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July 17, 2020

BY RESS AND EMAIL

Ms. Christine Long
Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

Dear Ms. Long:

**Re: Enbridge Gas Inc. (Enbridge Gas)
Ontario Energy Board File No.: EB-2020-0067
2017/2018 Demand Side Management (DSM) Deferral and Variance Account
Disposition Application**

Enclosed is Enbridge Gas Inc.'s ("Enbridge Gas") application and evidence concerning the final disposition and recovery of certain 2017 and 2018 Demand Side Management ("DSM") program year-end deferral and variance account balances.¹ The accounts which are the subject of this Application and the balances recorded (excluding interest) are as follows in Tables 1 and 2.

Table 1

2017 & 2018 DSM Deferral and Variance Account Balances - EGD Rate Zone²

Account (\$ millions)	2017	2018
DSM Variance Account	(\$0.027)	(\$1.400)
DSM Incentive Deferral Account	\$2.120	\$3.983
LRAM Variance Account	(\$0.010)	(\$0.015)
Total Balance	\$2.083	\$2.568

Table 2

2017 & 2018 DSM Deferral and Variance Account Balances - Union Rate Zones³

Account (\$ millions)	2017	2018
DSM Variance Account	\$6.011	\$5.851
DSM Incentive Deferral Account	\$5.519	\$6.366
LRAM Variance Account	\$0.468	\$0.402
Total Balance	\$11.999	\$12.619

Enbridge Gas proposes that disposition of these deferral and variance account balances be implemented in alignment with other rate changes through the Quarterly Rate Adjustment

¹ Enbridge Gas was formed by the amalgamation of Enbridge Gas Distribution Inc. ("EGD") and Union Gas Limited ("Union"), on January 1, 2019 pursuant to the Ontario Business Corporations Act, R.S.O. 1990, c. B. 16. Enbridge Gas carries on the business of selling, distributing, transmitting and storing natural gas in Ontario within the meaning of the Ontario Energy Board Act, 1998 (the "Act").

² Negative values indicate amounts being credited/reimbursed to ratepayers.

³ Collectively, the Union North and Union South rate zones are referred to as the "Union rate zones".

Mechanism ("QRAM"), effective as soon as January 1, 2021. For a typical residential customer in the EGD rate zone with annual consumption of 2,400 m³, the estimated one-time billing adjustment charge is \$10.80. For a typical residential customer in the Union South rate zone with annual consumption of 2,200 m³, the estimated charge for the period of January 1, 2021 to June 30, 2021 is \$27.01. For a typical residential customer in the Union North rate zone with annual consumption of 2,200 m³, the estimated credit for the period of January 1, 2021 to June 30, 2021 is \$8.97.

The above noted submission has been filed electronically through the OEB's RESS and will be made available on Enbridge Gas's website at:

<https://www.enbridgegas.com/Regulatory-Proceedings>

If you have any questions, please contact the undersigned.

Sincerely,

(Original Digitally Signed)

Adam Stiers
Technical Manager, Regulatory Applications

cc.: D. O'Leary (Aird & Berlis)
M. Bell (OEB Staff)
EB-2018-0300/0301 (Intervenors)
EB-2019-0003 (Intervenors)

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<u>Exhibit</u>	<u>Tab</u>	<u>Schedule</u>	<u>Appendix</u>	<u>Contents of Schedule</u>
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ONTARIO ENERGY BOARD

IN THE MATTER OF the Ontario Energy Board Act, 1998, S.O. 1998, c. 15, Schedule B, as amended;

AND IN THE MATTER OF an application by Enbridge Gas Inc. for an order or orders approving the balances and clearance of certain non-commodity 2017 & 2018 Demand Side Management deferral and variance accounts into rates, within the next available QRAM following the Board's approval.

APPLICATION

1. Enbridge Gas Inc. ("Enbridge Gas" or the "Company"), was formed by the amalgamation of Enbridge Gas Distribution Inc. ("EGD") and Union Gas Limited ("Union"), on January 1, 2019 pursuant to the *Ontario Business Corporations Act*, R.S.O. 1990, c. B. 16. Enbridge Gas carries on the business of selling, distributing, transmitting and storing natural gas in Ontario within the meaning of the *Ontario Energy Board Act*, 1998 (the "Act").
2. EGD and Union (collectively, referred to as the "Utilities") filed an application dated November 2, 2017 with the Ontario Energy Board ("OEB" or the "Board") pursuant to section 43(1) of the Act for an order or orders granting leave to amalgamate into a single company, referred to as "Amalco", effective January 1, 2019.¹ On November 23, 2017, the Utilities applied to the Board, pursuant to section 36 of the Act, for an order approving a rate setting mechanism and associated parameters for the deferred rebasing period, effective January 1, 2019.² The Board issued its Decision and Order for the amalgamation and rate setting mechanism (the "MAADs Decision") on August 30, 2018.
3. Enbridge Gas hereby applies to the OEB pursuant to Section 36 of the Act and pursuant to the MAADs Decision and Order for such final or interim orders and accounting orders as necessary approving the final balances in the 2017 and 2018 Demand Side Management ("DSM") Deferral and Variance Accounts (set out in Table 1 and Table 2 – excluding interest) and the disposition of these balances within the next available Quarterly Rate Adjustment Mechanism ("QRAM") application following the Board's approval,³ effective as soon as January 1, 2021: (i) for the EGD rate zone through a one-time adjustment in rates; and (ii) for

¹ EB-2017-0306 Enbridge Gas Distribution Inc. and Union Gas Limited – MAAD.

² EB-2017-0307 Enbridge Gas Distribution Inc. and Union Gas Limited – Rate Setting Mechanism.

³ Please see Exhibit B, Tab 3, Schedule 1 and Exhibit C, Tab 3, Schedule 1, for details of proposed allocation and disposition methodologies, timing of disposition and derivation of unit rates.

the Union rate zones,⁴ through a six-month adjustment for general service customers (Rates M1, M2, 01 and 10) and through a one-time adjustment for all remaining customers.

Table 1
2017 & 2018 DSM Deferral and Variance Account Balances - EGD Rate Zone⁵

Account (\$millions)	2017	2018
DSM Variance Account	(\$0.027)	(\$1.400)
DSM Incentive Deferral Account	\$2.120	\$3.983
LRAM Variance Account	(\$0.010)	(\$0.015)
Total Balance	\$2.083	\$2.568

Table 2
2017 & 2018 DSM Deferral and Variance Account Balances - Union Rate Zones

Account (\$millions)	2017	2018
DSM Variance Account	\$6.011	\$5.851
DSM Incentive Deferral Account	\$5.519	\$6.366
LRAM Variance Account	\$0.468	\$0.402
Total Balance	\$11.999	\$12.619

4. Enbridge Gas further applies to the OEB for all necessary orders and directions concerning pre-hearing and hearing procedures necessary for the determination of this application.
5. Enbridge Gas requests that the OEB's review of this application proceed by means of a written hearing in English.
6. This application is supported by written evidence. This evidence may be amended, from time to time, as required by the OEB or as circumstances may require.
7. The persons affected by this Application are the customers resident or located in the municipalities, police villages, and Indigenous communities served by Enbridge Gas, together with those to whom Enbridge Gas sells gas, or on whose behalf, Enbridge Gas distributes, transmits or stores gas. It is impractical to set out the names and addresses of all the customers because they are too numerous.
8. Enbridge Gas requests that all documents relating to this application and its supporting evidence, including the responsive comments of any interested party, be served on:

⁴ Collectively, the Union North and Union South rate zones are referred to as the "Union rate zones".

⁵ Negative values indicate amounts being credited/reimbursed to ratepayers.

Enbridge Gas Inc.

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-and-

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Attention: Dennis M. O'Leary
Telephone: (416) 865-4711
Email: doleary@airdberlis.com

DATED: July 17, 2020

Enbridge Gas Inc.

(Original Digitally Signed)

Adam Stiers
Technical Manager, Regulatory Applications

BACKGROUND AND OVERVIEW

1. The deferral and variance account balances which are the subject of this proceeding relate to DSM activities in 2017 and 2018 (please see Tables 1 and 2 for a summary of these balances). Approval and clearance is being sought for 2017 and 2018 DSM program year balances in DSM-related deferral and variance accounts at the same time as a result of the simultaneous conclusion of the OEB-coordinated evaluation, measurement and verification (“EM&V” or “Audit”) processes for both the 2017 and 2018 DSM program years’ activities on March 13, 2020. Enbridge Gas proposes to dispose of the account balances with the first available QRAM following Board approval. For the purposes of calculating bill impacts, Enbridge Gas assumes implementation with the January 1, 2021 QRAM.
2. As outlined in the OEB’s 2015-2020 DSM Framework for Natural Gas Distributors (EB-2014-0134) (the “Framework”),¹ the Board indicated it “...is of the view that it [the Board] is in the best position to coordinate the evaluation process throughout the DSM framework period”.² As outlined in the Filing Guidelines to the DSM Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134) (the “Guidelines”):³

Consistent with past practices, recovery and disposition of DSM related amounts (i.e., DSM Variance Account (“DSMVA”), DSM Incentive Deferral Account (“DSMIDA”), and Lost Revenue Adjustment Mechanism Variance Account (“LRAMVA”)) will be filed by the natural gas utilities annually, based on the actual amount of natural gas savings resulting from the utilities’ DSM programs in relation to the annual plans targets. The DSM amounts include program spending, shareholder incentive amounts and lost revenues in relation to the DSM programs delivered by the natural gas utility.

3. On August 21, 2015, the Board issued a letter which provided additional details regarding a new OEB-Staff coordinated evaluation governance structure.⁴ This letter included the following information:
 - The OEB would be responsible for coordinating and overseeing the evaluation and audit process, including selecting a third-party Evaluation Contractor (“EC”).

¹ EB-2014-0134, Report of the Board, DSM Framework for Natural Gas Distributors (2015-2020), December 22, 2014.

² Framework, p. 30.

³ Guidelines, p. 36.

⁴ EB-2015-0245, OEB Letter, 2015-2020 DSM Evaluation Process of Program Results, August 21, 2015.

- The EC would carry out the evaluation and audit processes and would draft an EM&V plan for the natural gas utilities' (EGD and Union, collectively referred to as the "Utilities") DSM programs.
- An Evaluation Advisory Committee ("EAC") would be formed to provide input and advice to the OEB on the development of the EM&V plan and on the evaluation and audit of the DSM results.

Furthermore, the letter noted that the EAC would be 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.

2017 and 2018 EM&V Process

4. The 2017 and 2018 DSM program years represent the third and fourth years of operation under the OEB's Framework and Guidelines and Enbridge Gas's (formerly EGD and Union) OEB-approved 2015-2020 DSM Plans (EB-2015-0029/0049) (the "DSM Plans").⁵ In 2017 and 2018, the non-utility stakeholders appointed to the EAC were:
 - Chris Neme, Energy Futures Group;
 - Jay Shepherd, Shepherd Rubenstein Professional Corporation; and
 - Marion Fraser, Fraser & Company.⁶

In 2017 and 2018, the independent experts appointed to the EAC were:

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

5. The methodologies used by Enbridge Gas to determine the amounts recorded in each of the DSMVAs,⁷ LRAMVAs⁸ and DSMIDAs⁹ for the 2017 and 2018 DSM

⁵ EB-2015-0029, 2015-2020 DSM Plan, Enbridge Gas Distribution Inc, April 1, 2015; EB-2015-0049, 2015-2020 DSM Plan, Union Gas Limited, April 1, 2015.

⁶ Marion Fraser ended her membership on the EAC in 2019 prior to the conclusion of the 2017 and 2018 DSM program years' EM&V process in March 2020.

⁷ EGD rate zone Account No. 179.06 and Union rate zones Account No. 179-111.

⁸ EGD rate zone Account No. 623.010 and Union rate zones Account No. 179-75.

program years for each of the EGD rate zone and the Union rate zones, were the subject of the:

- (i) Framework;
 - (ii) Guidelines;
 - (iii) Decision and Order and Revised Decision and Order of the Board on Enbridge Gas's DSM Plans;¹⁰
 - (iv) OEB's Mid-Term Review of the Framework (EB-2017-0127/0128) and related Report of the Board;¹¹
 - (v) Utilities' 2015 Clearance of DSM Deferral and Variance Accounts proceedings (EB-2017-0323 and EB-2017-0324); and
 - (vi) Utilities' 2016 Clearance of DSM Deferral and Variance Accounts proceedings (EB-2018-0300/0301).
6. The EC concluded 2017 and 2018 DSM program year EM&V activities in 2020 with the release and presentation of a series of reports to OEB Staff and the EAC:
- 2017 C&I Prescriptive Verification (February 7, 2020);¹²
 - 2017-2018 Natural Gas Demand Side Management Custom Savings Verification (March 13, 2020);¹³
 - 2018 Natural Gas Demand Side Management Free Ridership Based Attribution Evaluation (March 13, 2020);¹⁴
 - 2017 Natural Gas DSM Annual Verification (March 13, 2020);¹⁵ and
 - 2018 Natural Gas DSM Annual Verification (March 13, 2020).¹⁶
7. Enbridge Gas is in receipt of the 2017 and 2018 Natural Gas Demand-Side Management Annual Verification reports (the "Verification Reports") for the EGD rate zone and Union rate zones completed by the EC (DNV GL Energy Insights USA, Inc., f/k/a KEMA, Inc.) selected by OEB Staff. The 2017 and 2018 Natural Gas DSM Annual Verification reports provide the EC's conclusions regarding the amounts of: energy savings, lost revenue, shareholder incentive amounts and cost-effectiveness, for the DSM programs offered by Enbridge Gas in 2017 and 2018. These reports

⁹ EGD rate zone Account No. 179.26 and Union rate zones Account No. 179-126.

¹⁰ EB-2015-0029/0049, Decision and Order, January 20, 2016; EB-2015-0029/0049, Revised Decision and Order, February 24, 2016.

¹¹ EB-2017-0127/0128, Report of the Ontario Energy Board – Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020), November 29, 2018.

¹² <https://www.oeb.ca/sites/default/files/2017-CI-Prescriptive-Verification-NTG-Report.pdf>

¹³ <https://www.oeb.ca/sites/default/files/2017-2018-DSM-Custom-Savings-Verification.pdf>

¹⁴ While this study was conducted on 2018 program participants, its findings were also applied to the 2017 DSM program year: <https://www.oeb.ca/sites/default/files/2018-DSM-Free-Ridership-Evaluation.pdf>

¹⁵ <https://www.oeb.ca/sites/default/files/2017-DSM-Annual-Verification-Report.pdf>

¹⁶ <https://www.oeb.ca/sites/default/files/2018-DSM-Annual-Verification-Report.pdf>

also include the EC's recommendations regarding cost reduction, improvement of savings accuracy and risk reduction related to Enbridge Gas's DSM programs, for which Enbridge Gas has provided responses as set out at Exhibit A, Tab 4, Schedule 1.

8. The 2017 and 2018 DSM-related deferral and variance account balances, which are the subject of this Application and proposed for disposition (see Tables 1 and 2),¹⁷ are consistent with the above reports and the EC's opinion on energy savings, lost revenue, shareholder incentive amounts and cost-effectiveness with the exception of the EGD rate zone DSMVA as it relates to the DSM IT Project discussed in further detail at Exhibit B, Tab 3, Schedule 1.

Table 1

2017 & 2018 DSM Deferral and Variance Account Balances - EGD Rate Zone¹⁸

Account (\$millions)	2017	2018
DSM Variance Account	(\$0.027)	(\$1.400)
DSM Incentive Deferral Account	\$2.120	\$3.983
LRAM Variance Account	(\$0.010)	(\$0.015)
Total Balance	\$2.083	\$2.568

Table 2

2017 & 2018 DSM Deferral and Variance Account Balances - Union Rate Zones¹⁹

Account (\$millions)	2017	2018
DSM Variance Account	\$6.011	\$5.851
DSM Incentive Deferral Account	\$5.519	\$6.366
LRAM Variance Account ²⁰	\$0.468	\$0.402
Total Balance	\$11.999	\$12.619

9. Details of Enbridge Gas's proposed allocation of 2017 and 2018 DSM-related deferral and variance account balances to rate classes, disposition methodology and unit rates for disposition are set out at Exhibit B, Tab 3, Schedule 1, for the EGD rate zone and at Exhibit C, Tab 3, Schedule 1, for the Union rate zones.

¹⁷ These balances as presented do not include interest. Interest will be accrued up to the disposition date in accordance with the applicable accounting orders and reflected in the draft rate order filed following the Board's Decision in this proceeding.

¹⁸ Negative values indicate amounts being credited/reimbursed to ratepayers.

¹⁹ Collectively, the Union North and Union South rate zones are referred to as the "Union rate zones".

²⁰ The 2017 LRAMVA account balance includes volume variances related to 2016 and 2017 audited Union rate zones results at 2017 rates. The 2018 LRAMVA account balance includes volume variances related to 2017 and 2018 audited Union rate zones results at 2018 rates. This is discussed in further detail in Exhibit C, Tab 3, Schedule 1.

10. Final 2017 and 2018 DSM Annual Reports are included within this submission at Exhibit B, Tab 2, Schedules 1 and 2 for the EGD rate zone and at Exhibit C, Tab 2, Schedules 1 and 2 for the Union rate zones, respectively. Due to the simultaneous nature of the 2017 and 2018 audits, the development of Enbridge Gas's 2018 draft annual report was delayed, as the 2017 EM&V process did not conclude until March 2020. Absent the conclusion of the 2017 EM&V process, certain 2018 results could not be reported even in pre-audit/draft format, as calculation of 2018 targets is reliant upon the availability of final 2017 results. With the simultaneous conclusion of the 2017 and 2018 EM&V processes on March 13, 2020, Enbridge Gas developed final 2018 DSM Annual Reports for the EGD rate zone and the Union rate zones, as referenced above. While the 2018 annual reports are more concise than prior annual reports, they include all elements required by the OEB's Guidelines.

2017/2018 Summary Responses to the Natural Gas Demand Side Management Annual Verification Recommendations

Enbridge Gas Inc.

[17 July 2020]



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1. Introduction

The Evaluation Contractor (“EC”) submitted its 2017 and 2018 Natural Gas Demand Side Management Annual Verification reports (“Auditor Reports”) to the Evaluation Advisory Committee (“EAC”) relating to Enbridge Gas Inc.’s. (“Enbridge Gas” or “the Utility”) 2017 and 2018 DSM program year activities, on March 13, 2020. The Auditor Reports include findings and recommendations addressing the Utility’s Union rate zones DSM portfolio (referred to as “Union” in the Auditor Reports), the Utility’s EGD rate zone DSM portfolio (referred to as “Enbridge” in the Auditor Reports), and on future evaluation work. The EC’s findings and recommendations are identical for the 2017 and 2018 program years, reflecting the fact that the audits were completed concurrently.

This document reproduces all parts of Section 5 of the Auditor Reports (Findings and Recommendations) which are copied verbatim from the Auditor Reports¹, with the addition of the Utility’s responses to each of the EC’s recommendations. This document is structured in the same manner as Section 5 of the Auditor Reports, which includes four categories with associated sub-categories as follows:

- Annual Verification Recommendations (Section 2 of this document)
 - Overall annual verification
 - Whole home simulation modeling
 - Cost effectiveness
- CPSV Recommendations (Section 3 of this document)
 - Energy savings and program performance
 - Verification process
 - Documentation and support
 - Data management
- Free Ridership Based Attribution Report Recommendations (Section 4 of this document)
- Commercial & Industrial Prescriptive Program NTG Verification Recommendations (Section 5 of this document)

Where the EC’s 2017/2018 recommendations are unique from those that it provided in relation to previous DSM program year verification reports, Enbridge Gas provides its plans to address the recommendations and/or reasons why changes are not possible or appropriate. Where the EC’s 2017/2018 recommendations are identical to recommendations that it provided in relation to previous DSM program year verification reports, Enbridge Gas reiterates the changes made as a direct result of these initial recommendations and/or the reasons why such changes remain impossible or inappropriate.

¹ References mentioned in these sections refer to content within the Auditor Reports.

2. Annual Verification Recommendations

This section reproduces the tables, findings, recommendations, and outcomes from Section 5.1 of the Auditor Reports (Annual Verification Recommendations), as well as the Utility's responses to each recommendation, which includes the following sub-categories:

- Overall annual verification
- Whole home simulation modeling
- Cost-effectiveness recommendations

2.1. Overall annual verification

Table 1. Overall annual verification - summary of recommendations

#	Finding	Recommendation	Previously Recommended	Applies to			Primary Outcome		
				Union	Enbridge	Evaluation	Reduce Costs	Improve Accuracy	Decrease Risk
O1	The Enbridge tracking file does not currently include information that allows the evaluator to identify all the projects installed by a single customer.	A: Enbridge should include site-level information for all measures installed through the program.	✓		✓			✓	✓
O2	The format of Enbridge's tracking data is not well suited to a combined evaluation with the Union data.	A: Enbridge should deliver tracking data in a single flat file.	✓		✓		✓	✓	✓
O3	Neither Union nor Enbridge tracking databases currently use prescriptive measure descriptions that map directly to the approved energy savings spreadsheet (TRM).	A: Develop, maintain, and use an electronic summary spreadsheet of the TRM.	✓	✓	✓	✓	✓	✓	✓
		B: Once the electronic TRM spreadsheet is developed, track prescriptive savings using unique measure descriptions that map to electronic TRM.	✓	✓	✓	✓	✓	✓	✓
		C: Once the electronic TRM spreadsheet is developed, utilize the same electronic TRM for both utilities		✓	✓	✓	✓	✓	✓
		D: OEB: develop means for consistent system				✓	✓	✓	✓

O4	Explicit documentation was not available for all program stages, specifically for non-savings metrics	A: Document each required element and stage for non-savings metrics.		✓	✓	✓	✓		✓
		B: Data, information, and documentation is overly redacted		✓	✓			✓	✓
O5	Programs that rely on external reference sources required additional verification to identify the appropriately used source.	A: Documentation should record and explicitly cite the external source that was used for each program.		✓	✓		✓	✓	✓
		B: Program design should strive for the most up-to-date reference source to improve and promote greater energy efficiency outcomes.		✓	✓		✓	✓	✓

O1. Finding: The Enbridge tracking file does not currently include information that allows the evaluator to identify all the projects installed by a single customer. While Enbridge does provide IDs, these may or may not be consistent across programs or metrics, or from year to year.

Recommendation A: Enbridge should include a unique site-level or customer-level identifier for every measure installed in the program to allow the evaluator to identify all projects installed at a single customer, regardless of program.

Outcome: Confirmation that each installation is unique and assessment of interactive effects.

Utility Response: EGD rate zone's projects are designated with a unique project ID and a unique site ID that connects all projects completed at a given site. However, EGD rate zone's account structure does not assign a unique ID that connects multiple sites to a single organization.

The utility does provide customer contact information for each site that is sampled by the EC for custom project verification purposes. This allows the EC to understand which contacts are associated with each site, and whether there are some sites that have the same contact person.

O2. Finding: The format of Enbridge's tracking data is not well suited to a combined evaluation with the Union data, meaning that the format requires a significant investment of time to extract the necessary data for verifying each program's savings. In addition to increased time and thus verification cost, the need for manual extraction of data introduces many opportunities for error, which potentially decreases savings accuracy and increases risk.

Recommendation A: Deliver to evaluators a single, flat file of tracking data.² Each record should have measure-level information which includes the information listed below:

² In this context, a flat file is a table with one record per line and no summary information.

- Program identification information, such as scorecard, and program name
- Customer identification information, such as a unique customer ID, rate class, and location
- Measure identification information, such as measure description, unique measure identification, measure group, measure life, free rider rate, and savings per unit for prescriptive measures
- Savings information, such as annual gross and net savings, cumulative gross and net savings, and non-gas savings
- Additional information as needed to allow the evaluator to verify lost revenue and cost effectiveness

A “verification ready” flat file would not require summary rows, hidden rows or columns, links or formulas but would include all necessary variables in a single tab or table for all projects and measures, regardless of type.

Outcome: Reduced burden on program staff, more flexibility for evaluators.

Utility Response: Updated DSM tracking and reporting systems were rolled out for the 2018 program year for the Union rate zones and for the 2019 program year for the EGD rate zone. These systems include many upgrades and make providing data simpler for annual savings evaluation and verification.

Starting with the 2019 program year, Enbridge Gas is aligning the tracking files for the EGD rate zone and the Union rate zones as best as possible and drawing best practices from each. This includes providing requested data to the EC in a single flat file that is “verification ready” as described in the recommendation.

O3. Finding: Both Union and Enbridge tracking databases currently use prescriptive measure descriptions that map directly to internally consistent measure names. However, there remains a lack of a universally accessibly (i.e. public) dataset that is fully transparent and comprehensive for all prescriptive and quasi-prescriptive measures. New versions of the Technical Reference Manual (TRM) provide full documentation for new or updated measures; this limited update does not provide a comprehensive resource for all currently accepted measures nor does it provide a concise location for all items that can impact gross or net savings such as detailed accounting of free ridership.

Recommendation A: Develop, maintain, and use an electronic summary of the TRM, such as an Excel file. Each measure (identified as a unique savings value) should have an assigned measure ID number, and new ID numbers should be assigned when a measure is updated with a new savings value. This allows for a historical record of the changes in the TRM and allows the evaluation to identify outdated values. Once developed or agreed to, both utilities should utilize this system for simplification and transparency.

Recommendation B: Once the electronic TRM is developed, track prescriptive savings using unique measure descriptions that clearly map to the electronic TRM.

Recommendation C: Once the electronic TRM is developed, utilize the same electronic summary file for both utilities.

Recommendation D: As the entity with primary ownership of the TRM, the OEB should develop the references for parties to directly refer to specific measures in a consistent way which accounts for variations in energy savings due to capacity or other characteristics.

Outcome: Reduced burden on utility staff and reduced evaluation costs. Fewer errors in the tracking data.

Utility Response: The Utility supports the development of an electronic TRM measure list with measure IDs to make it easier to cross-reference TRM measures with the Utility's measure data. However, as noted in recommendation D, OEB Staff has ownership of the TRM and coordinates the TRM update process. Therefore, the Utility submits the development of such a product is best facilitated by OEB Staff.

Regardless, the Utility submits that it does provide sufficient detail to connect its measure data to the appropriate TRM measure. The Utility also works with the EC when requested to clarify the connection between the naming conventions in its tracking databases and the measure names within the TRM.

O4. Finding: Explicit documentation was not available for all program stages for programs such as Enbridge's Market Transformation Run-it-Right program. In that program, there was no documentation for participants moving to step 4 of the program (see Appendix J), only documentation that the participants had completed step 3 and utility confirmation that this is equivalent to engagement in step 4. Similar recommendations are included in section 5.1.2 for whole home simulation modeling programs.

Recommendation A: Documentation for each required element and stage for non-savings metrics should be recorded. The majority of these elements for future years have been identified in this evaluation, in the scorecard and program-relevant appendix sections.

Outcome: Reduced burden on utility staff and reduced evaluation costs.

