offering	Units	Annual Net Gas Savings (m ³)	Cumulative Net Gas Savings (m ³)	Total Spend	Net TRC-Plus	Net TRC-Plus Ratio
Residential	Home Reno Rebate	13,729	8,356,595	208,914,880	\$24,034,261	\$718,112	1.02
Residential Total		13,729	8,356,595	208,914,880	\$24,034,261	\$718,112	1.02

Table 5.3 2017 Residential DSM Program Spend

Item	Total
Incentives	\$19,482,017
Promotion	\$1,893,206
Administration	\$599,537
Evaluation*	\$2,059,500
Total Residential Program Spend	\$24,034,261

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

Table 5.4 shows the calculation of the Residential program's TRC-Plus ratio.

Table 5.4 2017 Residential DSM Program Cost-Effectiveness

	TRC-Plus Benefits (a)	TRC Costs (b)	Net TRC-Plus (c)=(a-b)	TRC-Plus Ratio (d)=(a/b)
Measures	\$42,334,622	\$37,064,267	\$5,270,355	1.14
Promotion		\$1,893,206		
Administration		\$599,537		
Evaluation*		\$2,059,500		
Residential Program Total	\$42,334,622	\$41,616,510	\$718,112	1.02

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

5.1.1 Home Reno Rebate Offering

Union introduced the HRR offering in 2012. The offering focuses on whole home energy savings by helping homeowners understand improvement opportunities throughout their home and encouraging them to install measures that generate long-lived energy savings. By participating in HRR, homeowners can increase the energy efficiency of their home and decrease their energy bills each year; enhance home comfort; avoid unsightly mould and condensation caused by poor insulation; and, improve health through better indoor air quality.

The HRR offering as outlined in Union's 2015-2020 DSM Plan (EB-2015-0029) includes four main stages:

1. Participants work with a partner Service Organization ("SO") to complete an initial, pre-installation energy assessment to determine the home's current energy use and profile. A critical component of this assessment is a blower door test that measures the home's air tightness;
2. A Certified Energy Advisor ("CEA") with the SO models the home using HOT2000 in EnerGuide mode and delivers an energy efficiency report to the homeowner that outlines all energy saving opportunities, along with the home's EnerGuide rating and energy saving tips and information;
3. Using the report, participants can make informed energy decisions on the most effective improvements to carry out. Rebates are available for completing the assessments and at least two eligible measures recommended in the energy efficiency report; and,
4. After upgrades to the home are complete, participants complete a second, post-installation energy assessment with the CEA to quantify the energy savings achieved by the retrofits, as determined by HOT2000. The CEA submits all reporting to Union Gas and the homeowner is mailed a cheque for their qualifying rebates.

Initiated in 2016, a partnership with the Government of Ontario leveraged Union's HRR existing offering and associated delivery infrastructure to provide an enhanced seamless, single offering for Ontario homeowners. This partnership is discussed greater detail in section 5.1.2.

In 2017, Union further expanded the HRR offering by collaborating with the IESO in a Whole Home Pilot. Through this collaboration, new rebates were available to all qualifying HRR participants for electric appliances and the offering was extended to homes that use electricity as their primary heating source. The Whole Home Pilot is discussed in section 5.1.3.

5.1.2 *Enhanced HRR Offering*

The enhanced HRR offering leverages the design, promotion and delivery of the existing, planned HRR offering while increasing homeowner participation and avoiding greenhouse gas emissions beyond what would have been realized through DSM funding alone.

In 2016, the Government of Ontario established a Green Investment Fund (“GIF”), with a \$100M allocation, targeted at reducing greenhouse gas emissions while strengthening the economy. Union was provided \$40M to enhance the existing HRR offering as well as \$2M to launch a behavioural offering.

Funding from the GIF allocation was used to expand the target market for HRR to include natural gas heated homes outside of Union’s franchise areas well as homes in Union’s franchise area that use oil, propane or wood as their primary heating fuel. Additional measures were added for these non-natural gas homes, such as high-efficiency oil and propane furnaces/boilers, air source heat pumps and wood burning systems. The funding also allowed rebates to be increased for all existing HRR measures to drive higher participation levels and provided smart thermostats to all qualifying homes. Attribution of these results is discussed in section 5.1.4 – Attribution of Results.

The behavioural offering uses customized energy reports to influence customers to change their energy use decisions and actions. Along with benchmarking to peers and past performance, the reports provide energy savings tips and other tools to motivate behavioural changes and are also used to promote the benefits of participating in the enhanced HRR offering. This offering was launched in 2017 and is fully funded by, and results fully attributed to, the GIF.

The enhanced HRR offering, funded by the GIF, will end when funding is exhausted or by May 2019, whichever occurs first.

5.1.3 Whole Home Pilot

In May 2017, the Whole Home Pilot with the IESO was added to the enhanced HRR offering. With funding from the IESO, homes that use electricity as their primary heating source became eligible to participate, new measures and incentives for electric appliances were made available to all HRR participants, and the scope of the energy assessments were expanded to include electric appliances and lighting.

Electrically-heated homes were not eligible to participate in either the existing or enhanced HRR offering. The Whole Home Pilot provided the opportunity for homeowners with these homes to participate by following the same four main stages of the HRR offering. In addition to incentives for insulation upgrades, air sealing and window upgrades, electrically heated homes could receive incentives for air source heat pumps.

Through this collaboration, all qualifying HRR participants could benefit from incentives on electricity saving ENERGY STAR® prescriptive measures including: refrigerators, freezers, dehumidifiers, window air conditioners, clothes washers and electrically commutated motors on central heating/air conditioning systems.

To support uptake in this integrated program, an electricity savings component was added to both initial and post-installation home assessments in the following manner:

- Additions to initial home assessment: assessment of existing appliances; delivery of educational messages (provided by the IESO) regarding electricity conservation and available Save on Energy programs; distribution of promotional and educational materials (provided by the IESO); and participant specific/customized upgrade recommendations for electricity savings.
- Additions to final home assessment: assessment of upgraded appliances; confirmation of decommissioning of old appliances by the customer; and gathering of information on participation in additional Save on Energy programs (e.g. coupons).

All HRR activities, including the Whole Home Pilot, are branded and delivered in market as a single offering to homeowners across Union's franchise area, although results are attributed

to DSM, GIF and IESO according to attribution agreements that follow the provisions of section 7.2.2 of the DSM guidelines¹⁸. Attribution of results is discussed in the following section.

5.1.4 Attribution of Results

Attribution for the enhanced HRR offering and Whole Home Pilot were defined in partnership agreements between Union and the province (i.e. GIF funding) and Union and the IESO (i.e. Whole Home Pilot) established prior to the respective program's launch. The separate agreements are discussed below.

Enhanced HRR Offering

While funding from the GIF drives incremental participation, the existing DSM offering continues to be the foundation of the offering. For this reason, attribution of the enhanced HRR offering's results is not determined simply based on the source of funding. Instead, attribution occurs based on the following rules:

- 100% of the results from homes outside of Union's franchise area are attributed to the GIF.
- 100% of the results from homes within Union's franchise that use a primary heating fuel other than natural gas are attributed to the GIF (excluding electrically heated homes).
- 100% of the results directly related to the smart thermostat are attributed to the GIF.
- For all other results, there is a two-phased approach to attribution each year. During Phase 1, 80% of the results are attributed to Union/DSM and 20% are attributed to the GIF. If at any point in a given year DSM funding is exhausted or Union elects to stop using DSM funds for the enhanced HRR offering, Phase 2 of attribution begins. During Phase 2, 100% of the offering's results are attributed to the GIF.

Attributable results include the number of homes participating, the amount of energy saved, and the amount of greenhouse gas emissions avoided by participants of the enhanced HRR

¹⁸ Filing Guidelines to the DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, pp.21-22.

offering. Savings were determined based on HOT2000, except for smart thermostats, which used prescriptive savings assumptions from the Technical Reference Manual (“TRM”).

Whole Home Pilot

The Whole Home Pilot is an add-on to the enhanced offering and is a straightforward attribution of electrically heated homes, which are not captured through DSM or the GIF, and electricity savings measures claimed prescriptively by the IESO. Attribution is as follows:

- 100% of the results from electrically heated homes within Union’s franchise area are funded by and attributed to the IESO (including smart thermostats).
- 100% of the results directly related to the add-on measures, i.e. electric appliances, electrically commutated motors and central air conditioners offered to HRR participants within Union’s franchise area are funded by and attributed to the IESO.
- 100% of the kWh results from DSM homes (not GIF) are attributed to the IESO¹⁹. The DSM guidelines state that jointly delivered CDM and DSM programs should attribute all natural gas savings to the natural gas utilities and vice versa for electricity savings.¹⁸

Savings for electrically heated homes participating in the HRR whole home offering were determined based on HOT2000, except for smart thermostats, which used prescriptive savings assumptions from the TRM. The kWh savings for all electric measures introduced through the Whole Home Pilot were based on prescriptive savings assumptions in the Whole Home Pilot Delivery Agreement.

Table 5.5 shows the total number of homes that participated in the HRR offering in 2017 and the manner in which the homes were attributed.

¹⁹ Note: Union uses the kWh savings as part of the TRC-Plus calculation since it is a benefit of the offering that should be accounted for when evaluating cost-effectiveness of the overall program.

Table 5.5 Total 2017 HRR Enhanced Offering Participants

Attribution Type	Attribution Details	Homes
Phase 1: DSM Homes	80% to DSM	13,729
Phase 1: GIF Homes heated by natural gas	20% to GIF	3,432
Phase 2: GIF Homes heated by natural gas	100% to GIF	926
GIF Homes heated by oil, propane, or wood and non-Union customers heated by natural gas	100% to GIF	2,372
Whole Home Pilot (electricity heated homes)	100% to IESO	35
HRR Offering Total		20,494

Savings attributed to GIF are presented in Table 5.6 in the manner prescribed in the GIF agreement (namely, modelled based on the in-place heating system and presented as gross cumulative savings). These results include savings from all GIF attributed homes as well as 808 smart thermostats. In 2017, a total of \$23.452 million of the Green Investment Fund was spent towards the enhanced HRR offering.

Table 5.6 2017 Enhanced HRR Offering Results Attributed to GIF

Fuel Type	Gross Cumulative Energy Savings (GJ)	Avoided Greenhouse Gas Emissions (t)
Natural Gas	4,293,688	220,371
Oil	2,371,776	169,721
Propane	(733,338)	(44,344)
Wood	268,282	34,901
Electricity	236,325	3,282
Total	6,436,732	383,930

IESO attributed savings are presented in Table 5.7 in the manner prescribed in the Whole Home Pilot Delivery Agreement, which is gross annual savings. These results include the savings from the 35 electrically heated homes participating in the HRR offering as well as savings from all the electrical add-on measures that any HRR participant received. In 2017, a total of \$3.11 million was spent towards the IESO Whole Home Pilot.

Table 5.7 2017 Whole Home Pilot Results Attributed to IESO

Savings Type	Annual Gross Energy Savings
Expressed in kilowatt hours (kWh)	4,509,926
Expressed in gigajoules (GJ)	16,236
Expressed in greenhouse gas emissions (t)	225

A summary of the electrical add-on measures received by HRR participants through the Whole Home Pilot are shown below in Table 5.8.

Table 5.8 2017 Whole Home Pilot Electrical Measures

Measure	Units
Central Air Conditioning System	2,425
Electrically Commutated Motor (ECM)	3,498
ENERGY STAR® refrigerator	153
ENERGY STAR® freezer	49
ENERGY STAR® dehumidifier	25
ENERGY STAR® clothes washer	119
Total	6,269

Target Market

The HRR offering targeted Union’s residential customers in detached, semi-detached, townhouses, individually metered row townhouses and mobile homes. Participants had to complete both the pre- and post-installation assessments and install at least two eligible energy efficiency upgrades to qualify for rebates. Additional characteristics of the target market varied based on the attribution of program activities:

- DSM homes are heated with a natural gas furnace/boiler.
- GIF expanded the target market to include homes that use oil, propane, or wood as their primary heating fuel (electric customers were not eligible); and also included non-Union natural gas customers, i.e. Kitchener Utilities, EPCOR (formerly Natural Resource Gas Ltd.), Utilities Kingston and Six Nations Natural Gas customers.
- The Whole Home Pilot extended the target market even further to include electrically heated homes.

Market Incentive

Rebates are structured in a prescriptive manner to ensure simplicity for participants. The predictable nature of this type of rebate allows participants to make fully informed decisions and assists SOs/CEAs and channel partners in communicating accurate information.

Table 5.9 outlines the measures, criteria and rebates of the HRR offering available to DSM participants throughout 2017.

Table 5.9 HRR Offering Measure Rebates

Measure	Criteria	Rebate
Attic Insulation	Increase insulation from R12 or less to at least R50	\$500
	Increase insulation from R13 to R25 to at least R50	\$250
	Increase cathedral/flat roof insulation by at least R14	\$500
Air Sealing	Achieve 10% or more above base target	\$150
	Achieving base target	\$100
Basement Insulation	Add at least R23 insulation to 100% of basement	\$1,250
	Add at least R12 insulation to 100% of basement	\$750
	Add at least R23 insulation to 100% of crawl space wall	\$1,000
	Add at least R10 insulation to 100% of crawl space wall	\$500
	Add at least R24 insulation to 100% of floor above crawl space	\$500
Exterior Wall Insulation	Add at least R9 insulation to 100% of building to achieve a minimum of R12	\$1,750
	Add at least R3.8 to 100% of building to achieve a minimum of R12	\$1,250
Furnace/Boiler	Replace a 94% or less AFUE with a 95% or higher AFUE natural gas, propane, or oil furnace; OR, Replace an 89% or less AFUE with a 90% or higher AFUE natural gas, propane, or oil boiler.	\$1,000
Water Heater	Replace a water heater with an ENERGY STAR® natural gas water heater with an energy factor of 0.82 or higher.	\$500
Window/Door/Skylight	For each window, door or skylight replaced with an ENERGY STAR®-qualified model.	\$80
Smart Thermostat*	Purchase and install a Wi-Fi enabled thermostat with learning capabilities utilizing sensor technology.	\$100

* Smart thermostats are funded by and attributed fully to the GIF. They are not one of the eligible energy efficiency upgrades to qualify for the offering and do not contribute towards the bonus rebate offer.

Measures introduced through the Whole Home Pilot were available to all HRR participants. They are not considered eligible energy efficiency upgrades to qualify for the DSM offering and do not contribute towards eligibility for the bonus rebate offer. Table 5.10 provides the add-on measures and rebates of the Whole Home Pilot.

Table 5.10 Whole Home Pilot Measures for All Homes

Measure	Criteria	Rebate
Central Air Conditioning System	ENERGY STAR [®] qualified, SEER 15 and EER 12.5	\$400
Electrically Commutated Motor (ECM)	Natural gas or propane furnace	\$250
ENERGY STAR [®] refrigerator	Must replace existing appliances 15 years or older (buying a new appliance without retiring an existing one doesn't qualify); old appliance must be removed from the house.	\$75
ENERGY STAR [®] freezer		\$75
ENERGY STAR [®] dehumidifier		\$30
ENERGY STAR [®] window air conditioner		\$25
ENERGY STAR [®] clothes washer		\$75

Assessment Rebate

Since pre and post assessments are participation requirements, customers were eligible for a rebate intended to cover the full cost of the assessments, excluding HST. For the enhanced HRR offering, this rebate was \$500. Once the Whole Home Pilot launched in May, assessment rebates increased from \$500 to \$600 to fund the incremental cost of the electricity component of the assessments.

Bonus Rebate

A bonus rebate of \$250 was available for each measure installed beyond the first two. This rebate was intended to encourage homeowners to pursue all energy savings opportunities available to them. The bonus rebate was not applicable for the smart thermostat or the measures introduced through the Whole Home Pilot.

The maximum rebate payment for the enhanced HRR offering was \$5,000 per home, which includes rebates for the home energy assessments, measure upgrades, and bonuses. The electric measure rebates introduced through the Whole Home Pilot were not included when determining the maximum rebate.

Market Delivery

Union established a network of SOs to deliver the HRR offering. Traditional marketing tactics, such as mass-media and targeted promotions, were used to create awareness and encourage participation.

Service Organizations

Union continued to rely on a strong network of energy professionals to generate participant leads and provide an effective and efficient customer experience from start-to-finish.

Customers could select any one of the partner SOs serving their area and contact them directly to schedule an energy assessment. SOs employ CEAs to perform the assessments, recommend eligible upgrades to the customer based on the pre-assessment and findings presented in the energy efficiency report, and submit all required paperwork to Union on behalf of the customer.

SOs and other channel partners were provided with promotional materials, training and ongoing coaching to help them understand the logistics of the HRR offering, how to “sell” energy efficiency, and how to provide a positive customer experience.

Figure 5.1 is an example of promotional material provided to SOs. This customer brochure was used by CEAs during customer visits to explain the offering and given to customers for reference.

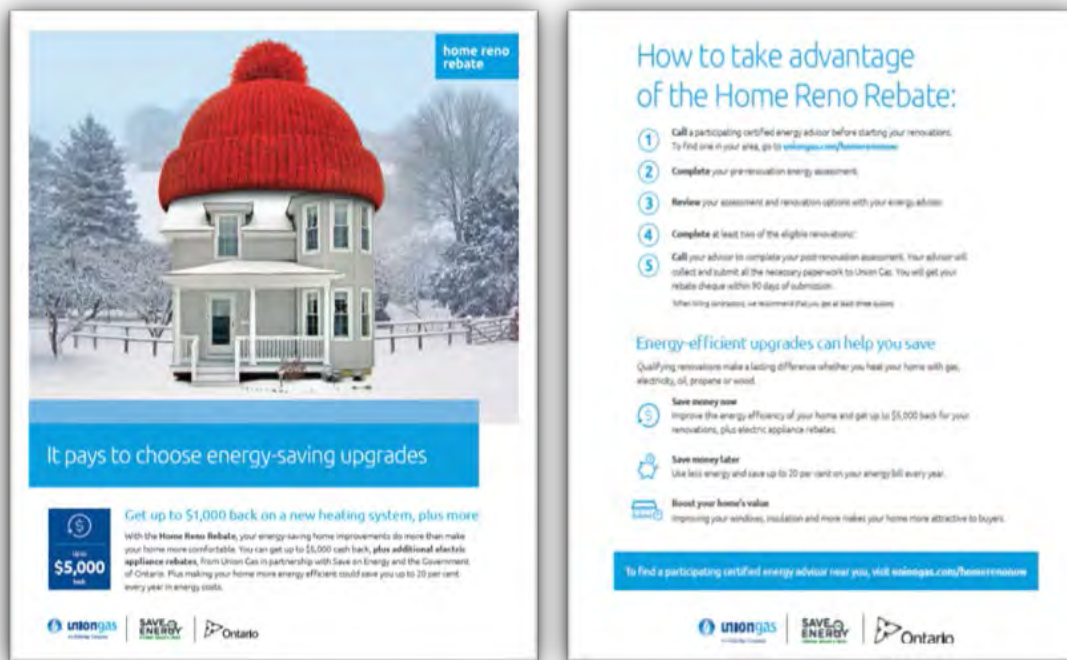


Figure 5.1 - HRR Customer Brochure

Marketing Tactics

Union used several marketing tools and tactics to promote the HRR offering in 2017, including:

- Newspaper and radio advertisements in major cities across Union's program delivery area;
- Digital tactics, including targeted Facebook posts and online banner advertisements on websites with home renovation content;
- Television vignettes in the Kitchener/Waterloo area discussing various ways homeowners can save money through the HRR offering;
- Search engine marketing with Save on Energy to ensure the HRR website was prominently displayed when key words were searched;
- Bill inserts;
- Flyers and door hangers, distributed by CEAs;
- Posters, for use at various trade shows and events; and,

-
- Print advertisements in several industry-specific publications, such as Canadian Contractor, Contracting Canada, Contractor Advantage, and Renovation Contractor.