Utility Response: Enbridge works with the EC to provide requested documentation and additional follow-up material where available for all savings and non-savings metrics. Contrary to this finding (which may be a carry-over from the 2016 annual verification report where it was first made), the EC's 2017 and 2018 verification reports confirm documentation was provided in 2017 and 2018 to demonstrate participants have moved into Step 4 of the Run it Right program: "Enbridge provided an EMIS file that listed the starting date for monitoring of all 29 sites after project implementation, satisfying the fourth step identified in Figure 6-8."^{3,4}

If the EC has other examples where it recommends further documentation be provided, Enbridge suggests the EC identify these more specifically.

O5. Finding: Programs that rely on external reference sources required additional verification to identify the appropriately used source. One such program is Union's Optimum Home program. In that program,

³ Ontario Gas DSM Evaluation Contractor 2017 Natural Gas Demand-Side Management Annual Verification report. March 13, 2020. Pg 172

⁴ Ontario Gas DSM Evaluation Contractor 2018 Natural Gas Demand-Side Management Annual Verification report. March 13, 2020. Pg 171

additional verification was needed to identify which building code was required for program qualification.

Recommendation A: Documentation should record and explicitly cite the external source that was used for each program.

Recommendation B: Program design should strive for the most up-to-date reference source to improve and promote greater energy efficiency outcomes.

Outcome: Reduced burden on utility staff and reduced evaluation costs. Improve program implementation and goals.

Utility Response: The Utility strives to provide the EC with the most up to date and relevant offering information, eligibility and qualifications. In the Utility's 2019 Draft Annual Report, the Utility has included appendices with offering details to outline important offering information, eligibility and qualifications. This was done to help clarify these items for external stakeholders, including the EC. However, with such a large DSM portfolio across Ontario and significant levels of detail for each offering, providing all information in a single document is challenging. The Utility continues to improve its documentation based on specific feedback from the EC. As more specific feedback is provided by the EC, the Utility will make improvements based on that feedback. It should be noted that no adjustments were made to Union rate zones' Optimum Home offering in either 2017 or 2018.

2.2. Whole home simulation modeling

Table 2. Whole home simulation modelling - summary of recommendations

#	Finding	Recommendation	Previously Recommended	Applies to			Primary Outcome		
				Union	Enbridge	Evaluation	Reduce Costs	Improve Accuracy	Decrease Risk
SM1	Both utilities use building simulation modeling to estimate energy savings	A: Provide both simulation file (HSE) and output file (TSV) to the evaluation team for every project.	✓		✓		✓		✓
SM2	Both utilities collect and deliver some photographs to support retrofit site improvements.	A: Provide more explicit support for major measure installations.	✓	✓	✓				✓
SM3	There were some inaccurate savings entries.	A: Consider reviewing and modifying program processes to avoid data entry or outdated simulation result errors.		✓			✓		✓

#	Finding	Recommendation	Previously Recommended	Applies to			Primary Outcome		
				Union	Enbridge	Evaluation	Reduce Costs	Improve Accuracy	Decrease Risk
		B: Provide more explicit support for major measure installations.	✓	✓	✓		✓		✓
SM4	Air sealing as a savings measure is present in a high percentage of single-family home retro-fit projects.	A: Evaluation: distribute before and after equivalent leakage area and energy savings attributable to reduced air leakage (if possible).				✓		✓	✓
SM5	The energy savings from the home retrofit programs rely exclusively on the simulations provided by the delivery agents.	A: Consider funding a study to verify the models produced by the utility agents.	✓			✓		✓	

SM1. Finding: Both utilities use building simulation modeling to estimate energy savings for their home retrofit programs, including the Home Energy Conservation, Home Reno Rebate, Winterproofing, Home Weatherization and Indigenous Programs. HOT2000 is the program used for those simulations, which is a program developed and released by NRCAN for certified energy advisors. Because of the restrictions on the program, the evaluator could not consistently run the simulation files and produce the same result reported by the program. Because of a previous round of evaluation, Enbridge and Union provided TSV files for all sites that improved the accuracy of verification. However, it would be useful to include full supporting documentation for all claimed project measures.

Recommendation A: Provide the building simulation file (HSE), the program output file (TSV), and full supporting documentation for all claimed project measures for every sampled project.

Outcome: Reduced burden on utility staff and reduced evaluation costs.

Utility Response: Recent versions of HOT2000, including versions supported by NRCAN and used by field agents during the 2017 and 2018 program years, no longer generate TSV files. The Utility provides all available building simulation files (HSE), program output files (TSV), and full supporting documentation for the Home Energy Conservation, Home Reno Rebate, Winterproofing, Home Weatherization and Indigenous Programs as described below.

2017 Home Reno Rebate files provided to the EC include:

- Pre- and post-installation HOT2000 HSE modeling files
- TSV model output files if HOT2000 version 10.51 was used or an Excel-based equivalent of these files for subsequent versions of HOT2000 that no longer generate a TSV file
- Photos, invoices and other supporting documentation as requested

2018 Home Reno Rebate files provided to the EC include:

- Pre- and post-installation HOT2000 HSE modeling files
- TSV model output files if HOT2000 version 10.51 was used or an Excel-based equivalent of these files for subsequent versions of HOT2000 that no longer generate a TSV file
- When applicable, an Excel-based file that converts savings based on the existing furnace basecase modeling to savings based on a 90% furnace basecase modeling
- Photos, invoices and other supporting documentation as requested

2017 Home Energy Conservation files provided to the EC include:

- Pre- and post-installation HOT2000 HSE modeling files
- TSV model output files if HOT2000 version 10.51 was used or an Excel-based equivalent of these files for subsequent versions of HOT2000 that no longer generate a TSV file
- Excel-based file that shows calculation of savings based on modeling files
- Photos, invoices and other supporting documentation as requested

2018 Home Energy Conservation files provided to the EC include:

- Pre- and post-installation HOT2000 HSE modeling files
- TSV model output files if HOT2000 version 10.51 was used or an Excel-based equivalent of these files for subsequent versions of HOT2000 that no longer generate a TSV file
- Excel-based file that converts savings based on the existing furnace basecase modeling to savings based on a 90% furnace basecase modeling
- Photos, invoices and other supporting documentation as requested

2017 and 2018 EGD rate zone's Winterproofing files provided to the EC include:

- Pre- and post-installation HOT2000 HSE modeling files
- TSV model output files if HOT2000 version 10.51 was used or an Excel-based equivalent of these files for subsequent versions of HOT2000 that no longer generate a TSV file or in the event HOT2000 was not run in Energuide mode, a PDF summary document that supports the savings claims.
- Photos, invoices and other supporting documentation as requested

2017 and 2018 Union rate zones' Home Weatherization Program offering and 2017 Indigenous program offering files provided to the EC include:

- Pre- and post-installation HOT2000 HSE modeling files
- TSV model output files if HOT2000 version 10.51 was used or an Excel-based equivalent of these files for subsequent versions of HOT2000 that no longer generate a TSV file
- Photos, invoices and other supporting documentation as requested

For the 2018 Union rate zones' Indigenous program offering, a HOT2000 Version 11.5 House Data Comparison report that supports the savings claim was provided. HOT2000 Version 11.5 does not generate a TSV file.

SM2. Finding: Both utilities collect and deliver some photographs to support many of the changes made at a home retrofit site as well as additional documentation for installed equipment and performed measures. However, the evaluator could not consistently confirm the number or type of major measures installed based on the photographs or other documentation provided.

Recommendation A: Consider providing more explicit support for each measure to eliminate uncertainty around project savings and participation. Full project documentation (pre/post photos, documentation of all installations or actions such as invoices and/or photos of each measure, data collection reports, pre-and post blower door tests for all sites) to the evaluation team. By delivering all documentation, the evaluation team would not have to follow up with the utility to obtain output for models that could not be run but could still verify the output for models that can be run.

Outcome: Greater certainty around scorecard achievements.

Utility Response: Enbridge provides all available supporting information (e.g., documents/photos/invoices) collected by external delivery agents to the EC as requested. The supporting information gathered for the offering is consistent with what Natural Resources Canada ("NRCan") requires be collected for use of HOT2000 software. Building simulation ("HSE") files as well as project data output files ("TSV") are also provided, where available.

Of note, in some projects, confirming measures after they have been installed can be challenging. By way of example, wall insulation once completed is covered up by drywall, making a post-installation photo difficult however, an invoice confirms that work was complete.

SM3. Finding: The evaluator identified a number of inaccurate savings entries due to data entry errors or outdated Union home retrofit simulation results. Many of these errors could be avoided through changes in program processes.

Recommendation A: Consider reviewing and modifying program processes to avoid similar errors in the future.

Recommendation B: Consider providing more explicit support for each measure to eliminate uncertainty around project savings and participation. Full project documentation (pre/post photos, documentation of all installations or actions such as invoices and/or photos of each measure, data collection reports, pre-and post blower door tests for all sites) to the evaluation team. By delivering all documentation, the evaluation team would not have to follow up with the utility to obtain output for models that could not be run but could still verify the output for models that can be run.

Outcome: Reduced burden on utility staff and reduced evaluation costs.

Utility Response: See the Utility response to recommendations SM1 and SM2.

SM4. Finding: Air sealing as a savings measure is present in a high percentage of single-family home retro-fit projects, over 90% of projects in some programs. With such a high percentage of projects relying on a single measure, it is more important to ensure the savings validity of that measure.

Recommendation A: If possible, the evaluation team should evaluate the before and after leakage area and attributable energy savings.

Outcome: Greater certainty around savings estimates.

Utility Response: This recommendation was not directed to the Utility. The Utility will continue to support evaluation discussions such as this one with the EAC.

SM5. Finding: The energy savings from the home retrofit programs rely exclusively on the simulations provided by the delivery agents. Those simulations likely rely on a number of assumptions or standard modeling practices which may or may not follow industry standards. A detailed review of the models was outside the scope of the annual audit.

Recommendation A: Consider funding a study to verify the models produced by the utility agents to ensure they conform to standard industry practice.

Outcome: Greater certainty around savings estimates.

Utility Response: While this recommendation was not directed to the Utility, it should be clarified that the agents supporting the whole home offerings are expected to follow NRCan protocols. The Utility will continue to support evaluation discussions, such as this one, with the EAC.

SM6. Finding: Site-level documentation confirmed that an auditor was involved, it does not signal that the auditor was an approved Certified Energy Evaluator.

Recommendation A: Tracking certifications for all energy evaluators and/or auditors submitting records.

Outcome: Ensuring proper credentials for all auditors decreases risk to program.

Utility Response: This finding was not included in Table 2 where the EC indicated to whom the recommendation was directed. However, this recommendation was also made in previous years and directed to future third-party evaluation. The Utility understands this finding to mean that the EC should consider verifying certification for energy evaluators as a future verification activity.

SM7. Finding: Number of projects for residential retrofit programs remains very large. Other programs required a second data request to verify metrics.

Recommendation A: Increase sample to include more project files in following verification cycles.

Outcome: Increased sample, along with improved documentation recommended earlier, increases the accuracy of savings estimates for the applicable programs.

Utility Response: This finding was not included in Table 2 where the EC indicated to whom the recommendation was directed. However, this recommendation was also made in previous years and directed to future third-party evaluation. The Utility will continue to support evaluation discussions, such as this one, with the EAC

2.3. Cost effectiveness

Table 3. Cost-effectiveness - summary of recommendations

#	Finding	Recommendation	Previously Recommended	Applies to			Primary Outcome		
				Union	Enbridge	Evaluation	Reduce Costs	Improve Accuracy	Decrease Risk
CE1	All overhead is still applied at the sector level rather than the program level.	A: Allocate “sector”-level administrative cost and overhead to each individual program.	✓	✓	✓			✓	✓
CE2	The utilities continue to use different discount rates.	A: Increase transparency around the inflation selected and why.	✓	✓	✓		✓		✓
CE3	The avoided costs provided by the utilities are not clearly labelled as being real or nominal dollars.	A: For all components of streams of avoided costs clearly identify whether they are real or nominal.		✓	✓			✓	
CE4	EUL is inconsistently applied for accelerated projects.	A: Include separate fields in the tracking data to explicitly communicate accelerated, annual and cumulative savings.			✓			✓	

CE1. Finding: For 2017, administrative and overhead costs are still being allocated differently by each utility.

For example, Union identifies administration and evaluation costs at the scorecard level whereas Enbridge details spending as direct and indirect at the OEB-defined program level and then has an explicit ‘overhead’ spend at the scorecard level. In the absence of clear direction from the utilities, the EC apportioned costs based on the distribution of savings, but that is not likely accurate. To facilitate the analysis, ensure that program costs are properly allocated and cost-effectiveness results reflect the true costs of each program, the EC recommends that the utilities report spending in a consistent format and apportion all overhead costs to individual programs rather than the scorecard level. This issue was also identified in 2015 and 2016.

Recommendation A: Allocate “sector”-level administrative cost and overhead to each individual program and report program-level cost-effectiveness results. Explicit allocation of general administration and evaluation costs will allow for easier cost-effectiveness calculations at the program level and ensure that cost-effectiveness results properly reflect true program costs.

Utility Response: Union rate zones allocate administration and evaluation costs at the program level where appropriate, and at the portfolio level otherwise. Programs for the Union rate zones are defined as Residential, Commercial/Industrial, Low-Income, Large Volume, Market Transformation and Performance-Based as per Union’s 2015-2020 DSM Plan. The Utility submits that the EC and the Utility can appropriately calculate cost-effectives for the Union rate zones at the program level.

As outlined in EGD rate zone’s 2015-2020 DSM Plan (EB-2015-0049), where possible, it allocates these costs at the program level – i.e. Resource Acquisition, Low Income and Market Transformation. In some instances, as acknowledged in the Board’s framework where this is not possible, administration and overhead costs may be reflected at the portfolio level.

The Utility acknowledges that there are differences in way costs are categorized between the EGD rate zone and the Union rate zones. This is a product of the fact that the DSM Plans were developed in 2015 by separate organizations, prior to amalgamation. The Utility has explored alignment in this area, and will continue to align cost categorization where appropriate, however it should be noted that fundamental changes can have unintended consequences (such as how the Target Adjustment Mechanism is impacted). The Utility submits that it is not appropriate to make certain fundamental changes in the middle of the DSM Framework, and that full alignment should occur as part of the next DSM Framework and Plan.

CE2. Finding: Both utilities are using different inflation rates to calculate discount rates for 2017 with no explanation as to why these rates were selected. The table below compares inflation rates used by both utilities in 2017.

	Enbridge	Union
2017 Inflation Rate	1.98	1.68

While the Central Bank targets 2%, the EC recognizes that there could be sector specific inflation rates, however, it is unclear why the values would vary significantly in the same year for both utilities.

Recommendation A: Both utilities should increase transparency around the inflation rates selected and why.

Utility Response: In 2017 the inflation rate used for the EGD rate zone was based the five-year average Ontario Consumer Price Index. The inflation rate used for the Union rate zones is the Q2, four quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index (“GDP IPI”). The Utility notes that the EC did not request clarification on this matter during the verification process, otherwise the information could have been provided.

Starting in the 2019 program year, all rate zones are using a Q2, four quarter moving inflation rate based on

the Gross Domestic Product Implicit Price Index.

CE3. Finding: The avoided costs provided by the utilities are not clearly labelled as being real or nominal dollars. The rule in a cost-effectiveness analysis is that both costs and discount rates must either both be nominal, or both be real. By including nominal costs and real discount rates, the cost-effectiveness analysis will exaggerate benefits. Just the opposite (nominal discount rate, real costs) will underestimate benefits. For the cost-effectiveness analysis, the EC treated everything as nominal.

Recommendation A: For all streams of avoided costs, clearly state whether they are real or nominal.

Utility Response: The Utility confirms that all avoided costs are in nominal dollars, and the utility will clearly label the avoided costs starting in 2019. The Utility notes that the EC did not request clarification on this matter during the verification process, otherwise the information could have been provided.

CE4. Finding: In 2016 the EC found that the EUL and cumulative gross savings were not provided in a consistent manner in the Enbridge program tracking database. This occurred again in 2017. The EUL inconsistency is the result of a work-around for advanced (Accelerated) projects used by Enbridge to allow the LRAM first year savings and the CCM to align. To perform the cost-effectiveness analysis correctly, the EC requires the EUL of the upgrade measure, the RUL (Remaining Useful Life) of the equipment being replaced, as well as the differing savings amounts for the two differing baselines. Given the lack of data, the EC calculated the annualized saving by taking the full lifetime resource savings and spreading it equally across each year of the measure. The equipment EUL for Advancement measures was not provided, but it appears that all the Advanced measures are boilers. Thus, the EC assumed a boiler EUL of 25.

Recommendation A: Include separate fields in the program tracking database for EUL, RUL, gross first year annual savings, gross post-RUL annual savings, NTG, gross cumulative savings, net cumulative savings, and net first year savings.

Utility Response: Enbridge provided the EC with all requested data broken out into specific fields as requested, including those noted in this recommendation except for RUL data for EGD rate zone.

The Utility confirms that RUL data for EGD rate zone is being provided to the EC for 2019.

3. CPSV Recommendations

This section reproduces the tables, findings, recommendations, and outcomes from Section 5.2 of the Auditor Reports (CPSV Recommendations), as well as the Utility's responses to each recommendation, which includes the following sub-categories:

- Energy savings and program performance
- Verification process
- Documentation and Support
- Data management

3.1. Energy savings and program performance

Table 4. Energy savings and program performance recommendations

#	Energy Savings and Program Performance		Applies to			Primary Beneficial Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
ES1	Both utilities exhibit a strong commitment to accurate energy savings estimate	The utilities should continue in their commitment to accuracy.	✓	✓				✓	✓
ES2	The CPSV effort found realization rates for market segments that were between 90 and 125% and identified adjustments for most projects.	Continue performing custom savings verification on a regular basis.			✓				✓
ES3	Relative precision targets were not met for all programs, nor for all segments	Use error ratio assumptions from the results provided in this report in future evaluation years, possibly with more conservative bounding than performed this year.			✓	✓			✓
ES4	Some measures have difficult-to-define baseline technologies.	Establish a policy to define rules around energy savings calculation for fuel switching and district heating/cooling measures.	✓	✓	✓				✓
ES5	Some measures in each utility program are routine maintenance, periodic repairs, or like for like replacements that are considered	Establish a clear policy regarding eligibility of maintenance repair and like for like replacement measures for the programs.	✓	✓	✓	✓			✓

#	Energy Savings and Program Performance		Applies to			Primary Beneficial Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
	standard care in other jurisdictions.								
ES6	Multiple heat sources and third-party purchases of heat require more documentation than typical measures	Document the gas demand in the pre-period that will be offset Document the volume of heat/steam/biogas available, the seasonality of supply and its alternative usage.	✓	✓					✓

ES1. Finding: Both utilities exhibit a strong commitment to accurate energy savings estimates. Each has made significant investments in developing calculation tools which model savings accurately. For example, Union's dock door seal calculator is well considered and designed, and Enbridge's Etools calculator is very thorough in attempting to model savings for key measures.

Both utilities chose to retain engineers with a strong understanding of their customers' building and process systems and showed a commitment to finding accurate savings estimates. On several occasions, both on the phone and in writing, the evaluation team suggested a value that would have increased savings in a way that the utility program engineer did not think was valid. When this happened, neither utility was shy in suggesting that we may want to make a more conservative choice.

Recommendation: The utilities should continue in their commitment to accuracy.

Outcome: Accurate energy savings.

Utility Response: The Utility appreciates the recognition that utility staff engineers are knowledgeable subject matter experts.

ES2. Finding: The CPSV effort this year found realization rates between 90 and 125% for each market

segment and identified adjustments for most projects. Across the programs, adjustments increased savings on for 41 measures and decreased savings on 56 measures. 57 measures had a large adjustment (verified savings more than 20% different from tracked), which was an increase from the 2016 verification.

Recommendation: Continue performing custom savings verification on a regular basis. Even a study that results in an adjustment of near 100% is still valuable because the programs know that their savings estimates will be reviewed. Knowing a review will be conducted improves the quality of pre-verification estimates. The review itself also results in information that improves future program savings estimates.

Outcome: Accurate energy savings.

Utility Response: This recommendation was not directed to the Utility. The Utility agrees that performing custom savings verification on a regular basis is a worthwhile exercise.

The Utility notes that the EC's Final 2017/2018 Natural Gas Demand Side Management Custom Savings Verification report states that Enbridge Gas "generally calculate sound claimed savings estimates, largely using engineering approaches...Much of the variation in gross realization rates is driven by factors that the utilities only partially control, such as changes in operating conditions, changes in operating hours and changes in production levels."⁵

ES3. Finding: Relative precision targets were met or close to met for each program. The sample design incorporated the final 2016 error ratios (ERs) and averaged them with the assumption used in the 2016 sample design. ERs were further bounded (minimum ER was 0.25, maximum 0.60) to limit the risk of over- or under- collecting data. Several segments did not achieve the precision targets sought. In some cases, the precision target was not met due to lack of data from very large measures in the sample, while in others the variability in the gross realization rate for projects was simply greater than the error ratio assumption that was used.

Recommendation: In future years, continue the process used to develop error ratios assumptions from the results provided in this report, possibly with more conservative bounding (potentially increasing the maximum ER) to avoid under-collection of data for any segments.

Outcome: Realistic estimates of error ratios result in an appropriate amount of data collected to meet targets.

Utility Response: This recommendation was not directed to the Utility. However, the Utility highlights the importance of maintaining a balance between ensuring study results meet a suitable threshold of statistical significance and ensuring that customers are not overly burdened by over sampling.

ES4. Finding: Some measures (e.g., geothermal heat pumps, combined heat and power, and those that save district heating energy) have difficult-to-define baseline technologies. Multiple different baselines are possible

⁵ 2017-2018 Natural Gas Demand Side Management Custom Savings Verification. Pg 3. February 24, 2020

for these projects, depending on how one looks at the scope of the project. Two challenging aspects include how non-gas energy changes and offsite gas use are considered in savings estimates.

Recommendation: Consider establishing a policy to define rules around energy savings calculations and baselines for fuel switching and district heating/cooling measures.

Outcome: Less risk of adjustment and a better alignment between provincial energy efficiency goals and program implementation.

Utility Response: Enbridge Gas continues to adhere to DSM policies and guiding principles as defined in the OEB's 2015-2020 DSM Framework and Guidelines and as outlined in the Utility's 2015-2020 DSM Plans. Discussion regarding changes to policies or approaches are better suited for the development of the next OEB DSM Framework.

ES5. Finding: Some measures in each utility program are routine maintenance, periodic repairs or like for like replacements that are considered standard care in other jurisdictions.

Recommendation: Establish a clear policy regarding the eligibility of maintenance, repair and like for like replacement measures for the programs.

Outcome: Reduced free ridership risk.

Utility Response: In some cases, seemingly standard practices at an industry level may not be standard practice for a specific customer. Furthermore, especially for complex projects, there can be varying opinions on which projects are standard or not. For reasons such as this, the Utility requires flexibility in how it designs and implements its DSM programs.

Understanding industry practices that would have occurred without DSM programs, and not incenting such projects, is a key part of the Utility's approach to minimizing free ridership. The Utility continues to learn from the market and evolves program rules as needed. Net-to-gross evaluation will determine the Utility's success at influencing projects. Ultimately, the Utility is committed to minimizing free-ridership and will continue to make best efforts to do so.

ES6. Finding: The technical estimates of potential savings from a measure need to match the achievable potential at the site. In 2017-2018, projects included measures that saved heat, but translating the heat savings into gas savings was challenging due to multiple heat sources and fuels. Other projects included the purchase of heat or landfill gas where the sufficiency and seasonality of supply affected the achievable gas savings. Also important in third-party purchase measures is to document whether and how the purchased product is and would be used in the absence of the purchase.

Recommendation: In situations with multiple heat sources, document the gas demand that is affected by the measure in order to establish whether gas is saved in all periods. For measures where heat, steam or biogas is purchased from a third-party where it is a by-product, document the sufficiency, seasonality and baseline use of the product without the purchase.

Outcome: Accurate energy savings.

Utility Response: The Utility identifies and documents relevant energy sources at customer sites (i.e. coal, bio-mass, landfill gas, waste heat from neighboring facilities, etc.), quantifies those that are relevant to the project, and takes them into account when calculating natural gas savings. While the project savings analysis always includes anticipated business changes (for example, future growth or contraction), customers will occasionally change their demand and/or supply of energy as part of unplanned business changes after the energy efficient project has been completed. In these cases, it is not practical for the Utility to continuously review all projects to monitor this occurrence after the project has been closed. Rather, this review is included as part of the EC's verification process.

3.2. Verification process

Table 5. Verification process recommendations

#	Verification Process		Applies to			Primary Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
VP7	DNV GL was unable to obtain access to all the equipment at all the sites selected for verification.	Modify contracts to require participants to agree to comply with EM&V as part of the requirements for participation in the program.	✓	✓		✓			✓

VP7. Finding: DNV GL was unable to obtain access to all the equipment at all the sites selected for verification.

Both Enbridge and Union have several large projects with industrial companies, including food processing, refineries, and other industries. In several cases, the customer refused to provide the necessary trend data to allow a reasonable verification of the project. This means we were unable to do more than a reasonableness check on the savings.

A review of the Enbridge contract shows that the customer is not required to provide the information that is necessary for EM&V. The most relevant sections are:

- Item 6: Payment of the Incentive Payment is subject to the completion of a satisfactory site inspection

of the improvements, including the installed equipment by an authorized representative of Enbridge.

- Item 9: Upon request within eighteen months of the commissioning date of the Project, and with reasonable notice, the Customer agrees to provide authorized representatives of Enbridge with access to the Project, and with required information or data relating to the project for the purposes of the Application and these General Terms and Conditions.

Neither of these are sufficient for EM&V.

Recommendation: Modify contracts to require participants to agree to comply with EM&V as well as utility representatives as part of the requirements for participation in the program.

Outcome: Reduced evaluation costs and risks. Participant non-compliance requires evaluators to request documentation for a large backup sample, and to survey and/or visit additional sites to obtain sufficient data for the evaluation. The process of contacting a site and getting a refusal costs time and money, as does the substitution of an additional site to make up for the unobtained data. In some cases, there might not be additional sites to sample, in which case the evaluation estimates will have lower precision than they would with full compliance.

Utility Response: Enbridge Gas encourages its customers to comply, cooperate and participate with all EM&V activities. At the same time Enbridge Gas recognizes it is important to be respectful that customers are busy running businesses and requests for customers' time should not be overly burdensome. Overburdening customers can have unintended consequences to energy efficiency in Ontario, as it could cause customers to withdraw from future programming.

Critically, the EC correctly states that the 2017/2018 CPSV participant response rate is consistent or slightly higher than what the EC has seen in comparable studies in North America.⁶ Accordingly, any resulting response or change should be measured to ensure it strikes an appropriate balance between supporting EM&V activities and not causing undue burden to customers which could impact their future participation.

In recent verification efforts, in some cases, the Utility received feedback from customers that onerous time requirements and/or specific data requests made of customers may not have been considered reasonable and/or compromised customer privacy or safety policies. In addition, the lengthy delay between project completion and third-party evaluation can discourage customers from participating fully in the verification. Some data may no longer be available at all.

⁶ 2017-2018 Natural Gas Demand Side Management Custom Savings Verification report. pg 36, 37 and 38.

3.3. Documentation and Support

Table 6. Documentation and Support recommendations

#	Documentation and Support		Applies to			Primary Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
DS8	Incremental improvement in project documentation by both utilities was again observed in the 2017-2018 CPSV. However, project documentation could still be improved.	<p>Implement an electronic tracking system that archives all materials</p> <p>Include explicit sources for all inputs and assumptions in the project documentation.</p> <p>Store background studies and information sources with the project files and make them available to evaluators.</p> <p>Provide evaluators full access to customer data.</p> <p>Provide pre- and post-installation photos, where available.</p> <p>Institute a checklist as part of project closeout to ensure all relevant project documentation is assembled and ready for verification</p>	✓	✓			✓		✓
DS9	Utility savings estimates based on annual energy consumption for industrial sites did not always include sufficient information documenting production.	Include site production totals in relevant years in the savings estimates based on annual energy consumption for industrial sites	✓	✓					✓
DS10	Enbridge Boilers use a 73% assumed thermal efficiency for in situ boilers that have been in place for more than 10 years.	Estimate boiler degradation from name plate efficiency to determine the baseline boiler efficiency rather than use a flat number	✓	✓					✓

#	Documentation and Support		Applies to			Primary Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
DS11	Pipe insulation is a significant source of savings for the Union programs. Documentation supporting the assumptions used in calculations, in situ conditions, and location of incentivized pipe insulation was not consistently provided.	Document baseline conditions of pipe insulation (and other measures) using photos and text descriptions to provide context. Explicitly tie the documentation of baseline condition to the heat loss assumption in the savings calculation. Documentation should clearly identify location of pipe insulation installed under the program, as well as associated equipment, especially in large facilities.	✓	✓					✓
DS12	Documentation did not always include explanation and supporting documentation for baseline types (ROB, ER) and remaining useful life (RUL).	Always provide a complete description of the base case. The description should reference included emails and photos to document in situ conditions and features that are carried over into the baseline system.		✓					✓
DS13	The utilities should use longer duration data in program savings estimates when possible.	Use longer duration data in program savings estimates. When time periods less than a year are used, utilities should document why the period used is applicable to a full year and why a full year was not able to be used.	✓	✓		✓			✓
DS14	In situ boiler name plate information, age and operating condition were not always recorded or described.	Document in situ boiler name plate information, age and operating condition for all projects where boiler efficiency affects savings.	✓	✓					✓
DS15	At large sites with multiple spaces containing similar equipment, program documentation did not always identify which space or piece of equipment was affected by the project.	Include additional descriptions of spaces and equipment affected to differentiate among similar spaces and equipment at the site.	✓	✓					✓

#	Documentation and Support		Applies to			Primary Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
DS16	Invoices were not always included with documentation, and sources for incremental costs were not always clear.	Ensure that incremental costs are supported by invoices or other documentation, especially for add-on and optimization measures where the total cost and incremental cost are likely to be the same.	✓	✓				✓	✓
DS17	Larger projects appeared to fall under the same documentation standards as smaller projects.	Increase the amount of documentation and source material for projects that have greater energy savings.	✓	✓					✓
DS18	Union's custom project summary workbook is a good approach to documentation. The workbook is not used in a consistent manner across all projects.	Consider providing more training or adding quality control steps to ensure the summary workbook front page is completed and stored in a consistent manner. Identify a common approach for common measures and, if applicable, document deviations and the reasons for the deviations in a clearly labelled field on the summary sheet.	✓			✓			✓
DS19	Enbridge Etools does not sufficiently document sources of inputs and assumptions.	Provide details used in Etools in the application along with supporting documentation.		✓		✓			✓

DS8. Finding: Incremental improvement in project documentation by both utilities was again observed in the 2017-2018 CPSV. However, project documentation could still be improved. Specific issues included:

- Project data or details missing
- Insufficient measure-level details to fully describe what was installed
- Descriptions that were difficult to understand
- Use of black box tools
- Hardcoded information in calculation spreadsheets
- Undocumented assumptions
- Input adjustments that approximate other effects, but are not explained

- Insufficient access to customer data (by customers).
- Adjustments to savings estimates for safety or influence that were not clearly marked, sourced, or carried out in a consistent fashion

Recommendation: Improve data quality. Possible steps include:

- Implement an electronic tracking system that archives all materials
- Include explicit sources for all inputs and assumptions in the project documentation.
- Store background studies and information sources with the project files and make them available to evaluators.
- Provide evaluators with full access to customer data.
- Provide pre- and post-installation photos, where available.
- Institute a checklist as part of project closeout to ensure all relevant project documentation is assembled as ready for verification

Outcome: Properly explaining and sourcing the savings calculation method and assumptions allows the evaluating engineer to more easily identify what needs to be verified. It also makes it easier to determine whether the methods and assumptions are reasonable and use program assumptions rather than seek documented values elsewhere.

Utility Response: Enbridge Gas is pleased that the EC has noted incremental improvements in project documentation in the 2017 and 2018 verification processes.

All custom projects are reviewed by an internal QA/QC team of professional engineers. This QA/QC team attempts to apply the same scrutiny to projects as the EC. Two independent assessments of project savings and the type of documentation needed will not always align. In some cases, the verifier might request additional clarification documentation. In other cases, the Utility's documentation might have additional information the verifier was not looking for. This speaks to the strength of the verification process; the verifier can request further documentation from the Utility, the customer or a third party and regularly does so when needed.

As with any large-scale IT initiative, trade-offs exist between complexity, functionality, and resources/costs. Enbridge considers each EC finding and recommendation but not all can or should be implemented. Enbridge Gas operates dozens of DSM offerings and initiatives, which rely on many internal groups and external organizations. Achieving a single-source storage for all required participation/eligible information across all programs is challenging and most likely not efficient for program implementers.

As detailed in their respective 2015-2020 Multi-Year Plans, the utilities outlined the need for an improved DSM tracking and reporting system. The Board approved this request in its January 20th, 2016 Decision. This system was rolled out for the 2018 program year for the Union rate zones and for the 2019 program year for the EGD rate zone. These systems include many upgrades and make providing data simpler for

annual savings evaluation and verification.

DS9. Finding: Utility savings estimates based on annual energy consumption for industrial sites did not always include sufficient information to document production. The change in energy use pre- and post- measure is often sensitive to changes in production.

Recommendation: Savings estimates based on annual energy consumption for industrial sites should include information from the site on the amount of production in the years used. If detailed production data are not available, the utilities should get percentage differences year to year (e.g.: if year 1=100%; is year 2 exactly the same or is it 95% or 110% of production the previous year).

Outcome: Documenting production changes and using them in savings estimates will improve accuracy and reduce evaluation risk.

Utility Response: When production changes impact natural gas savings, the utility does include pre- and post-production data and calculates energy savings accordingly. If savings are being driven by base load rather than changes in production, weather/space heating or other factors, production data may or may not be included or necessary.

See also the Utility response to recommendation DS8.

DS10. Finding: Enbridge boiler calculations use a 73% assumed thermal efficiency for in situ boilers that have been in place for more than 10 years. This value likely overstates energy savings with a baseline boiler that is 20 years or less in age. The value is based on a 2% de-rate of a 2007 combustion efficiency study that found an average combustion efficiency of 74.6% for 39 boilers aged 12-38 years (average 24.5). The study, which Enbridge provided to the evaluation team, did not attempt to tie the degraded combustion efficiency to the original rated efficiency of the boilers. The study is also now more than 10 years old, so its findings are likely out of date and should only at most apply to 20-year-old or more boilers. For 2017-2018, the evaluation used the 73% value since a better option was unavailable at the time.

Recommendation: Use a degradation from name plate efficiency to determine the baseline boiler efficiency rather than use a flat number. The 2019 CPSV effort should include in the scope secondary research to determine a degradation factor or curve to be used for the 2019 CPSV and incorporated by the utilities for the 2020 program year until primary research is completed or a better approach is developed.

Outcome: Improving this key assumption will improve savings estimates for a significant portion of savings in the Enbridge portfolio and the process would also be applicable to Union sites where baseline boiler efficiencies are required and not based on site tests of boiler performance.

Utility Response: In 2017 and 2018, ETools defaulted to 73% thermal efficiency for in-situ boilers that are older than 20 years where no nameplate information was available. If nameplate information was available, the stated efficiency was used. For basecase boilers, ETools was updated during the 2019 program year to default basecase boiler thermal efficiencies to the stated minimums required by Ontario Regulation 404.

This regulation states that any boiler used for space heating applications between 300 – 2,500 MBH installed in the province of Ontario after January 1, 2017 must have a minimum thermal efficiency of 83%. As this regulation does not cover boilers used in domestic hot water or combined heating applications, the program defaults to the original thermal efficiency of 80.5%.

DS11. Finding: Pipe insulation is a significant source of savings for the Union programs. Documentation supporting the assumptions used in the calculation and the condition of the existing pipe insulation (via photos and/or a description) was not consistently provided. In large facilities, it was often difficult to determine the location of the pipe insulation that was installed for the particular project being evaluated, especially if they had multiple similar incentivized projects installed through the facility.

Recommendation: Document baseline conditions using photos and text descriptions to provide context. Tie the documentation of the baseline condition to the heat loss assumption in a clear way. Include maps, drawings and/or descriptions that clearly identify the location of the installed pipe insulation for each measure and its associated equipment, especially in large facilities.

Outcome: Improving documentation of baseline conditions and clarity in calculations will reduce evaluation risk and improve consistency of approach among the Union engineering team.

Utility Response: As of 2019, both Union and EGD rate zones no longer use damaged insulation as a basecase assumption. The basecase is either bare or less thickness than what was incented. Enbridge Gas will continue to strive to improve savings claims and documentation based on specific feedback from the EC. See also the utility response to recommendation DS8.

DS12. Finding: Enbridge documentation did not always include an explanation and supporting documentation for baseline types (replace on burnout, early replacement) and remaining useful life (RUL). “See Etools for base case” is not sufficient: Etools⁷ is not designed to provide context and sources to support the values included.

Recommendation: Always complete the “Base Case Overview” with a detailed description of the base case. The description should reference included emails and photos to document in situ conditions and features that are carried over into the baseline system.

Outcome: Improved descriptions and documentation will reduce evaluation risk and help Enbridge ensure that accurate information has been entered into Etools.

Utility Response: In the 2019 program year, ETools boiler savings calculation require the boiler replacement decision (e.g. ROB, ER) and age of existing boiler (RUL) as mandatory fields. See also the utility response to recommendation DS8.

DS13. Finding: The duration of pre- and/or post-data (energy consumption, production output, raw material

⁷ Etools is a suite of energy savings calculators that Enbridge has developed to document projects and provide savings estimates to contractors and customers.

consumption, etc.) used by the utilities for savings estimates was too brief in several instances.

Recommendation: The utilities should use data that encompasses a longer period of time in savings estimates when possible. When time periods less than a year are used, the utilities should document why the period used is applicable to a full year and why a full year was not able to be used.

Outcome: Increased accuracy of savings estimates.

Utility Response: The Utility will make best efforts to include more information regarding pre- and post-data in future programming. It should be noted in the case of process load assessments, for example, where it can be established that energy consumption is consistent, data across shorter time periods may be sufficient.

See also the utility response to recommendations DS8 and DS9.

DS14. Finding: The utilities did not always gather boiler nameplate data for in situ systems. The age and operating condition were also not always recorded or described. This was a concern on boiler projects, but also for projects where boiler efficiency has an effect on savings, such as greenhouses, pipe insulation and heat recovery.

Recommendation: In situ boiler name plate information, age and operating condition are all helpful for determining the designed performance and reasonable range of actual efficiency for the system as well as providing context to better RUL.

Outcome: Improving documentation of the in situ boiler will reduce uncertainty in savings estimates and reduce evaluation risk.

Utility Response: Enbridge makes an effort to include boiler nameplate data for in situ systems where available and applicable unless testing data can support a different efficiency. Enbridge also continues to strive for greater documentation of the in-situ boiler as part of its commitment to continuous improvement.

See also the utility response to recommendation DS8.

DS15. Finding: At large sites with multiple spaces containing similar equipment, the utility documentation did not always identify which space or piece of equipment was affected by the project.

Recommendation: Include additional descriptions of spaces and the equipment affected by the measure to differentiate among similar spaces and equipment at the site.

Outcome: Reduced evaluation risk.

Utility Response: The Utility now requests satellite photos for greenhouse projects so that the Utility can better document to which greenhouse the project applies. The Utility will also strive to provide additional descriptions of equipment so they can be located easier and will consider any future specific feedback to

improve the EC's efforts.

DS16. Finding: Invoices were not always included with measure documentation, and the sources for incremental costs were not always clear.

Recommendation: Ensure that incremental costs are supported by invoices or other documentation, especially for add-on and optimization measures where the total cost and incremental cost are likely to be the same. Equipment replacement measures may require an additional standard efficiency quote to produce incremental cost.

Outcome: Incremental cost is an important component of simple payback, which is often used to judge the economic benefit of energy efficiency projects. It is also an input to some benefit-cost tests.

Utility Response: The Utility does ensure that incremental costs are supported by invoices or other documentation. In some cases, project costs are bundled within invoices for larger work being completed in tandem at a customer site. In others, projects are implemented using internal customer resources and no formal invoice is generated. In such cases, the Utility uses best available information to estimate incremental costs and these estimates are subject to verification.

DS17. Finding: Larger projects appeared to fall under the same documentation standards as smaller projects.

Recommendation: Increase the amount of documentation and source material for projects that have greater energy savings.

Outcome: Projects that are better documented tend to have more accurate savings estimates and receive fewer evaluation adjustments than those that are less documented. Large projects have a greater effect on overall savings adjustment factors. Therefore, large projects with better documentation are more likely to result in program-level adjustment factors closer to 100%.

Utility Response: The Utility strives to capture all relevant information regardless of project size. The Utility does and will continue to more comprehensively review the amount of documentation provided for projects with greater energy savings. If the EC finds that a specific large project could benefit from greater documentation, the Utility requests that the EC provide specific feedback on that particular project, so it can be actioned or addressed directly by the Utility going forward.

See also the utility response to recommendation DS8.

DS18. Finding: Union custom projects utilized a project application summary workbook that summarizes the key project inputs, calculations, and most details. In general, this is a good approach that facilitates internal review and evaluation. One challenge was that different projects used the workbook in different ways:

- The notes section was sometimes used to identify and highlight specific unique approaches and features in projects, but not always.

- Calculations internal to the summary page were consistent for most projects, but not all; additional factors were sometimes added.
- Sub-methods critical to the calculation were sometimes contained in hidden sheets.
- Safety and influence adjustments were inserted in different locations and not always explained.

Recommendation: Consider providing more training or adding quality control steps to ensure the summary workbook front page is completed and stored in a consistent manner. Identify a common approach for common measures and, if necessary, document deviations and the reasons for the deviations in a clearly labelled field on the summary sheet.

Outcome: A consistent summary workbook aids both internal and external quality assurance, quality control, and measurement and verification.

Utility Response: The Utility is pleased by the acknowledgement that its custom project workbooks are a good approach that facilitates internal review and evaluation. The Utility agrees that these workbooks are effective tools for summarizing key project inputs and calculations and that different projects might use the workbooks in different ways. Complete uniformity within these workbooks across hundreds of custom projects will take time and may not always be achievable or appropriate. The Utility will endeavour to include the specific items noted in the findings in a review of its custom project documentation process where appropriate.

DS19. Finding: Enbridge Etools is used as both a calculation tool and as a communication tool with customers. While it appears to serve the needs of the program, this form of communication is difficult for the evaluation efforts.

- Etools does not easily allow for assumptions to be sourced within the record.
- Some Etools selections may be site-specific and some may be defaults; the calculator does not clearly distinguish.
- Energy savings that are calculated outside of Etools are hard-entered in Etools but not always sourced.

Recommendation: Use a consistent summary workbook. Provide details used in Etools in the application along with supporting documentation.

Outcome: A consistent summary workbook aids both internal and external quality assurance, quality control, and measurement and verification.

Utility Response: For future Etools version updates, the Utility will make best efforts to list all assumptions used in the Etools calculator, provide back up sources, and provide visual indicators to which values are default assumptions versus actual site information. Best efforts will also be made to ensure energy savings calculated outside of Etools and hard entered into Etools are substantiated, properly documented and provided as backup.

3.4. Data management

Table 7. Data management recommendations

#	Data Management		Applies to			Primary Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Increase Customer Satisfaction	Decrease Risk
DM 20A	Neither Union nor Enbridge currently track participating customer or participating vendor contact information in their program tracking database. Providing the information to the evaluation puts significant burden on utility staff.	Track contacts associated with projects in the program tracking database.	✓	✓		✓		✓	✓
DM 20B		Strongly consider investing in relational program tracking databases.	✓	✓		✓	✓	✓	✓
DM 20C		Continue to use improved structure for data integrity in the evaluator request for contact information for the 2019 savings verification and evaluation.			✓	✓		✓	
DM 21	The extracts from the utility program tracking database do not include dates for key project milestones.	Track and provide to evaluators dates for key milestones in the project.	✓	✓		✓			✓
DM 22	EUL and cumulative gross savings were not provided in a consistent manner in the Enbridge program tracking database extract	Include separate fields in the program tracking database for all components of gross and net cumulative and first year savings.	✓	✓			✓		✓

DM20a. Finding: Neither Union nor Enbridge currently track participating customer or participating vendor contact information in their program tracking database. Providing the information to the evaluation puts significant burden on utility staff.

Recommendation A: Track contacts associated with projects in the program tracking database. At a minimum, the program tracking database should include:

- Project site address
- Customer mailing address

- Primary customer contact name
- Primary customer contact phone
- Primary customer contact email
- Primary customer contact mailing address
- Addresses are best tracked as multiple fields including:
 - Street address line 1
 - Street address line 2
 - City
 - Province
 - Postal code

Phone number fields should include data validation to enforce a consistent format and avoid missing or extra digit errors. Phone extensions should be tracked in a field separate from the ten-digit phone number and be restricted to numeric data only.

The best practice is to maintain contacts in a table separate from specific project or customer data. This allows for a single contact to be connected to multiple accounts and/or projects as necessary without creating duplication. This structure also makes it easier to associate multiple contacts with a single project and decreases quality control costs.

Vendor contact information should also be tracked in the database, in the same table as the participating customer contact information. With a relational database, the contact ID from the table can be added to a project record in the role consistent with the contact's participation (such as vendor, decision maker, or technical expert) with a separate table that allows a single vendor contact to be associated with multiple projects.

Outcome A: Reduced burden on utility staff to seek contact information for projects, whether for internal or evaluation use. Reduced evaluation costs and improved sample design expectations.

Utility Response: As detailed in the 2015-2020 DSM Plans, the Utility outlined the need for improved DSM tracking and reporting systems. The Board approved this request in its January 20th, 2016 Decision. This system was rolled out for the 2018 program year for the Union rate zones and for the 2019 program year for the EGD rate zone. These systems include many upgrades and make providing data simpler for annual savings evaluation and verification.

All the items identified in recommendation DM20a have been provided to the EC with few exceptions (e.g. a handful of customers that had not provided Enbridge Gas with email addresses). Enbridge Gas will continue to provide the EC with all available customer information noted in the recommendation.

Regarding the level of effort on utility staff to compile this information, much of that effort is in ensuring that

the contact information is up to date. With up to two years of time between the project completion date and the time of verification, customer and vendor contacts can change. The Utility's preference is to take the time to ensure the information provided to the EC is correct up front rather than have the EC report back to the Utility in instances where contact information is no longer correct.

Recommendation B: The utilities should strongly consider investing in relational program tracking databases. Relational program tracking databases and customer relationship management (CRM) systems allow for multiple contacts to be associated with a single account and/or project. The incremental cost of implementation is low if it is part of the initial database design, populated as projects are started, and updated once they are complete.

For the implementation team, a query-able one-stop shop for data provides a wealth of information that can improve delivery. For example, these databases can help programs understand how contractors work across projects, identify when projects have hit snags and need attention, and give the program team access to key customer context such as historical participation **and** different contacts that have worked with the program.

For evaluation, this allows programs to easily clarify aspects of projects during implementation and to provide accurate, timely, and usable contact information to evaluators and verifiers.

Outcome B: Improved customer satisfaction from better delivery, and a reduced burden on utility staff for tracking information. A relational database would also streamline aggregation of program data for scorecards and make providing data simpler for annual savings evaluation and verification.

Utility Response: As detailed in the 2015-2020 DSM Plans, the Utility outlined the need for improved DSM tracking and reporting systems. The Board approved this request in its January 20th, 2016 Decision. This system was rolled out for the 2018 program year for the Union rate zones and for the 2019 program year for the EGD rate zone. These systems include many upgrades including CRM components.

Recommendation C: Continue to use the improved structure for data integrity in the evaluator request for contact information for the 2019 savings verification and evaluation.

Outcome C: Reduced evaluation costs due to less data cleaning and research to fill missing information. Improved data collection with less returned advance letters and more accurate connection between projects and contacts.

Utility Response: This recommendation was not directed to the Utility.

DM21. Finding: The extracts from the utility program tracking database do not include dates for key project milestones. Enbridge's data did not include any dates and Union's included only the "install date."

Recommendation: Track and provide to evaluators dates for key milestones in the project. Dates for project start, installation, and those that define the program year provide useful context for interviewers that is not always easy to find in project documentation

Outcome: Improved data collection through more informed interviewers and reduced evaluation costs through less need to search for dates in documentation.

Utility Response: The Union rate zones and EGD rate zone do track an installation date for custom projects. This date was included in their respective tracking workbooks. Regarding inclusion of other dates, these dates are captured as best as possible, but some projects get proposed, prioritized, deferred and changed over time. Not all projects will have a definitive start date. The program year is defined by the calendar year.

DM22. Finding: EUL and annual gross savings in the Enbridge program tracking database extract total to the correct cumulative savings but are a work around for advanced (accelerated) projects. The data structure provides accurate cumulative savings but does not store and report the underlying dual-baseline annual saving estimates, or the actual claimed RUL and the EUL for each measure.

Recommendation: Include separate fields in the program tracking database for:

- EUL
- RUL
- gross first year annual savings
- gross post-RUL annual savings
- net to gross (NTG)
- gross cumulative gross
- net cumulative savings
- net first year savings

Outcome: Improved data integrity results in less evaluation risk and more accurate savings totals. Providing each of the key savings types and their components allows evaluation to confirm that the savings provided are internally consistent.

Utility Response: The Utility provides the EC with all requested data broken out into specific fields as requested, including those noted in this recommendation with the exception of RUL data for the EGD rate zone. RUL data for EGD rate zone is being provided to the EC starting with the 2019 annual verification.

4. Free Ridership Based Attribution Report Recommendations

This section reproduces the tables, findings, recommendations, and outcomes from Section 5.3 of the Auditor Reports (Free Ridership Based Attribution Report Recommendations), as well as the Utility's responses to each recommendation.

Table 8. Free Ridership Based Attribution Report recommendations

#	Energy Savings and Program Performance		Applies to			Primary Beneficial Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
FR1	FR based attribution in some segments of the utilities' programs is low and variable	Evaluate free ridership for the programs annually and couple the free ridership evaluation with process evaluation			✓		✓		
FR2	Relative precision targets were not met for some targeted segments.	Error ratios from this report should inform sample design for future evaluation. Response rates from this report should inform the size of the backup sample for future evaluation.			✓	✓			✓
FR3	FR based attribution for the programs came primarily through acceleration	Align the program design with cumulative net goals	✓	✓			✓		
FR4	Some customers receive funding from multiple third-party sources	Consider the potential effect of multiple third-party incentives on free ridership			✓				✓
FR5	Projects with very long and very short simple payback periods often have high free ridership.	Consider establishing a policy that defines an eligibility floor and cap based on simple payback period for energy efficiency projects.	✓	✓			✓		✓
FR6	Union's Large Volume program has a very low FR based attribution.	Consider the high free ridership within the context of the cost effectiveness of the program. High free rider programs can still deliver meaningful cost-effective net savings.	✓				✓	✓	

#	Energy Savings and Program Performance		Applies to			Primary Beneficial Outcome			
	Finding	Recommendation	Union	Enbridge	Evaluation	Reduce Costs	Increase Savings	Customer Satisfaction	Decrease Risk
		Conduct a process evaluation to improve Large Volume influence on customer projects	✓				✓	✓	✓
FR7	Vendor attribution increased program attribution significantly for the Enbridge Commercial and Multifamily Segments	Consider expanding approaches to market for other programs that leverage third-party vendors.	✓	✓		✓	✓		
FR8	Union Agriculture FR based attribution is the highest among the Union programs.	Continue the proactive approach to DSM marketing in this sector.	✓				✓	✓	✓
FR9	The assumption for “never would have implemented” has a significant effect on free ridership based attribution.	Consider studying the typical planning horizons for each of the customer segments.			✓				✓
FR10	The treatment of efficiency in the scoring has a relatively small effect free ridership based attribution.	Consider simplifying the efficiency question sequence in future research to reduce survey length.			✓			✓	
FR11	The current Lifecycle Net Savings method of free ridership based attribution has a large effect on free ridership based attribution	Continue to use the Lifecycle Net Savings method as long as the primary metrics for the program are based on Cumulative gas savings.			✓				✓

FR1. Finding: FR based attribution in some segments of the utilities' programs is low and variable.

Recommendation: Consistent annual evaluation of free ridership coupled with process evaluation will help identify specific ways for each program to manage and reduce free ridership. Consistent measurement of free ridership early in the next DSM framework can help Enbridge and stakeholders to understand what is working to drive net savings and provide lessons for continuous improvement.

Outcome: Effective free ridership management will allow the programs to increase their net savings significantly in future years.

Utility Response: Enbridge Gas is supportive of discussions at the EAC to determine the priority and frequency of free ridership studies. However, the decision to conduct a study and at what frequency does not lie with the Utility. Enbridge Gas completed process evaluations for the residential home retrofit offerings in recent years and is currently exploring a process evaluation for commercial offerings.

FR2. Finding: Relative precision targets were not met for some targeted segments. Error ratios from the evaluation were as high or higher than in the 2015 study and response rate was lower.

Recommendation 1: Error ratios from the results provided in this report should be used to inform sample design for future evaluation years.

Outcome 1: Better defined error ratios for the measures in the programs will allow more efficient sample design for future evaluations, improving precisions and reducing costs.

Recommendation 2: Response rates from this evaluation should be considered in planning the amount of backup sample required for future studies.

Outcome 2: A larger backup sample will provide more assurance of meeting sampling targets if response rates continue to be lower than in previous years. Approaches to increase response rates should be considered.