5.1.5 Education and Awareness

Education and awareness efforts in the residential sector are crucial in influencing homeowner decisions and ensuring the success of Union's DSM programs.

In 2017, there was a concentrated focus on redesigning the residential section of Union's website²⁰ to clearly communicate the program offering benefits and requirements as it continued to expand. Focus groups, with customers and non-customers, provided valuable insights and feedback that was incorporated into the redesign. Simplified navigation and improved content layout and flow ensured homeowners had a clear understanding of the offering, eligibility and measure upgrades as the offering expanded with easy access to begin the process; a postal code lookup tool allowed homeowners to search for the CEAs serving their area.

With the addition of electric measures and availability of the enhanced HRR offering across Union's franchise for homes heated with various fuels, it afforded the opportunity to coordinate efforts with other utilities to generate customer awareness of energy efficiency and the available programs that will help homeowners save money and energy.

Union worked with Kitchener Utilities, Utilities Kingston, EPCOR and Alectra in 2017 to create promotional materials and conduct outreach activities to increase awareness of the offering to their customers. Specific tactics varied by utility, and included:

- Bill inserts and messages;
- Tips in Powerful Insights™ reports delivered to customers;
- Social media (e.g. Facebook and Twitter);
- Email blasts;
- Local newspaper advertisements; and,
- Website content

²⁰ <https://www.uniongas.com/residential/save-money-energy>

5.1.6 *Lessons Learned*

Program Access for Remote Communities

Union's program area covers remote areas of Ontario, which are sparsely populated and in many cases do not have local CEAs to perform energy assessments. This led to long wait times and/or high travel costs associated with energy assessments and, in some cases, difficulty in finding a CEA to service the home. In 2017, Union developed and launched a service zone delivery strategy to ensure equitable program access for households in remote areas of Ontario. Based on initial feedback from SOs, the service zone delivery strategy has been effective. This approach has ensured all homeowners are able to participate in the program and provides reasonable response times while balancing program costs.

Regional CEA Capacity

As of May 2017, CEAs performing assessments for the HRR offering were required to be re-certified to the updated EnerGuide Rating System ("ERS") version 15 standard. This requirement led to a regional capacity shortage for assessments in Thunder Bay while CEAs in that area worked towards the ERS version 15 certification. To address this, Union worked with the two SOs serving Thunder Bay to capture the information of homeowners requesting an assessment and engaged SOs from other areas, such as Barrie, to send a CEA to Thunder Bay to perform the assessments. These assessments were scheduled to allow a CEA to perform a series of assessments over the span of a week to minimize travel requirements. Union tracked all CEA capacity throughout this re-certification process to ensure it was not a limiting factor to participation and that homeowners in all regions continued to have the ability to participate in the offering.

Value of Program Certainty & Continued Awareness

Multi-year stability for the enhanced HRR offering ensures Union can continue to build on the momentum in the market. A significant change in the program, such as a reduction in rebate levels or restrictions in homeowner eligibility, without adequate notice would lead to customer frustration and negatively impact SOs, as their staff resourcing is linked to the program.

Uncertainty also limits Union’s ability to actively promote the offering since there needs to be consistency for the duration of any marketing campaign promoting it. Further, it would prevent coordination and collaboration efforts with other utilities that are also amenable to actively promoting the offering to their customers.

Coordinating and integrating DSM efforts is not limited to a single partnership

Collaborative partnerships with existing DSM programs can promote and further the unique objectives and goals of multiple entities targeting energy efficiency in Ontario. By leveraging solid design, promotion and delivery, DSM programs can be extended to consumers not currently served through DSM or enhanced by adding-on other energy saving measures, specifically those with electricity savings. This creates opportunities to increase overall efficiency and maximize program impacts. Homeowners value the holistic one-stop approach to education and accessing program rebates.

In Summary

The HRR offering has experienced incredible growth. Attributable DSM homes nearly doubled from 2016 to 2017. It has proven a successful model for integration efforts with both government-sponsored programs as well as the IESO and offers residential customers across the province the opportunity to better manage their energy usage while maintaining home comfort. The enhanced HRR offering, supported by GIF funding, will continue until funding is exhausted or by May 2019, whichever occurs first. The Whole Home Pilot will also be extended into 2018.

5.2 Commercial/Industrial (“C/I”) Program

In addition to the Residential program, the resource acquisition scorecard includes results from the C/I program. The C/I program aims to advance customer energy efficiency and productivity in the commercial, institutional, agricultural and industrial markets by providing a mix of prescriptive and custom incentive offerings to customers.

Goals for the C/I program include:

- Increasing customer’s awareness and knowledge of energy-efficient practices;

- Delivering a comprehensive suite of cost effective DSM initiatives across all sectors and customer types;
- Generating long-term energy savings; and,
- Attracting participation from customers who have not yet embraced a culture of conservation in their facility.

There are three offerings in the C/I program: the C/I Prescriptive offering, the Direct Install offering and the C/I Custom offering. Fixed financial incentives are offered for the installation of eligible high-efficiency technologies with deemed savings values through the C/I Prescriptive offering while the Direct Install offering provides increased incentive levels for select prescriptive technologies, including free installation. The C/I Custom offering, in contrast, addresses energy savings opportunities related to unique building specifications, design concepts, processes and/or new technologies that are outside the scope of the C/I Prescriptive offering.

C/I program offerings generated significant savings and benefits in 2017, as shown below in Table 5.11. Budget spend and program TRC-Plus is found in Tables 5.12 and 5.13.

Table 5.11 2017 Commercial/Industrial Program Results

Program	Offering	Units	Annual Natural Gas Savings (m ³)	Cumulative Natural Gas Savings (m ³)	Total Spend	Net TRC-Plus	TRC-Plus Ratio
Commercial/ Industrial	C/I Prescriptive	4,540	10,167,581	194,339,424			
	C/I Custom	581	42,813,966	714,752,252	\$20,206,054	\$52,795,666	1.69
	C/I Direct Install	228	1,922,435	28,836,528			
Commercial/Industrial Total		5,349	54,903,981	937,928,204	\$20,206,054	\$52,795,666	1.69

Table 5.12 2017 Commercial/Industrial Program Spend

Item	Total
Incentives	\$14,195,978
Promotion	\$1,671,598
Administration	\$4,338,478
Evaluation*	\$0
Total C/I Program Spend	\$20,206,054

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

Table 5.13 2017 Commercial/Industrial Program Cost-Effectiveness

	TRC Benefits (a)	TRC Costs (b)	Net TRC-Plus (c)=(a-b)	TRC-Plus Ratio (d)=(a/b)
Measures	\$128,817,293	\$70,011,551	\$52,795,666	1.84
Promotion		\$1,671,598		
Administration		\$4,338,478		
Evaluation*		\$0		
Commercial/Industrial Program Total	\$128,817,293	\$76,021,627	\$52,795,666	1.69

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

5.2.1 Commercial/Industrial ("C/I") Prescriptive Offering

Union's C/I Prescriptive offering provides commercial, institutional, and industrial customers with a list of recommended efficient technologies and equipment, also known as measures, which have pre-determined incentive and natural gas savings amounts defined by facility and equipment size. The application process for the C/I Prescriptive offering promotes ease of participation with the added benefit that customers know upfront the incentive available for each measure. This allows customers with multiple facilities to make informed decisions and roll out technologies to their entire building stock.

Target Market

All C/I customers are eligible to participate in the C/I Prescriptive offering however Union continued to use a segmented approach to the market through various delivery channels and tailored initiatives. By using a segmented approach, Union targeted similar business types with customized communications on the measures most relevant to each segment and more effectively address barriers to DSM uptake.

CI market segments targeted in 2017 included education, entertainment, foodservice, healthcare, hotel/motel, manufacturing, multi-unit residential, retail and warehouses. CI segments beyond those specifically targeted were also eligible to participate, where the technology was appropriate, and were included in the outreach and marketing efforts.

Market Incentive

Eligible prescriptive measures were grouped into initiatives that targeted water heating, space heating, and foodservice applications. The water heating initiative includes measures that are designed to reduce a customer's energy use and water consumption; the space heating initiative centres on retiring older inefficient space heating equipment and installing new energy-efficient equipment; and, the commercial foodservice initiative focuses on getting food establishment owners and operators to install high efficiency technologies designed to reduce hot water consumption and natural gas use. Information on how the technologies work, save energy and help customers reduce energy costs can be found on Union's website²¹.

A range of incentives are directed towards the end-use customer (also known as downstream incentives) to encourage the adoption of these energy-efficient technologies. In an effort to appeal to the diverse commercial/industrial market, the 2017 C/I Prescriptive offering included over 20 different measure incentives for a variety of equipment.

Additionally, Union provided a financial incentive to service providers, also known as trade allies or channel partners, to encourage their support in proliferating adoption of energy-efficient equipment in the marketplace and participation in Union's DSM program. This includes promoting, stocking, installing and commissioning of eligible DSM technologies, as well as providing support to complete the documentation required for project applications. Union's account management team works closely with these service providers, including HVAC companies, equipment retailers, installers, design engineering firms, equipment manufacturers and distributors across Ontario.

The 2017 prescriptive incentives for customers and the financial performance incentives provided to service providers are outlined below in Table 5.14.

²¹ <https://www.uniongas.com/business/save-money-and-energy/equipment-incentive-program>

Table 5.14 2017 Commercial/Industrial Prescriptive Offering Measure Incentives

	Measure	Customer Incentive	Service Provider Incentive
Water Heating	Condensing Storage Water Heater	\$450	\$100
	Condensing Tankless Water Heater	\$450	\$100
	Front Loading Clothes Washer, CEE Tier 2	\$200	\$50
	Ozone Laundry Equipment	\$0.02 x total annual lbs of laundry processed*	\$100
Space Heating	Air Curtain Single Pedestrian Door	\$200 - \$500	\$100
	Air Curtain Double Pedestrian Door	\$400 - \$1,000	\$100
	Air Curtain Shipping and Receiving Door	\$1,200 - \$1,800	\$100
	Condensing Boiler	\$1,000 - \$6,000	\$100
	Condensing Make-up Air Constant Speed	\$0.30 - \$0.40/CFM per unit	\$100
	Condensing Furnace	\$200	\$100
	Condensing Unit Heater	\$750	\$100
	Energy Recovery Ventilation (ERV)	\$0.50 - \$1.15/CFM per unit**	\$100
	Heat Recovery Ventilation (HRV)	\$0.50 - \$0.75/CFM per unit†	\$100
	Infrared Heaters	\$300 - \$400	\$100
Demand Control Ventilation (DCV)	\$500	\$50	
Commercial Foodservice	ENERGY STAR® Fryer	\$700 per vat	\$50 per vat
	ENERGY STAR® Dishwasher	\$100 - \$450	\$50
	Demand Control Kitchen Ventilation (DCKV)	\$1,400 - \$4,600	\$100
	ENERGY STAR® Convection Oven	\$300	\$50
	ENERGY STAR® Steam Cooker	\$400	\$50
	High Efficiency Under-Fired Broiler	\$500	\$50

* Ozone: Max \$8,000 per unit

**ERVs: Min \$200/Max \$6,000 per unit

†HRVs: Min \$200/Max \$4,000 per unit

To influence customer behaviour and motivate uptake of specific measures several incentive structures were available. A multi-unit incentive and limited time offer of increased incentives on four measures was available to end-use customers as well as service providers/distributors incentives.

Multi-Unit Incentive

In 2017, Union's national account multi-unit incentive was expanded beyond national accounts to include all commercial customers. Through this offer, customers that undertook multiple

installations of various energy-efficient technologies in one or multiple buildings could receive an increased incentive amount, not to mention realize greater energy savings in their facilities. Customer segments targeted through this offer included school boards, hotel/motel, agriculture, manufacturing, retail chains, property management firms and foodservice chains. All equipment included as part of the 2017 C/I Prescriptive incentive offering was eligible except demand control ventilation and ozone laundry equipment and the maximum total bonus per customer, for all locations, was \$20,000. The tiered multi-unit installation bonus incentive structure in 2017 was:

- 20% incentive increase on 4 to 10 installations
- 30% incentive increase on 10 to 20 installations
- 40% incentive increase on 20 to 30 installation
- 50% incentive increase on 30 or more installations (mostly national accounts)

Limited Time Offer of Increased Incentives

Incentive levels were increased on select measures installed between May and December 2017 to reduce the financial barrier of participating and increase measure uptake. Measures selected for an increase were based on a number of considerations such as total equipment cost, historical take-up, percentage of incremental cost covered by Union’s incentive and the ability to generate natural gas savings. Air curtain shipping doors, demand control kitchen ventilation, condensing make-up air units and ozone laundry equipment were eligible for the increased incentive offer. Table 5.15 shows the incentive level for these measures during the offering period.

Table 5.15 2017 Commercial/Industrial Prescriptive Limited Time Offer Incentives

Measure	Limited Time Incentive Offering
Air Curtain Shipping and Receiving 8' x 8 or 8' x 10'	\$2,400
Air Curtain Shipping and Receiving 10' x 10'	\$4,000
DCKV - ≤ 4,999 CFM	\$1,700
DCKV - 5,000 – 9,999 CFM	\$6,400
DCKV - 10,000 – 15,000 CFM	\$4,600
MUA - 2 Speed (> 5,000 CFM)	\$0.35/CFM + \$1,500
MUA – VFD (> 5,000 CFM)	\$0.40/CFM + \$2,500
Ozone Laundry Equipment	\$0.04 x total annual lbs of laundry processed (maximum incentive of \$12,000/unit)

Service Provider/Distributor Incentives

Service providers and trade allies play an integral role in encouraging uptake of energy-efficient technologies. Union provided a \$50 to \$100 incentive on all C/I prescriptive measures to service providers who actively promoted prescriptive DSM measure offerings and administered the application process, including equipment eligibility validation.

Distributors influence both service providers and end-users. Union offered a \$50 incentive in 2017 to any distributor who promoted Union's C/I Prescriptive offering, influenced the sale of an applicable technology and administered the application process. Condensing gas boilers and water heaters, condensing unit heaters, ERVs, HRVs, and infrared heaters were measures eligible for the incentive.

Market Delivery

For the C/I Prescriptive offering, Union continued to rely on a combination of direct and indirect delivery channels supported by a comprehensive set of marketing tools and strategies customized by segment.

Delivery Channels

Within each customer segment, Union identified and targeted key influencers and energy manager leaders. Offers were delivered both directly to the customer and indirectly through service provider delivery channels comprised of equipment manufacturers, distributors, retailers, installers and HVAC contractors. Union's account management teams personally work with both end-use customers and service providers.

Direct delivery is carried out by Union account managers, who work with end-use customers to identify improvements to the energy efficiency of their facilities, provide technical support to implement changes and assist customers in applying for financial incentives. Account managers are assigned based on business-type, region and city. There is also a dedicated account manager focused on national account customers, where decisions impacting multiple property locations are made using a top-down centralized approach.

Indirect channels, such as strategic relationships with service providers and delivery agents, allow Union to maximize alliance opportunities and influence the market as a whole. These

industry allies promote or install energy-efficient equipment and are in a position to directly educate or influence Union's customers to adopt these technologies. Cultivating and maintaining relationships with industry allies, such as manufacturers, distributors and service providers, ensures that they are aware of the savings, benefits and incentives provided by Union's programs and offerings and can market long-life energy-efficient technologies to their customers.

Marketing Tools and Strategies

In 2017, Union used an integrated marketing strategy to target C/I customers as well as service providers in key markets; promoting both prescriptive measures and custom offerings. A number of tactics were used to reach the widest range of C/I end-use customers, such as digital and social media, in-bill communications, direct mail campaigns, email blasts, outreach calls and segment specific advertising. Union also engaged customers and industry partners alike through event-based marketing such as tradeshow, customer workshops, sponsorships, and other similar events.

Here is a more detailed description of some of the marketing tools and tactics deployed through the delivery channels in 2017:

- Printed materials were developed for the mass C/I market as well as targeted segments. Sell sheets and brochures served as discussion tools and reference sheets to support customer and trade ally decision making.
- Targeted bill insert communications (Figure 5.2) were distributed to select customer segments with customized information on applicable measures and program offerings. Targeted segments included healthcare, hospitality, education, foodservice, manufacturing, multi-unit residential, and municipalities.



Figure 5.2 - Bill insert targeting Education customers

- Digital and social media campaigns were designed to reach end-use customers and trade ally decision makers in the education, healthcare, and multi-residential segments as well as the C/I market as a whole. Display and search ads in Google and directed customers to Union’s dedicated website page “Save Money & Energy”.²² A LinkedIn campaign provided messaging in LinkedIn members’ feed for all C/I segments and trade allies; while LinkedIn InMail sent direct email messages to LinkedIn members based on industry, job title and role/seniority.
- Industry association advertising in magazines and membership e-newsletters provided broad access to C/I customers and key trade allies while allowing segment-specific content to be communicated. Union carried out association advertising through a number of organizations, such as Canadian Healthcare Facilities, Canadian Facility Management & Design, Canadian Property Management, and Heating, Plumbing & Air-Conditioning Magazine, to name a few.
- In addition to ongoing account management activities, a new outreach strategy was tested in 2017: direct customer outreach calls conducted by a third-party vendor to reach decision makers of targeted businesses with information on energy efficiency and available incentive offers. The calls included an energy target questionnaire to

²² <https://www.uniongas.com/business/save-money-and-energy>

help customers identify energy efficiency opportunities in their building. Customers that opted to participate in the questionnaire were emailed a copy of their report that outlined quick wins, equipment upgrade opportunities and incentive programs available.

The C/I Prescriptive offering continues to be a valuable platform to reach the mass C/I customer market as well as influence the supply chain to increase sales and distribution of energy-efficient technologies. The Direct Install offering is also underpinned by prescriptive measures. This offering provides the opportunity to home in on small commercial facilities, a group that historically has low participation in DSM offerings. The Direct install offering is discussed next, in section 5.2.2.

5.2.2 *Commercial/Industrial Direct Install Offering*

The newest offering added to the C/I program is the Direct Install offering. This offering differs from the C/I Prescriptive offering by providing commercial customers with direct equipment installation to seamlessly upgrade current equipment and technologies to more efficient options. The offering strives to increase awareness and knowledge of energy efficiency with small commercial customers, who typically do not participate in traditional DSM programs due to limited availability of resources. A simplified, turnkey process is intended to address barriers to participation and provide energy savings for these hard-to-reach small commercial customers. Union launched the Direct Install offering in 2017, which is comprised of two targeted market programs: one for pedestrian door air curtains (a coordinated program with electric local distribution company Alectra Utilities) and the other for shipping door air curtains.