Utility Response: This recommendation was not directed to the Utility. For clarity, the Utility highlights the importance of maintaining a balance between ensuring study results meet a suitable threshold of statistical significance and ensuring that customers are not overly burdened by over sampling.

FR3. Finding: FR based attribution for the programs came primarily through acceleration rather than changes in efficiency or quantity. Acceleration is less valuable to programs that are seeking to meet cumulative net goals, because savings often drop after the acceleration period is over. Acceleration periods tend to be considerably shorter than the estimated useful life (EUL) of a measure and thus the partial FR based attribution that results is low relative to cumulative gross savings.

Recommendation: To align the programs with cumulative net goals, the utilities should seek to:

- Continue promoting long life measures and consider discontinuing promotion of short-lived measures
- Proactively upsell equipment purchases from standard to efficient products

- Stop providing incentives for standard efficiency products even in non-replace on burnout situations
- Target hard to reach customers who have not participated in the past
- Continue to identify unique solutions that save energy at customer plants
- Expand promotion of energy efficiency measures with low market penetration (such as heat reflector panels)
- motivate customers to increase the scope of their projects. Some options include multi-measure bonuses or escalating incentive structures that pay more for doing more.
- Adopt lessons learned from the Enbridge Commercial and Multifamily approach to market, working proactively with vendors
- Increase focus on promoting novel energy saving solutions to industrial customer problems. Several customers indicated that the project would not have happened without the utility because Union or Enbridge identified a solution that they had not considered

Outcome 1: Focusing on proactive sales rather than reactive will help increase FR based attribution.

Outcome 2: Effective free ridership management will allow the program to increase net savings significantly in future years.

Utility Response: The Utility does focus its efforts on achieving cumulative gas savings and supports a wide range of eligible energy conservation projects to address the multiple key priorities set out by the Board. The Utility continually improves and changes the design and focus of its programs. Many of the activities listed in the recommendation have already been adopted and others will be considered moving forward.

FR4. Finding: Some customers receive funding from multiple third-party sources (eg. IESO, municipalities, national and provincial carbon abatement programs/cap and trade), to complete the same energy efficiency measure. Both parties may claim the same changes in energy use, resulting in overlap when aggregated across fuels at the provincial level.

Recommendation: Develop policies to collaborate across electric and gas projects to avoid double-counting fuel savings and increases from energy efficiency measures.

Outcome: More accurate energy and carbon savings estimates across the province.

Utility Response: This recommendation was not addressed to the Utility. For clarity, the Utility was not made aware of any instances of double counting energy savings for projects that were reviewed through the course of the 2017/2018 verification and doesn't understand the basis for which the EC reached its finding.

Enbridge continues to work towards coordination of CDM and DSM programs as outlined in the 2015-2020 DSM Guidelines.

FR5. Finding: Projects with very long and very short simple payback periods often have low FR based attribution. However, from a customer service standpoint, it may be difficult for utilities to deny incentives to customers unless they have pre-established rules to point to.

Recommendation: Consider establishing a policy that defines an eligibility floor and cap based on simple payback period for energy efficiency projects.

Outcome: The rule will give utilities a guideline to restrict the program to projects that are more likely to result in FR based attribution. It will also allow the utilities to reject potentially poor projects without a large effect on customer satisfaction.

Utility Response: Policies on payback periods have been discussed in recent years, with respect to free ridership mitigation. As set out in the Board's Decision and Order, Section 5.2.6 on the utilities' 2015-2020 Plans (EB-2015-0029 / EB-2015-0049), the OEB rejected the need to introduce a policy defining payback eligibility criteria for the commercial and industrial custom offerings. Enbridge Gas agrees with the Board that specific payback period policies should not be developed at this time.

FR6. Finding: Union's Large Volume program has a very low FR based attribution.

Recommendation 1: FR based attribution is one metric with which to judge a program, but low-cost programs with high savings totals and high free ridership can still deliver significant volumes of cost-effective savings. The Union Large Volume has low program costs relative to the net CCM saved. The program still provides cost effective net savings despite having low FR based attribution.

Recommendation 2: This evaluation did not include a process evaluation. Union should consider conducting a process evaluation focused on how to reduce the rate of free ridership. Three options that the Union might consider are:

- Consider the benefit-cost of eliminating maintenance and like-for-like measure replacements, as they are associated with high free ridership.
- Use an application process that includes a committee review that can reject free rider projects. This option has been successful for government run programs, but would likely prove hard for utilities to manage as it can negatively affect customer satisfaction
- Develop clear payback criteria such as "initial payback must be longer than X years and the incentive paid must reduce payback below Y years." This has the advantage of being a rule that account representatives can explain when talking to customers.
- Consider the non-energy benefits realized by the customer when approving projects under a FR based attribution criterion. The non-energy benefits of many projects in the large industrial segment often large compared to the energy saving benefits, so simple payback criteria will not eliminate all free rider projects. Promote awareness of this issue among the implementation team.

Outcome: Effective free ridership management may allow the program to increase its net savings

significantly in future years.

Utility Response: Union rate zones' Large Volume program is a direct access offering where customers access their own money for eligible projects. If they do not use their money, it becomes available to other customers. This program design is largely incompatible with the application of a free rider rate. While the Utility can attempt to influence a customer by providing incentives and identifying/quantifying opportunities to save energy, the customer prioritizes projects depending on its own needs. If a project meets the eligibility criteria of the program, the Utility will not refuse a customer access to its own money.

The Utility disagrees with the EC that a process evaluation focused on how to reduce the rate of free ridership should be conducted. This type of study will not address the fundamental incompatibility between the Large Volume program design and the application of a free rider rate.

FR7. Finding: Vendor attribution increased attribution significantly for the Enbridge multifamily program and moderately for the Enbridge commercial program. Participants of all programs indicated vendor involvement at key decision-making junctures, suggesting that if Enbridge and Union are able to influence vendor recommendations, there may be an opportunity to increase indirect influence on participants in all segments.

Recommendation: The utilities should consider what lessons can be learned from the Enbridge multifamily approach to market that is applicable to other segments. All segments may have opportunities to leverage third-party vendors. A process evaluation that includes vendor interviews might uncover specific opportunities and approaches that would help in transferring the Enbridge multifamily lessons to other segments.

Outcome: Effective leveraging of vendors could both increase FR based attribution and program uptake.

Utility Response: The Utility's current approach to market for many of its DSM programs fully leverages third parties. For many years, the two rate zones have extensively engaged third party partners including vendors, contractors, engineers and distributors to promote DSM programs and support customers in the decision-making process, propelling customers to implement energy efficiency improvements. Enbridge is also currently exploring a process evaluation for its custom commercial offerings.

FR8. Finding: Union Agriculture FR based attribution is the highest among the Union programs. Customers reported that Union account representatives recommended novel solutions for specific problems and appear to be a conduit for disseminating information on best practices.

Recommendation: Continue the proactive approach to DSM marketing in this sector. Union appears to be playing a role in reducing information barriers which is leading to increased uptake of energy efficiency measures in this growing sector.

Outcome: Effective leveraging of vendors could both increase FR based attribution and program uptake.

Utility Response: The utility will continue the proactive approach to DSM marketing in this sector.

FR9. Finding: The sensitivity testing shows that the assumption for “never would have implemented” has a significant effect on free ridership based attribution.

Recommendation: Consider studying the typical planning horizons for each of the customer segments to verify if the 2 year or 4 year assumptions are consistent with participating Ontario businesses in each segment.

Outcome: More accuracy and confidence in free ridership based attribution results.

Utility Response: This recommendation was not directed to the Utility. However, the Utility supports refinement of NTG calculation methodologies.

FR10. Finding: The sensitivity testing shows that the treatment of efficiency in the scoring has a relatively small effect free ridership-based attribution.

Recommendation: Consider simplifying the efficiency question sequence in future research to reduce survey length.

Outcome: Reduced customer burden during interviews.

Utility Response: This recommendation was not directed to the Utility. However, the Utility is supportive of efforts to update and improve the survey design.

FR11. Finding: The sensitivity testing shows that the current Lifecycle Net Savings method of free ridership based attribution has a large effect on free ridership based attribution relative to the simpler Year 1 Net Savings method.

Recommendation: Continue to use the Lifecycle Net Savings method as long as the primary metrics for the program are based on Cumulative gas savings.

Outcome: More accurate estimates of cumulative net savings for the programs.

Utility Response: This recommendation was not directed to the Utility. However, it is the Utility’s understanding that a significant reason why its free ridership rates appear to be more elevated than other jurisdictions is that the EC uses the Lifecycle Net Savings method whereas many others use the Year 1 Net Savings method.

5. Commercial & Industrial Prescriptive Program NTG Verification Recommendations

This section reproduces the tables, findings, recommendations, and outcomes from Section 5.4 of the Auditor Reports (Commercial & Industrial Prescriptive Program NTG Verification Recommendations), as well as the Utility’s responses to each recommendation.

Table 9. 2017 C&I Prescriptive Program Verification: Findings & Recommendations

Finding	Recommendation	Applicable Entity
Free-ridership levels for Enbridge ranged from 38% to 92% and from 50% to 93% for Union.	The utilities should consider evaluating free-ridership for the programs annually and consider coupling the free-ridership evaluation with process evaluation to better understand how the utilities are influencing the vendors and their outreach to the end-users.	Enbridge & Union
Both utilities had high ex-post gross realization rates, implying that the utilities are accurately estimating the ex-ante savings based on the measure sub-docs and/or the TRM.	GRRs were close to 100.00% for all evaluated Priority Measure Groups; <i>no action recommended.</i>	Enbridge & Union
There was no participant spillover for either utility.	The utilities should work with the vendors to find out their protocol on recommending the installation of program measures at customers' facilities. This would enable the utilities to better understand the influence the programs have on the customers' behavior, especially in the context of spillover.	Enbridge & Union
	The utilities should also consider conducting a market study to quantify any nonparticipant spillover, contingent on EAC and EC consideration.	
Union could benefit from investing in a modern program tracking database with document storage capabilities as most of the participant and vendor contact information had to be extracted by the verification team.	Digitize and file project documentation for all projects as they are completed and paid during project closeout.	Union; however, it must be noted that Union has indicated the presence of an online tracking database for their 2018 programs
	Track contacts associated with projects in the program tracking database.	

Finding	Recommendation	Applicable Entity
	Strongly consider investing in relational program tracking databases.	
Vendor surveys had very low response rates	Incentives to complete survey	Enbridge & Union and Verification Team
	Recommendation for Utility to communicate with vendors regarding the importance of this evaluation step during future NTG studies	
Participants were generally receptive in responding to surveys. The response rate for participants was around 50% for the first few months. After the first wave of customers were contacted, the more difficult corporate customers and unresponsive customers were attempted to be reached. By the end, after many attempts and exhausting the sample, the overall response rate was about 30% overall for participants.	Incentives to complete survey	Enbridge & Union and Verification Team
	Recommendation for utilities to communicate with customers about the importance of this evaluation steps during future NTG studies	
Scoring methodology for participant's responses to efficiency questions "between standard and high" was sometimes not clear.	This item should be re-visited during subsequent NTG studies contingent on EAC and EC discussion. One alternative is that if a respondent indicates that they would have used an efficiency between standard and high without the program, but cannot answer the follow up question of the efficiency level they would use, instead of taking the average "between standard and high" responses for the measure, use the scoring for "standard efficiency" instead. The logic behind this is that if the customer does not know the efficiency level, it is likely that they may not have equipment at this efficiency.	Verification Team

CI1. Finding: Free-ridership levels for Enbridge ranged from 38% to 92% and from 50% to 93% for Union.

Recommendation: The utilities should consider evaluating free-ridership for the programs annually and consider coupling the free-ridership evaluation with process evaluation to better understand how the utilities are influencing the vendors and their outreach to the end users.

Utility Response: Enbridge is supportive of discussions at the EAC to determine the priority and frequency of free ridership studies. However, the decision to conduct a study and at what frequency does not lie with the utility. Process evaluations activities are part of the Utility's accountability, and the Utility is currently exploring a process evaluation for its commercial offerings.

CI2. Finding: Both utilities had high ex-post gross realization rates, implying that the utilities are accurately estimating the ex-ante savings based on the measure sub-docs and/or the TRM.

Recommendation A: GRRs were close to 100.00% for all evaluated Priority Measure Groups; no action recommended.

Utility Response: The Utility is pleased that its efforts to provide accurate ex-ante savings based on the measure sub-docs and/or the TRM are reflected in this finding.

CI3. Finding: There was no participant spillover for either utility.

Recommendation A: The utilities should work with the vendors to find out their protocol on recommending the installation of program measures at customers' facilities. This would enable the utilities to better understand the influence the programs have on the customers' behavior, especially in the context of spillover.

Recommendation B: The utilities should also consider conducting a market study to quantify any nonparticipant spillover, contingent on EAC and EC consideration.

Utility Response: The Utility is supportive of discussions at the EAC to determine the priority and frequency of other evaluation studies and activities. However, the decision to conduct a spillover study does not lie with the utility.

CI4. Finding: Union could benefit from investing in a modern program tracking database with document storage capabilities as most of the participant and vendor contact information had to be extracted by the verification team.

Recommendation A: Digitize and file project documentation for all projects as they are completed and paid during project closeout.

Recommendation B: Track contacts associated with projects in the program tracking database.

Recommendation C: Strongly consider investing in relational program tracking databases.

Utility Response: As detailed in the 2015-2020 DSM Plans, the Utility outlined the need for improved DSM tracking and reporting systems. The Board approved this request in its January 20th, 2016 Decision. This system was rolled out for the 2018 program year for the Union rate zones and for the 2019 program year for the EGD rate zone. These systems include many upgrades and make providing data simpler for annual savings evaluation and verification.

As with any large-scale IT initiative, trade-offs exist between complexity, functionality, and resources/costs. The Utility considers each EC finding and recommendation but not all can or should be implemented. The Utility operates dozens of DSM offerings and initiatives, which rely on many internal groups and external organizations. Achieving a single-source storage for all required participation/eligibly information across all programs is challenging and most likely not efficient for program implementers.

CI5. Finding: Vendor surveys had very low response rates

Recommendation A: Incentives to complete survey

Recommendation B: Recommendation for Utility to communicate with vendors regarding the importance of this evaluation step during future NTG studies.

Utility Response: The Utility is open to discussing the provision of incentives for a future survey with the EAC and is supportive of further communicating with vendors regarding the importance of this evaluation step.

CI6. Finding: Participants were generally receptive in responding to surveys. The response rate for participants was around 50% for the first few months. After the first wave of customers were contacted, the more difficult corporate customers and unresponsive customers were attempted to be reached. By the end, after many attempts and exhausting the sample, the overall response rate was about 30% overall for participants.

Recommendation A: Incentives to complete survey

Recommendation B: Recommendation for utilities to communicate with customers about the importance of this evaluation steps during future NTG studies.

Utility Response: As part of this study, an advance letter was provided to the customer sample identifying the importance of participating in this study. The Utility is open to discussing customer communication for a future survey with the EAC. Details should be discussed with the EAC.

CI7. Finding: Scoring methodology for participant's responses to efficiency questions "between standard and high" was sometimes not clear.

Recommendation A: This item should be re-visited during subsequent NTG studies contingent on EAC and EC discussion. One alternative is that if a respondent indicates that they would have used an efficiency between standard and high without the program, but cannot answer the follow up question of the efficiency level they would use, instead of taking the average "between standard and high" responses for the measure,

use the scoring for “standard efficiency” instead. The logic behind this is that if the customer does not know the efficiency level, its is likely that they may not have equipment at this efficiency

Utility Response: The Utility is supportive of this change. It is in line with concerns raised that the target population of survey recipients does not necessarily have the technical background to accurately respond to questions on alternative efficiencies.

EGD RATE ZONE: ACCOUNT BALANCES AND APPROVALS SOUGHT

Account Balances for Disposition

1. The EGD rate zone account balances set out in Table 1, which are the subject of this application in-part, are consistent with the EC's Verification Reports and the EC's opinion on energy savings, lost revenue, shareholder incentive amounts and cost-effectiveness, with the exception of the DSMVA as it relates to the EGD rate zone DSM IT Project as discussed in further detail at Exhibit B, Tab 3, Schedule 1.

Table 1
2017 & 2018 DSM Deferral and Variance Account Balances – EGD Rate Zone¹

Account	2017	2018	Total
DSM Variance Account	(\$26,855)	(\$1,399,621)	(\$1,426,476)
DSM Incentive Deferral Account	\$2,120,130	\$3,982,872	\$6,103,002
LRAM Variance Account	(\$10,377)	(\$15,107)	(\$25,484)
Interest	\$34,965	\$39,556	\$74,521
Total	\$2,117,863	\$2,607,700	\$4,725,563

2. Final 2017 and 2018 DSM Annual Reports for the EGD rate zone are set out at Exhibit B, Tab 2, Schedules 1 and 2.

Approvals Sought

3. Enbridge Gas is seeking the following approvals:
 - Approval of the EGD rate zone's DSMVA, DSMIDA, and LRAMVA balances as set out in Table 1.
 - An Order providing for the clearance through to rates of the amounts set out in Table 1 as a one-time adjustment to be cleared within Enbridge Gas's next available QRAM application following the Board's approval, effective as soon as January 1, 2021.

¹ Negative values indicate amounts being credited/reimbursed to ratepayers.

2017 Demand Side Management Annual Report - **EGD Rate Zone**

June 19, 2020

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Executive Summary

Enbridge Gas Distribution summarized its 2017 DSM Plan in the 2015-2020 Multi-Year DSM Plan (EB-2015-0049), filed on April 1st, 2015. The Company's 2017 DSM Plan was outlined consistent with the provisions set out by the Ontario Energy Board in the Report of the Board: Demand Side Management Framework for Natural Gas Distributors (2015-2020), published December 22nd, 2014 (EB-2014-0134).

In its Decision and Order, published January 20th, 2016, and the update to the Decision and Order, published February 24th, 2016, the Board responded to the details outlined in the Company's Plan and determined that Enbridge reasonably interpreted the DSM Framework. The Decision outlined the approvals for Enbridge's 2017 programs and budgets and established the mechanism for setting targets. The 2017 Annual Report provides an overview on the Company's results.

The Company reports that in the 2017 DSM program year, the portfolio generated total gas savings of 787 million net lifetime (cumulative) cubic meters. These savings are a direct result of the Company's ongoing efforts delivering the Resource Acquisition and Low Income programs. Natural gas savings attributable to Market Transformation and Energy Management program delivery are not captured in these totals, since results for this program are not measured on the basis of cubic meters (m³) or lifetime (cumulative) cubic meters saved.

As outlined in the Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020), submitted by the Board on December 22nd, 2014 (EB-2014-0134), the Board calls for application of a Total Resource Cost (the TRC-Plus) test as well as the introduction of the Program Administrator Cost (PAC) test to screen for cost-effectiveness of programs. In 2017, the portfolio demonstrated cost-effective program delivery based on positive results from both the TRC-Plus and PAC screening tests. The portfolio had an overall TRC-Plus ratio of 2.58 and an overall PAC ratio of 3.02.

Table ES.0 2017 DSM Portfolio Results

Program	Annual Net Gas Savings (m ³)	Cumulative Net Gas Savings (m ³)	Budget	2017 Spending ¹	TRC-Plus Ratio	PAC Ratio
Resource Acquisition						
Home Energy Conservation	6,156,714	153,917,853	\$15,180,000	\$22,644,994	1.50	1.19
Adaptative Thermostats	2,537,549	38,063,232	\$1,525,000	\$1,479,319	2.90	4.52
C&I Custom	24,517,940	406,957,171	\$7,157,145	\$7,240,134	3.62	7.64
C&I Prescriptive	2,437,180	41,009,936	\$2,241,134	\$1,113,533	2.77	5.77
C&I Direct Install	3,734,401	56,016,021	\$5,060,872	\$1,807,641	5.38	5.00
Small New Construction	-	-	\$1,305,566	\$0	-	-
Energy Leaders	137,553	1,375,530	\$400,000	\$78,613	1.60	3.13
Run It Right (RA)	173,891	869,455	\$1,434,480	\$872,005	0.24	0.13
Comprehensive Energy Mgmt (RA)	-	-	\$80,184	\$0	-	-
Overheads	-	-	\$5,104,327	\$5,054,191		
Total RA	39,695,229	698,209,198	\$39,488,708	\$40,290,431	2.63	3.27
Low Income						
Single Family (Part 9)	790,267	19,598,364	\$6,290,000	\$4,539,420	0.89	0.74
Multi-Residential (Part 3)	3,531,178	69,363,767	\$3,418,121	\$2,765,831	3.52	3.31
New Construction ¹	-	-	\$1,200,000	\$1,158,956		-
Overheads	-	-	\$1,619,299	\$1,603,394		
Total LI	4,321,445	88,962,131	\$12,527,420	\$10,067,600	2.20	1.89
Market Transformation						
Residential Savings by Design ¹	-	-	\$3,250,000	\$4,216,284	-	-
Commercial Savings by Design ¹	-	-	\$950,000	\$1,270,688	-	-
School Energy Competition	-	-	\$600,000	\$460,396	-	-
Run It Right (MT)	-	-	\$285,520	\$421,777	-	-
Comprehensive Energy Mgmt (MT)	-	-	\$763,861	\$234,085	-	-
Overheads	-	-	\$868,335	\$859,806	-	-
Total MT	-	-	\$6,717,716	\$7,463,035	-	-
Programs Subtotal	44,016,674	787,171,329	\$58,733,844	\$57,821,067		
Portfolio Overheads	-	-	\$4,200,000	\$5,085,923		
Grand Total	44,016,674	787,171,329	\$62,933,844	\$62,906,989	2.58	3.02

The cumulative net gas savings results for the individual offers are outlined above in Table ES.0. In 2017, the Resource Acquisition program contributed a total of 698 million net cumulative cubic meters (CCM) in natural gas savings; the Low Income program delivered 89 million net CCM natural gas savings, and overall the Market Transformation and Energy Management offers continued to demonstrate good results. Total spending in 2017 amounted to \$62,906,989.¹ In comparison, the OEB approved budget for 2017 as per the Board's Decision was \$62,933,844.

¹ Total spending includes accrued amounts for future incentive payment commitments for applicable offers.

Table ES.1 2017 DSM Results Summary

2017 DSM Results Summary	
Net CCM Savings	787,171,329 m³
DSMIDA amount recoverable from Ratepayers	\$2,120,130
LRAMVA amount payable to Ratepayers ¹	-\$10,377
Pre-accrual DSMVA amount ²	-\$2,355,355
DSMVA amount payable to Ratepayers ^{1 2}	-\$26,855

1. The LRAMVA and DSMVA are negative indicating that these amounts are payable to ratepayers.

2. Refer to Section 10.5 for explanation regarding the DSMVA.

The determination of the Company's shareholder incentive is based on 2017 DSM performance in relation to the weighted scoring approach. The resulting DSM Shareholder Incentive earned by the Company for 2017 is \$2,120,130 as outlined in Table ES.1. The DSM Incentive Deferral Account (DSMIDA) is utilized to record the shareholder incentive amount earned by Enbridge as a result of its DSM program results.

The Lost Revenue Adjustment Mechanism Variance Account (LRAMVA) is utilized to true-up the lost distribution revenues associated with DSM activity relative to what was included in the forecast for rate-setting purposes. The Lost Revenue Adjustment Mechanism calculation based on 2017 results is \$8,064. As such the Lost Revenue Adjustment Mechanism Variance Account amount relative to the forecasted impact included in distribution rates for 2017 is \$10,377 to be refunded to ratepayers.

The DSM Variance Account (DSMVA) is utilized to track the difference between DSM spending in 2017 (including accrued amounts for offers with future incentive payment commitments) and the amount already built into rates which equates to the 2017 OEB approved DSM budget. In 2017, the full OEB approved budget was not spent. The total amount of unspent dollars, pre accrual, in the DSMVA is \$2,355,355. Of this amount, \$2,328,500 represents amounts accrued for incentive payment commitments to be paid out in future years and tracked in the DSMVA. \$26,855 is to be refunded to ratepayers.

1. Introduction

The continuing need for DSM efforts in the province of Ontario was outlined by the Ontario Energy Board (the “Board”) in the Report of the Board: Demand Side Management Framework for Natural Gas Distributors (2015-2020), published December 22nd, 2014 (the “Framework”).

To guide the utilities’ DSM portfolios, the Framework established a number of goals including, assisting consumers in managing their energy bills, promoting energy efficiency and creating a culture of conservation. The Framework also provides direction for DSM programs and outlines the proposed weighted scorecard approach to measuring DSM performance.

Enbridge Gas Distribution (“Enbridge”, the “Company”) has demonstrated significant achievement in results since Demand Side Management was introduced to its customers in the mid-1990s. Between 1995 and 2017, Enbridge’s energy efficiency programs reduced customer consumption by 13.4 billion cubic meters of natural gas. These gas savings have resulted in a reduction of 25.0 million tonnes of greenhouse gas emissions², roughly equal to removing 4.9 million cars from the road for one year.³

Despite evolving government policies and mandates that are presenting new challenges to operating in the energy efficiency landscape, as well as the continuing low cost of natural gas relative to increasing electricity prices, Enbridge is pleased to continue to offer DSM programming through the Board approved 2015-2020 Multi-Year DSM Plan to help its customers reduce their energy bills, and at the same time provide support for the Province’s greenhouse gas reductions emissions targets.

² Assumes 1.875kg of CO_{2e} is emitted for each m³ gas that is consumed.

³ Assumes the average automobile produces 5.1 tonnes of CO₂ per year.

Enbridge's 2017 DSM portfolio included programs directed towards Resource Acquisition, Low Income, and Market Transformation and Energy Management as follows:

Resource Acquisition Program

- Home Energy Conservation Offer
- Residential Adaptive Thermostat Offer
- Custom Commercial Offer
- Custom Industrial Offer
- Run it Right Offer
- Commercial and Industrial Prescriptive Offer
- Commercial and Industrial Direct Install Offer
- Energy Leaders Initiative

Low Income Program

- Home Winterproofing Offer
- Low Income Multi-Residential Offer
- Low Income New Construction Offer

Market Transformation and Energy Management Program

- Savings by Design – Residential Offer
- Savings by Design – Commercial Offer
- School Energy Competition
- Run it Right Offer
- Comprehensive Energy Management Offer

The 2017 Annual Report (the "Report") on Enbridge's Demand Side Management program provides a summary of the results for the program year and summarizes these results relative to scorecard metrics approved by the Board. The Report provides a comparison of actual and target results and also provides an opportunity for Enbridge to

highlight successes as well as lessons learned. In addition, the Report offers information in support of the Company's 2017 Demand Side Management Incentive Deferral Account (DSMIDA), Demand Side Management Variance Account (DSMVA), and the Lost Revenue Adjustment Mechanism Variance Account (LRAMVA) claims.