Target Market

The Direct Install offering targets small to mid-sized businesses, specifically those who:

- pay their own natural gas bill (whether they rent or own the building);
- are in the Union franchise area; and,
- are commercial customers who operate less than two buildings (i.e. national account customers were not eligible).

Market Incentive

Participants receive up to 100% of the total cost of installation for either pedestrian door air curtains or shipping door air curtains delivered through the offering.

Market Delivery

The Direct Install offering was delivered through third-party delivery agents/program administrators. These program administrators function as a central channel for program coordination, including direct outreach to customers, identifying and installing measures through channel partners, organizing payments and reporting results to Union.

The Pedestrian Door Air Curtain Program was co-delivered in market through a shared vendor with an electric local distribution company, Alectra Utilities. While designing the offering, Union identified a co-delivery opportunity with Alectra and, together, proceeded to investigate various program offering models for integrated delivery. Alectra's Small Business Lighting Program was determined to provide the best fit for initial collaboration efforts in the joint franchise area. Co-delivery coordinated through one delivery agent creates an all-inclusive experience for customers with on-site audits assessing both natural gas and electric energy saving opportunities.

In designing the offering, Union assessed historical DSM participation and concluded that the Direct Install offering could also provide an opportunity to reach underserved small manufacturing and warehouse businesses. Using the same turnkey, delivery agent/program administrator model, the Shipping Door Air Curtains Program was launched.

A component of this model is that all customer outreach and recruitment is conducted by the third party delivery agent/program administrator. Union did provide promotional materials to assist in these activities, as shown in Figure 5.3 below.



Figure 5.3 - Printed materials for Pedestrian Door Program and Shipping Door Program

At its core, the Direct Install offering is a highly targeted prescriptive program that provides access to hard-to-reach market segments; demonstrating the benefits of energy efficiency and hopefully motivating participants to continue to prioritize and pursue other opportunities in their facilities. This offering is confined to technologies for which a predetermined savings value exists and buildings that meet the eligibility requirements as defined by the TRM.

The alternative to a prescriptive approach to energy savings determination is a custom one. As discussed in the following section, the C/I Custom offering provides customized energy savings based on site-specific information and is discussed in the following section.

5.2.3 Commercial/Industrial (“C/I”) Custom Offering

Union’s C/I Custom offering is the largest offering of the C/I programs in terms of cumulative natural gas savings (m³) as well as the largest contributor to achievement on the resource acquisition scorecard. The C/I Custom offering focuses on opportunities where energy savings are linked to unique building specifications, design concepts, processes and/or new technologies that are outside the scope of prescriptive measures. The offering and incentives were targeted directly to the end user, while trade allies involved in the design, engineering and consulting communities assisted to expand the message of energy efficiency.

The goal of the C/I Custom offering is to generate long-term and cost-effective energy savings in CI facilities while supporting continuous energy use improvement through long-term relationships with customers.

Custom DSM project savings are determined for each customer specific project by considering a high efficiency option compared against a lower efficiency base case option that is equal to, or more efficient than, the technology benchmarks mandated in energy efficiency standards.

Target Market

The C/I Custom offering focuses on commercial /industrial general service and mid-sized contract rate customers.

Targeted market segments included, but were not limited to: manufacturing, industrial processing and refining, municipalities, universities, schools, hospitals, warehouses and greenhouses.

Market Incentive

Custom incentives were based on the calculated annual gas savings of the project. Incentives were also available for studies, meters and training. Table 5.16 outlines the core incentives available in the C/I Custom offering.

Table 5.16 2017 Commercial/Industrial Custom Incentive Guidelines

Measures	Commercial Incentives	Industrial Incentives
New and Retrofitted Equipment and Process Optimization	General Service* \$0.20/m ³ up to \$40,000	General Service* \$0.20/m ³ up to \$40,000
	Contracts** \$0.10/m ³ up to \$100,000	Contracts** \$0.10/m ³ up to \$100,000
Incentive cannot exceed 50% of project cost		
Engineering Feasibility Studies	50% up to \$4,000	50% up to \$10,000
Process Improvement Studies	--	66% up to \$20,000
Meters	--	50% of installed cost up to \$3,500 limit of 5 meters a year per site
Total incentives capped at \$250,000 a year per site		

* General Service rates are M1, M2, R1, and R10

** Contract rates are M4, M5, M7, T1, and R20

New and Retrofitted Equipment and Process Improvements

Customer financial incentives were provided for installation of new and retrofit equipment, or implementing building/system optimization projects that resulted in energy efficiency gains and/or improvements in the productivity of the customer's operations. Examples of custom projects include boilers, high efficiency process equipment, steam system equipment, building and process controls, and building envelope technologies.

Studies

Engineering feasibility and process improvement studies help customers identify, justify and prioritize DSM custom project opportunities. Quantifying the financial costs and benefits of energy efficiency opportunities underpins the customer's internal decision making process. Studies include thermal surveys, HVAC audits, energy audits, equipment upgrade analyses, process integration analysis and process operation improvement studies, to name a few.

Meters

Customers could receive financial incentives to support the installation of energy meters for natural gas, steam or hot water. These meters enable customers to better monitor and manage the energy intensity of their operations as well as identify energy efficiency improvements.

In addition to the core custom incentives, there were two special offers in 2017: a study top-up incentive and a limited time offer to encourage early submission of projects.

Study Top-Up

To motivate customers to implement recommendations from a previously incented study, Union offered an additional incentive once a resulting custom project was commissioned. Customers could receive funding for the remaining cost of the study, i.e. a 50% top-up on an engineering feasibility study (maximum of \$10,000) or a 34% top-up on a process improvement study (maximum of \$20,000). There was a limit of one top-up per study.

Limited Time Offer

Given that custom projects require a high degree of interaction and information exchange between customers and Union account managers, there tends to be a procrastination effect and a large influx of project applications are not fully completed and submitted until Q4 of a program year. In an effort to address this, a limited time offer was available for customers who worked with account managers to complete all necessary paperwork and submit project applications by July 1st. The limited time offer gave customers a 20% bonus on the calculated incentive.

Market Delivery

The most effective way to promote and encourage energy efficiency in this target market is by considering the individual energy needs of each customer. As such, the C/I custom offering relied on a direct sales, customer centric approach to market. Union's value proposition to its customers is the technical expertise and guidance provided with respect to energy-related decision making and business justifications.

In 2017, Union re-organized the account management structure to put project managers in a customer facing position. In past years, an account manager would liaise between customers and project managers when completing custom projects. This change in role accountability provides direct access between customers and Union's technical experts, who are adept at identifying and quantifying customized energy efficiency solutions based on customers' business needs. Project managers now provide full account management support from initial assessment of energy efficiency opportunities right through to completing the custom project application and confirming the appropriate base case, high efficiency option and measure life for the project.

The C/I program is marketed in a holistic manner since C/I customers can participate in both prescriptive and custom offerings and overall objectives of educating and building awareness of energy efficiency is not influenced by specific prescriptive or custom incentives. For further information on how the C/I program is marketed, refer to *Marketing Tools and Strategies*, under *Market Delivery* for the C/I Prescriptive offering (section 5.2.1).

Savings claims put forth on a custom project application were subsequently assessed through Union's internal quality assurance/quality control process to validate the project results.

Internal Quality Assurance/Quality Control (“QA/QC”)

A rigorous quality control process was used for all custom projects. Each custom project underwent an internal QA/QC project review prior to finalizing the savings and issuing the incentive cheque to the customer. The review was conducted by Ontario licensed Professional Engineers (P.Eng.) within the Commercial/Industrial Energy Efficiency Programs team who assessed the calculated savings and underlying customer-specific factors including base case, high efficiency case, project life assumptions and project costs as well as “other” factors affecting gas demand (e.g. production and weather).

Project savings calculations were based on the best information available at the time of review.

5.2.4 *Education and Awareness*

A wide variety of training materials and workshops were used to promote and expand knowledge of energy-efficient technologies to C/I customers. The objective was to educate stakeholders (including service providers and industry allies) on how to identify energy conservation opportunities, supply them with the resources to evaluate possible solutions, and motivate them to take action to install and/or market these technologies.

Education and awareness initiatives for the C/I program in 2017 included:

- A refresh of the Union DSM business website
Union’s dedicated business webpage was refreshed in 2017 to create a better experience for customers with simplified content and easier navigation to information on energy conservation and Union’s CI DSM program. Tools and calculators on the website allowed customers to assess their energy usage and sources and ways to reduce energy costs. Plus, a new tool was added in 2017 so customers could easily find the Union account manager servicing their area based on type of business, region and city where the business is located.
- Distribution of the *GasWorks* and *Energylink* newsletters
Newsletters were distributed to C/I customers with their gas bills and also available on Union’s website. *GasWorks* is a technology or equipment-based newsletter while

Energylink is business-focused. Both provide education on energy-efficient practices and equipment and highlight the support Union can provide in implementing such practices.

- Workshops and education forums

Union continued to be involved with two large workshop and educational outreach efforts in 2017:

1. Canadian Boiler Society (“CBS”) Educational Days: The Changing Face of Your Boiler Room – Where is Your Money Best Spent?

Union partnered with CBS to deliver educational forums in London, Burlington and Kingston. Participants learned common boiler solutions to increase energy efficiency and save natural gas; with a focus on boiler selection and sizing, operation and maintenance, burner upgrades for lower emissions, and improved performance.

2. HVAC Information Sessions

Union hosted 10 information sessions across the franchise area to educate and train local HVAC contractors. Content included information on energy-efficient equipment, incentive offerings available to end use customers, and ways to promote the benefits of higher efficiency equipment. Materials were provided to session participants to use with customers to guide discussions on higher efficiency equipment and Union’s available offerings.

- Attendance and sponsorship at trade shows and specific industry events

Tradeshows and organized events provided Union with an opportunity to engage, educate and influence customers and trade allies. Associations hosting these events are credible sources of information and attendees rely on the content and resources they provide.

Union continued to participate in a number of tradeshows and association events in 2017, as an exhibitor and sponsor, to create awareness of C/I program offerings and generate leads among attendees. Here are just a few of the events from 2017:

- Multiple province-wide ‘Know Your Power’ information sessions with the Ontario Chamber of Commerce;
- Canadian Boiler Society Technology Fair and Educational Forum;
- Canadian Healthcare Engineering Society Conference;
- Retail Energy Innovation Workshop;

-
- CDM collaboration events such as Energy Into Action and the Save on Energy Symposium; and,
 - Canadian Greenhouse Conference.
- Pilot projects and studies
By participating in pilot projects and studies, Union can gain insight into the viability of potential energy-efficient technologies and important information to shape program design and delivery. Partnering with other utilities and distribution companies also allows Union to assess collaboration opportunities between natural gas and electricity utilities; all with minimal investment.

Union was involved in two pilot projects/studies in 2017: the Performance-Based Conservation Pilot and the Sustainable Schools Charrette Pilot.

1. Performance-Based Conservation Pilot

This pilot was launched in 2015 and continued through 2017. Led by the Toronto Region Conservation Authority and Enerlife Consulting, project partners include: Union, Enbridge, IESO, Halton Hills Hydro, Milton Hydro, Brampton Hydro One, Region of Peel Water, Halton Region Water and the Real Property Association of Canada.

The strategic concept of the pilot is to use large-scale energy benchmarking diagnostics to enhance conservation program performance and drive the adoption of energy benchmarking as a standard practice in the Ontario commercial & institutional sector. The pilot seeks to enroll up to 150 buildings to assess high potential buildings by market segment, identify facility-specific conservation measures, quantify energy (gas and electricity) and water savings opportunities, and monitor and verify performance improvements over time.

Union enlisted 10 public buildings in the Town of Halton Hills and 17 buildings of the Halton Hills Catholic District School Board to participate in the pilot. In 2017, the pilot progressed to the workshop stage.

2. Sustainable Schools Charrette Pilot

Union is undertaking a separate pilot project with the Toronto and Region Conservation Authority and Enerlife Consulting to host Energy Savings Charrettes that

produce energy conservation action plans using performance based conservation methodologies. The target market is two school boards, consisting of ten schools for each, although the ultimate goal is that the analysis and actions identified for the target schools could be readily transferred to other schools within the participating boards.

The pilot began in 2017 with two school boards: Hamilton and Wentworth District School Board and Waterloo and Region District School Boards. Ten high savings potential schools for each school board were selected. Actual energy data, such as historical consumption, was used to identify improvements that will provide the greatest energy savings. In 2017, Enerlife Consulting was hired to conduct a workshop on the performance based conservation approach and its application within the selected schools in preparation for the Energy Savings Charrettes. One Charrette was undertaken in 2017. The pilot will continue through 2018.

5.2.5 Lessons Learned

C/I Prescriptive Offering

- **Testing new incentive models**

An end-user incentive model coupled with complex measures is creating challenges in driving incremental results. In 2017, Union designed an upstream/midstream incentive model and began recruiting manufacturers. This process revealed a number of variations from manufacturer to manufacturer in how a single type of equipment is delivered in market as well as how end-users source types of technology. In 2018, Union will look to determine how best to manage these variations by piloting different incentive models in market.

- **Prescriptive measure complexity**

The C/I Prescriptive offering is designed to be easy for customers to understand and participate and intended to broadly attract business customers. Some measure substantiation documents contained in the TRM have become so complex that it has impacted program delivery and market understanding. An example of this is energy recovery ventilators and heat recovery ventilators. In response to this barrier, Union

implemented additional training to account management teams to explain how to interpret the eligibility of the measure offering. Going forward, this type of training will continue. Union will also advocate for improvements in the TRM so that substantiation documents consider implementation and market realities.

Direct Install Offering

- **The length of time to complete an installation can vary**

The time to complete one project – from outreach to final install – was longer than expected and can vary significantly. Part of this can be attributed to the purchase cycle of the equipment. Since the equipment required is in a variety of sizes (sometimes even custom-built), it may not be readily available. If the equipment needs to be sourced and shipped from the U.S., it will further add to the overall project time. To mitigate this, Union worked with vendors to promote the offering and sales potential of having adequate stock available and investigated opportunities to influence sourcing and stocking practices.

- **Delivery agents are a critical gateway to reaching the target market**

Union used several tools to compile a prospecting list to reach the targeted market – natural gas consumption analysis, national accounts, marketing through affiliates, etc. However, it was Union’s delivery agent who was truly pivotal in this process. As a vendor/contractor themselves, along with their relationships with other local vendors/contractors, their familiarity with the businesses serviced in their area provided valuable insight on prospective participants who would be likely candidates and could benefit from the equipment being installed through the offering. Going forward, Union will focus on engaging more delivery agents to work with the program and use their knowledge and contacts to more effectively reach the target market.

C/I Custom Offering

- **Study Top-Up and Limited Time Offer**

Customers responded positively to both of these special offers. The study top-up became an inciting tool for prioritizing projects from studies and the limited time offer did balance out the influx of projects to some degree; a noticeable spike occurred in July compared to previous years. Both special offers will be continued into 2018. As customers become more aware of their presence, it is expected it will fuel further uptake.

- **Continuous improvement of custom savings determination**

Union remains focused on improving documentation practices and accuracy of custom project savings claims based on the feedback of customers, DSM account/project managers, auditors and other stakeholders. In 2017, Union modified new build greenhouse base cases to reflect evolving industry standard practice. No relevant building code applies specifically to energy efficiency in greenhouses. As such, these base case updates ensure that Union's assumptions when calculating savings claims are objective, conservative and capture incremental savings influenced by DSM programs.

In Summary

C/I Prescriptive and C/I Custom offerings will be offered throughout the current DSM framework (2015-2020). Union will continue to respond to evolving market conditions by modifying program elements, such as incentive structures or inputs used in savings claims, and refine marketing strategies to reach customers. These efforts are intended to increase participation from customers who have not yet embraced a culture of conservation in their facility, increase awareness and knowledge of energy efficiency best practices across the C/I market, and generate significant long term energy savings in CI facilities.

6. LOW-INCOME SCORECARD

Another resource acquisition program in Union’s DSM portfolio, the Low-Income program helps the most vulnerable customers manage their natural gas bills. It is included on a separate Low-Income scorecard because offerings are specially designed to address the financial and non-financial barriers (e.g. communication, cultural and linguistic) of this unique customer segment as well as satisfy additional guiding principles and requirements set out in the DSM framework.

The Low-Income program consists of four offerings: the Home Weatherization offering, the Furnace End-of-Life Upgrade offering, the Indigenous offering, and the Multi-Family offering. Performance on the Low-Income scorecard is measured by three metrics: single family cumulative natural gas savings (m³), social and assisted multi-family cumulative natural gas savings (m³), and market rate multi-family cumulative natural gas savings (m³).

The single family metric consists of cumulative natural gas m³ savings from the HW offering, the Furnace End-of-Life Upgrade offering and the Indigenous offering. The multi-family metrics consist of cumulative natural gas savings from the Multi-Family offering, which includes social and assisted multi-family housing as well as low-income market rate multi-family buildings.

Table 6.0 presents the results of the Low-Income scorecard. Union achieved 84% of the overall scorecard target, resulting in a DSM Shareholder Incentive of \$0.368 million.

Table 6.0 2017 Low-Income Scorecard Results

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Single Family Cumulative Natural Gas Savings (m ³)	33,776,883	45,035,844	67,553,765	60%	31,080,630	69%	41%
Social and Assisted Multi-Family Cumulative Natural Gas Savings (m ³)	15,839,979	21,119,972	31,679,958	35%	25,135,454	119%	42%
Market Rate Multi-Family Cumulative Natural Gas Savings (m ³)	11,851,284	15,801,711	23,702,567	5%	4,382,179	28%	1%
Total Scorecard Target Achieved							84%
Scorecard Utility Incentive Achieved							\$368,424

6.1 Low-Income Program

The Low-Income program is designed to reduce the energy burden faced by low-income single family and multi-family dwelling customers and minimize the barriers that low-income customers face to participate and benefit from energy conservation programs.

Table 6.1 shows the results of the Low-Income program in 2017. The total spend for the Low-Income program is shown in Table 6.2, separated into the main cost categories.

Table 6.1 2017 Low-Income Program Results

Program	Offering	Units	Net Annual Natural Gas Savings (m ³)	Net Cumulative Natural Gas Savings (m ³)	Total Spend	Net TRC-Plus	TRC-Plus Ratio
Low-Income	Home Weatherization	1,611*	1,212,177	30,191,664	\$10,882,721	\$(125,127)	0.99
	Furnace End-of-Life Upgrade	464	24,570	442,260			
	Indigenous	68*	18,332	446,706			
	Multi-Family	210	1,381,012	29,517,362			
Low-Income Total		2,353	2,636,091	60,598,262	\$10,882,721	\$(125,127)	0.99

* Includes homes as well as basic measures

Table 6.2 2017 Low-Income Program Spend

Item	Total
Incentives	\$6,259,457
Promotion	\$3,493,640
Administration	\$975,724
Evaluation*	\$153,900
Total Low-Income Program Spend	\$10,882,721

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

Table 6.3 shows the calculation of the Low-Income program's TRC-Plus ratio.

Table 6.3 2017 Low-Income Program Cost-Effectiveness

	TRC-Plus Benefits (a)	TRC Costs (b)	Net TRC-Plus (c)=(a-b)	TRC-Plus Ratio (d)=(a/b)
Measures	\$10,760,815	\$6,262,677	\$4,498,138	1.72
Promotion		\$3,493,640		
Administration		\$975,724		
Evaluation*		\$153,900		
Low-Income Program Total	\$10,760,815	\$10,885,942	(\$125,127)	0.99

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

6.1.1 Home Weatherization Offering

Part of the single family metric on the Low-Income scorecard, the Home Weatherization offering is a full service retrofit program that provides low-income customers living in single family homes with free energy assessments, weatherization upgrades, and prescriptive conservation measures to improve the energy efficiency of the customer's home. A single delivery agent entity coordinates all elements of the offering – from energy assessments to installation of measures; ensuring ease of participation. Customers also benefit from one-on-one energy conservation education by auditors and contractors.

An initial home energy assessment identifies the eligible building envelope upgrades, including attic insulation, wall insulation, basement insulation and draft-proofing measures. After all upgrades are completed by Union's delivery agent, a final post renovation home energy assessment is conducted to evaluate the energy savings realized in the home using NRCan's HOT2000 modelling software.

Basic measures, such as showerheads, aerators, pipe insulation and programmable thermostats, are installed for qualified customers at the time of the home energy assessment if they do not have them.

To improve health and safety in low-income customers' homes and ensure income eligible customers can participate, Union addressed treatable environmental hazards within the building envelope identified during the assessment and prior to commencing any installation

work. Hazards include: inadequate ventilation, combustion safety, mould, moisture and excessive clutter. The issues are often the result of poor structural design, age of the home, as well as the inability of the homeowner to address maintenance concerns due to lack of time, knowledge and money. Another safety measure, a carbon monoxide detector, was left behind for self-installation in all participating homes where one was required.

Union successfully delivered the Home Weatherization offering to 113 homes in the social housing market and 1,068 homes in the private market for a total of 1,181 homes. Approximately 7% of the net cumulative natural gas savings were derived from social housing and 93% from the private market.

Target Market

The Home Weatherization offering targeted both the social and assisted housing market and the private market, provided customers met the following criteria:

Social and Assisted Housing Market:

- Household income was at or below 135% of the most recent Statistics Canada Pre-Tax Low-income Cut-Offs (“LICO”) for communities of 500,000 or more; and,
- Customers were occupants of a single/semi-detached, town/row house or low-rise multi-family housing (three stories or less, as defined by Part 9 of the Ontario Building Code).

Private Market:

- Household income was at or below 135% LICO OR the customer had received one of the following social benefits in the twelve months prior to participation:
 - Allowance for Survivors
 - Guaranteed Income Supplement
 - Allowance for Seniors
 - Ontario Works
 - Ontario Disability Support Program
 - Low-income Energy Assistance Program Emergency Financial Assistant Grant
 - Home Assistance Program Participant (Electric Utility)
 - Ontario Electricity Support Program
 - Healthy Smiles Ontario

AND,

- Customer was an occupant of a single/semi-detached, town/row house; and,
- Customer was a private homeowner or tenant who paid their own gas bills.

Market Incentive

The Home Weatherization offering is delivered at no cost to the customer, including energy assessments, all recommended thermal envelope upgrades, basic prescriptive measures, carbon monoxide detectors, individualized energy conservation education and health and safety work.

Market Delivery

The Home Weatherization offering relies on an experienced and reliable delivery agent to provide a turnkey solution - from energy assessments to measure installation and calculation of savings.

To maximize uptake of the Home Weatherization offering, Union approached the social and assisted housing market and private market uniquely.

Social and Assisted Housing Market Delivery

After considerable promotion in previous years, Union has shifted primary focus to the private market. For social and assisted housing market delivery, a direct sales approach is used and is executed by Union's account managers as an integrated approach to commercial DSM delivery and account management activities.

Union also maintains partnerships with key associations and organizations including, but not limited to: the Ontario Non-Profit Housing Association, the Ontario Municipal Social Services Association, and the Institute of Housing Management. Through these relationships, Union gains key housing provider contacts and insights that account managers can use in their outreach efforts.

Private Market Delivery

In 2017, Union enhanced efforts to increase awareness and encourage participation in the private market. Union’s media strategy to reach this market included traditional and online marketing, partnerships and community outreach and use of the Union contact centre.

Traditional and Online Marketing

Several mass marketing campaigns and online tools were used in 2017 to attract new customers, including:

- Direct mail advertising and advertorials in community newspapers;
- Bill inserts (Figure 6.0);
- A multi-faceted radio, newspaper and digital platform campaign;
- Use of Google AdWords to: 1) geo target postal codes and display digital advertisements for those that have a higher density level of lower income home owners, and 2) deliver targeted ads based on browsing behaviour; and,



Figure 6.0 – 2017 Bill Insert

- Union’s Home Weatherization offering webpage²³ gave private homeowners, renters and social housing providers the ability to explore the benefits of the offering, obtain information on eligibility criteria and access an online application screening tool. A series of educational and testimonial videos were created to reduce barriers effecting participation, such as uncertainty of the program’s process or legitimacy. In these videos, homeowners talk about their experience with the offering and experts show what’s involved in making a customer’s home more comfortable.

²³ <https://www.uniongas.com/weatherization>

Partnerships and Community Outreach

Union works with several organizations across the franchise area to promote the Home Weatherization offering to low-income customers. These partnerships and outreach activities are essential for the private market to build trust and provide assurance that the service is being provided at no cost to the customer. In 2017, the main collaborations were:

- **United Way Greater Simcoe**
Union has an on-going agreement with the United Way Greater Simcoe to provide referrals to the Home Weatherization offering. The United Way is the lead intake agency for all Hydro One Low-Income Energy Assistance Program Grants. The United Way screens customers applying for the electricity grant for Home Weatherization offering eligibility.
- **United Way Centraide North East Ontario**
Union also has an on-going agreement with the United Way Centraide North East to provide referrals to the Home Weatherization offering. In 2017, the United Way hired an in-house energy auditor to help with energy literacy and support the reduction of energy-related poverty through awareness programs. Union's delivery agent sub-contracted all energy audit work in the Sudbury area to the United Way auditor as part of our collaborative partnership.
- **United Way Sudbury Tax Clinic**
Union sponsored a tax clinic hosted by the United Way of Sudbury where low-income community members received help in filing free Canadian income tax returns. Volunteers were on hand to promote the offering during clinic hours and had marketing materials to distribute to interested customers. This helped ease difficulties in the application process since customers already had income documentation with them for the tax clinic and could receive in-person guidance on exactly what was required and how to apply.

Union Gas Customer Contact Centre

Union's customer contact centre has daily contact with low-income customers in need of assistance with their bills. To increase awareness and encourage participation in the program, customer service representatives are trained to promote the Home Weatherization offering to callers identified to have a high propensity to be home and income eligible. Interested customers are transferred to the appropriate delivery agent or provided with a phone number

to call the delivery agent at a later time. Additionally, customer service representatives inform customers about the online information and application tools available.

6.1.2 *Furnace End-of-Life Upgrade Offering*

The Furnace End-of-Life Upgrade offering is another offering within the single family metric on the Low-Income scorecard. The offering provides qualified social and assisted housing providers and private market customers with an incentive to upgrade to a 95% or greater AFUE rating furnace when their existing furnace reaches end-of-life and is being replaced.

Target Market

While private market customers are also eligible to participate, in 2017 the Furnace End-of-Life Upgrade offering continued to specifically target social and assisted housing providers. Eligibility criteria for the offering are the same as the Home Weatherization offering ([section 6.1.1](#)).

Market Incentive

Social and assisted housing providers were given an incentive amount equal to approximately half of the incremental cost of upgrading to a 95% or greater AFUE rating furnace as indicated in the TRM substantiation document. In 2017, this amounted to \$275 per unit.

Market Delivery

To streamline delivery, the offering was integrated into other CI and low-income delivery efforts aimed at the social and assisted housing market. Namely, a direct sales approach carried out by Union's account managers and promoted through partnerships with key associations and organizations. This allowed account managers to promote a comprehensive suite of all available DSM programs and offerings to the customer segment.

6.1.3 *Indigenous Offering*

A new single family offering on the Low-Income scorecard is the Indigenous offering. It combines the Home Weatherization and Furnace End-of-Life Upgrade offerings and is being delivered directly to Indigenous communities within the Union franchise area. Eligible

customers receive free weatherization upgrades installed by an Indigenous delivery agent along with a financial incentive if upgrading an existing furnace to a higher-efficiency furnace. Customers also benefit from direct installation of an energy savings kit with basic water-savings measures and are provided with carbon monoxide and fire alarms for the home.

The Indigenous offering is a completely new offering approved as part of the 2015-2020 DSM Plan Decision to commence in 2016. After securing a delivery agent at the end of 2016 and receiving endorsements from Band Councils, 2017 marked the first year Union delivered the offering beginning with four communities: Garden River First Nations, Batchewana First Nations, Mississauga First Nations and Nipissing First Nations.

Target Market

The offering was initially planned to target 13 Indigenous communities with residential gas service in Union's franchise area. This has been updated based on expansion projects planned and underway and now includes 20 communities. The number of communities targeted each year is dependent on Band Council endorsement to operate in their communities and capacity of the delivery agent.

Market Incentive

The Indigenous offering uses the same incentive structure as the Home Weatherization offering ([section 6.1.1](#)) and Furnace End-of-Life Upgrade offering ([section 6.1.2](#)).

Market Delivery

The cornerstone of the delivery model for this offering is employing an Indigenous delivery agent that has experience working with Indigenous communities. It demonstrates Union's commitment to the communities being served and is critical to building customer trust and participation by ensuring the unique culture and characteristics of this customer group are respected and incorporated into all delivery and promotional elements. First Nations Engineering Services Limited (FNESL) was selected for this work.

Along with FNESL, Union leverages existing Band Council relationships to promote and rollout the offering over a phased multi-year approach to ensure maximum uptake of the offering.

6.1.4 Multi-Family Offering

The Multi-Family offering provides social and assisted housing and low-income market rate multi-family customers with prescriptive and custom incentives for a variety of energy efficiency measures, energy assessments and education. The offering is designed similar to the C/I Prescriptive and C/I Custom offerings.

Incentives included in this offering are enhanced to reflect the barriers to participation that exist within the low-income market, such as limited capital available for upgrades in social housing. Union offers these enhanced incentives to implement any measures available to commercial multi-family customers in the C/I offering, including prescriptive measures and custom projects, to encourage housing managers to invest wisely in their housing stock.

The offering is measured on two multi-family metrics on the Low-Income scorecard that separate out the targeted market segments.

Target Market

The Multi-Family offering targets two market segments: social and assisted housing and low-income market-rate multi-family.

Social and Assisted Housing

Social and assisted housing is housing developed, acquired or operated under a federal, provincial or municipally funded program. To be eligible, providers must operate Part Three buildings with tenants who have a household income at or below 135% of the most recent Statistics Canada Pre-Tax LICO for communities of 500,000 or more.

Examples of social and assisted housing are:

- Non-profit corporations as outlined in the Social Housing Reform Act, 2000;
- Public housing corporations owned by municipalities directly or through Local Housing Corporations;
- Non-profit housing co-operatives as defined in the Co-operative Corporations Act, 1990; and,
- Non-profit housing corporations that manage or own rural residential housing.

Union has established strong relationships with the 27 municipal social housing providers that operate throughout the franchise area and assists them in proactively planning their energy efficiency upgrades. The majority of these 27 municipal housing providers have participated in the offering over the past five years. In 2017, Union continued to increase its focus on the 450+ smaller housing providers, including non-profit housing providers, low-income co-operative housing providers and faith- and ethnic-based providers.

Low-Income Market-Rate Multi-Family

Low-income market rate housing consists of privately owned, multi-family, Part Three buildings that have a high propensity of low-income tenants as determined by building location and average rents of the building. To be eligible:

1. The building must be located in a low-income neighbourhood according to one of the following data sources:
 - The forward sortation area (i.e. the first three digits of a postal code) has a 70% or greater likelihood of being low-income, as determined by data sourced from Statistics Canada LICO information;
 - Census tract data shows there is a 40% or greater likelihood of being low-income, as determined by data sourced from Statistics Canada Low-income Measure;
 - A poverty or other neighbourhood report indicating that it is low-income; or,
 - A high percentage of Ontario Works recipients, as determined by data sourced from Municipal Ontario Works recipient postal code maps.

AND,

2. Average rents of the building must be at or below the average market rent for that municipality based on one of the following:
 - Rent roll review, demonstrating average rent levels;
 - Existence of Rent Geared to Income or rent supplement contract(s) with the designated Service Manager Office; or,
 - The building has participated in Ontario Renovates or Canadian Housing and Mortgage Corporation's Residential Rehabilitation Assistance Program in the last five years.

Market Incentive

Through the offering, customers receive incentives for energy-efficient upgrades and building assessments as well as benefit from education initiatives as outlined below:

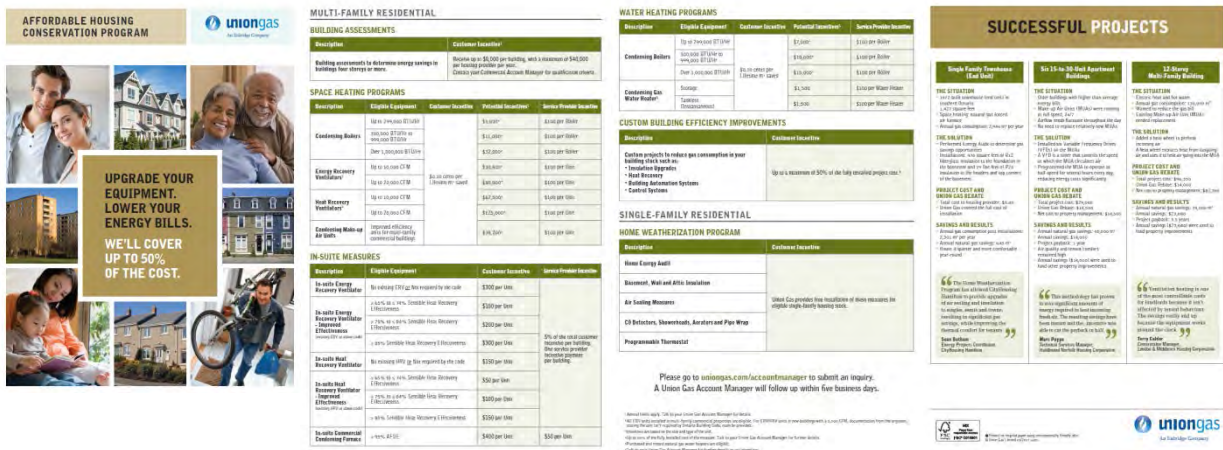
- **Prescriptive measures and custom projects** – customers are eligible to receive \$0.10 per cumulative m³ saved, up to 50% of the fully installed project cost, for all measures offered to the multi-family segment within the standard C/I offering. Typical prescriptive measures include condensing boilers, condensing make-up air units and gas water heaters while custom projects may involve building envelope improvements and controls.
- **Building / Energy Assessments** – In 2017, incentives were increased so that housing providers could receive up to \$8,000 per building (to a maximum of \$40,000 per housing entity for the year) for conducting building / energy assessments. These assessments identify and recommend high-efficiency space heating, water heating and envelope upgrade opportunities that will generate energy savings at the site.
- **Education** – building operators and tenants received educational materials and information about the building’s energy usage and ways to increase energy efficiency at no cost.

Market Delivery

Consistent with Union’s single family offering, direct sales and partnership channels have been found to be the most successful and cost effective means to reach these customer segments and address barriers for participation.

Direct Sales

Union’s account managers met directly with housing providers and building owners to assess the energy needs of their buildings, provide support in developing multi-year energy conservation plans and to present Union’s suite of offerings. A sales package, or sell sheet, was used as a discussion tool to communicate the incentives and benefits of the offering (Figure 6.1).



The brochure is divided into several sections:

- AFFORDABLE HOUSING CONSERVATION PROGRAM:** Includes a photo of a family and the text: "UPGRADE YOUR EQUIPMENT. LOWER YOUR ENERGY BILLS. WE'LL COVER UP TO 50% OF THE COST."
- MULTI-FAMILY RESIDENTIAL:** Contains two tables:

Measure	Eligible Equipment	Customer Incentive	Potential Incentive	Service Provider Incentive
Building Assessments	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
Space Heating Programs	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
Energy Recovery Ventilators	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
Heat Recovery Ventilators	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
Gasification Water Heaters	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
- WATER HEATING PROGRAMS:** Includes a table:

Measure	Eligible Equipment	Customer Incentive	Potential Incentive	Service Provider Incentive
Condensing Boilers	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
Condensing Gas Water Heaters	10 to 24 Units (10 to 24 Units)	\$1,000*	\$1,000 per dollar	\$1,000 per dollar
	25 to 49 Units (25 to 49 Units)	\$1,500*	\$1,500 per dollar	\$1,500 per dollar
- CUSTOM BUILDING EFFICIENCY IMPROVEMENTS:** Includes a table:

Measure	Customer Incentive
Custom projects to reduce gas consumption in your building (10 to 24 Units)	Up to a maximum of 50% of the fully installed project cost.
- SINGLE-FAMILY RESIDENTIAL HOME WEATHERIZATION PROGRAM:** Includes a table:

Measure	Customer Incentive
Home Energy Audit	\$1,000 per unit
Basement, Wall and Attic Insulation	\$100 per unit
Air Sealing Measures	\$100 per unit
CE Sealing Measures	\$100 per unit
CE Repairs, Showers, Berations and Floor Wax	\$100 per unit
Preparation Materials	\$100 per unit
- SUCCESSFUL PROJECTS:** Includes three columns of text and photos:
 - Single Family (One and Two Units):** "The situation: A single family home with high energy bills. The solution: A weatherization program that included insulation, air sealing, and energy audits. The result: A 20% reduction in energy bills." (Photo of a family)
 - 10 to 24-Unit Residential Apartment Building:** "The situation: A 10-unit apartment building with high energy bills. The solution: A weatherization program that included insulation, air sealing, and energy audits. The result: A 15% reduction in energy bills." (Photo of an apartment building)
 - 25 to 49-Unit Residential Apartment Building:** "The situation: A 25-unit apartment building with high energy bills. The solution: A weatherization program that included insulation, air sealing, and energy audits. The result: A 10% reduction in energy bills." (Photo of an apartment building)

Figure 6.1 - Social and Assisted Housing Brochure

For the social and assisted housing market, Union targeted key influencers in municipalities and district social services administration boards as well as consolidated municipal service managers. These service managers administer the distribution of subsidies and technical services to all social housing providers in a given municipality, including municipal, non-profit and co-operative housing organizations. These relationships provide information on the social housing market structure, funding models, building condition assessments and decision making processes associated with the different types of housing while allowing Union to promote participation in the Multi-Family offering.

Association and Organization Partnerships

To support the direct sales efforts, Union leveraged the same housing and social service associations from the Home Weatherization offering as well as the multi-family focused Housing Services Corporation (“HSC”), the Federation of Rental Housing Providers of Ontario, and Municipal Property Management Associations.

Union also engaged in specific partnership opportunities with Ontario Non-Profit Housing Association (“ONPHA”) and HSC to connect with housing providers, building owners and property managers and increase exposure to the offering.