As outlined in the Framework, beginning in 2015 the governance structure changed significantly such that the Board is now responsible for the oversight responsibility of the annual audit and evaluation of the utilities' DSM results, including selecting the Evaluation Contractor and verification consultants. As requested in the Framework, Enbridge and Union Gas consulted to align on the general format of each utility's Annual Report. The Report will be reviewed by the OEB's third party Evaluation Contractor to facilitate the 2017 program evaluation.

Enbridge remains committed to the objective of continually improving its DSM practices, program design and delivery. A significant component of this effort includes the consideration of recommendations and expertise provided by stakeholders through the annual audit and evaluation process. This evaluation process has been delayed since the beginning of the current framework. The delayed evaluation process has limited the Company's ability to consider recommendations or incorporate learnings in a timely fashion to support continuous improvement.

2. Demand Side Management

2.1 2017 DSM Plan

The Minister of Energy issued a Directive to the Board calling for the development of a new DSM policy framework on March 31st, 2014. Beginning January 1st, 2015, the new framework was to span a six year period and, among other things, enable the achievement of all cost-effective DSM.

The Board issued a Draft Report on September 15th, 2014 outlining the Board's proposed 2015-2020 DSM Framework for Natural Gas Distributors (EB-2014-0134) and requested all interested parties to provide comments. Enbridge, Union Gas, and a wide variety of stakeholders provided comments on the Board's proposed 2015-2020 DSM Framework on October 15th, 2014. The Board issued its Framework and the accompanying Guidelines on December 22nd, 2014.

In accordance with the 2015-2020 Framework, Enbridge filed the Multi-Year Demand Side Management Plan (2015-2020) (EB-2015-0049) on April 1st, 2015. The Board responded to the details outlined in the Multi-Year Demand Side Management Plan (the "Plan"), and on January 20th, 2016 and February 24th, 2016, provided a Decision and a Revised Decision respectively to support the Plan which included Enbridge's 2017 approved programs and budgets and established the mechanism for determining targets.

Enbridge's 2016 to 2020 DSM portfolio includes offers that are new in this Plan and offers that have existed in the past. These new or enhanced offers have been developed based on industry input, stakeholder input, Enbridge's experience, and research from best practices in other jurisdictions. These offers are responsive to market fundamentals, including opportunities and challenges, as well as they are directly responsive to the Board's Framework guiding principles and key priorities (EB-2014-0134).

The provisions set forth in the Plan were intended to be flexible within reason, allowing the Company to introduce, change, or discontinue activities or initiatives as necessary in response to market conditions as well as the customers' needs, within the constraints of the DSM budgets and scorecards approved by the Board and the terms of the Framework and the Board's Filing Guidelines (EB-2014-0134).

2.2 Program and Portfolio Design

The Company's DSM activities continue to drive change in the market through focused efforts to deliver natural gas savings and related benefits to customers. Enbridge's 2017 DSM Plan includes three distinct programs; Resource Acquisition, Low Income, and Market Transformation and Energy Management. Within each of these programs, a variety of energy efficiency offers are available in support of the Company's customers and the province's greenhouse gas (GHG) emission reduction efforts.

The offers comprising the Resource Acquisition program focus on achieving direct, volumetric natural gas savings customer by customer. This generally involves the installation of energy efficient equipment, the implementation of process optimization or putting into practice operational improvements by the customer. The Company supports these improvements by providing training, energy audits, technical assistance and financial incentives among other approaches.

The offers made available in the Low Income program are largely similar to the offers included in the Resource Acquisition and Market Transformation and Energy Management programs. However, delivering energy efficiency to the low income market presents a unique set of challenges requiring a different approach that recognizes the distinctive needs of this market segment.

While the Low Income program will often yield lower net Total Resource Cost (TRC) benefits relative to Resource Acquisition, delivery of energy efficiency to these consumers yields various benefits which are difficult to quantify, justifying a Board-

approved threshold for cost-effectiveness which is lower than that of Resource Acquisition.

Lastly, the focus of Enbridge's Market Transformation and Energy Management program is on facilitating fundamental changes in the market, such as increased market shares of energy efficient products and services, or the provision of education to the market and the influencing of consumer behavior and attitudes to support efficiency in energy use over the longer term.

2.3 Cost-Effectiveness Screening

The utility is expected to assess the economic value of its DSM portfolio through a method of calculating and screening the cost-effectiveness of its programs. As outlined in the Framework, beginning in 2015, the Board adopted "an enhanced TRC test, or the "TRC-Plus" test, which the gas utilities should use to screen all potential DSM programs when developing their multi-year DSM plans." The utilities were instructed to apply a 15% non-energy benefit adder to the benefit side of the TRC test calculation. In addition, the Board directed the utilities to also "incorporate the PAC test as a secondary cost-effectiveness reference tool to help better inform which programs should be proposed."

Prior to 2017, Enbridge's cost-effectiveness screening considered benefits related to natural gas, electricity and water savings over the life of the energy-efficient equipment. Starting with the 2017 program year, benefits attributed to reduced carbon emissions were also incorporated into cost-effectiveness screening.

"The TRC-Plus test measures the benefits and costs of DSM programs for as long as those benefits and costs persist and applies a 15% non-energy benefit adder." The 15% non-energy benefit adder accounts for other benefits, for example, environmental, economic and social benefits that are not related to the reduction in natural gas.

In the case of the Resource Acquisition program, if the TRC-Plus ratio (which compares the present value of the natural gas, carbon, electricity and water savings and 15% non-energy benefits added to the present value of non-carbon costs) exceeds 1.0, the program is considered cost-effective.

In recognition that the Low Income program may include additional benefits that are not reflected in the TRC-Plus test, the Low Income program is screened using a TRC-Plus threshold of 0.7.

As highlighted in the Guidelines, some programs, such as Market Transformation are not typically amenable to a screening approach (such as TRC-Plus) and instead are reviewed and assessed on their own merits based on the objectives of the program.

The Program Administrator Cost (PAC) test is also utilized by Enbridge as a secondary reference tool to assess the programs' cost-effectiveness. As outlined in the Guidelines, "the costs included in the PAC test calculation include all expenditures by the utility to administer DSM programs (i.e., costs to design, plan, administer, deliver, monitor and evaluate)." The 2017 DSM Annual Report provides an opportunity to report both TRC-Plus and PAC assessments for the 2017 DSM portfolio. Cost-effectiveness screening for 2017 programs is summarized in Section 4.3.

2.4 Target Adjustment Mechanism

As outlined in the Board's Decision, beginning in 2017, the Board approved a target adjustment mechanism ("TAM") such that the utilities would adjust target metrics year to year based on actual performance adjusted for spending. Further to promote continued efficiency, the OEB directed there would be a 2% productivity factor added to targets for Resource Acquisition and Low Income metrics, and a 10% productivity factor for all Market Transformation and Performance-Based target metrics.

For Resource Acquisition and Low Income target metrics the Board provided the following guidance by way of example:⁴

Actual performance in year 1 / Dollars spent in year 1 x Dollars in budget year 2 x 1.02

For illustrative purposes, if the utility's 2016 actual cumulative gas savings achievement for a program is 665 million m³ with an actual spend of \$7.50M (excluding overheads) on the program, the result would be 88.67 m³ per dollar spent. To calculate the 2017 target, the 2016 result (88.67 m³/\$) will be multiplied by the 2017 budget of \$7.8M (691.6 million) times the productivity improvement of 2% equaling a 2017 target of 705.4 million m³.

The lower and upper bands are calculated by multiplying the target by 75% and 150% respectively.

In the illustration the lower band will be 529.1 million m³ (75% of 705.4 million m³) and the upper band will be 1,058.1 million m³ (150% of 705.4 million m³).

The prior year's metric achievement is expected to reflect the final verified program results following the annual program evaluation. Actual spend is equal to the final actual spending excluding all overhead costs (program and portfolio).

For Market Transformation and Performance-Based target metrics the Board provided the following guidance by way of example:⁵

Actual performance in year 1 / Dollars spent in year 1 x Dollars in budget year 2 x 1.1

For illustrative purposes, if the 2016 School Energy Competition metric achievement was 55 schools with an actual spend of \$0.30M (excluding overheads) on the program, the result would be 183.3 schools per million dollars spent. To calculate the 2017 target, the 2016 result (183.3 schools/\$million) will be multiplied by the 2017 school energy budget of \$0.60M (110 schools) times the productivity improvement of 10% equaling a 2017 target of 121 schools. The Lower Band will be 91 schools (75% of 121 schools) and the Upper Band will be 182 schools (150% of 121 schools).

Again, the prior year's metric achievement is expected to reflect the final verified program results following the annual program evaluation. Actual spend is equal to the final actual spending excluding all overhead costs (program and portfolio).

⁴ EB-2015-0029/2015-0049, Board Decision, January 20, 2016, page 70.

⁵ EB-2015-0029/2015-0049, Board Decision, January 20, 2016, page 70.

In the EB-2015-0049 Board Decision, the Board noted, “given the limited experience with formulaic adjustment mechanisms, the utilities should suggest any necessary changes to the approved formulaic targets at the mid-term review, for 2018 to 2020.”⁶ Enbridge followed this direction and included a number of comments outlining concerns with the operationalization of the TAM in its submission to the Board for the mid-term review. In particular, Enbridge noted that the TAM was not appropriate for the adjustment of targets for program offers with deferred incentive payouts (i.e. offers where annual metrics do not align with the year in which customer incentive payouts are made), as the adjustment mechanism results in artificial and unachievable targets that do not reflect the true relationship between the Company’s results from the previous year, considered in terms of the previous year’s program spending, and the market potential for those program offers.

The utilities concerns regarding TAM impacts on offers with deferred incentives were assessed by the Board and in the Board’s November 29, 2018 Report of the Ontario Energy Board: Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020) (the “Mid-Term Report”), the Board provided the following update to the Target Adjustment Mechanism methodology:

“The OEB will revise the target adjustment formula for [Low-Income New Construction, Run-it-Right, Comprehensive Energy Management, Residential Savings by Design and Commercial Savings by Design] ... The revised target formula will replace “annual actual program costs” with “annual accrued program costs”. Accrued program costs are those costs that the gas utility is subject to providing to the customer in latter years should the customer fulfill its commitments to the program and be eligible for the financial incentives.”⁷

In response to this revised direction, Enbridge has provided both 2017 (current year) spending as well accrued spending amounts for applicable offers in Section 10, Table 10.1 of this report. As outlined above, pursuant to the Board’s Mid-Term Report,

⁶ EB-2015-0029/2015-0049, Board Decision, January 20, 2016, page 72.

⁷ Report of the Ontario Energy Board: Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020), November 29th, 2018, page 16.

Enbridge will apply the total of actual and accrued spending for these offers in the determination of their respective 2018 targets.

2.5 Program Evaluation

As outlined in the Framework, the Board introduced that it would be taking on the coordination function of the Evaluation, Measurement & Verification (EM&V) process throughout the 2015-2020 DSM framework period. The Board provided utilities and participants in the EB-2014-0134 consultation a memo on August 21st, 2015, which provided additional details regarding the new governance structure for the 2015-2020 DSM evaluation process of program results (EB-2015-0245). The focus of the memo was the establishment of the OEB's process to evaluate the results of Natural Gas Demand Side Management programs beginning with the 2015 program year. This document included the following evaluation responsibilities:

- The OEB would be responsible for coordinating and overseeing the evaluation and audit process, including selecting a third party Evaluation Contractor.
- The Evaluation Contractor (EC) would carry out the evaluation and audit processes and would draft an EM&V Plan for the natural gas utilities' DSM programs.
- An Evaluation Advisory Committee (EAC), which includes representation from each of the utilities, would be formed to provide input and advice to the OEB on the development of the plan and on the evaluation and audit of the DSM results.

2.6 2017 Annual Audit and Evaluation of DSM Results

Enbridge's 2017 DSM results, as summarized in the DSM Annual Report are subject to an independent external audit. As referenced in section 2.5 above, the Board's August 21st, 2015 memo (EB-2015-0245) specified that the OEB would be responsible for coordinating and overseeing the evaluation and audit process, including selecting a third party EC and publishing the final evaluation results on an annual basis. The memo specified that the EC would carry out the annual evaluation and audit processes of all DSM programs and provide an opinion on whether the claimed DSM Incentive (DSMI)

amount, LRAMVA, and DSMVA have been correctly calculated using reasonable assumptions. The EAC, which includes utility representation as described below in section 2.7, will provide input and play an advisory role throughout the audit to facilitate the achievement of the audit objectives. Board Staff communicated it had issued an RFP on February 8th, 2016, for the procurement and selection of the EC. Subsequently, Board staff announced it had selected DNV GL as the EC for the 2015-2017 program years.

The EC's 2017 Annual Verification report, 2017/2018 Custom Savings Verification report and 2018 Custom Free Rider Evaluation⁸ (all March 13, 2020), which document all 2017 verification activities and the calculation of the EC's verified DSMIDA, LRAM and DSMVA amounts can be found at:

<https://www.oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm-evaluation>

2.7 Evaluation Advisory Committee

As detailed in the August 21st, 2015 memo from the Board (EB-2015-0245), the EAC provides input and advice as required throughout the DSM evaluation process. 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 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

⁸ While this study was conducted on 2018 custom projects, its findings were also applied to the 2017 program year.

- Representatives from the Ministry of Energy (MOE) and the Environmental Commissioner of Ontario (ECO), 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, Jay Shepherd Professional Corporation
- Marion Fraser, Fraser & Company⁹

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

3. OEB Data Reporting Requirements

The following tables summarize the annual reporting key elements outlined in Section 14.2 of the Guidelines.

⁹ Marion Frasier resigned from the EAC on February 26, 2019 and had limited involvement in the evaluation of 2017 program activities.

Table 3.0 Annual and Long-Term DSM Budgets

[illegible]

Table 3.1 Actual Annual Total DSM Costs
(including DSM spending¹⁰, overheads, evaluation, shareholder incentive, lost revenues)
for each rate class dating back to 2007

Annual Actual Total DSM Costs													
RATE CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ^{1,2}	TOTAL (2016-2007)	AVERAGE (2015-2007)
RATE 1	\$11,894,135	\$12,545,981	\$14,794,795	\$12,467,796	\$14,214,627	\$17,935,484	\$13,881,901	\$23,507,037	\$26,855,974	\$42,390,914	\$44,578,671	\$190,488,643	\$19,048,864
RATE 6	\$2,848,384	\$7,519,262	\$7,486,577	\$10,713,308	\$15,103,141	\$17,127,050	\$15,172,590	\$13,901,251	\$15,646,361	\$17,001,090	\$17,610,239	\$122,519,014	\$12,251,901
RATE 9	\$0	\$0	\$0	\$0	\$0	\$1,425	\$1,420	\$1,712	\$1,839	\$2,030	\$2,306	\$8,427	\$843
RATE 100	\$8,949,764	\$3,201,527	\$2,667,170	\$86,297	\$17,677	\$0	\$0	\$0	\$0	\$0	\$0	\$14,922,435	\$1,492,244
RATE 110	\$3,658,449	\$1,041,758	\$1,943,819	\$1,470,858	\$1,048,222	\$783,904	\$937,258	\$1,189,687	\$1,899,864	\$1,250,531	\$1,474,088	\$15,224,350	\$1,522,435
RATE 115	\$643,144	\$1,716,735	\$1,314,146	\$545,382	\$602,386	\$1,329,072	\$1,420,390	\$567,271	\$657,559	\$532,093	\$592,505	\$9,328,178	\$932,818
RATE 125	\$0	\$0	\$0	\$0	\$0	\$53,449	\$53,268	\$64,223	\$68,967	\$76,131	\$86,462	\$316,039	\$31,604
RATE 135	\$1,762	\$79,757	\$11,685	\$59,163	\$121,756	\$441,318	\$320,401	\$123,739	\$58,863	\$85,564	\$387,197	\$1,304,008	\$130,401
RATE 145	\$855,487	\$901,590	\$676,730	\$729,534	\$655,237	\$495,925	\$369,074	\$253,864	\$152,227	\$84,478	\$90,532	\$5,174,145	\$517,415
RATE 170	\$294,508	\$1,860,562	\$1,843,628	\$2,040,735	\$2,195,089	\$536,445	\$149,399	\$457,841	\$403,107	\$574,392	\$177,446	\$10,355,706	\$1,035,571
RATE 200	\$0	\$0	\$0	\$0	\$0	\$18,529	\$18,466	\$22,264	\$23,909	\$26,392	\$29,973	\$109,560	\$10,956
RATE 300	\$0	\$0	\$0	\$0	\$0	\$3,563	\$3,551	\$4,281	\$4,598	\$5,075	\$5,764	\$21,069	\$2,107
TOTAL	\$29,145,632	\$28,867,172	\$30,738,550	\$28,113,075	\$33,958,134	\$38,726,165	\$32,327,718	\$40,093,170	\$45,773,267	\$62,028,692	\$65,035,183	\$369,771,576	\$34,193,654

1. 2017 values are subject to Board approval.

2. 2017 DSM Spending includes accrued incentive amounts.

Table 3.2 Historic Actual Annual DSM Spending

	2007	2008	2009	2010	2011	2012	2013	2014	2015 ²	2016	2017 ³
Total DSM Spending (\$ millions) ¹	\$21.20	\$23.03	\$25.42	\$24.00	\$27.24	\$30.61	\$27.84	\$32.51	\$35.78	\$55.65	\$62.91

1. Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

2. 2015 DSM Spending includes incremental spending of \$559,378

3. 2017 DSM Spending includes accrued incentive amounts

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ⁵
Total DSM Spending (millions \$) ¹	\$21.2	\$23.0	\$25.4	\$24.0	\$27.2	\$30.6	\$27.8	\$32.5	\$35.8	\$55.6	\$62.9
Total Distribution Revenue (millions \$) ^{2,3,4}	\$980.9	\$995.9	\$1,012.1	\$960.4	\$978.8	\$972.0	\$1,055.0	\$1,044.0	\$1,055.4	\$1,115.6	\$1,128.3
DSM Spending as % of Distribution Revenue	2.2%	2.3%	2.5%	2.5%	2.8%	3.1%	2.6%	3.1%	3.4%	5.0%	5.6%

1. Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

2. Distribution Revenue includes gas sales and transportation of gas less gas commodity cost

3. Distribution Revenue excludes transmission, compression, and storage

4. Distribution Revenue is based on data unnormalized for weather

5. 2017 DSM Spending includes accrued incentive amounts.

¹⁰ As the request is for actual costs, Enbridge interprets this to be 'DSM spending' rather than 'DSM budget' as written in Section 14.2 of the Guidelines.

Table 3.4 Historic Annual Shareholder Incentive Amounts Available and Earned dating back to 2007

	2007	2008	2009	2010	2011	2012 ¹	2013	2014	2015	2016	2017 ²
	\$ millions										
Total Shareholder Incentive Earned	\$8.25	\$5.80	\$5.36	\$4.16	\$6.77	\$8.16	\$4.54	\$7.65	\$10.08	\$6.37	\$2.12
Maximum Shareholder Incentive Available	\$9.00	\$9.22	\$9.24	\$9.40	\$10.16	\$10.45	\$10.66	\$10.87	\$11.09	\$10.45	\$10.45

1. 2012 Shareholder Incentive includes reduction of -\$657,223 per Board's decision (EB-2013-0352)

2. 2017 Shareholder Incentive subject to Board approval

Table 3.5 Shareholder Incentive Earned as a Percent (%) of DSM Spending¹¹

	2007	2008	2009	2010	2011	2012 ²	2013	2014	2015	2016	2017 ^{3,4}
Total Shareholder Incentive (\$ million)	\$8.25	\$5.80	\$5.36	\$4.16	\$6.77	\$8.16	\$4.54	\$7.65	\$10.08	\$6.37	\$2.12
Total DSM Spending ¹	\$21.20	\$23.03	\$25.42	\$24.00	\$27.24	\$30.61	\$27.84	\$32.51	\$35.78	\$55.65	\$62.91
Shareholder Incentive Earned as a % of DSM Spending	39%	25%	21%	17%	25%	27%	16%	24%	28%	11%	3%

1. Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

2. 2012 Shareholder Incentive includes reduction of -\$657,223 per Board's decision (EB-2013-0352)

3. 2017 Shareholder Incentive subject to Board approval

4. 2017 DSM Spending includes accrued incentive amounts

Table 3.6 Annual and Long-Term Natural Gas Savings Targets

	Annual Natural Gas Savings Targets					
Scorecard	2015	2016	2017 ¹	2018 ²	2019	2020
Resource Acquisition	1,011.9	631.1	806.5	<i>Targets are formulaic based on past year's performance</i>		
Low-Income	92.8	96.7	167.1			
Total	1,104.7	727.8	973.6			

1. 2017 targets are calculated based on 2016 audited results multiplied by the 2017 budget multiplied by the productivity improvement of 2% in accordance with the Board's direction for a target adjustment mechanism beginning in 2017.

2. 2018 targets require post audited 2017 DSM results and Board approval

¹¹ Enbridge interprets this request as requesting values as a percentage of 'DSM spending' rather than 'DSM budget' as written in Section 14.2 of the Guidelines.

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

	2017 Annual Gas Savings ¹		2017 Cumulative Gas Savings ¹	
	Gross	Net	Gross	Net
Resource Acquisition	66,944,391	39,695,229	1,126,355,600	698,209,198
Low-Income	4,333,713	4,321,445	89,084,809	88,962,131
Total	71,278,104	44,016,674	1,215,440,409	787,171,329

1. 2017 DSM results subject to Board approval

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹
Total Net Gas Savings (millions m3)	85.07	77.25	69.86	64.58	76.40	60.14	47.74	43.54	48.97	50.52	44.02
Total Gross Gas Savings (millions m3)	85.99	121.98	117.62	98.82	114.14	92.53	66.06	60.62	67.09	90.03	71.28

1. 2017 DSM results subject to Board approval

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹
Total Net CCM (millions m3)	1,214.10	1,118.98	1,039.18	951.40	1,253.82	1,068.98	826.91	719.84	826.17	837.11	787.17
Total Gross CCM (millions m3)	1,233.54	1,809.65	1,801.77	1,455.74	1,811.35	1,593.05	1,148.12	993.62	1,114.13	1,479.09	1,215.44

1. 2017 DSM results subject to Board approval

Table 3.10 Total Annual Natural Gas Savings as Percent (%) of Total Annual Natural Gas Sales

(Gross and Net)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹
Net Annual Gas Savings (millions m3)	85.1	77.3	69.9	64.6	76.4	60.1	47.7	43.5	49.0	50.5	44.0
Net Annual Gas Savings as % of Natural Gas Sales	0.7%	0.7%	0.6%	0.6%	0.7%	0.6%	0.4%	0.4%	0.4%	0.5%	0.4%
Gross Annual Gas Savings (millions m3)	86.0	122.0	117.6	98.8	114.1	92.5	66.1	60.6	67.1	90.0	71.3
Gross Annual Gas Savings as % of Natural Gas Sales	0.7%	1.0%	1.1%	0.9%	1.0%	0.9%	0.6%	0.5%	0.6%	0.8%	0.6%
Total Natural Gas Sales (millions m3) ²	11,862.9	11,686.5	11,114.9	10,742.3	11,303.2	10,304.4	11,338.3	12,434.3	11,728.3	10,736.2	11,172.6

1. 2017 DSM results subject to Board approval

2. Total Gas Sales include only rate classes that are eligible for DSM and subject to DSM costs

Table 3.11 Total Cumulative Natural Gas Savings as Percent (%) of Total Annual Natural Gas Sales

(Gross and Net)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹
Net Cumulative Gas Savings (millions m3)	1,214.1	1,119.0	1,039.2	951.4	1,253.8	1,069.0	826.9	719.8	826.2	837.1	787.2
Net CCM Gas Savings as % of Natural Gas Sales	10.2%	9.6%	9.3%	8.9%	11.1%	10.4%	7.3%	5.8%	7.0%	7.8%	7.0%
Gross Cumulative Gas Savings (millions m3)	1,233.5	1,809.7	1,801.8	1,455.7	1,811.3	1,593.0	1,148.1	993.6	1,114.1	1,479.1	1,215.4
Gross CCM Gas Savings as % of Natural Gas Sales	10.4%	15.5%	16.2%	13.6%	16.0%	15.5%	10.1%	8.0%	9.5%	13.8%	10.9%
Total Natural Gas Sales (millions m3) ³	11,862.9	11,686.5	11,114.9	10,742.3	11,303.2	10,304.4	11,338.3	12,434.3	11,728.3	10,736.2	11,172.6

1. 2017 DSM results subject to Board approval

2. Total Gas Sales include only rate classes that are eligible for DSM and subject to DSM costs

Table 3.12 Actual Annual Gas Operating Revenue

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Operating Revenue (millions \$) ¹	\$3,095.0	\$3,233.8	\$2,952.3	\$2,394.1	\$2,393.6	\$2,240.9	\$2,613.4	\$2,861.3	\$2,892.1	\$2,588.7	\$2,788.1
Less Total Gas Cost (millions \$) ²	\$2,113.0	\$2,236.1	\$1,938.6	\$1,432.3	\$1,413.3	\$1,267.6	\$1,556.8	\$1,815.5	\$1,834.8	\$1,466.7	\$1,640.8
Total Distribution Revenue (millions \$) ³	\$982.0	\$997.7	\$1,013.7	\$961.8	\$980.3	\$973.3	\$1,056.6	\$1,045.8	\$1,057.3	\$1,122.0	\$1,147.3

1. Operating Revenue includes gas sales and transportation, transmission, compression, and storage. All values are unnormalized for weather

2. Gas Cost is based on data unnormalized for weather

3. Distribution revenue is equal to the gas distribution margin and is the gas sales plus transportation less the cost of gas

Table 3.13 Total Natural Gas Sales per Rate Class Subject to DSM Costs

Rate Class	2017 Natural Gas Volumes (millions m3)
<u>General Service</u>	
Rate 1	4,739.2
Rate 6	4,700.6
Total General Service	9,439.8
<u>Contract Service</u>	
Rate 100	1.2
Rate 110	798.2
Rate 115	508.6
Rate 135	66.0
Rate 145	46.1
Rate 170	312.7
Total Contract Service	1,732.8
Grand Total	11,172.6

**Natural Gas Sales (Volumes) for rate classes that are subject to DSM only*

Table 3.14 Number of Customers by Customer Type

	Residential	Commercial	Industrial	Total Customers
# of Customers (2017) ¹	1,990,032	160,725	5,912	2,156,669

1. Residential customers include Low Income, which cannot be differentiated

Table 3.15 Number of Customers Broken Out by Rate Class

Rate Class	# of Customers
	2017
Rate 1	1,990,032
Rate 6	166,224
Rate 9	3
Rate 100	3
Rate 110	263
Rate 115	27
Rate 125	5
Rate 135	45
Rate 145	37
Rate 170	26
Rate 200	1
Rate 300	2
Rate 315	1
Total	2,156,669

4. 2017 DSM Program Results Summary

4.1 2017 DSM Scorecard Summary

The 2017 DSM program scorecard performance is presented in Table 4.0.