- Partnership with the ONPHA
 Union sponsored regional meetings in London, Windsor, Sudbury, Hamilton, Kingston and Kitchener; participated in the 2017 ONPHA tradeshow in Niagara Falls; continued to

advertise in the ONPHA bi-monthly newsletter *Quick Connections*; and, posted program information on a section of the ONPHA website dedicated to funding opportunities.

- Partnership with HSC

Union has a long-standing partnership with HSC, a non-profit organization that delivers province-wide programs to Ontario's affordable housing sector. In 2017, Union was a key sponsor for the Measuring Matters Conference for the fourth year in a row. This conference provides practical energy efficiency solutions for social housing providers. This is illustrated through real-life case studies that included Union customers who participated in DSM discussing how their organization had benefitted from the Multi-Family offering and achieved significant natural gas savings in several multi-family buildings.

6.1.5 Education and Awareness

Educational and awareness initiatives are the foundation of all Low-Income program offerings, included in market delivery efforts and are always provided at no cost to customers. In 2017, the mass media campaign allowed Union to reach new customers, both single family and multi-family, to increase awareness of energy conservation and promote participation in DSM program offerings.

In addition to promotional activities aimed at building overall awareness, association and organization partnerships provided the opportunity to participate in special educational forums. In 2017, Union continued to be a participant in the Community Champions Workshops delivered by HSC. This program supports the development of healthy, sustainable communities within Ontario's social housing sector by educating, engaging and supporting staff and residents in conservation activities. Training sessions addressed a variety of topics, including reducing energy and water consumption and minimizing waste. A total of ten workshops were conducted in multiple communities including: Thunder Bay, Orillia, Sault Ste. Marie and communities served through the Cochrane District Social Services Administration Board.

6.1.6 Lessons Learned

Home Weatherization Offering

Shortage of energy advisors due to re-certification requirements for NRCan's EnerGuide Rating System v15 ("ERS v15")

When Ontario fully transitioned to the ERS v15, existing energy advisors had to be re-certified and pass the new proficiency exams. This change proved very challenging for advisors and in some areas, in particular the north service area, the availability of energy advisors declined significantly and potential customers were left waiting. To address this, Union has instructed the delivery agent that any certified energy auditor could conduct the on-site measurement and testing as long as a NRCan certified energy advisor was completing the modelling and savings estimate in HOT2000.

Aligning campaigns with industry availability

When launching mass media campaigns it is important to consider the availability of energy auditors and contractors. Otherwise, potential leads are left waiting causing customer frustration and possibly loss of interest in participation. Going forward, Union intends to stay more closely aligned with industry availability and take a staged approach to campaigns, ensuring that the leads generated by a campaign can be adequately serviced.

Furnace End-of-Life Upgrade Offering

Participation constrained by cost-effectiveness

The Furnace End-of-Life Upgrade offering was launched in September 2016 to the social housing market with 24 units incented by the end of the year. In 2017, Union incented 464 units. Since the furnace measure has a lower cost-effectiveness than other measures, participation had to be capped in order to ensure that the Low-Income program as a whole remains above the TRC-Plus ratio threshold of 0.70. For this reason, Union has chosen to target the social housing market rather than the private market (although these customers are still eligible to participate) given the efficiencies in program delivery, ease of integration into other account management activities and limited number of units that can be incented.

Indigenous Offering

A unique approach to market

A unique approach to market has enabled Union to successfully provide DSM programming, for the first time, to Indigenous communities. Union launched the Indigenous offering to four communities in the franchise in 2017 through a specialized rollout process that respects Union's strong relationships with Indigenous partners and follows a collaborative approach with Chiefs and Councils while observing the local government process. An important part of this outreach strategy is rooted in a holistic offering that benefits all members of the community and considers local traditions. Union has retained an Indigenous delivery agent and contributes to local economic development through the hiring of local community members as Project Leads and Community Canvassers. Union continues to foster strong relationships with Indigenous communities through this and other initiatives in an effort to ensure the successful rollout of this offering across the franchise.

Weatherization levels in homes were more adequate than expected

In 2017, the first year of this completely new offering, an interesting finding was that the number of total homes receiving insulation measures was less than expected as many homes in the four communities had sufficient levels of insulation and were deemed weather tight by certified energy assessment experts. Homes requiring more insulation benefitted from the upgrades and repairs provided by the offering which, in turn, benefitted residents with energy savings and better comfort levels. Union has some early indications that other energy savings measures not currently part of this offering may be of benefit to Indigenous communities, such as energy-efficient windows and doors as well as air handling units to promote air circulation to reduce moisture levels. As the Indigenous offering expands into other communities, Union will continue to gather new insights into the housing stock in these communities and assess ways the offering may be modified in subsequent years to best serve this market.

Multi-Family Offering

Increased incentives for studies proved to be more aligned with market costs

In response to feedback received from housing providers, the incentive for building / energy assessments were increased from \$5,000 to \$8,000 per building. In reviewing the average incentive provided in 2017, it is apparent that this increased incentive is more in line with the cost to conduct these studies. Union will continue to offer studies at this increased incentive amount. Studies help customers identify, justify and prioritize DSM projects while also educating customers on energy usage and savings opportunities across their building stock.

The structure of the OEB-approved budget is incongruous with the target adjustment mechanism for Multi-Family metrics on the Low-Income Scorecard

The OEB-approved budget provides a single figure representing the entire Multi-Family offering. This does not provide the necessary level of detail for the general target adjustment mechanism to calculate separate multi-family metric targets. To remedy this, as part of Union's DSM Mid-Term Review Submission²⁴, Union has proposed combining the Social and Assisted Multi-Family metric and the Market Rate Multi-Family metric into a single Multi-Family Cumulative Natural Gas Savings (m³) metric effective 2018. This proposal is being considered by the OEB through the DSM Mid-Term Review process. For 2017 targets, the budget has been allocated based on 2016 actuals (m³) by segment.

In Summary

The Low-Income single family offerings had notable accomplishments in 2017; successfully launching the first DSM program offering in Indigenous communities and seeing over 19 times growth in the first full year of the Furnace End-of-Life Upgrade offering. All of this is underpinned by solid performance in Union's core single-family Home Weatherization offering. In 2018, Union will be transitioning the weatherization offering to a new delivery agent and assessing the viability of new single-family measures, specifically smart thermostats. With a unique and effective outreach strategy to Indigenous communities in

²⁴ EB-2017-0127; Union Gas Limited DSM Mid-Term Review: Part Two Requirement Two Submission, January 15, 2018, pp. 21-23.

place, the offering will also be expanded to other communities across Union's franchise area. Further, to maximize the value provided to these communities as a whole, Union is investigating collaborative opportunities with Hydro One to provide seamless access to both electric and gas savings programs.

The Multi-Family offering, which includes social and assisted housing as well as low-income market-rate, will continue to provide enhanced incentives for a variety of energy efficiency measures that benefit low-income tenants. Energy assessments and education remain important tools to help customers identify, implement and maintain energy savings. Union's proposal to align the general target adjustment mechanism under a single multi-family scorecard metric will be addressed through the DSM Mid-Term Review expected in 2018.

All Low-Income program offerings as described in the 2015-2020 DSM Plan Decision have now been launched and will continue for the duration of this framework with modifications being made as necessary to adapt to changes in the market.

7. LARGE VOLUME SCORECARD (RATE T2/RATE 100)

The Large Volume scorecard consists of one program, the Large Volume program. Similar to Low-Income, the Large Volume program is also a resource acquisition program targeted towards a unique customer segment; in this case, Union’s largest natural gas customers. The delivery and incentive model for the Large Volume program differs entirely from other resource acquisition programs and, as such, is measured on a dedicated large volume scorecard.

The 2017 Large Volume scorecard consists of a Cumulative Natural Gas Savings (m³) metric measuring natural gas saved from customers within Rate T2 and Rate 100. Table 7.0 presents the results of the Large Volume scorecard. In 2017, Union achieved below the threshold that earns a DSM Shareholder Incentive on this scorecard.

Table 7.0 2017 Large Volume Rate T2/Rate 100 Program Scorecard Results

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings (m ³)	347,662,404	463,549,872	695,324,808	100%	84,986,654	18%	18%
Total Scorecard Target Achieved							18%
Scorecard Utility Incentive Achieved							\$0

7.1 Large Volume Program

As part of the 2015-2020 DSM Plan Decision, the OEB directed Union to continue its large volume self-direct program offering with a similar structure from previous years rather than adopt a program focused solely on technical support and training. In response, Union relaunched the Large Volume program in 2016 with a single offering, the Large Volume Direct Access (“DA”) offering, which continued throughout 2017.

The tables below summarize the 2017 results for the Large Volume program. Table 7.1 shows the natural gas (m³) savings achieved, Table 7.2 breaks down the total program spend into its components and Table 7.3 shows the calculation of the Large Volume program’s TRC-Plus cost-effectiveness.

Table 7.1 2017 Large Volume Program Results

Program	Offering	Units	Net Annual Natural Gas Savings (m ³)	Net Cumulative Natural Gas Savings (m ³)	Total Spend	Net TRC-Plus	TRC-Plus Ratio
Large Volume	Direct Access Offering	48	6,536,294	84,986,654	\$2,622,762	\$3,341,790	1.44
Large Volume Program Total		48	6,536,294	84,986,654	\$2,622,762	\$3,341,790	1.44

Table 7.2 2017 Large Volume Program Spend

Item	Total
Incentives	\$2,114,335
Promotion	\$12,870
Administration	\$495,557
Evaluation*	\$0
Total Large Volume Program Spend	\$2,622,762

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

Table 7.3 2017 Large Volume Program Cost-Effectiveness

	TRC-Plus Benefits (a)	TRC Costs (b)	Net TRC-Plus (c)=(a-b)	TRC-Plus Ratio (d)=(a/b)
Measures	\$10,948,079	\$7,097,862	\$3,850,217	1.54
Promotion		\$12,870		
Administration		\$495,557		
Evaluation		\$0		
Large Volume Program Total	\$10,948,079	\$7,606,289	\$3,341,790	1.44

7.1.1 Large Volume Direct Access (“DA”) Offering

To encourage the largest natural gas consuming customers to participate and pursue all cost-effective energy conservation opportunities, Union uses a self-directed funding model. The direct access budget mechanism grants each customer direct access to the incentive budget they pay in rates. Under this model, customers know exactly how much funding they have available each program year. This ensures they can appropriately plan their expenditures to reduce energy usage in their facility.

Customers are required to submit an Energy Efficiency Plan (“EEP”), authored with the assistance of Union’s technical account managers. The EEP serves as a roadmap allowing

customers and Union to actively work together, driving energy efficiency projects at customers' operations, sites and facilities. Projects identified on the EEP are earmarked for funding.

If a customer elects not to submit an EEP or if the direct access budget funds are not fully earmarked or used by a certain date, the funds are dispersed via an aggregated pool approach. Funds transferred to create the Large Volume Aggregate Pool are used to fund additional energy efficiency projects for all Rate T2 and Rate 100 customers on a first-come-first-served approach.

Target Market

The DA offering is exclusive to large volume contract customers that are either Rate T2 (Union South) or Rate 100 (Union North). These customers have very high natural gas consumption and include large volume industrial operations, power generators, chemical plants, and petroleum refineries.

Market Incentive

The large volume market is heterogeneous, with most projects tied directly to unique processes or technology requirements. Accordingly, all large volume projects are custom. Table 7.4 shows the incentive guidelines for the 2017 Large Volume DA offering.

Table 7.4 2017 Large Volume Direct Access Offering Incentive Guidelines

Offer	Incentive
Engineering Feasibility Study	50% of the cost, up to \$10,000
Process Improvement Study	66% of the cost, up to \$20,000
Steam Trap Survey	50% of the cost, up to \$6,000
Meters	50% of the cost, up to \$3,500 per meter
Customer Education	Provided by or funded by Union Gas
New and Retrofit Equipment, Process Optimization & Operational Improvement	
Direct Access Funded	\$0.10 per annual m ³ saved, up to \$100,000*
Aggregate Pool Funded	\$0.05 per annual m ³ saved, up to \$40,000*

* Incentive cannot exceed 50% of project cost

Engineering Feasibility Studies

Engineering feasibility studies analyze natural gas equipment as well as electricity, compressed air, water and wastewater to identify and quantify potential energy saving measures. Studies may include thermal surveys, facility air-balances, HVAC audits, energy audits, benchmarking activities and equipment upgrade studies.

Process Improvement Studies

Union provided incentives for customers to conduct a comprehensive analysis to determine and assess financial costs of energy improvement opportunities. This generally requires baseline data measurement, collection and analysis and included steam plant audits, process integration analysis, heat integration studies and process operation improvement studies.

Steam Trap Surveys

Steam trap surveys conducted by qualified service companies can identify energy losses from steam distribution systems. Each survey identifies leaking, over-sized or under-sized, blocked and/or flooded traps, as well as possible performance improvements in condensate return systems.

Meters

Incentives were offered for customers to install a natural gas, steam or hot water meter to measure and monitor energy usage. This allows customers to better manage the energy intensity of their operations and identify energy efficiency improvements.

Customer Education

Union provided training, workshops, seminars, newsletters and access to technical information and experts to increase awareness of energy efficiency opportunities and benefits.

New and Retrofit Equipment, Process Optimization and Operational Improvements

With the continual focus on cost reduction, many industrial facilities lack the resources required to analyze and implement potential energy saving opportunities. Union helped fill this gap with its reliable and knowledgeable technical account managers in conjunction with incentives designed to influence the installation of new equipment to save natural gas,

increase efficiency or improve productivity. Typical projects include boilers, combustion control, high-efficiency processes and heat recovery equipment.

Market Delivery

All custom offerings, including those targeted to large volume customers, are delivered through a direct sales approach.

In 2017, Union re-organized the account management structure to put technical account managers, previously called project managers, in a customer facing position to directly promote and deliver the program to customers. In past years, an account manager would liaise between customers and project managers when completing custom projects. This change in role accountability helped facilitate early recognition and seamless development of customized energy efficiency solutions to meet customers' business needs and address participation barriers.

The technical account managers are all Ontario licensed Professional Engineers (P.Eng.) who work with customers as well as third party engineers, equipment manufacturers and service providers, as necessary, to identify opportunities and gather information required for project savings estimates and the custom project application. They provide full support from initial assessment of energy efficiency opportunities and drafting of EEPs right through to completing the custom project applications.

The DA offering used similar marketing tools and strategies as the C/I program. A sell sheet specific to large volume customers and the Large Volume Direct Access offering is just one tool used to promote the offering (Figure 7.0).



Figure 7.0 - Large Volume Brochure

Additionally, all custom projects undergo an internal project review for Quality Assurance/Quality Control (“QA/QC”) conducted by engineers in Union’s Commercial/Industrial Energy Efficiency Programs team. Refer to *Internal QA/QC* under section 5.2.3 for further details.

7.1.1 Education and Awareness

To coordinate efforts and optimize program spending, education and awareness activities for the C/I program extend to large volume customers with topics and information tailored to this customer group and delivered through a *GasWorks* newsletter, *EnerCase* reports, and Union sponsored workshops. The offering is further promoted through Union’s participation in independent professional development groups, associations and trade organization events. Refer to section 5.2.4 *Education and Awareness* for further details.

7.1.2 *Lessons Learned*

DA Offering Observations

The following outlines some key observations of the DA offering in 2017:

- 80% of Rate T2/Rate 100 customers (28 out of 35) participated by submitting energy efficiency plans
- 77% of Rate T2/Rate 100 customers (27 out of 35) submitted energy efficiency plans and completed at least one project
- 49% of Rate T2/Rate 100 customers (17 out of 35) used all of their budget
- 37% of Rate T2/Rate 100 customers (13 out of 35) received additional funding from the Aggregate Pool; and
- Approximately 16% of the total Rate T2/Rate 100 program savings were funded by the Aggregate Pool.

Increase in Natural Gas Savings Compared to 2016 Draft Savings Claim

Net cumulative natural gas savings have increased approximately 20% in 2017 as compared to the 2016 utility savings claim. This can be attributed to two main drivers:

1. A longer program year compared to the short execution period in 2016. Union was instructed to continue the offering as part of the 2015-2020 DSM Plan Decision received early in 2016. As such, it took time to design and relaunch the offering since it was not planned to continue past 2015.
2. Changes in the DSM execution strategy implemented in 2017 whereby Union's technical account managers directly promoted and delivered conservation offerings. This provided for more effective interactions with customers in identifying energy needs and opportunities for savings.

In-Plant Training Pilot

An in-plant training pilot was initiated in late 2017 to test a different approach to identifying energy savings opportunities and enhancing participation in the DA offering. One large volume customer participated in the pilot in November 2017; it included three days of in-plant training and a plant walk-through exercise attended by the customer's technical team. An

expert in industrial steam system optimization was contracted by Union to conduct this site specific training and facility inspection as well as provide recommendations on equipment upgrades and process improvement opportunities at the site. The pilot was well-received and increased the customer's interest in energy conservation. Union will monitor the impact of the training in 2018 to observe if it results in efficiency projects being undertaken and will promote the pilot to other facilities to gain more information on the effectiveness of this type of education-based approach.

In Summary

The Large Volume Direct Access offering assisted Union's largest volume customers in reducing gas consumption in their facilities by installing or upgrading energy efficiency equipment and implementing process improvements. This program will continue to be offered to Union's large volume customers (Rate T2 and Rate 100) in 2018.

8. MARKET TRANSFORMATION SCORECARD

While the previous programs and scorecards discussed in this report focus on achieving direct, natural gas savings customer by customer, market transformation programs are intended to create a lasting change in market behaviour by removing barriers and accelerating the adoption of specific energy efficiency technologies or concepts to the point that they become standard practice. Since a market transformation program has different goals other than discretely measuring cubic meters of natural gas saved, it is captured on a distinct scorecard.

Union’s Market Transformation program consists of two offerings, the Optimum Home offering and the Commercial Savings by Design offering (“CSBD”).

The Market Transformation Scorecard and achievement is presented in Table 8.0. In 2017, Union successfully relaunched the Optimum Home offering and gained traction in the first full year of delivering the CSBD offering; both offerings met or exceeded targets. This resulted in Union achieving the maximum DSM Shareholder Incentive for this scorecard.

Table 8.0 2017 Market Transformation Scorecard Results

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Participating Builders (Regional Top 10)	8	10	15	20%	10	100%	20%
Prototype Homes Built	22.5%	30%	45%	30%	60%	200%	60%
New Developments Enrolled by Participating Builders	6	8	12	50%	12	150%	75%
* Scorecard is capped at 150%. Actual achievement is 155%.				Total Scorecard Target Achieved		150%*	
				Scorecard Utility Incentive Achieved		\$461,623	

The three scorecard metrics measuring achievement in 2017, included:

1. The Optimum Home Participating Builders Metric is the number of ‘top 10 builders’ who signed a participation contract for the Optimum Home offering in 2017. Eligible builders are the top ten builders in each region based on number of housing starts in Union’s franchise area in the prior calendar year.