Table 4.0 2017 DSM Program Scorecard Summary

	Component	Metric	Weight	Targets			2017 Results
				Lower Band	Target	Upper Band	
Resource Acquisition	Large Volume Customers	Cumulative Savings (million m ³) ¹	40%	327.1	436.1	654.1	401.23
	Small Volume Customers	Cumulative Savings (million m ³)	40%	277.8	370.4	555.6	296.98
	Residential Deep Savings	Participants ²	20%	6,837	9,116	13,674	11,390
Low Income	Single Family (Part 9)	Cumulative Savings (million m ³)	45%	30.5	40.7	61.0	19.60
	Multi-residential (Part 3)	Cumulative Savings (million m ³)	45%	94.8	126.4	189.6	69.36
	New Construction	Participants	10%	21	28	42	11
Market Transformation	Residential Savings by Design	Builders	10%	24	32	48	24
		Homes Built	15%	1,705	2,273	3,410	2,570
	Commercial Savings by Design	New Developments	25%	24	32	48	30
	School Energy Competition	Schools	10%	43	57	86	65
	Run It Right	Participants	20%	88	117	176	29
	Comprehensive Energy Mgmt	Participants	20%	41	55	83	5

1. Large volume consumers include commercial customers with a 3 year average annual consumption of greater than 75,000 m³/year or industrial customers with a 3 year average consumption of greater than 340,000 m³/year.

2. Number of participants with at least 2 qualifying measures (average annual gas savings across all participants is at least 15% of combined baseline space heating and water heating usage as calculated by HOT2000).

The 2017 weighted scorecard is the basis for the calculation of the Demand Side Management Shareholder Incentive. DSMI amounts for the 2017 program year are outlined in Section 9 of this report.

Table 4.1 2017 CCM Savings Results by Sector

Program/Sector	2017 Net CCM Results (m ³)
Resource Acquisition	
<i>Residential</i>	<i>191,981,085</i>
<i>Commercial & Industrial</i>	<i>506,228,113</i>
Resource Acquisition Total	698,209,198
Low Income	88,962,131
Combined Total	787,171,329

As summarized in Table 4.1, in terms of Net Cumulative Cubic Meters (CCM) savings, 2017 results totaled 787 million cumulative m³ for all offers that include CCM as a metric.

In 2017, Enbridge delivered five offers through the Market Transformation and Energy Management scorecard. Results for the Market Transformation program offers are reviewed in Section 7 of this report.

4.2 Annual and Cumulative (Gross and Net) Results

As outlined in the Guidelines, the utilities “should provide the annual and cumulative resource savings attributable to each program, presented as both net and gross of the adjustment factors”¹² in the Annual Report.

¹² EB-2014-0134. Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020), OEB, December 22, 2014, Page 18.

Table 4.2 2017 Annual and Cumulative Natural Gas Savings

	Program/Sector/Offer	Gross Annual Gas Savings (m3)	Net Annual Gas Savings (m3)	Gross CCM (m3)	Net CCM (m3)
Resource Acquisition	Residential				
	<i>Home Energy Conservation</i>	7,243,193	6,156,714	181,079,827	153,917,853
	<i>Adaptative Thermostats</i>	2,643,280	2,537,549	39,649,200	38,063,232
	Total Residential	9,886,473	8,694,263	220,729,027	191,981,085
	Commercial & Industrial				
	<i>Custom Industrial</i>	27,656,580	14,400,781	430,867,267	224,352,589
	<i>Custom Commercial</i>	22,131,941	10,117,159	364,584,598	182,604,582
	<i>Run It Right</i>	347,365	173,891	1,736,825	869,455
	<i>Prescriptive</i>	2,853,530	2,437,180	48,098,120	41,009,936
	<i>Direct Install</i>	3,930,949	3,734,401	58,964,233	56,016,021
Low Income	<i>Energy Leaders</i>	137,553	137,553	1,375,530	1,375,530
	Total C & I	57,057,918	31,000,966	905,626,572	506,228,113
	Low Income				
	<i>Single Family (Part 9)</i>	796,791	790,267	19,663,606	19,598,364
	<i>Multi-Residential (Part 3)</i>	3,536,922	3,531,178	69,421,203	69,363,767
	Total Low Income	4,333,713	4,321,445	89,084,809	88,962,131
	Grand Total	71,278,104	44,016,674	1,215,440,409	787,171,329

Table 4.2 details the annual gas savings and cumulative lifetime natural gas savings results (in cubic meters) for each of the offers in the Resource Acquisition and Low Income programs that have CCM as a performance metric. Savings results are summarized for both gross and net savings (net of applicable adjustment factors).

4.3 2017 Program Cost-Effectiveness Screening

Table 4.3 summarizes the TRC-Plus screening calculations for the 2017 Enbridge DSM Portfolio for illustrative purposes. The portfolio as a whole was cost-effective with an overall TRC-Plus ratio of 2.58.

Table 4.3 2017 TRC-Plus Screening Summary

Program/Sector/Offer		NPV TRC Plus Benefits	Total TRC Costs	Net TRC Plus Benefits	TRC Plus Ratio
Resource Acquisition	Residential				
	<i>Home Energy Conservation</i>	40,322,000	26,844,000	13,478,000	1.50
	<i>Adaptative Thermostats</i>	13,137,000	4,524,000	8,613,000	2.90
	Residential Total	53,459,000	31,368,000	22,091,000	1.70
	Commercial & Industrial				
	<i>Custom Commercial</i>	43,082,000	12,863,000	30,219,000	3.35
	<i>Custom Industrial</i>	48,507,000	12,434,000	36,073,000	3.90
	<i>Run It Right</i>	211,000	879,000	-668,000	0.24
	<i>Prescriptive</i>	11,238,000	4,059,000	7,179,000	2.77
	<i>Direct Install</i>	11,064,000	2,057,000	9,007,000	5.38
	<i>Energy Leaders</i>	<u>307,000</u>	<u>192,000</u>	<u>115,000</u>	<u>1.60</u>
	Commercial & Industrial Total	114,409,000	32,484,000	81,925,000	3.52
	Resource Acquisition Total	167,868,000	63,852,000	104,016,000	2.63
Low Income	Low Income				
	<i>Single Family (Part 9)</i>	4,032,000	4,549,000	-517,000	0.89
	<i>Multi-Residential (Part 3)</i>	<u>15,823,000</u>	4,495,000	11,328,000	<u>3.52</u>
	Low Income Total	19,855,000	9,044,000	10,811,000	2.20
Combined RA/Low Income *		187,723,000	72,896,000	114,827,000	2.58

As proposed in the Guidelines, the Company is expected to use the PAC test as a secondary reference tool in assessing the programs' cost-effectiveness. Table 4.4 below summarizes the PAC screening calculations for the 2017 Enbridge DSM Portfolio. The portfolio as a whole had a positive overall PAC ratio of 3.02.

Table 4.4 2017 PAC Screening Summary

	Program/Sector/Offer	NPV PAC Benefits	Total PAC Costs	Net PAC Benefit	PAC Ratio
Resource Acquisition	Residential				
	<i>Home Energy Conservation</i>	28,297,000	23,740,000	4,557,000	1.19
	<i>Adaptative Thermostats</i>	7,909,000	1,750,000	6,159,000	4.52
	Residential Total	36,206,000	25,490,000	10,716,000	1.42
	Commercial & Industrial				
	<i>Custom Commercial</i>	35,154,000	5,735,000	29,419,000	6.13
	<i>Custom Industrial</i>	42,250,000	4,401,000	37,849,000	9.60
	<i>Run It Right</i>	188,000	1,451,000	-1,263,000	0.13
	<i>Prescriptive</i>	8,116,000	1,406,000	6,710,000	5.77
	<i>Direct Install</i>	11,029,000	2,206,000	8,823,000	5.00
	<i>Energy Leaders</i>	<u>277,000</u>	<u>88,000</u>	<u>189,000</u>	<u>3.15</u>
	Commercial & Industrial Total	97,014,000	15,287,000	81,727,000	6.35
				<u>0</u>	
	Resource Acquisition Total	133,220,000	40,777,000	92,443,000	3.27
Low Income	Low Income				
	<i>Single Family (Part 9)</i>	3,606,000	4,887,000	-1,281,000	0.74
	<i>Multi-Residential (Part 3)</i>	<u>13,208,000</u>	3,994,000	9,214,000	<u>3.31</u>
				<u>0</u>	
	Low Income Total	16,814,000	8,881,000	7,933,000	1.89
	Combined RA/Low Income *	150,034,000	49,658,000	100,376,000	3.02

5. Resource Acquisition Scorecard

Enbridge works across the entire marketplace to build awareness of the energy efficiency opportunities supported through its Resource Acquisition (RA) program. The ongoing education, customer support and technical assistance provided by DSM consultants continue to be key drivers in delivering results for the RA program.

The performance metrics in Enbridge's Resource Acquisition scorecard encompass results attributable to offers which are geared to the Residential, Commercial, and Industrial market segments. Performance for the Resource Acquisition program is measured primarily in terms of net CCM of natural gas savings, and in one case, the Home Energy Conservation (HEC) offer also includes a participant metric.

RA offers focus on achieving direct, volumetric natural gas savings customer by customer that commonly involve the installation of energy efficient equipment or the implementation of operational or process improvements.

The RA scorecard includes separate CCM metrics for both large and small volume customers. The Large Volume metric includes savings from offer participants who have a three year average annual consumption of greater than 75,000 m³/year in the Commercial sector or 340,000 m³/year in the Industrial sector. The Small Volume metric includes savings from DSM participants with a three year average annual consumption of less than 75,000 m³/year in the Commercial sector or 340,000 m³/year in the Industrial sector, and also includes savings from the Residential sector.

In the Residential Sector there are two offers, HEC and Adaptive Thermostats. The HEC offer encourages participants to install energy-efficient measures such as upgrades to space and water heating equipment as well as home building envelope upgrades. The Adaptive Thermostats offer focuses on a single measure upgrade.

For Commercial customers, Custom and Prescriptive offers are available for new and existing Commercial building customers and include the installation of efficient heating, ventilating and air conditioning (HVAC) systems, operational improvements, and custom solutions specific to the customer's needs.

Industrial customers tend to have differing and unique considerations. In addition to selected prescriptive measures, projects for Industrial customers are most often customized solutions, engineered to meet the specific needs of a customer's manufacturing process and facility.

Results for Enbridge's 2017 RA program were divided into Large Volume and Small Volume Customers. As outlined in Table 5.0, the achievement for the Large Volume Customers metric was 401 million net CCM. The Small Volume Customers result was 297 million net CCM. The Resource Acquisition program scorecard also includes a deep savings metric specific to the Residential sector. There were 11,390 Residential Deep Savings Participants, exceeding the target.

Table 5.0 2017 Resource Acquisition Scorecard

Component	Metric	Weight	Targets			2017 Result
			Lower Band	Target	Upper Band	
Large Volume Customers	Cumulative Savings (million m ³) ¹	40%	327.1	436.1	654.1	401.23
Small Volume Customers	Cumulative Savings (million m ³)	40%	277.8	370.4	555.6	296.98
Residential Deep Savings	Participants ²	20%	6,837	9,116	13,674	11,390

1. Large volume consumers include commercial customers with a 3 year average annual consumption of greater than 75,000 m³/year or industrial customers with a 3 year average consumption of greater than 340,000 m³/year.

2. Number of participants with at least 2 qualifying measures (average annual gas savings across all participants is at least 15% of combined baseline space heating and water heating usage as calculated by HOT2000).

Within the RA program, each of the Residential, Commercial and Industrial sectors contributed to the CCM savings achievement as detailed below in Table 5.1. Further detail on the offers within each of these sectors is provided in the following pages.

Table 5.1 2017 Resource Acquisition Program Sector Results

Resource Aquisition Program Sector	2017 Net CCM (m ³)	# of Projects	# of Units
<i>Residential</i>	191,981,085	25,678 ¹	14,288 ²
<i>Commercial & Industrial</i>	506,228,113	1,418 ³	4,460 ⁴
Total Resource Acquisition	698,209,198	27,096	18,748

1. # of Projects summarizes the number of unique projects for HEC and adapative thermostats.

2. # of Units summarizes the number of units installed for adapative thermostats offers.

3. # of Projects summarizes the number of unique projects for custom, prescriptive, direct install, RIR, and energy leaders offers.

4. # of Units summarizes the number of units installed for prescriptive, and direct install.

All Resource Acquisition offers delivered to Enbridge customers in 2017 and discussed below will be continued in the Resource Acquisition DSM program in 2018.

5.1 Residential Resource Acquisition

Enbridge serves over 1.9 million Residential customers, which represents the largest customer segment in the Company's service area. Offers marketed to Residential customers in 2017 include Home Energy Conservation (HEC) and Adaptive Thermostats. In addition to helping homeowners understand energy improvement opportunities through the completion of a home energy audit, the HEC offer looks at whole home energy savings and encourages participants to install energy-efficient measures that generate ongoing energy savings. The Adaptive Thermostat offer provides customers with rebates to support the installation of qualified smart thermostats, which utilize sensors and wi-fi technology giving homeowners the flexibility to control their thermostat remotely through a smart device, to maintain comfort while achieving energy savings.

2017 DSM Results for Residential Resource Acquisition offers are provided in Table 5.2. Further detail on the Residential Resource Acquisition offers is provided in the following pages.

Table 5.2 2017 Residential Resource Acquisition Results

Resource Acquisition Residential Sector	2017 Net CCM (m ³)	# of Participants	# of Units
<i>Home Energy Conservation</i> ¹	153,917,853	11,390	-
<i>Adaptive Thermostats</i>	38,063,232	14,288	14,288
Total Residential	191,981,085	25,678	14,288

1. Number of participants with at least 2 qualifying measures (average annual gas savings across all participants is at least 15% of combined baseline space heating and water heating usage as calculated by HOT2000).

5.11 Home Energy Conservation

Objectives	<p>The aim of the Home Energy Conservation (HEC) offer is to promote meaningful improvements to Residential customers' gas consumption and thereby help customers lower their energy bills.</p> <p>The goal of the HEC offer is to achieve deep energy savings in existing homes and to raise awareness of the benefits of energy efficiency. The initiative is designed to reduce gas use for space and water heating using a holistic approach, encouraging conservation through the installation of high efficiency equipment as well as thermal envelope improvements to reduce the space heating load. With financial incentives, the offer helps homeowners make their homes more energy efficient and reduces the burden of high energy costs.</p>
Target Customer	<p>HEC is targeted to Rate 1 Residential customers.</p>
Metrics	<p>As part of the Resource Acquisition program, HEC has two metrics. The first metric is lifetime natural gas savings – CCM savings. The second metric is the total number of Residential participants who install at least two qualifying measures. The aggregate annual gas savings across all participants in the portfolio must achieve on average at least a 15% reduction in annual natural gas use in comparing the results of the D (pre-installation) assessment to the results of the E (post-installation) assessment as determined by HOT2000 (NRCan's) accredited energy modelling software.</p>
Offer Description	<p>The HEC offer is a direct-to-consumer delivered initiative. Participants work with an Enbridge partner Service Organization</p>

	<p>(SO) to undergo a preliminary energy assessment to determine the home's current energy use. The SO assigns a Registered Energy Auditor (REA) to audit the home and complete a blower door test to measure the home's air tightness. The REA models the home using HOT2000 and completes an energy efficiency report for the homeowner. This report details energy savings tips, information regarding the home's current energy consumption, and outlines the energy savings opportunities for the home as well as provides an EnerGuide rating. With this information, the homeowner is in a position to make informed decisions regarding potential energy efficient improvements. Participants are required to install at least two eligible measures. Once energy upgrades are completed, the REA completes a post-installation audit to model for the customer the energy savings achieved, as determined by HOT2000. Participants are eligible for a variety of incentives, including reimbursement for the cost of the pre and post audits, and incentives towards energy upgrade implemented. Natural gas savings claims are determined based on the pre and post HOT2000 modelled consumption. REAs submit modeling simulation files along with supporting data to NRCan. Enbridge receives pre and post audit data from NRCan and compiles monthly reports. This data is tracked and reviewed with Service Organizations (SOs) for validation as required. Tracking reports summarize information regarding project specifics, including participant details, project dates, measures installed and gas savings (m³).</p>
2017 Results	<p>As outlined in Table 5.3 below, the HEC offer contributed 153.9 million CCM to the Resource Acquisition Small Volume Customer metric in 2017 with a total of 11,390 participants.</p>

Table 5.3 2017 Home Energy Conservation Results

Resource Aquisition Residential Sector	2017 Net CCM (m ³)	# of Participants
<i>Home Energy Conservation</i> ¹	153,917,853	11,390

1. Number of participants with at least 2 qualifying measures (average annual gas savings across all participants is at least 15% of combined baseline space heating and water heating usage as calculated by HOT2000).

2017 Commentary and Lessons Learned

- When the HEC offer was launched in 2012, efforts were strategically targeted to the Markham community, which was identified based on location, age of homes, and community interest in energy efficiency. Since 2012, the HEC offer has grown substantially from 271 participants to 11,390 participants during the 2017 program year.
- Though Enbridge's market delivery strategy continues to focus marketing and communications efforts on the home improvement contractor community, in 2017 the Company also focused efforts towards a mass media approach including TV commercials and radio advertisements. These efforts along with bill inserts were successful in increasing homeowner awareness of the HEC offer and motivating customer participation.
- In 2017, Enbridge won two marketing awards from the Association of Marketing and Communication Professionals (AMCP) recognizing the Company's mass media campaigns for the HEC offer. The MarCom Gold Award for Integrated Marketing and the dotCOMM Gold Award for Integrated Digital Marketing.
- Enbridge held fifteen retail events at various big-box store locations in 2017. Teams of program representatives were available in store to engage shoppers,

discuss energy efficiency and highlight the Home Energy Conservation and Smart Thermostat offers.

- A key success in the mass media strategy in 2017 involved the creation of an interactive booth to be used for Home Shows and community events called Granny's House. This booth provided a look back in time through interactive elements, and visual demonstrations of savings potential. Granny's House featured an outdated thermostat, drafty outlets and inefficient windows as examples, to teach the importance of energy-efficient upgrades, educate homeowners ways to save energy and reduce monthly utility bills. Visitors to the booth were encouraged to take a seat on the antique couch to watch a short video promoting HEC. The new booth also generated some great media coverage that included:

- 98.1 live radio broadcast from the booth
- 98.5 live radio broadcast from the booth
- Breakfast TV
- CTV at noon
- Toronto Sun



- On May 29th 2017, Enbridge launched the Independent Electric System Operator (IESO) Whole Home Pilot (WHP) initiative. Discussed further below in section 5.14, the Pilot provided consumers with a combined offer which promotes both gas and electric savings.
- Enbridge identified and executed various marketing opportunities to cross promote the enhanced HEC offer marketed through the Whole Home Pilot with Local Distribution Companies (LDCs). For instance, Enbridge provided training to Hydro Ottawa event staff on the electric incentives available in through this offer in advance of the Ottawa Home Show. This training allowed the Hydro

Ottawa staff to inform customers of the variety of incentives available in the market from both gas and electric utilities. Enbridge also collaborated with Alectra Utilities to promote the offer through e-blasts sent to Alectra's residential customers, Facebook Ads, Twitter posts and the Alectra Utilities website.

- As the offer has grown significantly since 2012, Enbridge continues look for opportunities to improve the customer experience. For instance, modifications were made to the HEC website to include an online participation screening form. This form is intended to streamline the confirmation of the customer's eligibility, facilitating the information needed by Service Organizations (SOs) to book the customer's energy audit faster. Also to improve the customer experience the Company held monthly call calibration sessions in an attempt to reduce the average handling time of calls received from customers. During these sessions call agents were trained on how to improve the agent escalation process and work towards first-call resolution as well as how to address the concerns of the caller in a clear and concise manner. This resulted in an average drop in the handling time by 30 seconds in 2017 despite a three-fold increase in calls over the prior year.
- Enbridge continues to work diligently with Service Organizations and Energy Auditors in order to effectively manage processes and support participation. With the significant number of participants Enbridge also continues to look for ways to enhance internal processes, in particular working with NRCan to streamline data collection as well as to improve the reconciliation process to ensure quality control.
- HEC participant feedback continues to be positive:
"[The REA] was in a word amazing. On the first audit visit, after taking his readings, he walked us through the areas of concern for us, advised us on how to make the air sealing adjustments, prioritized the different jobs that were required and made my whole experience without frustration by showing me the

products he recommended. [The REA] was quick and thorough on his second visit to measure the difference, walked us through the rebate program and gave us realistic time lines for rebate arrival. We are very pleased with the entire process of our energy audit.”

- Following a consultation process, Enbridge determined that the tiered incentive levels were confusing as customers were uncertain of the incentive they would receive once upgrades were completed. As a result, a single incentive of \$1,600 towards annual gas savings was promoted effective May 29th 2017.

An advertisement for a home energy conservation program. The top half has a teal background with the title "Conserving Energy at Home" in white. Below this is a photograph of a man and a young child in a kitchen, smiling and baking together. The man is stirring a bowl of batter, and the child is watching him. On the counter are various baking items: a bowl of batter, a measuring cup with milk, a tray of eggs, and some finished cookies. Text overlays on the image include: "With our Home Energy Conservation Program, you can put less energy into running your home and more into living." in the upper left; "Now With Added Electrical Incentives" in a dark box on the left; and a circular badge on the right stating "Receive \$1,600* PLUS Newly added electrical incentives". At the bottom, a line of text says "*Visit [enbridgesmartsavings.com](\"http://enbridgesmartsavings.com\") for full details."

- Market conditions were substantially altered for the offer in Q4 of 2017 with the introduction of a prescriptive residential rebate program through the provincial government's GreenON initiative. The GreenON program offered substantial incentives to participants for the installation of windows as well as attic, wall and basement insulation. The introduction of the GreenON program in the marketplace resulted in unforeseen competition for participant attention as well as confusion among contractors and residents regarding eligibility requirements for the respective initiatives. In addition, many window and insulation contractors

that had previously partnered with Enbridge through the HEC offer turned their attention to the more lucrative GreenON program. In an effort to dispel confusion, Enbridge reached out to GreenON to collectively provide clarity to the marketplace.

- The HEC offer will continue in 2018. In an attempt to decrease barriers to customer participation and diversify measure uptake as well as align this offer with Union's Home Reno Rebate program, Enbridge will re-design the HEC offer in 2018. The Company will implement a quasi-prescriptive incentive structure for this offer that aligns with the Union's Home Reno Rebate program. Enbridge will monitor the offer through the course of 2018 to determine if these design changes will result in an increase customer participation and measure uptake through higher incentives available to HEC participants.

5.12 Residential Adaptive Thermostat

Objectives	The goal of this offer is to broadly reach the mass market with a straight-forward prescriptive approach that helps customers achieve gas savings.
Target Customer	The Adaptive Thermostat offer is targeted to Rate 1 Residential customers.
Metrics	As part of the Resource Acquisition program, the primary metric for the Adaptive Thermostat offer is lifetime natural gas savings - CCM savings.
Offer Description	<p>Customers benefit from the potential savings generated by installing and using a smart thermostat. This offer provides an easy to understand, stand-alone prescriptive opportunity for Residential Customers. A \$100 incentive is provided to customers who install a qualified adaptive thermostat and apply online. To receive an incentive, customers must meet the following eligibility criteria:</p> <ul style="list-style-type: none"> • Be a Residential customer in Enbridge franchise area; • Have a valid EGD account number; • Register the device to confirm installation and activation of the unit; <p>Through partnerships with participating manufacturers, Enbridge utilizes web portals specific to each manufacturer to facilitate customer participation. These sites provide confirmation of installation and activation, as well as authentication of homeowner data allowing Enbridge to process applications. As part of the customer registration process, these portals track the thermostat connection date for each device, identifying when the thermostat was actually activated in the home.</p>

2017 Results	The Residential Adaptive Thermostat offer was successful in 2017, as Enbridge claimed 16,284 units through the DSM program offer.
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Table 5.4 2017 Residential Adaptive Thermostat Results

Resource Acquisition Residential Sector	2017 Net CCM (m ³)	# of Units
<i>Adaptive Thermostats</i>	38,063,232	14,288

2017 Commentary and Lessons Learned

- The Adaptive Thermostat offer continued to receive a positive response in the market in 2017 despite some confusion around similar offers introduced by the provincial government through the GreenON program late in the year.
- Market conditions were substantially altered in Q4 with the arrival of competing government programs. First, GreenON announced a direct-install program available to 140,000 applicants across the province of Ontario which was fully subscribed in a matter of days. This program was followed closely by a second initiative from GreenON duplicating the \$100 incentive Adaptive Thermostat offer already in market through Enbridge. Beyond impacting the participation in Enbridge's offer, this caused confusion in the market and required logistical improvements to Enbridge's program delivery including the development of a process to ensure customers only applied to one program.
- In 2016, Enbridge supported the offer in partnership with two major manufacturers of smart thermostats. In 2017, Enbridge expanded this offer to include three additional major manufactures of smart thermostats providing more choice for the retail customer. Among the additions, a direct install option for customers leveraging the contractor channel proved to be well received.

[illegible]

- In 2018, Enbridge will explore the addition of more qualifying smart thermostats, and market the offer in conjunction with customer buying decisions for HVAC equipment. Leveraging the HVAC contractor channel at the time the customer is upgrading HVAC equipment provides a logical opportunity to educate the consumer on the additional benefits of installing a smart thermostat.
- In addition to enhancements to Enbridge's website supporting this offer, Enbridge worked with vendors to promote the offer through in-store marketing (e.g. Home Depot) and digital advertising including online ads and YouTube videos.
- Enbridge saw success with two large campaigns in 2017. The first was an enhanced Canada Day promotion offering customers \$150 incentive towards an Ecobee device. The second, in association with manufacturer's Black Friday promotions, leveraged sale prices offered by Ecobee, Nest and Honeywell.



- In Q4 of 2016 Enbridge entered into a collaboration agreement with Toronto-Hydro Electric System Limited (THESL) which was continued in 2017. This collaboration effort required both Enbridge and THESL to contribute \$50 toward the \$100 incentive for those participants in the THESL franchise area with air conditioning detected by the control. This collaboration, allowed Enbridge to

provide rebates to more customers than it might have otherwise been able to support.

- The Residential Adaptive Thermostat offer is expected to continue in 2018 including the successful collaboration between Enbridge and THESL. Enbridge will also explore opportunities for further LDC collaboration. In addition, Enbridge is investigating point of sale incentive applications and opportunities for online marketplaces to further expand the offer in 2018.



Enbridge Gas Distribution

Smart Thermostats Program

Maximize home comfort and energy savings. Save on the purchase of a qualified Smart Thermostat and lower your energy bills.

Receive a **\$100*** incentive on Smart Thermostat purchases

The advertisement features a woman with dark curly hair, wearing a blue and white striped shirt, smiling while holding a white smart thermostat. The background is a bright, slightly blurred indoor setting. The text is presented in a clean, modern font, with the program name in a large, bold font. A circular badge in the bottom right corner highlights the \$100 incentive.