2. The Optimum Home Prototype Homes Built Metric is the percentage of participating builders who construct a prototype home 15% greater than OBC 2017 based on the total number of builders who remain enrolled in the Optimum Home offering.
3. The CSBD Metric sets a targeted number of participants to enroll in the offering. Enrollment is defined as a builder or developer committing to participate in the CSBD offer and completing an integrated design process session in 2017.

8.1 Market Transformation Program

In Union's 2015–2020 DSM Plan (EB-2015-0029), the Market Transformation program consisted of a sole offering, Optimum Home, which was intended to conclude at the end of 2016. In the 2015-2020 DSM Plan Decision, the OEB approved the Optimum Home offering as proposed in 2016; while also ordering the offering to continue from 2017 to 2020.

Additionally, the OEB directed Union to establish a new market transformation offering, similar to Enbridge's Commercial Savings by Design, targeting the commercial and industrial new construction market. Union's new CSBD was launched in Q4 2016.

Table 8.1 breaks down the total Market Transformation program spend.

Table 8.1 2017 Market Transformation Program Spend

Item	Total
Incentives	\$626,401
Promotion	\$687,083
Administration	\$306,762
Evaluation*	\$0
Total Market Transformation Spend	\$1,620,246

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

8.1.1 Optimum Home Offering

The second generation of the Optimum Home program offering was launched in January 2017. Optimum Home continues to capture the spirit of market transformation set by the first Optimum Home program cycle (2014-2017); to move residential home builders' energy efficiency practices ahead of current OBC 2017, address barriers to the wider adoption of

high efficiency homes in residential new construction, avoid lost opportunities and set the stage for long-term energy savings in the residential market. It 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.

Union has built on the lessons learned from the previous Optimum Home program and made a few main changes to the offering:

- Optimum Home is now aligned solely with ENERGY STAR®, a brand recognised and trusted by consumers to be more energy-efficient than standard OBC built homes
- The performance standard is set against current OBC 2017;
- Outcomes are accelerated in comparison to the previous program and this has been reflected in more aggressive scorecard targets. For example, Union now requires prototype homes to be built in the first year of the offering, which previously began in year two. Similarly, the Homes Built Metric will be introduced in the second year (2018), which previously was not introduced until the third year; and,
- The offering was redesigned to include a post-phase that supports builders while expediting the overall market transformation outcomes.

The relaunched Optimum Home will run from 2017 to 2020; during which time participating top builders can work with building science experts, at no cost, to develop customized building plans that achieve ENERGY STAR® for New Homes v17 ("ESNH v17")²⁵. The consulting process is comprehensive, tailored to each builder's individual needs and considers every aspect of their business including marketing, sales, contracts, construction, services and trades. This process identifies and addresses barriers to energy-efficient construction, develops capacity within builder organizations to build consistently to this higher efficiency, and helps builders realize cost efficiencies to reduce incremental costs of building to the higher efficiency standard.

The Optimum Home program offering consists of three phases, including the new post-phase introduced to sustain the momentum of building to the ESNH v17 standard.

The Optimum Home phases are shown below in Table 8.2:

²⁵ ESNH v17 standard is, on average, 20% more energy-efficient than OBC 2017.

Table 8.2 Optimum Home Phases

Phase	Activities
Phase One: Design	<ul style="list-style-type: none"> • A cross-functional team from the builder’s organization is paired with a building science expert to begin the consultative process. • An on-site assessment is done to help establish a baseline by benchmarking current construction and business practices. • A work plan is developed detailing objectives, tasks, targets, Key Performance Indicators (“KPIs”) and timelines. • New technologies, building practices and other options are assessed and extensively modelled using NRCan’s HOT2000 software. This produces a new Builder Option Package (“BOP”) - a customized handbook of building specifications to achieve the ESNH v17 standard. • At least one prototype home (or discovery home) is built and verified to achieve the ESNH v17 standard, as determined by a third-party Certified Energy Advisor. • Marketing & sales staff are trained on the benefits, features and key messages relating to the BOP and discovery home. • Lessons learned are used to establish best practices for implementation on future product mix (single houses, townhouses, stacked townhouses) and new BOPs are created.
Phase Two: Build to ESNH v17	<ul style="list-style-type: none"> • The design team examines lessons learned, tests the BOP, identifies efficiencies in the builder’s internal business and construction practices, and establishes training requirements. • Training continues with construction staff, tradespeople and suppliers on the new BOP construction practices. • Marketing plans are developed. • High performance housing stock is being built and verified to the ESNH v17 standard throughout the phase.
Post Phase: Retain Builders to ESNH v17	<p>The builder is encouraged to fully implement and expand rollout of ESNH v17 specifications. To facilitate this outcome, the following activities are undertaken:</p> <ul style="list-style-type: none"> • Ongoing performance is tracked against targets and KPIs. • Trouble shooting, problem solving and training address ongoing challenges or barriers to incorporating the ESNH v17 standard across the majority of the builder’s housing stock. • A sustainability plan is developed to maintain momentum of building to the new level of efficiency. • The building science expert helps to create an annual summary report that includes the builder’s story of their journey through the process of becoming an ENERGY STAR® builder. • Union holds regional builder forums for non-participating builders to cascade knowledge and lessons learned to further market transformation.

In 2017, ten builders were recruited and six of these builders each built one discovery home that was tested and certified to the ESNH v17 standard.

Target Market

Optimum Home targets stakeholders who influence the market and drive demand for high performance homes, including:

- **Builders eligible for participation**
 The primary target market is the top 10 regional builders in Union’s franchise area based on the previous year’s housing starts. The seven regions are: Halton, Hamilton, London, Waterloo, Windsor, Kingston and North.
- **Consumers / new home buyers**
 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 and wanting to purchase them; thereby creating demand for high efficiency homes in the market.
- **Non-participating builders**
 To encourage spillover, Union promotes the success of participating builders to all other builders that build homes in Union’s franchise area.

Market Incentive

The builder incentive for each of the phases is outlined below in Table 8.2. Incentives for consulting services, education and training are provided in kind.

Table 8.3 2017 Optimum Incentives

Phase	Incentive
Phase One: Design	<ul style="list-style-type: none"> • In-kind services up to \$30,000 value per builder • \$3,000 cash incentive per builder towards the prototype Discovery Home
Phase Two: Build	<ul style="list-style-type: none"> • In-kind services up to \$25,000 value per builder
Post Phase: Retain	<ul style="list-style-type: none"> • In-kind services up to \$15,000 value per builder

Market Delivery

Optimum Home is implemented through two main channels, supply-side and demand-side:

1. Supply-side

These are all activities that drive participants to successfully complete the original offering phases. The cornerstone of this approach, and the offering as a whole, is partnering enrolled builders with building science experts who provide customized, one-on-one support throughout the term of the Optimum Home commitment.

As part of the Optimum Home design phase (phase one), builders are encouraged to create a high performance discovery home promotion strategy and market it to its customers. In 2017, upon completion of their discovery home, Union supported each builder in creating their own GoTour video; a digital marketing tool that can be integrated into their traditional communication and sales strategy. This tool was designed to help the builder target a broader and younger audience using online social media. These videos can be shared instantly via Facebook, Twitter, email, LinkedIn, etc. and not only help illustrate and promote the aesthetic features of the discovery home, but also describe the ENERGY STAR® benefits that set these homes apart from standard new homes.

Along with building science experts, Union's residential sales team plays a role in supply-chain channel delivery by monitoring builder engagement, helping to troubleshoot issues as needed, and leveraging manufacturing and channel partner relationships to provide product knowledge and education.

2. Demand-side

The goals of this channel are to generate interest and influence adoption of ENERGY STAR® homes. Union focused on creating awareness amongst new home buyers about the benefits of higher efficiency homes as well as helping builders to effectively promote and sell these homes. Broader market initiatives aimed at builder sales centres and non-participating builders are intended to further encourage the adoption of higher efficiency homes as standard market practice.

Aside from the specific marketing and sales support provided to participating builders, as discussed above, Union's mass market initiatives are discussed under *Education and Awareness*, [section 8.1.3](#).

8.1.2 Commercial/Industrial Savings by Design (“CSBD”) Offering

Union’s CSBD offering is designed to improve the long-term energy and environmental performance of new construction commercial projects. It encourages commercial developers and builders to design and build new construction developments to a level that is above current OBC through an Integrated Design Process (“IDP”) and offers financial incentives to do so.

The IDP takes a holistic approach to high performance building design and construction. Through detailed analysis and modelling of various building elements and alternatives, such as equipment sizing and design, building envelope characteristics, and optimization of systems, participants can achieve the offering target of building to 15% above the 2017 OBC Part Three requirements.

The CSBD offering was launched in late 2016 making 2017 the first full year for the program offering; with resounding success. Union achieved 150% of the scorecard metric.

Target Market

CSBD targets builders and developers of new commercial, industrial, institutional, or multi-residential buildings. Builders and developers are eligible to participate in the offering multiple times for different projects assuming the eligibility criteria are met.

Eligibility criteria include the following:

- Construction projects must have a minimum threshold of 50,000 square feet. A project is defined as either a single building or multiples of the same building by the same company, i.e. “same construction”, that add up to 50,000 square feet or more.
- Building(s) must be in the design phase or earlier in the process; and,
- Building construction must be completed within five years of the IDP session, and commissioning must be completed no more than one year after that.

Market Incentive

CSBD is a multi-phase offering that begins early in the design planning stage through to post-commissioning of the site.

In committing to CSBD for a five year period, participants are eligible to receive design and performance incentives, as described below in Table 8.3.

Table 8.4 CBSD Incentive Structure

Project Phase	Incentive	Conditions
Planning/Design: Integrated Design Process (“IDP”)	In-kind services up to \$30,000 value	Includes visioning session and report, preliminary energy model and IDP energy model, IDP session (including logistics, catering, facilitation, and design expert fees), and final IDP session report.
Energy Performance Incentive	\$15,000 cash incentive	Available if the pre-construction energy model meets the specified energy performance targets and the participant submits the final design stage plans and specifications.
Commissioning Incentive	\$15,000 cash incentive	Provided upon completion of a final as-constructed energy model that demonstrates the building meets the specified energy performance target, along with the final commissioning report.

Market Delivery

Union uses a direct sales approach and expert sales team to promote and deliver Commercial/Industrial and Multi-Family DSM offerings. CSBD is delivered through the same successful model and is integrated into existing account management activities. Through regular customer outreach efforts, account managers promoted and educated builders and developers on this new offering and discussed eligibility of any potential projects.

Account managers also leveraged existing, long-term relationships with municipalities and government entities to create awareness in this sector and identify project opportunities.

8.1.3 Education and Awareness

Since market transformation programs are focused on removing adoption barriers and generating energy savings and lasting change within an entire market, education is a vital

component of these offerings. This section discusses the many ways that the offering aims to educate market players.

Optimum Home

To generate awareness of high performance / ENERGY STAR® homes, highlight the success of builders and promote the offering, Union leverages online content, builder appreciation awards and industry partnerships.

Union Gas Website

Union has dedicated sections on the Union Gas website for both builders²⁶ and consumers²⁷.

- For Builders:

Builders (including those who were not enrolled in the offering) could access information on the advantages of building housing stock to a higher energy standard and gain key insights into why customers want these homes and the technologies and construction processes involved in achieving this standard. Part of the content included videos from high performance builders, and Optimum Home participants, explaining the innovations and solutions used in high performance construction.

- For Consumers:

Union used the message “All homes are not created equal” to build awareness among new homebuyers of the difference between a new home built to current OBC versus an ENERGY STAR® high performance home.

The residential section of Union’s website included a repository of information for customers describing the benefits, features and other considerations (i.e. environmental impacts) of choosing a new build high performance home prior to making the purchase decision. A highly impactful, animated ‘behind the walls’ video tour highlighted the difference between the two types of homes; it showed how

²⁶ <https://www.uniongas.com/business/your-business/builders/residential/energy-star-new-homes>

²⁷ <https://www.uniongas.com/residential/save-money-energy/energy-star-homes>

unseen features, such as better insulation, heating and cooling, and ventilation, translate into a whole home approach to save energy, lower energy bills, increase comfort, and improve air quality, to name a few benefits.

Builder Appreciation Award Plaque

In recognition of a builder's commitment to building higher efficiency homes, Union presented builders with a commemorative plaque upon completion of their first discovery home built to the ESNH v17 standard. Most builders celebrated this milestone at internal events to generate knowledge, interest and pride amongst their employees. Figure 8.0 is an appreciation plaque provided to one of the Optimum Home Builders.



Figure 8.0 – Builder Appreciation Award Plaque

Industry Partnerships

Union has partnered with the Ontario Home Builders' Association ("OHBA") for several years as part of an ongoing commitment to the builder community. Support from the OHBA provided Union with the ability to enhance market intelligence related to energy efficiency, sustainability and better building in the new housing market. Since 2013, Union has been participating in the OHBA Builder Forums, and has attended various events throughout the year with the OHBA's local chapters.

CSBD Offering

Since CSBD is a new offering in Union’s DSM portfolio there was significant focus on awareness and education efforts in 2017 to generate participation. This was facilitated through mass-media promotions, targeted social media and industry partnerships.

Mass-Media Promotions

In 2017, mass-media campaigns were launched targeting commercial building owners, designers and architects in the franchise area to promote the benefits of the program with specific focus on the IDP session and opportunity to work closely with industry leaders in green building design. Promotion activities included:

- Print and digital advertising and advertorials through a variety of publications such as Canadian Architect, Canadian Interior, Canadian Property Management (Figure 8.1), Canadian Facility Management & Design, among others; and,
- Inclusion in association membership e-newsletters, such as Canadian Consulting Engineers, Ontario Homebuilders Association, and Renew Canada.



Figure 8.2 – Canadian Property Management

Targeted Social Media

In addition to mass-media promotions, Union used LinkedIn sponsored content (InMail) to send direct messages to industry professionals such as architects, mechanical engineers, construction professionals, energy modellers, etc. The message touted both the short-term (financial benefits of up to \$60,000 between in-kind and cash incentives) and long-term (continuous operational savings due to highly efficient design) benefits of the program. In total, the message was sent to just over 127,000 LinkedIn.

Industry Partnerships

To create a presence in the commercial new construction community, Union developed relationships with industry associations and their memberships. In 2017, Union partnered with various industry associations to sponsor events and promote the offering, such as:

- Green Building Festival event sponsorship and participation;
- Ontario Sustainable Energy Association membership, event sponsorship of Green Energy Doors Open as well as participation at this event; and,
- Ontario Home Builders Association event sponsorship and participations as well as advertising in the OHBA Magazine.

8.1.4 *Lessons Learned*

Optimum Home

Challenges persist in moving the builder market towards high performance

High demand for new homes in 2017 in the Golden Horseshoe Area resulted in builders focusing more on keeping up with demand and less on improving overall home performance. Home builders in the other areas of the province also continued to compete in a highly price sensitive marketplace. These market pressures created barriers for builders in adopting a strategy of high performance building because they don't foresee the bottom line impact to their business. Programs like Optimum Home are needed to demonstrate to builders that they can maintain a healthy bottom line and achieve greater housing performance for their customers and the communities in which they build.

CSBD

Working with Enbridge to reach provincial builders/developers is an effective way to ensure CSBD is promoted across the province

In 2017, Union worked closely with Enbridge to leverage their familiarity in the Toronto market and establish relationships with commercial builders and developers. Creating this focused partnership and alignment with Enbridge provided an effective approach for reaching and working with the larger builders and developers who operate across Ontario.

Further opportunities exist to increase green building practice across smaller commercial new construction buildings (i.e. below the current size eligibility criteria)

In 2017, Union witnessed the value the IDP and visioning session brings to builders and developers. It provided them with an opportunity to educate their design teams about green building practices through collaborative sessions with Canadian green build experts, Sustainable Buildings Canada. The current offering is targeted for building designs with a minimum threshold of 50,000 sq. ft. Union believes that there is an opportunity to expand the reach of the offering beyond the larger builders and developers to other firms that focus on smaller building stock between 40,000 and 50,000 sq. ft. In 2018, Union will continue to assess the square footage threshold, in partnership with EGD, and change eligibility, if appropriate, in an effort to serve more of the commercial building sector.

In Summary

Building on the success and lessons learned from the original offering, Optimum Home has been relaunched in 2017; focusing exclusively on building ENERGY STAR® high performance homes that are, on average, built 20% above 2017 OBC.

CSBD had its first full year as a new DSM offering with much success. Union exceeded its metric target and formed new partnerships for promoting the offering province-wide.

The market transformation offerings are designed with multi-year structures and are planned to continue until the end of 2020.

9. PERFORMANCE-BASED SCORECARD

The final scorecard used to measure Union’s DSM activities is the Performance-Based scorecard. Performance-based conservation relies on detailed customer data to quantify on-going savings at the meter.

Union’s Performance-Based program contains two offerings, the RunSmart offering and the Strategic Energy Management (“SEM”) offering. The 2017 Performance-Based scorecard included Participant Metrics for the two offerings and introduced a RunSmart Savings (%) Metric.

The Participation Metrics measure the number of customers that enter into an agreement with Union to participate in the offerings within a given program year.

The Savings Metric for RunSmart measures the aggregate percentage of savings achieved by the program participants within a program year. This metric is new in 2017 and it is the first year that the offering will have measured savings arising from the 2016 RunSmart participant cohort.

Table 9.0 presents the results of the Performance-Based scorecard. In 2017, Union achieved below the threshold that earns a DSM Shareholder Incentive on this scorecard.

Table 9.0 2017 Performance-Based Scorecard Results

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
RunSmart Participants	57	76	113	20%	35	46%	9%
RunSmart Savings (%)	7.5%	10%	15%	60%	1.61%	16%	10%
Strategic Energy Management (SEM) Participants	24	32	48	20%	0	0%	0%
Total Scorecard Target Achieved							19%
Scorecard Utility Incentive Achieved							\$0

9.1 Performance-Based Program

Union proposed a distinct Performance-Based program as part of the 2015-2020 DSM Plan (EB-2015-0029) that included two offerings: RunSmart and SEM. The program was to be measured on a separate scorecard with a dedicated shareholder incentive amount to encourage focus on the success of the program and ensure it was not overshadowed by larger resource acquisition programs. The Performance-Based program and scorecard were approved in the 2015-2020 DSM Plan Decision for 2016 to 2018. Re-categorizing the program to the Resource Acquisition scorecard was discussed at the DSM Mid-Term Review. Union’s position is that it is not appropriate to re-categorize as doing so will detract from the intended focus and resulting momentum that this program has achieved.

The Performance-Based program benchmarks a customer’s energy usage and uses energy monitoring as an educational tool to enable commercial and industrial customers to identify and implement operational energy efficiency enhancements. Savings are measured by comparing metered billing data before and after improvements are made. Through this program, Union provides customers with expert support to evaluate opportunities for behavioural and performance improvement and incentives once deep savings are demonstrated through metered data analysis.

Table 9.1 breaks down the total program spend into its components.

Table 9.1 2017 Performance-Based Program Spend

Item	Total
Incentives	\$118,386
Promotion	\$237,553
Administration	\$176,837
Evaluation*	\$0
Total Performance-Based Program Spend	\$532,776

* Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

9.1.1 *RunSmart Offering*

Union's RunSmart offering is focused on optimizing commercial building equipment to operate as efficiently as possible by identifying low-cost or no cost measures and operational efficiency opportunities as well as advancing energy efficiency practices.

The RunSmart offering is intended to:

- Reach previously untapped commercial markets;
- Bring building energy performance back to original design intent;
- Increase operational efficiency with a systematic process of identifying and implementing tune-up measures;
- Increase customers' awareness and knowledge of energy-efficient practices and provide education on how to operate in an energy-efficient manner; and
- Generate long term energy savings in commercial facilities.

RunSmart participant savings are evaluated by comparing before and after measured billing data. Baseline consumption analysis is conducted upon enrolment into the offering. A site walk through is administered by a third party expert at no cost to the customer to identify opportunities to more efficiently use heating equipment and systems in place. Customers then complete recommended RunSmart actions and monitor and maintain these actions over a 12-month time period. Energy savings are based on the new annual consumption for the site compared to the customer's baseline consumption as related to the recommended operational improvements.

By completing the RunSmart recommended actions, customers can receive financial incentives for achieving consumption reductions of at least 5% from the previous year.

Target Market

This offering is largely directed towards Union's general service mid-size commercial customers, such as offices, multi-family buildings, big-box retailers, schools, and hospitals, with an annual consumption in excess of 50,000 m³. However, other segments and building sizes may be considered if there is opportunity and interest.

Additionally, RunSmart specifically targets customers that have not recently implemented energy conservation measures at their site (e.g. non-DSM participants and/or customers who have not participated in the last two years).

Market Incentive

Through this offering, customers gain access to a technical expert who can help identify ways to optimize their facility's energy use at no charge. Customers qualify for financial incentives when energy-efficient measures are implemented and energy savings are achieved. Table 9.2 shows the RunSmart financial incentive structure, which is based on measured energy performance improvement.

Table 9.2 RunSmart Performance Incentives

Demonstrated Savings from Baseline	Financial Incentive
5% to below 10%	\$0.20 per annual m ³ saved
10% to below 15%	\$0.25 per annual m ³ saved
15% or more	\$0.30 per annual m ³ saved

Market Delivery

Union delivers RunSmart as a custom offering. All custom offerings are delivered through a direct sales approach executed by Union's account managers. Eligible customers/potential participants were identified and targeted through account management outreach and direct marketing efforts. A number of promotional tools were used in 2017, including a sell sheet/brochure for potential participants (Figure 9.0).



Figure 9.0 - RunSmart Sell Sheet

Once a participant enrolled, a third-party expert completed a site evaluation at each customer's facility to identify building and operational changes to reduce energy consumption and educate customers on energy efficiency practices. The findings of the facility walk-through and recommended actions were captured on the RunSmart checklist, an essential component of the offering. To earn financial incentives, customers must complete the recommended RunSmart actions from the checklist and maintain these actions over a 12-month time period.

Additional resources with detailed instructions on implementing each of the recommendations/actions were also provided. For example, how to verify dampers and valves on air handling units are operating properly or how to reduce excessive exhaust quantity.

9.1.2 Strategic Energy Management Offering

The other Performance-Based offering is Strategic Energy Management ("SEM"). SEM is the successor to Union's Integrated Energy Management System offering targeting industrial customers.

SEM participants establish a baseline for existing operations by analyzing energy performance and then track performance over time while identifying and measuring continuous improvement efforts. Through this offering, Union has the opportunity to actively influence customers to adopt and nurture a culture of conservation and continuous energy improvement.

Customers use their own energy data to analyze historic and current energy performance. This analysis allows participants to set energy baselines and targets for improving energy efficiency of operations. Through SEM, customers are able to:

- Recognize energy efficiency opportunities that would otherwise go unnoticed;
- Establish and sustain energy team(s) to champion continuous energy efficiency improvements;
- Proactively manage natural gas consumption through real-time measurement and analytical tools;
- Systematically track baselines, report energy intensity and establish targets;

- Quantify, implement, and validate behaviour and process and/or equipment based energy efficiency improvements; and
- Foster a culture of continuous energy improvement consistent with the principles of ISO 50001.²⁸

Similar to RunSmart, energy savings for SEM are based on actual metered data, normalized for weather and production, compared against a baseline energy use. However, SEM is structured as a multi-year program that measures results and progressive savings over five years. Incentives and in-kind technical support are available to customers for start-up evaluation and implementation of a monitoring system. Further incentives are provided for demonstrated energy performance improvements over time.

Reporting is a key requirement of the SEM offering to assess the effectiveness of continuous improvement actions. To support this, SEM participants receive incentives to install sub-metering to gather comprehensive energy data. Participating customers are also required to submit annual performance reports detailing continuous improvement opportunities and energy usage for the prior 12-month operating period.

SEM participants receive significant support from Union and a third-party expert throughout the start-up and implementation phase. All reporting commitments are managed by the third-party technical expert, at no cost to the customer. This encourages commitment to the offering by reducing the administrative burden to the customer and reinforces the continued focus on energy efficiency through regular performance reviews with Union and the third-party expert.

Target Market

Union's contract industrial-manufacturing customers are eligible to participate in SEM, provided the customer:

- Has annual natural gas usage of or near 1,000,000 m³;
- Does not currently have an Energy Management System²⁹ in place; and,

²⁸ ISO 50001 is the International Standard's Organization's 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.

²⁹ A system used to track, report and plan continuous improvement energy efficiency activities.

- Has not previously participated in Union’s integrated energy management system offering.

Market Incentive

Incentives are structured to support initial start-up costs in baseline and energy plan development and then provide incentives for measured energy efficiency improvements over a 5-year participation period. Table 9.3 outlines the multi-year SEM offering incentives.

Table 9.3 SEM Incentive Structure

Participation Period	Incentives
Year One: Start-up incentives	Up to \$25,000 to support the purchase and installation of sub-metering and data management equipment
	In-kind technical support from Union and a third party expert
Year Two: Baseline incentive	Participants continue to receive technical support as baseline data is being collected and analyzed.
Years Three to Five: Fixed performance incentives	Year Three: \$10,000 for energy savings of 5% or more over baseline
	Year Four: \$15,000 for energy savings of 10% or more over baseline
	Year Five: \$20,000 for energy savings of 15% or more over baseline

A minimum of 5% savings compared to baseline is required to qualify for any performance incentive.

Market Delivery

Union identified eligible participants and delivered the offering directly to industrial customers through account management outreach by Union DSM account managers. A promotional brochure, shown below in Figure 9.1, was used to introduce the program to customers.



Figure 9.1 - SEM Brochure

After signing a Memorandum-of-Understanding outlining their commitment to the program, participating customers gained access to ongoing energy management expertise through dedicated time with technical experts. A third-party expert worked with the customer, along with Union, and will provide the following services and benefits over the course of the offering:

- Conduct site evaluations;
- Define energy metrics and metering requirements;
- Aid in the development of a continuous improvement energy management plan;
- Complete annual reports to identify demonstrated savings, including details on the customer's improvement opportunities implemented and those planned in the future;
- Educate and influence energy saving best practices;
- Develop customers' capacity to make energy efficiency decisions; and,
- Promote the investigation and implementation of energy monitoring and tracking.

9.1.3 Education and Awareness

Both RunSmart and SEM strive to change energy efficiency awareness and practices. They encourage customers to look at the energy intensity and use of their facilities and to identify and implement opportunities to ensure that equipment is operating optimally and efficiently.

To achieve this, Union relies on the long-term relationships developed and maintained with commercial and industrial customers through account managers as well as the knowledge and experience of the third-party experts. These technical professionals advocate for the use of best practices and work with customers to actualize these practices based on the unique operating conditions of each customer as demonstrated through the site evaluations.

In addition to account management outreach, Union leverages education and awareness activities undertaken for all C/I customers to promote RunSmart and SEM. Information on C/I education and awareness activities can be found in [section 5.2.4](#).

9.1.4 Lessons Learned

Current Calculation of Performance-Based Scorecard Metrics Provide Erroneous Targets

The target calculation of Participant metrics and RunSmart Savings (%) metric currently uses the previous year's cost effectiveness as part of the calculation, i.e. the 2017 target uses the 2016 metric achievement divided by 2016 actual program spend without overheads. This is problematic because it does not consider the deferred/multi-year incentive payment structure of the Performance-Based program, which causes inaccurate and mismatched cost-effectiveness and results in erroneous targets when using the general target adjustment mechanism.

As part of Union's DSM Mid-Term Review Submission³⁰, Union has proposed using the previous year's actual achievement (rather than the previous year's cost effectiveness) as the basis for the targets for the RunSmart offering Participants metric, the RunSmart offering Savings (%) metric, and the Strategic Energy Management offering Participants metric beginning in 2018. This proposal is being considered by the OEB through the DSM Mid-Term Review process in 2018.

RunSmart Offering

National account approach

³⁰ EB-2017-0127; Union Gas Limited DSM Mid-Term Review: Part Two Requirement Two Submission

To reach a wider customer group who meets eligibility for participation, Union began a coordinated approach with existing national accounts management. Union is optimistic this approach will broaden the program reach and provide access to more mid-size commercial customers who are infrequent or non-DSM participants as well as encourage participation at multiple sites.

Savings were less than anticipated

In the first year of quantifying RunSmart savings, Union fell short of the target. Upon review, Union found that two main factors in the lower savings percentage were: 1) customers not completing all recommended actions, and 2) system changes being made at customer sites that were difficult to isolate and quantify when comparing the before and after metered billing data (e.g. the installation of LED lighting). To address this, Union will increase education and outreach to participants to remind them to fully complete the recommended actions in a timely manner so they achieve the savings necessary for the performance incentive. Further, an improved screening process will be used when a customer first expresses interest in participating to identify sites that are best suited to the offering based on stability of baseline data and the likelihood of system changes being completed and maintained.

Strategic Energy Management Offering

Difficulties in securing capital to make recommended changes

As the 2016 cohort of SEM participants move through the offering, some participants expressed difficulty in making capital funding available for the improvements identified as part of the energy plan development. Since the SEM offering relies on continuous improvement activities, a steady state of funding and organizational commitment is required for successful outcomes. When recruiting future participants, Union will more clearly communicate expectations and success factors, such as management commitment to the process, sustainability in operations and ability to earmark capital funding for ongoing improvement efforts. By doing so, this will help screen out participants who may be better suited for a different offering.

Competing resource acquisition offerings

Competing resource acquisition offerings are a barrier to recruiting customers for the SEM offering. While some customers expressed interest in the SEM offering in 2017, the multi-year commitment and lack of performance incentives until the third year were less appealing than Union's resource acquisition offerings. Ultimately, potential customers chose to participate in the C/I Custom offering rather than commit to the SEM offering; resulting in no new participants in 2017. To avoid lost opportunities, Union has decided that customers should be able to participate in other offerings simultaneously and will allow any SEM participants to also benefit from qualifying resource acquisition projects.

In Summary

By refining outreach and education efforts and improving screening processes, Union anticipates future participants recruited to the performance-based offerings will be better suited to fully realize the benefits of the program. Union will continue to assess and modify program design, in response to the feedback and experiences of customers, to reduce any barriers to participation and support the goal of customers adopting a continuous improvement philosophy and organization-wide energy efficiency culture.

The performance-based offerings are designed with multi-year structures and are planned to continue until 2020.

10. DSM SHAREHOLDER INCENTIVE

Union earns a shareholder incentive based on its performance against targets outlined on the Resource Acquisition, Low-Income, Large Volume, Market Transformation, and Performance-Based scorecards.

The DSM shareholder incentive is intended to "*effectively motivate the gas utilities to both actively and efficiently pursue DSM savings and to recognize exemplary performance.*"³¹

The total annual maximum incentive available is \$10.45M and is allocated based on the combined program budgets for each scorecard.

The 2017 scorecard results and corresponding DSM Shareholder Incentive earned are presented in Tables 10.0, 10.1, 10.2, 10.3 and 10.4 below.

Table 10.0 2017 Results - Resource Acquisition Scorecard

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings (m ³)	754,211,082	1,005,614,776	1,508,422,163	75%	1,146,843,084	114%	86%
Home Reno Rebate Participants (Homes)	5,145	6,859	10,289	25%	13,729	200%	50%
Total Scorecard Target Achieved							136%
Scorecard Utility Incentive Achieved							\$ 5,450,281

³¹ Report of the Board: DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, p. 20.

Table 10.1 2017 Results - Low-Income Scorecard

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Single Family Cumulative Natural Gas Savings (m ³)	33,776,883	45,035,844	67,553,765	60%	31,080,630	69%	41%
Social and Assisted Multi-Family Cumulative Natural Gas Savings (m ³)	15,839,979	21,119,972	31,679,958	35%	25,135,454	119%	42%
Market Rate Multi-Family Cumulative Natural Gas Savings (m ³)	11,851,284	15,801,711	23,702,567	5%	4,382,179	28%	1%
Total Scorecard Target Achieved							84%
Scorecard Utility Incentive Achieved							\$368,424

Table 10.2 2017 Results - Large Volume Scorecard

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Cumulative Natural Gas Savings (m ³)	347,662,404	463,549,872	695,324,808	100%	84,986,654	18%	18%
Total Scorecard Target Achieved							18%
Scorecard Utility Incentive Achieved							\$0

Table 10.3 2017 Results - Market Transformation Scorecard

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
Participating Builders (Regional Top 10)	8	10	15	20%	10	100%	20%
Prototype Homes Built	22.5%	30%	45%	30%	60%	200%	60%
New Developments Enrolled by Participating Builders	6	8	12	50%	12	150%	75%
Total Scorecard Target Achieved							150%*
Scorecard Utility Incentive Achieved							\$461,623

* Scorecard is capped at 150%. Actual achievement is 155%.

Table 10.4 2017 Results - Performance-Based Scorecard

Metrics	Metric Target Levels			Weight	Achievement	% of Metric Achieved	Weighted % of Scorecard Achieved
	Lower Band	Target	Upper Band				
RunSmart Participants	57	76	113	20%	35	46%	9%
RunSmart Savings (%)	7.5%	10%	15%	60%	1.61%	16%	10%
Strategic Energy Management (SEM) Participants	24	32	48	20%	0	0%	0%
Total Scorecard Target Achieved							19%
Scorecard Utility Incentive Achieved							\$0

Union achieved a total of \$6.280M in DSM Shareholder Incentive as a result of its program performance results in 2017, as shown in Table 10.5.

Table 10.5 Summary of 2017 DSM Shareholder Incentive Achieved

Scorecard	DSM Shareholder Incentive Achieved
Resource Acquisition	\$5,450,281
Low-Income	\$368,424
Large Volume	\$0
Market Transformation	\$461,623
Performance-Based	\$0
Total 2017 DSM Shareholder Incentive	\$6,280,328

11. 2017 BUDGET AND PROGRAM SPEND

Union's total OEB-approved 2017 DSM Budget was \$58.570M, with a program budget of \$52.928M. As outlined in Table 11.0, total DSM portfolio spending in 2017 was \$67.117M with \$59.899M spent on programs.

11.1 Demand Side Management Variance Account ("DSMVA")

Union is able to spend and recover up to an additional 15% of the approved annual DSM budget on incremental program expenses once a 100% weighted scorecard target is achieved on a pre-audited basis. Incremental spend must be on program-related expenses.

The DSMVA records the difference between actual DSM spending versus the OEB-approved budgeted amount included in rates. If spending is less than what was included in rates, ratepayers will be credited with the variance. If more is spent than what was included in rates, Union will recover the variance from ratepayers. Credits or recoveries occur through the deferral and variance account disposition following the completion of the annual audit. As shown in Table 11.0, the 2017 DSMVA amount to be recovered from ratepayers is \$5.933M.

DSMVA Adjustment - DSM Tracking and Reporting System Upgrades

As part of the 2015-2020 DSM Plan Decision, the OEB approved Union's request of \$6M (\$1M in 2015 and \$5M in 2016) for DSM tracking and reporting system upgrades.

In 2016, Union was underspent on the system upgrades by \$2.959M. In its 2016 DSM Deferral and Variance Account Disposition, Union proposed not to return the 2016 underspend to ratepayers through the DSMVA that was subsequently spent to complete the system upgrades. Union adjusted the 2016 DSMVA balance to reflect the best information available at the conclusion of the 2016 audit (i.e. in October 2018), which included costs incurred in 2017 and 2018 prior to the system going into service in Q1 2018. Union spent a total of \$4.863M from 2016 to 2018 of the OEB-approved \$5M budget for the tracking and reporting system upgrades, resulting in a \$0.137M underspend. This was credited back to ratepayers through the DSMVA in 2016. Accordingly, the 2017 DSMVA has been adjusted to exclude any variance related to the tracking and reporting system upgrades since this has now been accounted for in the 2016 DSMVA.

Table 11.0 Summary of 2017 Budget and Spending

	2017 Spend	2017 Budget	Variance	Budget Transfers	DSMVA
	A	B	C=A-B	D	E=C-D
Program Budget					
Resource Acquisition Scorecard					
Residential Program*	\$21,974,761	\$10,659,828	\$11,314,933	\$2,060,148	\$9,254,785
Residential Evaluation**	\$2,059,500	\$709,000	\$1,350,500	\$1,350,500	
Commercial/Industrial Program*	\$20,206,054	\$21,846,334	\$(1,640,280)	\$(1,049,808)	\$(590,472)
Commercial/Industrial Evaluation**		\$189,000	\$(189,000)	\$(189,000)	
Low-Income Scorecard					
Low-Income Program*	\$10,728,821	\$12,129,826	\$(1,401,005)	\$(456,102)	\$(944,903)
Low-Income Evaluation**	\$153,900	\$213,015	\$(59,115)	\$(59,115)	
Large Volume Scorecard					
Large Volume Program*	\$2,622,762	\$3,937,000	\$(1,314,238)	\$(291,442)	\$(1,022,796)
Large Volume Evaluation**		\$63,000	\$(63,000)	\$(63,000)	
Market Transformation Scorecard					
Market Transformation Program*	\$1,620,246	\$2,301,250	\$(681,004)	\$(153,488)	\$(527,516)
Market Transformation Evaluation**		\$36,820	\$(36,820)	\$(36,820)	
Performance-Based Scorecard					
Performance-Based Program*	\$532,776	\$808,000	\$(275,224)	\$(39,163)	\$(236,061)
Performance-Based Evaluation**		\$35,000	\$(35,000)	\$(35,000)	
Programs Sub-total	\$59,898,819	\$52,928,073	\$6,970,746	\$1,037,709	\$5,933,037
Portfolio Budget					
Research	\$555,846	\$1,000,000	\$(444,154)	\$(444,154)	
Evaluation**	\$654,214	\$1,300,000	\$(645,786)	\$(645,786)	
Administration	\$2,911,324	\$2,842,000	\$69,324	\$69,323	
Pilot Programs	\$290,675	\$500,000	\$(209,325)	\$(209,325)	
DSM Tracking and Reporting System Upgrades†	\$2,613,933	\$2,821,803	\$(207,870)		\$(207,870)
Portfolio Sub-total	\$7,025,992	\$8,463,803	\$(1,437,812)	\$(1,229,942)	\$(207,870)
Incremental DSM Projects 2017 Spend					
Future Infrastructure Planning Study	\$192,233		\$192,233	\$192,233	
Total 2017 DSM Spending (before Adjustments)	\$67,117,043	\$61,391,876	\$5,725,167	\$0	\$5,725,167
Adjustment					
DSM Tracking and Reporting System Upgrades – Variance has been recovered from 2016 DSMVA	\$(2,613,933)	\$(2,821,803)	\$207,870		\$207,870
Total 2017 DSMVA					\$5,933,037

* Program costs include incentives, promotion and administration costs

** Costs related to the OEB staff coordinated evaluation and audit process are not provided detailed by program. These costs are recorded at the portfolio level.