5.13 Expansion of Residential Offers through the Green Investment Fund

In 2016, the Ontario Government allocated \$100 million from the Green Investment Fund (GIF) towards helping homeowners reduce their energy bills and cut greenhouse gas emissions. In partnership with Enbridge Gas Distribution and Union Gas, this effort was intended to help homeowners conduct audits to identify energy-saving opportunities and complete retrofits. In 2016, an agreement was signed between Enbridge and the Province allocating \$58 million of the GIF funding towards the expansion of the Company's HEC and Adaptive Thermostat offerings as well as the introduction of a behavioural initiative. Beyond the reach of Enbridge's DSM offer, over the three year term of the agreement this effort is targeting incremental residential homeowners.

The foundation for this effort utilizes the existing HEC offer, which was introduced in the Company's DSM portfolio and has been offered in the market since 2012. The expanded initiative leverages the existing design, promotion, delivery and execution of the DSM HEC and Adaptive Thermostat offers already established in the Residential market. For this reason, attribution of in-franchise gas customer Residential results cannot be determined merely based on the source of funding.

In addition, GIF funding will extend the market to homes beyond the Enbridge franchise area and provides for the inclusion of homes with a primary heating fuel that is non-gas (e.g. oil, propane or wood) in the HEC offer; these participants and results will be fully attributable to GIF.

Residential results attributed to GIF in 2017 are outlined in Table 5.5.

Table 5.5 2017 Residential Results Attributed to GIF

Offer	# of Participants/ Units
Home Energy Conservation	6,817 homes (6,490 gas & 327 non-gas)
Adaptive Thermostats	9,000 units

Spending in 2017 from GIF funding totalled approximately \$15.97 million, the majority of which was used towards payment of customer incentives. Beyond incentives tied to these GIF results, GIF spending in 2017 related to program costs, including marketing, implementing systems and expansion to the non-gas and out-of-franchise markets.

The agreement with the Province earmarked \$2.2 of the \$58 million GIF funds to support a Residential behavioural initiative. The intent of this program is to influence customers to change their decisions and actions regarding energy use through customized energy reports that are sent directly to customers. Customized reports include benchmarking to the community and past performance. Also, the communications will provide energy savings tips and other tools to encourage behavioural changes, as well as promote the benefits of participation in the HEC and Adaptive Thermostat offerings. 100% of the results from the behavioural offer will be attributed to the GIF initiative. The Residential behavioural initiative was initiated late 2016, and is expected to end in late 2018.

5.14 Independent Electricity System Operator (IESO) Whole Home Pilot

As of May 29th, 2017, in partnership with the IESO, Enbridge delivered the Whole Home Pilot. Upon initiating the pilot, all eligible participants of the existing HEC offer benefited from an additional assessment of the electric energy use in the home with the opportunity to receive prescriptive incentives for electricity improvements. Incented measures included electronically communicated motors (ECM), central air conditioners,

and specified electric appliances. Beyond HEC, the pilot allowed for the accessibility of a whole home offer to residential customers with an electric primary heating fuel source.

Feedback on this pilot has been encouraging from all stakeholders. Participants have benefited from receiving one combined incentive cheque for all eligible incentives and the general consensus is that the “one stop shop” approach has increased the overall customer experience. Customers have also appreciated that the process allows for the identification of potential energy savings for both gas and electric in one visit. These audit visits also provide “leave behind” materials aimed at educating participants on how they can achieve energy savings by changing behaviours as part of their everyday routine.

Contractor feedback has also been positive. As the Whole Home Pilot leverages the existing HEC program infrastructure, contractors benefited from a reduction in the administrative burdens related to the Save on Energy Heating and Cooling incentives. Also HVAC contractors appreciated that the pilot was more inclusive regarding HVAC contractor participation than the current Save on Energy program.

In 2017, over 15,000 customers received an electric energy assessment to identify opportunities in their homes, and over 8,500 received an incentive towards an electrical energy efficiency measure.

The Whole Home Pilot will continue to be offered through Enbridge in concert with the HEC offer in 2018.

5.2 Commercial and Industrial Resource Acquisition

Enbridge serves Large and Small Volume Commercial and Industrial customers that span a wide variety of sub-sectors. Some of these include multi-residential buildings, commercial office buildings, schools/universities, hotels/motels, warehouses, retail facilities, food services, hospitals/health-care, and government/municipal facilities in the Commercial sector and agricultural, manufacturing, and automotive facilities in the Industrial sector.

Offers designed for Commercial and Industrial customers include custom, prescriptive and direct install approaches supporting customers with the installation of energy efficient equipment as well as the adoption of energy efficient practices such as operational improvements. This is accomplished through the provision of energy audits, technical support, opportunity assessment, data and consumption analysis, education initiatives, and incentives.

DSM programming available to Commercial and Industrial customers is delivered directly by Enbridge's Energy Solutions Consultants (ESCs) to customers, building owners, and facility managers and operators, as well as through supply chain channels and business partners that include contractors, service providers, distributors, engineering firms and energy service advisors.

2017 results for Commercial and Industrial Resource Acquisition offers are provided in Table 5.6. Further detail on the Commercial and Industrial Resource Acquisition offers is provided in the following pages.

Table 5.6 2017 Commercial and Industrial Resource Acquisition Results

Resource Acquisition	2017 Net CCM (m ³)	# of Projects ¹	# of Units ²
<i>Custom Commercial</i>	182,604,582	646	-
<i>Custom Industrial</i>	224,352,589	177	-
<i>Run It Right</i>	869,455	59	-
<i>Prescriptive</i>	41,009,936	426	4,202
<i>Direct Install</i>	56,016,021	105	258
<i>Energy Leaders</i>	1,375,530	5	-
Total/Average	506,228,113	1,418	4,460

1. # of Projects summarizes the number of unique projects for custom, prescriptive, direct install, RIR, and energy leaders offers.

2. # of Units summarizes the number of units installed for prescriptive and direct install offers.

5.21 Custom Commercial

Objectives	The goal of the Commercial Custom offer is to promote energy efficiency and to reduce natural gas use through the capture of energy efficiency opportunities in commercial buildings, including retrofits of building components and upgrades at the time of replacement. The objective is to provide technical support, business support services, and financial incentives to help customers meet energy efficiency and budgetary goals.
Target Customer	The Custom Commercial offer targets Commercial customers who are in Rates 6, 110, 115, 135, 145, and 170.
Metrics	As part of the Resource Acquisition program, the primary metric for the Commercial offer is lifetime natural gas savings - CCM savings. There are two metrics defined in the 2017 scorecard, one for Large Volume and one for Small Volume. Large Volume includes Commercial customers with a 3 year average annual gas consumption greater than 75,000 m ³ /year. Small Volume includes

	Commercial customers with a 3 year average annual gas consumption below 75,000 m ³ /year.								
Offer Description	<p>The Commercial Custom offer provides technical assistance and financial incentives aimed at encouraging Commercial customers to implement energy efficient technologies. The offer consists of variable incentives based on project specific details wherein custom calculations are used to estimate the savings. Enbridge provides consultative services to customers and third party service providers aimed at assessing building energy consumption and making recommendations for gas-saving measures. Upon implementing recommended energy efficiency projects, customers are eligible to receive financial incentives under this offer. Enbridge currently provides a tiered custom incentive structure for Commercial customers as described in the table below:</p> <table border="1"> <tr> <th>% of Annual Consumption (m³) Saved</th><th>\$/m³ Incentive*</th></tr> <tr> <td>0-10%</td><td>\$0.10/m³</td></tr> <tr> <td>10-20%</td><td>\$0.20/m³</td></tr> <tr> <td>20% and above</td><td>\$0.30/m³</td></tr> </table> <p>*All boiler retrofit projects receive either a \$0.20/m³ for 0-20% annual consumption (m³) saved or \$0.30/m³ incentive for 20% and above annual consumption (m³) saved.</p> <p>The Commercial Custom offer provides up to 50% of the project's capital cost to a maximum of \$100,000 per project. The objective of the tiered incentive structure is to drive completion of projects that yield incremental savings. The additional incentive for these projects should encourage the adoption of additional efficiency measures and/or the installation of the most efficient equipment</p>	% of Annual Consumption (m ³) Saved	\$/m ³ Incentive*	0-10%	\$0.10/m ³	10-20%	\$0.20/m ³	20% and above	\$0.30/m ³
% of Annual Consumption (m ³) Saved	\$/m ³ Incentive*								
0-10%	\$0.10/m ³								
10-20%	\$0.20/m ³								
20% and above	\$0.30/m ³								

	possible to achieve the highest result. From the customer's perspective, the higher incentive helps offset the increased capital requirement that may be associated with achieving greater savings, allowing the customer to increase the project scope and making the project(s) more feasible.
2017 Results	As summarized in Table 5.7, 646 Commercial custom projects were claimed in 2017; these projects accounted for 182.6 million CCM in natural gas savings. Custom projects traditionally drive the highest percentage of Commercial results in the portfolio.

Table 5.7 2017 Custom Commercial Results

Resource Acquisition	2017 Net CCM (m ³)	# of Projects
<i>Custom Commercial</i>	182,604,582	646

2017 Commentary and Lessons Learned

- A significant portion of Enbridge's Resource Acquisition results continue to be driven through delivering Custom offers. In 2017, the Commercial team's efforts were focused on engaging the small commercial sector as evidenced in the increased number of custom projects completed in the small Commercial sector.
- Enbridge's Commercial sales team is comprised of Energy Solutions Consultants (ESCs) who work with customers (including key accounts), business partners (providing services or products promoting the energy efficient technologies), and industry associations to identify and encourage energy efficient retrofits specific to the customers' needs and goals. Importantly, ESCs provide technical expertise through the Custom offer to support and influence Commercial customers and business partners to identify and implement energy efficient projects.

- Business partners continue to play a significant role in promoting the Custom Commercial offer and influencing customers to choose higher efficiency options. These business partners include contractors, distributors, manufacturers, wholesalers, and consulting engineers. In 2017, Enbridge continued to expand the business partner network in an effort to grow program adoption and reach. Several initiatives were leveraged as a means of engaging and educating partners, including electronic communications and e-mail blasts, webinars, networking events and a dedicated micro-site with tools including online project applications, savings calculators as well as project case studies.

- In 2017, Enbridge continued to focus efforts on supporting education and building awareness of Enbridge's services and DSM support available to engage key stakeholders and organizations. These groups include:
 - American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
 - Association of Condominium Managers of Ontario (ACMO)
 - Canadian Condominium Institute (CCI)
 - Canadian Healthcare Engineering Society (CHES)
 - Centre for Energy Advancement through Technological Innovation (CEATI)
 - Continental Automated Buildings Association (CABA)
 - Eastern Ontario Landlord Organizations (EOLO)
 - Federation of Rental Providers of Ontario (FRPO)
 - Gas Technology Institute (GTI)
 - Greater Toronto Apartment Association (GTAA)
 - Hotel Engineering/Facilities Manager's Association of Toronto (HEAT)
 - Ontario Association of School Business Officials (OASBO)
 - Ontario Long-Term Care Association (OLTCA)
 - Ontario Recreation and Facilities Association (ORFA)
 - Ontario Refrigeration and Air Conditioning (ORAC)

- Ontario Restaurant Hotel & Motel Association (ORHMA)
 - Professional Retail Store Maintenance Association (PRSM)
 - Restaurants Canada
 - Building Owners and Managers Association (BOMA Toronto, BOMA Ottawa)
 - The Heating, Refrigeration and Air Conditioning Institute (HRAI)
 - Toronto and Region Conservation Authority (TRCA)
- In 2017, Enbridge expanded the offer to include the adoption of newer energy efficient technologies such as Advance Building Automation Systems (ABAS), CO Sensors for Parking Garages, Combination Ovens and Steam Trap Jackets. As a means of promoting the adoption of these energy efficient technologies, Enbridge held limited time campaigns. For instance, in the fall of 2017 Enbridge held a limited time campaign for steam trap jackets. This campaign was considered a success as the uptake of this technology increased among customers.



Trap in savings with our Steam Saver Campaign.

Earn Double & Triple Incentives for a limited time*

Commercial customers can save steam and money.

When steam traps fail, they release live steam into the condensate return system, resulting in increased energy consumption and CO₂ emissions. Enbridge's Steam Saver Campaign makes steam trap replacements and insulation more affordable than ever.

Earn double the incentives on steam trap replacements and triple the incentives on steam insulation jackets.

Between **September 1 and October 31, 2017**, Enbridge is offering double and triple incentives to cover:

- \$0.20/m² for steam trap replacement, the lesser of 75% of the total project cost or \$5,000 per facility*
- \$0.30/m² for the installation of a steam insulation jacket, up to 50% of the total project cost*

Take advantage of our Steam Saver Campaign today.

Contact your Enbridge Energy Solutions Consultant:

☎ 1-866-844-9994
✉ energyservices@enbridge.com
🏠 enbridgegas.com/commercial

ENBRIDGE
Life Takes Energy™

enbridgegas.com/commercial

- As a means of generating awareness of Enbridge's DSM offers among commercial customers, in Q4 live on-air advertisements were broadcasted during traffic reports on the Canadian Traffic Network. The advertisements were well received by business partners and customers, resulting in an incremental increase in website visits and inquiries about Enbridge's DSM offers. Enbridge also developed a series of sector specific advertorials placed in various trade publications to increase awareness of Enbridge's DSM offers. Advertisements were placed in the following publications:
- Canadian Property Management
 - Canadian Facility Management & Design (CFM&D)
 - Canadian Apartment
 - Canadian Healthcare Facilities

- Condo Business
- Canadian Restaurant and Foodservice News (CRFA)

- In addition, Enbridge ESCs were active at major events and conferences to further build DSM program awareness, hear from stakeholders, and provide customers with opportunities to discuss their challenges directly with DSM representatives. Some of these events included:
 - TRCA, Greening Health Care and Mayor's Megawatt Challenge Events
 - Federation of Rental Providers of Ontario, MAC Awards
 - Eastern Ontario Landlord Organization, Spring and Fall Networking Events
 - BOMA Toronto, PM Expo
 - Operations, Maintenance & Construction of Ontario Association of School Business Officials Annual Tradeshow
 - Hotel Engineering Association of Toronto Speaking Engagements (HEAT)
 - Ontario Recreation Facilities Association Conference (ORFA)
 - Tower Renewals and Toronto Hi-Rise Breakfast Sessions

- Municipal government customers continue to require dedicated account management. Throughout the year Enbridge representatives work closely with municipalities and their stakeholders to identify opportunities and provide technical support for energy efficiency projects to propel municipal energy management plans.

- Participants in the Company's Custom offer continue to provide positive feedback. Customers appreciated the technical expertise and unbiased advice provided by ESCs as well as the financial incentives available which help offset the cost of projects.

"Enbridge has been instrumental in assisting us with identifying new opportunities for retrofits and programs to reduce our energy expense. With their incentives we have been able to expedite work or get projects implemented that would have

otherwise been rejected, which allows us to increase the overall value of the properties we manage”

-2017 Custom Participant

- Warehouses have traditionally been an underrepresented sector in the DSM portfolio and have been a challenge to engage. To generate interest and increase participation in the Warehouse sector for DSM offers, Enbridge developed a programmable thermostat campaign in 2017. This campaign offered warehouses a maximum incentive of \$2,000 per programmable thermostat upgrade completed. This campaign resulted in over a hundred warehouses installing this measure.
- One of the major challenges to DSM project uptake in 2017 continues to be competing priorities for Commercial customers. With limited capital to invest into energy efficiency upgrades, customers must weigh a variety of options. These options may include investing in gas utility DSM initiatives to decrease natural gas consumption and/or Conservation Demand Management (CDM) initiatives to reduce higher cost electricity consumption. Potential cost savings for electricity conservation as well as larger incentives provided for CDM upgrades on a per energy unit basis, means Commercial customers often stand to benefit more from these types of investments than from gas DSM initiatives.
- The introduction of the GreenON fund created new challenges from a competitive and speculative perspective in 2017. Although few GreenON programs were in market throughout 2017, selected established programs had an undeniable impact on our program results. In some cases projects that Enbridge initiated were ultimately implemented through the GreenON program. Despite efforts by Enbridge to work with the various GreenON program administrators to identify opportunities for collaboration, programs were generally not compatible from a cost effectiveness and/or emission reduction requirement perspective.

- Enbridge encourages energy conservation across all fuel types and explores project collaboration efforts with the applicable Local Distribution Companies (LDCs) where appropriate. Despite considerably lower funding to provide financial incentives relative to CDM programs, Enbridge recognizes the coordinated benefits to the customer of highlighting CDM incentives and accessing LDC expertise wherever efficiency opportunities are considered. Enbridge will continue to act in the best interest of its customers by leveraging all support and funding available to customers, to supplement the Company's own technical expertise and project implementation support.
- In particular, Enbridge collaborated with LDCs in some targeted areas to jointly promote energy efficiency including:
 - Powering up Durham-Save on Energy Symposium - energy conservation information and networking event sponsored by Enbridge and various LDCs (e.g. Hydro One, Veridian Connections and Whitby Hydro Electric Corporation).
 - The City of Vaughan's Windfall event, targeted towards small and medium businesses that would like to pursue energy efficiency projects but typically lack the funds and resources to do so.
 - Enbridge/Union/IESO joint training for contractors and business partners on promotion and benefits of energy efficiency to customers.
 - Enbridge/IESO joint training for Multi-Residential Building Managers highlighting industry best practices.

Enbridge Gas Distribution

Commercial Custom Retrofit Incentive Program



Earn up to 50% of Project Costs*

Energy saved is money earned

INCREASED SAVINGS

TIER 3

\$0.30/m³

For remaining gas savings above 20%

TIER 2

\$0.20/m³

For gas savings >10% or ≤ 20%

TIER 1

\$0.10/m³

For the first ≤10% gas savings

Tiered incentives offer incremental percentage incentives over three levels of savings.

* Savings are in reference to customer's total gas consumption prior to the retrofit.

- In 2018, to maximize the benefits and convenience for customers Enbridge will continue to explore opportunities to strengthen collaboration with IESO, LDCs, municipalities and key stakeholders to promote energy conservation.

5.22 Custom Industrial

Objectives	The Industrial Custom offer is designed to capture cost-effective energy savings within the Industrial sector by delivering customized energy solutions, including providing technical and financial support to customers. Industrial Energy Solutions Consultants (ESCs) focus on assisting customers with the adoption of energy efficient technologies by overcoming financial, knowledge or technical barriers. This offer provides engineering technical support, business support services, and financial incentives to help customers meet production, energy efficiency, and budgetary needs.
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	<p>The primary objectives of this offer include:</p> <ul style="list-style-type: none"> • Maximizing the energy savings potential of the Industrial sector; • Increasing adoption of energy efficient technologies among Industrial customers; • Assisting customers in overcoming implementation hurdles including financial, knowledge, and technical barriers to increasing energy efficiency; • Supporting customers' project planning by enhancing the return on investment of projects.
Target Customer	<p>The Custom Industrial offer is available to Industrial customers (including Agricultural) in Rates 6, 110, 115, 135, 145 and 170.</p> <p>Custom projects encompass opportunities where savings are linked to unique industrial processes, building specifications, uses and technologies. With the Custom offer, Enbridge mainly targets Industrial customers (both large and small) whose gas usage is primarily consumed through process loads.</p>
Metrics	<p>As part of the Resource Acquisition program, the primary metric for the Industrial Custom offer is lifetime natural gas savings - CCM savings.</p> <p>For the purposes of the scorecard, Industrial customers are divided into Large and Small Volume customers, with corresponding incentives applied to each group. Large Volume Industrial customers are defined as having a 3 year average annual consumption of greater than 340,000 m³/year. Small Volume Industrial customers are defined as having a 3 year average annual consumption of less than 340,000 m³/year.</p>
Offer Description	<p>In the Industrial sector, offers include the Industrial Custom offer and the Prescriptive offer together with a number of enabling</p>

	<p>initiatives, such as support for Industrial customers in identifying energy-saving opportunities through to assistance with project implementation.</p> <p>These offers are primarily promoted and delivered by ESCs (professional engineers) who are active in the marketplace. ESCs are trusted energy advisors that work with customers to determine solutions to address multiple objectives, namely production, energy efficiency and budgetary considerations. Work involves addressing technical barriers to energy efficiency adoption as well as financial barriers that may hinder business justification and implementation.</p> <p>Enabling initiatives allow ESCs to work with customers to identify potential opportunities, quantify benefits, and justify action. Such initiatives include: ESCs leveraging their skills and tools to identify efficiency opportunities; involvement of third-party vendors to conduct specific types of audits or assessments of facilities; and/or ESCs assisting with the development of project implementation plans.</p> <p>Due to the unique nature of Industrial customers, custom solutions developed by ESCs are designed and engineered to meet the specific requirements of each particular customer facility. Five core components are common to the Custom offer:</p> <p>Knowledge Development: Technical publications, quarterly updates, themed workshops and a resource based energy solutions portal are offered to provide customers with the knowledge to make informed decisions through education.</p> <p>Opportunity Identification: ESCs provide support to assist customers in the identification of efficiency opportunities, such as equipment testing and assessment and thermal imaging.</p>
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	<p>Measurement: ESCs assist customers in selecting appropriate means of measurement to quantify key energy inputs.</p> <p>Engineering Analysis: ESCs assist customers who do not have the resources needed to conduct financial, technical and enterprise risk evaluations for potential projects.</p> <p>Implementation Support: ESCs work with customers on an implementation plan and connect them with business partners to complete the project.</p> <p>The following tiered incentive structure is provided with the Custom Industrial offer:</p> <ul style="list-style-type: none">• \$0.20/m³ for first 50,000 m³ gas saved• \$0.05/m³ for gas savings above 50,000 m³ <p>This incentive structure is designed to provide additional support to customers (both large and small) with the implementation of smaller projects. A higher tier for smaller projects makes energy efficiency implementation for these efforts more attractive to Enbridge's Industrial customers. This is particularly true for smaller customers. Enbridge believes it is important to directly engage this under-served market in light of the Board's direction to achieve all cost-effective DSM with a reasonable rate impact.</p> <p>The Custom Industrial offer is largely influenced by the relationship fostered between Enbridge's ESCs and customers. ESCs are responsible for providing sound technical and business support, in addition to preparing engineering calculations, documenting substantiated savings claims and key project information. Savings for each custom project are calculated on an individual basis. Each custom project includes applicable supporting project documentation that outlines key parameters and details gas savings calculations.</p>
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2017 Results	As summarized in Table 5.8, there were 177 projects completed in the Industrial Custom offer in 2017, which contributed 224 million net CCM. Custom projects for Industrial customers can be varied across a wide range of technologies and improvements. In 2017, results from custom projects were led by savings from projects focused on industrial process efficiency improvements, and the installation of control systems unique to specific customers.
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Table 5.8 2017 Custom Industrial Resource Acquisition Results

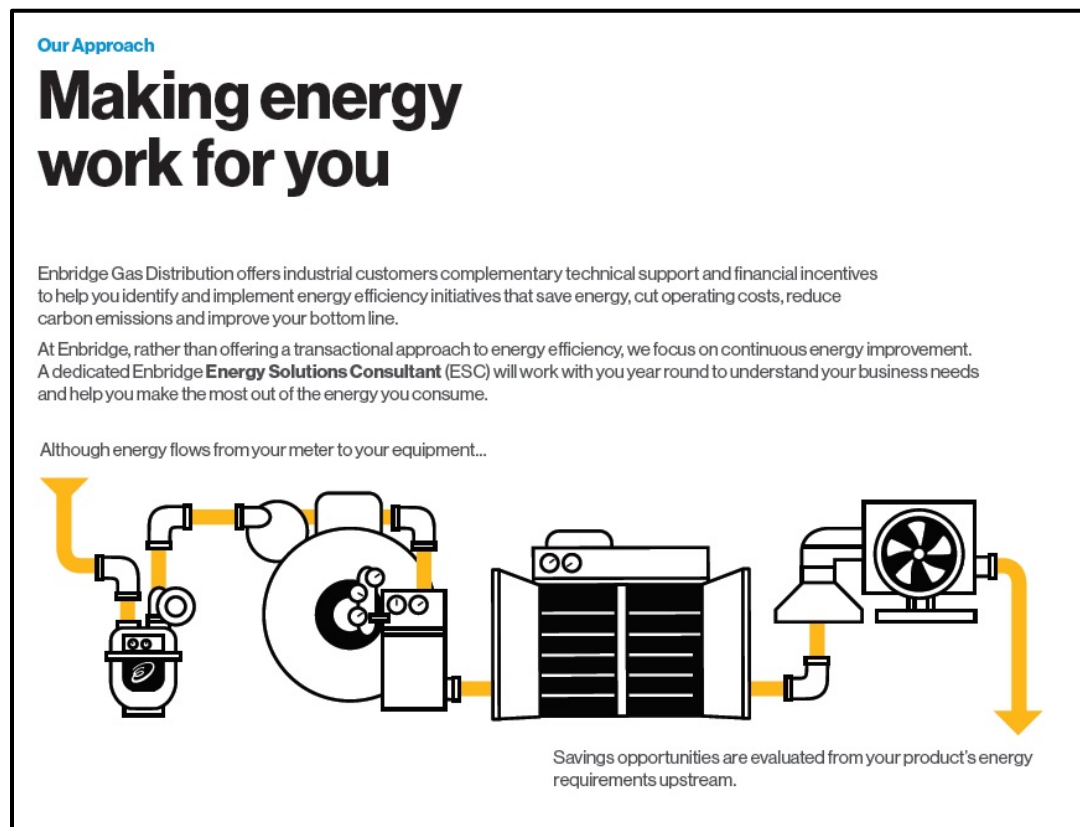
Resource Acquisition	2017 Net CCM (m ³)	# of Projects
<i>Custom Industrial</i>	224,352,589	177

2017 Commentary and Lessons Learned

- Most of the energy utilized in the industrial sector is associated with process related consumption rather than for heating and ventilation purposes. Typically, a small portion of energy is consumed by the building itself when compared with the process equipment within the facility. Many Industrial customers do not have the technical knowledge regarding energy efficient technologies that may help improve these processes and reduce overall energy consumption. The industrial team focuses its efforts on identifying opportunities to improve customers' manufacturing efficiency through improved equipment efficiency and the optimization of process lines.
- Overall, the Custom offer remained largely unchanged in 2017 from the previous year. The two tiered incentive structure continued to support the increasingly common smaller energy efficiency projects, being undertaken by both small and large industrial customers. In terms of results, though the number of projects completed for industrial customers is similar in 2017 to the year prior, the per

project gas savings are significantly lower given the increasing number of smaller industrial customers completing smaller projects.

- Custom projects tend to be resource intensive regardless of the size of the project or the customer. These projects require extensive technical expertise and data analysis as well as the development of customer relationships over many years to gain an understanding of the customer's business.
- In 2017, Enbridge continued to promote opportunities to undertake audits (e.g., plant energy assessments) as a means to identify potential energy savings that could be realized by the customer through the implementation of recommended improvements. Enbridge provides financial incentives towards audits that can reveal potential energy savings to customers, particularly in areas that customers likely would not have otherwise explored, improving the customer's overall process efficiency of the facility.