† Budget amount carried-over from 2016 DSMVA

11.2 Cost-Efficiency Initiative

The DSM guidelines established a Cost-Efficiency Incentive that allows budget amounts to be carried over and used in the following year if the total aggregate annual lifetime natural gas savings targets are met in a given year based on evaluated results. The Cost-Efficiency Incentive Deferral Account tracks the differences between the annual approved DSM budget and the actual amount spent to achieve the 100% targets across all programs.

Union did not meet the eligibility requirements to use this incentive in 2017.

12. LOST REVENUE ADJUSTMENT MECHANISM (“LRAM”)

The OEB-approved Lost Revenue Adjustment Mechanism Variance allows Union to recover the lost distribution revenues associated with DSM activity.

The LRAM Variance Account (“LRAMVA”) is used to track, at the rate class level, the actual impact of DSM activities compared to the forecasted impact included in distribution rates.

Union’s LRAMVA captures lost volumes for the contract rate classes only, as established in the 2014-2018 Incentive Regulation Application, Evidence and Settlement Agreement (EB-2013-0202).

For 2017, the LRAMVA amount of \$0.189 M is based on 2017 delivery rates, TRM version 2.0 filed December 22, 2017, and net annual natural gas savings of 22.227 million 10^3m^3 . The 2017 LRAMVA statement is detailed in Table 12.0 on the following page.

Table 12.0 2017 LRAMVA Statement

Rate class	DSM Volumes (10 ³ m ³)												Total Volumes (10 ³ m ³)	2017 Delivery Rates (\$/10 ³ m ³)	Revenue Impact
	Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	(a)	(b)	(a) x (b)
South															
M4 Industrial	2,896	1,777	300	1,333	151	394	235	291	301	158	454	464	8,754	13.79	\$120,715
M5 Industrial	826	-	85	51	106	31	87	204	15	18	5	105	1,534	26.86	\$41,208
M7 Industrial	970	29	28	4	8	119	234	79	114	294	129	-	2,008	4.15	\$8,334
T1 Industrial	645	1,126	93	48	260	49	102	24	40	686	242	46	3,359	1.36	\$4,568
T2 Industrial	2,295	308	133	132	-	248	46	201	307	123	19	-	3,813	0.41	\$1,548
South Total	7,632	3,239	640	1,568	525	841	705	798	777	1,278	849	615	19,468		\$176,373
North															
20 Industrial	1,372	-	20	10	43	45	33	23	467	123	7	-	2,142	5.49	\$11,770
100 Industrial	146	57	169	-	-	27	147	4	-	57	8	-	616	2.20	\$1,356
North Total	1,518	57	189	10	43	72	180	27	467	179	15	-	2,758		\$13,126
Total	9,150	3,296	829	1,578	568	913	885	826	1,244	1,458	864	615	22,227		\$189,500

13. CONCLUSIONS AND NEXT STEPS

In 2017, DSM programs generated 1.293 billion m³ of cumulative natural gas savings; the majority of these savings coming from solid program performance on the Resource Acquisition scorecard. Aside from strong results in the C/I Custom and C/I Prescriptive offerings, the new Direct Install offering launched and the HRR offering experienced incredible growth. Attributable HRR DSM homes nearly doubled from 2016 to 2017 demonstrating that, more than ever before, residential homeowners had the opportunity to access integrated programs that generate long-lived energy savings.

In the Low-Income Program, the Indigenous offering launched, providing DSM programming for the first time to Indigenous communities. Plus, there was over 19 times growth compared to 2016 in the first full year of the Furnace End-of-Life Upgrade offering.

While Union achieved below the threshold to earn a DSM Shareholder Incentive on the Large Volume scorecard, net cumulative natural gas savings have increased approximately 20% in 2017 as compared to the 2016 utility savings claim. With a target adjustment mechanism based on three-years of savings yield, the target is still inflated from high performance in previous years and does not reflect current market challenges. Participation continues to be impacted by carbon programs and policies and economic priorities of the customers themselves.

The Market Transformation scorecard had excellent results. Union successfully relaunched the Optimum Home offering and gained traction in the first full year of delivering the CSBD offering. Both offerings met or exceeded targets and as a result, Union achieved the maximum DSM Shareholder Incentive possible on the scorecard.

Finally, Union continues to assess and modify design and delivery of the Performance-Based program. As a new program and scorecard, Union is committed to adapting the program, in response to the feedback and experiences of customers, to reduce any barriers to participation and support the goal of customers adopting a continuous improvement philosophy and organization-wide energy efficiency culture.

This section presents a breakdown of 2017 DSM impacts by rate class and highlights major modifications to programming for 2017, as well as showing the methodology to be followed in setting 2018 scorecard targets.

13.1 DSM Rate Class Allocation from 2017 Results

Table 13.0 illustrates the allocation to rate classes of the DSM Variance Account amounts resulting from 2017 DSM programming.

Table 13.0 Rate Class Allocation of 2017 DSM Variance Account Amounts

Rate Class	DSMIDA	DSMVA	LRAMVA
South			
M1	\$3,539,973	\$12,526,850	NA
M2	\$861,808	\$(2,653,620)	NA
M4	\$570,702	\$2,251,283	\$120,715
M5	\$111,758	\$(850,684)	\$41,208
M7	\$122,523	\$(885,076)	\$8,334
T1	\$250,117	\$824,260	\$4,568
T2	\$0	\$(601,022)	\$1,548
	\$5,456,880	\$10,611,991	\$176,373
North			
Rate 01	\$495,002	\$(2,329,500)	NA
Rate 10	\$189,962	\$(971,351)	NA
Rate 20	\$138,484	\$(303,516)	\$11,770
Rate 100	\$0	\$(1,074,587)	\$1,356
	\$823,448	\$(4,678,954)	\$13,126
Total	\$6,280,328	\$5,933,037	\$189,500

13.2 Next Steps - DSM in 2018

Union will continue offering DSM programming in 2018 based on its OEB-approved 2015-2020 DSM Plan (EB-2015-0029), with adjustments and refinements resulting from lessons learned in 2017. The enhanced DSM portfolio going into 2018 provides a comprehensive set of programs and offerings to meet the needs of customers while fulfilling the OEB's key priorities and guiding principles outlined in the framework.

Major planned modifications for each offering are outlined in Table 13.1.

Table 13.1 Planned activities and modifications in 2018

Program / Program Offerings	Planned Modifications in 2017
Residential Program	
<ul style="list-style-type: none"> Home Reno Rebate Offering 	<ul style="list-style-type: none"> Offering will continue to be enhanced with the GIF funding and by IESO's Whole Home Pilot. It is expected that funding for these enhancements will be exhausted or conclude in 2018.
Commercial/Industrial Program	
<ul style="list-style-type: none"> C/I Prescriptive Offering 	<ul style="list-style-type: none"> Testing upstream/midstream incentive models in market
<ul style="list-style-type: none"> C/I Direct Install Offering 	<ul style="list-style-type: none"> Continue as planned with refinements resulting from 2017 lessons learned
<ul style="list-style-type: none"> C/I Custom Offering 	<ul style="list-style-type: none"> Study top-up and limited time incentive offers will continue
Low-Income Program	
<ul style="list-style-type: none"> Home Weatherization Offering 	<ul style="list-style-type: none"> A new delivery agent will be selected to deliver the offering (replacing the current)
<ul style="list-style-type: none"> Furnace End-of-Life Upgrade Offering 	<ul style="list-style-type: none"> Continue as planned with refinements resulting from 2017 lessons learned
<ul style="list-style-type: none"> Indigenous Offering 	<ul style="list-style-type: none"> Continue rolling out the offering to new communities with refinements resulting from 2017 lessons learned
<ul style="list-style-type: none"> Multi-Family Offering 	<ul style="list-style-type: none"> Increased study incentive will continue
Large Volume Program	
<ul style="list-style-type: none"> Large Volume Direct Access Offering 	<ul style="list-style-type: none"> Funding pilot for in-plant training will be extended Continue as planned with refinements resulting from 2017 lessons learned
Market Transformation Program	
<ul style="list-style-type: none"> Optimum Home Offering 	<ul style="list-style-type: none"> Continue as planned with refinements resulting from 2017 lessons learned
<ul style="list-style-type: none"> Commercial Savings by Design Offering 	<ul style="list-style-type: none"> Continue as planned with refinements resulting from 2017 lessons learned
Performance-Based Program	
<ul style="list-style-type: none"> RunSmart Offering 	<ul style="list-style-type: none"> Continue as planned with refinements resulting from 2017 lessons learned
<ul style="list-style-type: none"> Strategic Energy Management Offering 	<ul style="list-style-type: none"> SEM participants may also take part in resource acquisition programs.

In addition to offering modifications, there are both expected and proposed modifications to be made to the scorecards. The 2018 scorecards are discussed below.

13.3 2018 Scorecards

The 2018 scorecard targets will be established on a formulaic basis, using the prior year's performance. Since the final 2018 scorecard targets rely on best available information at the conclusion of the 2017 audit, the scorecard targets have not been calculated for inclusion in this report. Rather, Table 13.2 to Table 13.6 present the current approved methodology, as provided in Schedule C of the OEB's 2015-2020 DSM Plan Decision, for calculating scorecards.

The 2018 Market Transformation and Performance-Based scorecards will have new performance metrics.

Additionally, as part of Union's DSM Mid-Term Review Submission³², Union has proposed metric modifications on the 2018 Low-Income and 2018 Performance-Based scorecards. These proposals are being considered by the OEB through the DSM Mid-Term Review process in 2018. The proposed modifications are:

- Union proposed combining the Social and Assisted Multi-Family metric and the Market Rate Multi-Family metric into a single Multi-Family Cumulative Natural Gas Savings (m³) metric effective 2018 since the structure of the OEB-approved budget is incongruous with the target adjustment.
- Union proposed using the previous year's actual achievement (rather than the previous year's cost-effectiveness) as the basis for the targets of all performance-based metrics because the deferred/multi-year incentive payment structure of the program causes inaccurate and mismatched cost-effectiveness, resulting in erroneous targets when using the general target adjustment mechanism.

³² EB-2017-0127; Union Gas Limited DSM Mid-Term Review: Part Two Requirement Two Submission

Table 13.2 2018 Resource Acquisition Scorecard Target Setting Methodology

Programs	Metrics	Metric Targets			Weight
		Lower Band	Target	Upper Band	
Home Reno Rebate Commercial & Industrial Custom Commercial & Industrial Prescriptive Commercial & Industrial Direct Install	Cumulative Natural Gas Savings (m ³)	75% of Target	2017 metric achievement (LRAM natural gas savings) / 2017 Resource Acquisition actual spend without overheads x 2018 Resource Acquisition budget without overheads x 1.02	150% of Target	75%
Home Reno Rebate	Home Reno Rebate Participants (Homes)	75% of Target	2017 metric achievement/2017 actual program spend without overheads x 2018 program budget without overheads x 1.02	150% of Target	25%

Table 13.3 2018 Low-Income Scorecard Target Setting Methodology

Programs	Metrics	Metric Targets			Weight
		Lower Band	Target	Upper Band	
Home Weatherization Furnace End-of-Life Upgrade Aboriginal	Cumulative Natural Gas Savings (m ³)	75% of Target	2017 metric achievement (LRAM natural gas savings) / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.02	150% of Target	60%
Multi-Family*	Social and Assisted Multi-Family Cumulative Natural Gas Savings (m ³)	75% of Target	2017 metric achievement (LRAM natural gas savings) / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.02	150% of Target	35%
	Market Rate Multi-Family Cumulative Natural Gas Savings (m ³)	75% of Target	savings) / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.02	150% of Target	5%

* As provided in the 2015-2020 DSM Plan Decision. Subject to change pending approval of Union's proposal through the DSM Mid-Term Review.

The 2018 Large Volume and Market Transformation scorecard methodology were outlined in Schedule C of the revised 2015-2020 DSM Plan Decision, dated February 24, 2016.

Table 13.4 2018 Large Volume Scorecard Target Setting Methodology

Programs	Metrics	Metric Targets			Weight
		Lower Band	Target	Upper Band	
Direct Access	Cumulative Natural Gas Savings (m ³)	75% of Target	Three-year rolling average (2015-2017) Rate T2/Rate 100 cost effectiveness x the 2018 budget without overheads x 1.02	150% of Target	100%

Table 13.5 2018 Market Transformation Scorecard Target Setting Methodology

Programs	Metrics	Metric Targets			Weight
		Lower Band	Target	Upper Band	
Optimum Home	Participating Builders (Regional Top 10)	6	8	12	10%
	Prototype Homes Built	45%	60%	90%	30%
	Percentage of Homes Built (>20% above OBC 2012) by Participating Builders	3.75%	5%	7.5%	10%
Commercial New Construction	New Developments Enrolled by Participating Builds	75% of Target	2017 metric achievement / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.1	150% of Target	50%

This is the scorecard as provided in the 2015-2020 DSM Plan Decision. The target calculation of all metrics may change pending approval of Union's proposal through the DSM Mid-Term Review.

Table 13.6 2018 Performance-Based Scorecard Target Setting Methodology

Programs	Metrics	Metric Targets			Weight
		Lower Band	Target	Upper Band	
RunSmart	Participants	75% of Target	2017 metric achievement / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.1	150% of Target	10%
	Savings (%)	75% of Target	2017 metric achievement / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.1	150% of Target	40%
Strategic Energy Management (SEM)	Participants	75% of Target	2017 metric achievement / 2017 actual program spend without overheads x 2018 program budget without overheads x 1.1	150% of Target	10%
	Savings (%)	4%	5%	8%	40%

APPENDIX A: PRESCRIPTIVE INPUT ASSUMPTIONS

The prescriptive input assumptions used in savings claims can be found on the OEB website: <https://www.oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm>)

For input assumptions related to the calculation of the DSM Shareholder Incentive:

- Technical Reference Manual/Applications and Decisions – Union Gas Limited & Enbridge Gas Distribution Inc. (Joint Filing) – Input Assumptions
 - Measures & Assumptions Updates
 - Case file EB-2016-0246

For input assumptions related to new or expanded measures in 2017 or the calculation of LRAM:

- Technical Reference Manual/Applications and Decisions – Union Gas Limited & Enbridge Gas Distribution Inc. (Joint Filing) – Input Assumptions
 - Technical Reference Manual Updates
 - December 27, 2017 (TRM version 2.0)

APPENDIX B: 2017 AVOIDED COSTS

The avoided costs used for the determination of 2017 TRC-Plus and PAC results are included below for reference.

The inflation rate used is 1.98%. The discount factor is 6.06%.

Gas Avoided Costs						
	Residential and Commercial				Industrial	
	Baseload (\$/m ³)		Weather Sensitive (\$/m ³)		Baseload (\$/m ³)	
	Rate	NPV	Rate	NPV	Rate	NPV
1	0.14090	0.14090	0.18283	0.18283	0.13078	0.13078
2	0.14402	0.27669	0.18849	0.36055	0.13351	0.25666
3	0.14634	0.40679	0.19206	0.53130	0.13893	0.38017
4	0.15074	0.53314	0.19738	0.69674	0.14318	0.50019
5	0.14250	0.64576	0.19006	0.84695	0.13479	0.60672
6	0.15878	0.76408	0.20729	1.00141	0.15092	0.71918
7	0.15680	0.87425	0.20628	1.14635	0.14878	0.82371
8	0.16224	0.98172	0.21271	1.28726	0.15406	0.92577
9	0.17946	1.09382	0.23093	1.43150	0.17112	1.03266
10	0.20137	1.21241	0.25387	1.58102	0.19286	1.14624
11	0.19928	1.32307	0.25283	1.72141	0.19061	1.25209
12	0.20920	1.43260	0.26381	1.85953	0.20036	1.35699
13	0.20921	1.53587	0.26492	1.99031	0.20020	1.45581
14	0.23324	1.64443	0.29005	2.12531	0.22404	1.56010
15	0.25041	1.75433	0.30836	2.26064	0.24103	1.66587
16	0.27219	1.86696	0.33130	2.39773	0.26263	1.77455
17	0.26658	1.97096	0.32687	2.52526	0.25683	1.87475
18	0.26892	2.06989	0.33041	2.64680	0.25897	1.97001
19	0.27632	2.16572	0.33903	2.76439	0.26617	2.06233
20	0.28581	2.25919	0.34979	2.87878	0.27547	2.15242
21	0.29564	2.35035	0.36089	2.99006	0.28509	2.24032
22	0.30578	2.43925	0.37234	3.09831	0.29503	2.32609
23	0.31627	2.52595	0.38416	3.20361	0.30530	2.40978
24	0.32712	2.61049	0.39635	3.30605	0.31593	2.49144
25	0.33833	2.69294	0.40895	3.40571	0.32692	2.57111
26	0.34991	2.77334	0.42193	3.50265	0.33828	2.64883
27	0.36188	2.85174	0.43535	3.59697	0.35002	2.72466
28	0.37425	2.92818	0.44918	3.68872	0.36215	2.79864
29	0.38703	3.00273	0.46345	3.77798	0.37469	2.87080
30	0.40024	3.07541	0.47819	3.86481	0.38766	2.94120

Water and Electricity Avoided Costs				
	Residential/Commercial/Industrial			
	Water (\$/m ³)		Electricity (\$/kWh)	
	Rate	NPV	Rate	NPV
1	0.70128	0.70128	0.13905	0.13905
2	0.71516	1.37558	0.14180	0.27275
3	0.72932	2.02395	0.14461	0.40131
4	0.74376	2.64738	0.14747	0.52493
5	0.75849	3.24684	0.15039	0.64379
6	0.77351	3.82324	0.15337	0.75807
7	0.78882	4.37747	0.15641	0.86797
8	0.80444	4.91038	0.15951	0.97363
9	0.82037	5.42280	0.16266	1.07524
10	0.83661	5.91550	0.16588	1.17293
11	0.85318	6.38926	0.16917	1.26687
12	0.87007	6.84480	0.17252	1.35719
13	0.88730	7.28281	0.17593	1.44404
14	0.90487	7.70398	0.17942	1.52755
15	0.92278	8.10895	0.18297	1.60785
16	0.94105	8.49835	0.18659	1.68506
17	0.95969	8.87276	0.19029	1.75930
18	0.97869	9.23278	0.19406	1.83068
19	0.99807	9.57895	0.19790	1.89932
20	1.01783	9.91181	0.20182	1.96532
21	1.03798	10.23186	0.20581	2.02878
22	1.05853	10.53960	0.20989	2.08980
23	1.07949	10.83551	0.21404	2.14847
24	1.10087	11.12004	0.21828	2.20489
25	1.12266	11.39362	0.22260	2.25914
26	1.14489	11.65668	0.22701	2.31130
27	1.16756	11.90963	0.23150	2.36145
28	1.19068	12.15284	0.23609	2.40967
29	1.21425	12.38670	0.24076	2.45604
30	1.23830	12.61157	0.24553	2.50063