- Enbridge continued to offer a variety of promotional and educational materials as well as forums aimed at increasing awareness of energy efficiency opportunities and benefits, educating Industrial customers and providing resources to research and evaluate potential improvement solutions. In 2017, efforts included access to the Industrial Energy Solutions Portal, quarterly newsletters, promotions in industry publications, and energy efficiency workshops.
- The energy efficiency workshops hosted by Enbridge focused on educating customers and their employees on identifying energy conservation opportunities as well as providing information to assist in the assessment of potential projects. Some workshops were filmed and the video, along with the presentation material, was made available online for customers to view at their own leisure. In some instances these workshops not only helped customers identify projects with natural gas savings, but also identified potential electric and water savings opportunities. The 2017 workshops included the following:
 - Take Control of Your Natural Gas Costs
 - Energy Management in Industrial Facilities
 - Heat Recovery
 - Heating & Ventilation
- Feedback from workshop participants continues to indicate customers value these sessions and the information provided. Workshop survey results were excellent with ratings of 90% satisfaction in terms of relevancy of the workshop content.
- Enbridge has seen some success with limited time incentive campaigns, launched to coincide with workshops. For example, increased incentives for energy efficient opportunities related to heat recovery was promoted in conjunction with the heat recovery workshop. This led to an increased number of heat recovery projects considered.

- In 2017, Enbridge participated in various industrial events such as the Canadian Manufacturers & Exporters (CME) Energy conference, Powering Up Durham - Save on Energy Symposium and Greening Healthcare to promote the Custom offer to targeted audiences.
- Though the introduction of GreenON initiatives targeted to the industrial sector in 2017 provided new funding opportunities for industrial projects, the various programs in market caused confusion for many customers and in some cases delayed decisions and implementations. Notwithstanding the financial support available, customers continued to require the technical expertise provided by Enbridge's ESCs who can be relied on to provide knowledgeable and unbiased engineering advice and guidance on business case development and project implementation.
- The Industrial Custom offer is focused on understanding customers' needs and creating solutions in line with each customer's specific goals. ESCs develop relationships with the customer over time to understand their unique processes, risk tolerances, and financial boundaries. This effort provides an unbiased resource and information source that the customer can rely on when making energy efficiency investment decisions. The Industrial Custom offer is an important component of Enbridge's DSM portfolio and will continue in 2018.

5.23 Run it Right

The Run it Right offer includes two metrics, one in each of the Resource Acquisition and Market Transformation and Energy Management (MTEM, MT, "Market Transformation") scorecards. For the purposes of this report, details regarding the Run it Right offer in 2017 are included in Section 7.4 which provide a summary of the MTEM Program.

5.24 Commercial & Industrial Prescriptive (Fixed) Incentive

Objectives	The goal of the Prescriptive offer is to reduce natural gas use through the capture of cost effective energy efficiency opportunities in new and existing Commercial and Industrial sector buildings.
Target Customer	The Commercial and Industrial Prescriptive offer is intended for Commercial and Industrial customers in Rates 6, 110, 115, 135, or 145.
Metrics	<p>As part of the Resource Acquisition program, the primary metric for the Commercial and Industrial Prescriptive (Fixed) Incentive offer is lifetime natural gas savings - CCM savings.</p> <p>Commercial and Industrial customers are divided into Large and Small Volume customers. Large Volume Commercial customers are defined as having a 3 year average annual consumption of greater than 75,000 m³/year. Small Volume Commercial customers are defined as having a 3 year average annual consumption of less than 75,000 m³/year. Large Volume Industrial customers are defined as having a 3 year average annual consumption of greater than 340,000 m³/year. Small Volume Industrial customers are defined as having a 3 year average annual consumption of less than 340,000 m³/year.</p>
Offer Description	The method of determining annual savings for measures included in the Prescriptive offer is based on substantiation documents that detail deemed cubic meter savings. The costs of energy efficient upgrades are intended to be offset by energy savings. The Prescriptive offer encompasses both pure prescriptive and quasi-prescriptive measures. Gas savings for pure prescriptive technologies are based on simple deemed values. Examples of

	prescriptive technologies include demand control kitchen ventilation, dishwashers, and Energy Star equipment. Enbridge also provides incentives for quasi-prescriptive technologies, which use simple calculations incorporating relevant inputs. These measures include demand control ventilation (DCV), infrared heaters, make-up air units, and high efficiency boilers.
2017 Results	As outlined in Table 5.9, Prescriptive offers generated 41 million CCM and included 4,202 units installed across Commercial and Industrial facilities.

Table 5.9 2017 Commercial and Industrial Prescriptive Results

Resource Acquisition	2017 Net CCM (m ³)	# of Projects	# of Units
<i>Prescriptive</i>	41,009,936	426	4,202

2017 Commentary and Lessons Learned

- Enbridge utilized a variety of channels in 2017 to deliver the Commercial and Industrial Prescriptive Incentive offer, which included:
 - Energy Solutions Consultants (ESCs) working directly with the end use customer in order to provide expertise and education,
 - Business partners continue to be an important delivery channel in promoting the Prescriptive offer to customers as well as encouraging customers to pursue energy efficiency opportunities. Marketing through this network of partners which include service providers, contractors, associations, engineering firms and distributors, continues to yield the most significant results for this offer.

- In 2017, Enbridge marketed the Prescriptive offer to industry partners through presentations, sponsorships and events, and communication channels, including:
 - Presentations:

- Annual General Meetings - Hotel Engineering Facility Managers Association of Toronto (HEAT)
- Sustainability Partner Meetings – Buildings Owner and Managers Association Toronto (BOMA Toronto)
- Board of Director Meetings - Ontario Restaurant Hotel & Motel Association (ORHMA) -
- Webinars – Federation of Rental-housing Providers of Ontario (FRPO)
- Sponsorships and Events:
 - Fall Networking Event – Eastern Ontario Landlord Association (EOLO)
 - MAC Awards - Federation of Rental-housing Providers of Ontario (FRPO)
 - PM Expo – BOMA Toronto
 - OMC Workshop - Ontario Association of School Business Officials (OASBO)
- Communication Channels:
 - Mass marketing through the Enbridge website, email blasts, social media and bill inserts,
 - Newsletters - Ontario Restaurant Hotel Motel Association (ORHMA), Ontario Refrigeration & Air Conditioning Contractors Association (ORAC), Greater Toronto Apartment Association (GTAA), and FRPO

Enbridge will continue to leverage relationships with these associations to disseminate offer information to a mass audience.

- Recognizing the need to identify and target smaller and harder to reach customers, the Company continued to focus on building relationships with business partners. In 2017, Enbridge utilized and expanded the business partners network database. This database includes contractors, distributors, manufacturers, and engineering firms, identified in the small Commercial and

Industrial sectors, who have enrolled to receive electronic communication.

Specifically, webinars and targeted emails were launched to inform channels and customers of program offers, limited-time offers, sector specific information, and to provide updates on important industry topics (i.e. cap and trade). This initiative supported improved engagement with business partners.

- Enbridge continued to utilize limited time campaigns which featured increased fixed incentives to customers for certain technologies as a means to encourage participation in this offer. This proved successful in particular for Air Doors and Demand Control Kitchen Ventilation projects.

- Enbridge continued to pursue collaborative opportunities with LDCs by highlighting incentives for dual fuel saving measures.

- In partnership with Veridian, a Demand Control Kitchen Ventilation (DCKV) campaign was launched in 2017. The campaign's objective was to create awareness of the DCKV technology and the potential savings available to food service and food sales operations in the Enbridge/Veridian franchise areas. Enbridge utilized direct mail, email blasts and outbound calling, to contact 350 customers, these efforts resulted in over 40 leads for Enbridge.

"[The Enbridge] Energy Solutions Consultant helped us identify energy efficiency opportunities, such as Demand Control Kitchen Ventilation, that not only resulted in natural gas and electricity cost savings, but also made our kitchen less noisy and more functional"
- 2017 DCKV participant

- In 2017, Enbridge continued to provide an incentive to business partners including contractors and distributors. This incentive was offered to encourage their support of the Prescriptive offer and in acknowledgment for the additional administrative work required to secure the incentive for a customer. These business partners are an important extension in the Company's efforts to reach customers in highlighting these energy efficiency opportunities. Based on

feedback received from the distributors' network, Enbridge intends to develop measure and technology specific marketing materials that are specifically intended to assist distributors in promoting higher efficiency options to contractors and customers.

- Enbridge will continue providing support to the Commercial and Industrial sectors through delivery of the Prescriptive offer in 2018.



5.25 Commercial and Industrial Direct Install

Objectives	As an extension to the Prescriptive offer, the primary goal of the Direct Install offer is to more effectively reach the small Industrial and Commercial market segments, who remain reluctant to participate in DSM offers. The Direct Install offer, intends to expand the reach of fixed incentive DSM offers by largely supporting the cost and installation of specified measures.
Target Customer	The Commercial and Industrial Direct Install offer is intended for smaller Commercial and Industrial customers in Rates 6, 110, 115, 135, or 145, though larger customers are not precluded from participation.
Metrics	<p>As part of the Resource Acquisition program, the primary metric for the Commercial and Industrial Direct Install offer is lifetime natural gas savings - CCM savings.</p> <p>Commercial and Industrial customers are divided into Large and Small Volume customers. Large Volume Commercial customers are defined as having a 3 year average annual consumption of greater than 75,000 m³/year. Small Volume Commercial customers are defined as having a 3 year average annual consumption of less than 75,000 m³/year. Large Volume Industrial customers are defined as having a 3 year average annual consumption of greater than 340,000 m³/year. Small Volume Industrial customers are defined as having a 3 year average annual consumption of less than 340,000 m³/year.</p>
Offer Description	The Direct Install offer is a “turnkey” solution that makes it easy and affordable for the targeted customers to increase their energy efficiency. Enbridge and its selected contractors assist customers in

	<p>their decision making processes, beginning with an assessment of the customer's current equipment and concluding with the installation of eligible, efficient equipment. Direct Install offers are such that measures are incented up to 100% of the cost of the equipment and installation. In 2017, Enbridge's Direct Install offer focused on Air Curtains (also known as Air Doors) and single-zone Demand Control Ventilation (DCV).</p> <p>Air Curtains provide a stream of downward blowing air which prevents outdoor air infiltration. Air Curtains are commonly used on openings to the outdoors or to unheated portions of a building that need to remain open because of high traffic volumes or because of the inconvenience of constant door movement. They are suitable for installation in warehouses, manufacturing, industrial, or retail buildings with forced air space heating.</p> <p>DCVs allow for more efficient ventilation control to meet occupancy requirements of a space. This technology is used to ventilate as well as condition the air during heating or cooling periods. Sensors are used to monitor conditions and provide real-time feedback to the control. The control then triggers the fan speed, which modifies the ventilation rate to meet occupancy requirements. DCVs are well suited for buildings with varying occupancy levels, such as office buildings and retail stores.</p>
2017 Results	<p>As summarized in Table 5.10, the Commercial and Industrial Direct Install offer delivered a total of 105 projects, encompassing 258 units, and contributed 56.02 million net CCM.</p>

Table 5.10 2017 Commercial and Industrial Direct Install Results

Resource Acquisition	2017 Net CCM (m ³)	# of Projects	# of Units
<i>Direct Install</i>	56,016,021	105	258

2017 Commentary and Lessons Learned

- The Direct Install offer continued to be an effective delivery channel to engage the Commercial and Industrial sector. In 2017, the second year in market for this offer, Enbridge re-assessed measures for suitability for the direct install approach. The Company determined that in addition to Air Curtains (Shipping/Receiving Doors), which were previously promoted in 2016, Demand Control Ventilation (DCV) also provided a good market opportunity to cost-effectively serve the smaller Commercial and Industrial market segments in particular.

The advertisement features a blue header with the text "Direct Install Air Door Program" and "Stop losing energy and money through your shipping and receiving doors." Below the header is a photograph of a warehouse interior with several large white shipping and receiving doors. Orange traffic cones are placed in front of the doors. The bottom section of the ad contains text about Enbridge Gas Distribution covering up to 100% of the cost of the purchase of Enershield air doors mechanically installed by Northern Dock Systems*. A circular call-to-action bubble on the right says "Don't miss this limited time offer!" and provides contact information for Northern Dock Systems.

Direct Install Air Door Program

Stop losing energy and money through your shipping and receiving doors.

Enbridge Gas Distribution will cover up to **100% of the cost of the purchase** of Enershield air doors mechanically installed by Northern Dock Systems*

Don't miss this limited time offer!
Contact Northern Dock Systems today at
1-866-601-1758
ext. 292

ENBRIDGE
Life Time Energy

- Enbridge continues to explore strategies to engage the historically hard-to-reach small Commercial and Industrial customer. Despite the existing Prescriptive offer which provides an incentive to offset the cost of Air Door/Air Curtain and DCV equipment, the upfront installation cost inherent with both Air Curtains and DCVs was often a significant barrier for uptake with smaller Commercial and Industrial

customers. In addition, those customers typically lack the technical expertise and resources required to select a quality product and qualified contractor.

- The Direct Install offer aimed to overcome those barriers. By providing an upfront financial incentive, a prequalified product, and an experienced installation contractor, Enbridge targeted smaller customers who were unaware of the Company's program and who had never participated previously.
- In addition, qualification for the Direct Install offer required that participants complete an energy efficiency audit of their facility. This upfront assessment was beneficial to the customer as the findings from the audit assisted Enbridge in the identification of further potential energy efficiency opportunities within the facility that might merit additional evaluation.
- In 2017, Enbridge utilized a push strategy (e.g., targeted emails and cold calls) to engage small Commercial and Industrial customers in the Direct Install offer. Despite significant efforts in market outreach, the market response for DCVs was much lower than anticipated. In particular, the technical specifications outlined in the supporting TRM document for the prescriptive DCVs are designed for application in single-zone scenarios (and not multi-zone); as a result, once customers underwent an assessment process, the screening requirements to ensure customer's eligibility were often not met.
- The Direct Install offer will continue in 2018. The total solution approach continues to be effective in engaging Commercial and Industrial customers who typically have budgetary, personnel, or technical knowledge constraints. In particular, this initiative provides an opportunity for the Company to engage small Commercial customers in the Retail and Food Service sectors.

- Moving forward, Enbridge will continue to evaluate other technologies to assess their suitability for a direct install approach. Beginning in 2018, Air Curtains will be expanded to include pedestrian doors as well as shipping/receiving doors.

5.26 Energy Leaders Initiative

Objectives	The intention of the initiative is to review, determine, and support areas for incremental energy efficiency activity among customers who are deemed energy leaders and are interested in exploring innovative ways to achieve energy efficiency.
Target Customer	The Energy Leaders Initiative is intended for energy leaders in the following rate classes: Rates 6, 110, 115, 135, 145, and 170.
Offer Description	<p>The Energy Leaders initiative is intended to appeal to early adopters of new and emerging technologies. The initiative provides these early adopters increased incentives for implementing new and innovative technologies. Emerging Technology – Ice Resurfacing</p> <p>This alternative ice resurfacing approach is aimed at the commercial recreational ice arena sector. The ice resurfacing method uses a high precision de-aeration process to remove micro-air bubbles from water when laying or resurfacing ice in arenas. This process does not require heated water traditionally required in building or resurfacing ice pads.</p> <p>Ice resurfacing practices have been well established for decades in a manner that provides a high quality of ice. In exploring new resurfacing approaches and in consideration of the cost of the technology, facility managers need assurance that ice quality will not be compromised. Consequently, decision makers considering adoption for the ice resurfacing technology are cautious, as such</p>

	strong implementation support and well demonstrated benefits are required to change long standing practices.
2017 Results	As summarized in Table 5.11, there were five Energy Leaders projects completed in 2017, which contributed 1.38 million CCM.

Table 5.11 2017 Energy Leaders Results

Resource Acquisition	2017 Net CCM (m ³)	# of Projects
<i>Energy Leaders</i>	1,375,530	5


2017 Commentary and Lessons Learned

- The intent of the Energy Leaders Initiative is to investigate the implementation of emerging technologies with leading customers who are receptive to improving their energy efficiency through new opportunities, and then apply the learnings such that the technology can be delivered to a larger audience with the assurance of successful early projects.
- As this approach to ice resurfacing is still considered a new and innovative technology in Ontario, Enbridge has continued to see challenges in convincing customers to adopt this technology. Consequently, in collaboration with technology manufacturers, Enbridge ESCs focused efforts on promoting prior successful implementations and educating private arena owners and municipal facility managers on the benefits of the technology to generate interest in the adoption of this new approach. Enbridge also leveraged relationships with key industry associations such as the Ontario Recreation Facilities Association (OFRA) to support and promote this technology.
- Participant feedback for the Energy Leaders Initiative continues to be positive:

“Enbridge’s Energy Leader Program contributed significantly to our implementation of the ice resurfacing projects resulting in significant savings for us. Partially incentivizing the costs made the decision to implement the projects easier.”

- Energy Leaders participant

- In recognition of these customers, based on the criteria established by the Energy into Action committee, Enbridge nominated an early adopter for the Energy into Action Innovation Award for Continuous Energy Improvement. Enbridge’s award winning customer was recognized for its commitment and leadership in energy efficiency through the implementation of technologies and the adoption of leading edge practices.



2017 Ice Resurfacing Incentive Offer


Save Money, Energy and Reduce Your Carbon Footprint with technologies that makes it possible to Resurface Your Ice with Unheated Water.

Technologies are available that remove micro-air bubbles from water before it hits the ice resurfacer, eliminating the need for heated water to produce good quality ice.

In addition to generating energy savings and reducing carbon emissions, the use of unheated water also requires less time to evaporate after flooding, easing the load on dehumidification and chiller systems while producing ice that is harder and clearer than traditionally treated ice surfaces.

Tried, tested and true, technologies like these are currently being used in hundreds of arenas worldwide.

Through energy savings alone, the typical payback period is attractive and thanks to Enbridge, these technologies are now more affordable than ever!



5.27 Small Commercial New Construction

As previously communicated to the Board in 2016, the Small Commercial New Construction offer was similarly not offered in 2017. All of its budget allocation was credited back to the DSMVA.

6. Low Income Scorecard

Enbridge is a leader in the delivery of energy efficiency programs specifically designed for low income customers. Programming has evolved considerably since DSM activities for this market were first offered in the Enbridge franchise in 2004.

The 2017 Low Income Program is comprised of three offers: Low Income New Construction (Affordable Housing New Construction), Low-Income (Affordable Housing) Multi-Residential (targeting Part 3 buildings) and Low Income (Affordable Housing) Single Family (targeting Part 9 buildings). These offers focus on reducing the energy costs facing low income customers and their housing providers through the installation of measures and thermal envelope improvements to achieve water and space heating savings.

Low Income offers are set apart to recognize the unique needs of their target customer base. Although the offers may result in a lower benefit/cost ratio, Total Resource Cost, than similar offers delivered to non-low income customers, they are expressly designed to address the needs of low income consumers and include other important societal benefits.

Design and delivery considerations for this segment have been unique and as such, Enbridge has adopted non-traditional approaches to effectively reach these vulnerable customers, raise customer awareness, encourage resident and building staff engagement, and in turn, build participation. Enbridge's delivery strategy for the Low Income sector focuses on leveraging available channels and resources, community-based organizations (CBOs) and local community service providers. These groups have established relationships with trusted organizations that support the social service needs (housing affordability and environmental sustainability) of low income consumers.

The Company has also been particularly effective in building collaborative partnerships in the marketplace with Local Distribution Companies (LDCs) and municipalities.

Enbridge has recognized the benefits of collaboration with these partners, as well as with social and assisted housing support networks, in helping to inform and improve program delivery. Proactive stakeholder and customer relationship management has led to continuous program improvement and the refocusing of program strategies to be responsive to housing providers' needs and the evolution of affordable housing.

In the past, Enbridge's Low Income offers have primarily focused on the full funding and installation of energy efficient equipment or measures. In the current DSM Multi-Year Plan, the Low Income Program was expanded to include an offer similar to Enbridge's existing Savings by Design offer. With the available government funding for low income new construction (Affordable Housing New Construction), Enbridge recognized the opportunity to work with builders of low income housing to encourage higher energy efficiency in the design of these buildings. Now in its second year in market, the Affordable Housing New Construction offer aims to work with municipalities, as well as community housing providers and affordable housing builders/developers to encourage energy efficiency in new construction projects.

The results for the Low Income program, as outlined in Tables 6.0 and 6.1, were 69 million CCM in Multi-Residential (Part 3) and 20 million CCM in Single Family (Part 9). The Affordable Housing New Construction offer supported 11 affordable housing developments in its second year in market.

Table 6.0 2017 Low Income Scorecard

Component	Metric	Weight	Targets			2017 Result
			Lower Band	Target	Upper Band	
Single Family (Part 9)	Cumulative Savings (million m ³)	45%	30.52	40.69	61.04	19.60
Multi-residential (Part 3)	Cumulative Savings (million m ³)	45%	94.80	126.40	189.60	69.36
New Construction	Participants	10%	21	28	42	11

Table 6.1 2017 Low Income Results

Low Income Component	2017 Net CCM (m ³)	# of Projects	# of Units
<i>Single Family (Part 9)</i>	19,598,364	1,352 ¹	1,297 ²
<i>Multi-Residential (Part 3)</i>	69,363,767	126 ³	1,544 ⁴
Total/Average	88,962,131	1,478	2,841

1. # of Projects summarizes the number of unique projects for Home Winterproofing and prescriptive offers.

2. # of Units summarizes the number of units installed for prescriptive offers.

3. # of Projects summarizes the number of unique projects for custom and prescriptive offers.

4. # of Units summarizes the number of units installed for prescriptive offers.

All Low Income offers delivered to Enbridge customers in 2017 will be continued in 2018. Details regarding individual offers are discussed below.

6.1 Single Family (Part 9)

Home Winterproofing and Prescriptive Measures

Objectives	<p>The goal of the Single Family Affordable Housing offer is to enable energy savings through the reduction of hot water use and space heating demand in low income single family households through the installation of thermal envelope improvements, space heating and water saving measures.</p> <p>The Home Winterproofing offer aims to reduce energy costs for Part 9 low-income households by increasing the energy efficiency of their homes, while addressing comfort and some health and safety matters within the homes.</p>
Target Customer	<p>The Home Winterproofing offer targets social housing and assisted housing, and income qualified customers residing in low-rise buildings (Ontario Building Code (OBC, the “Code”) Part 9). This</p>

	<p>offer targets Rate 1 homeowners and tenants within the Enbridge franchise area who need assistance with their energy costs.</p> <p>Income verification is a requirement for participation in this offer.</p> <p>Eligible Enbridge customers must meet the following criteria:</p> <ul style="list-style-type: none"> • Income is at or below 135% of Statistics Canada's Low Income Cut-Off (LICO) or tenants reside in social and assisted housing, regardless of gas bill payment responsibility; • Occupants of single detached and low-rise multi-family (3 stories or less) buildings; and • Private homeowner or tenant who pays their own gas bills.
Metrics	<p>The primary metric for the Home Winterproofing offer is lifetime natural gas savings - CCM savings.</p>
Offer Description	<p>The offer provides a free home assessment and weatherization services (i.e., insulation and air sealing) to qualified Enbridge customers who meet income and customer eligibility criteria. As a direct install offer, there is no financial cost to the participant for the energy assessment or for the weatherization products and services provided. As a health and safety value-add on, a carbon monoxide monitor is provided to participants where one is not already present in the home. At the time of assessment, the home is also prequalified for water conservation measures (e.g., showerheads and aerators) as well as a programmable thermostat.</p> <p>Customers that qualify for the Board's Low Income Emergency Assistance Program (LEAP) or the Local Distribution Companies (LDCs) delivered Home Assistance Program (HAP) initiative automatically meet the income eligibility requirements of the offer.</p>

	<p>Enbridge promotes the Home Winterproofing offer through community based organizations, which have strong relationships with low income interest groups and are well entrenched and trusted within the communities that they serve. Enbridge delivers the offer through selected qualified Delivery Agents who are responsible for designated areas within the Company's franchise area.</p> <p>For each project, documentation is submitted by Delivery Agents summarizing installation site information (e.g., address, ownership, housing type) and natural gas savings (m³) calculations. Natural gas savings claims are based on pre and post HOT2000 modelled consumption which is determined through customized energy audits conducted by energy auditors for income qualified participants. Documentation includes:</p> <ul style="list-style-type: none"> • A completed pre and post audit data collection sheet • Work order summary outlining proposed upgrades • Cost estimate for suggested authorized retrofits • HOT2000 pre and post audit files • Pre and post project photos • Completed participant agreement or application form <p>Participation is tracked by type of tenancy (i.e., social housing or privately-owned dwellings). Monthly reporting is provided by delivery agents and summarizes unit installations for any prescriptive measures installed.</p>
2017 Results	<p>In 2017, cumulative savings for single family (Part 9) were 19.6 million CCM, as outlined in Table 6.2. The Enbridge Home Winterproofing offer reached 1,022 low income households in 2017 as outlined in Table 6.3. In addition, some homes also received</p>

	basic prescriptive measures including showerheads and aerators where appropriate.
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**Table 6.2 2017 Single Family (Part 9) Low Income Results
(whole home savings and prescriptive measures)**

Low Income Component	2017 Net CCM (m ³)	# of Projects ¹	# of Units ²
<i>Single Family (Part 9)</i>	19,598,364	1,352	1,297

1. # of Projects summarizes the number of unique projects for Home Winterproofing and prescriptive offers.

2. # of Units summarizes the number of units installed for prescriptive offers.

Table 6.3 Home Winterproofing – Breakdown of Results (whole home savings only)

Low Income Component	2017 Net CCM (m ³)	# of Projects ¹
Home Winterproofing		
<i>Private</i>	13,444,705	660
<i>Social Housing</i>	6,009,405	362
Total/Average	19,454,110	1,022

1. # of Projects summarizes the number of unique projects for Home Winterproofing.

2017 Commentary and Lessons Learned

- A total of 1,022 homes participated in the Home Winterproofing offer in 2017, of which 660 were private homes and 362 were social housing properties, as outlined in Table 6.3 above.
- Results in the social housing sector were below forecast due to a number of reasons. For instance, Enbridge has now fully assessed all social housing units within Ottawa Community Housing for participation. Also in 2017, some expected completions of Home Winterproofing projects were not realized due to a revised strategy by Toronto Community Housing as well as the temporary cancellation of the Home Assistance Program. In addition, forecasted results from Delivery Agents did not fully materialize. These factors contributed to the offer not achieving the target in 2017.
- Moving forward Enbridge will continue to work with business partners such as the Low-Income Energy Network (LIEN), Ontario Non-Profit Housing Association

(ONPHA) as well as Co-operative (Co-op) Housing providers to promote the Home Winterproofing Offer. The Company will also be exploring opportunities to expand relationships with Co-op Housing within the Ottawa region as well as with Tecumseh Co-op, Ahneen Co-op and John Hill Co-op. This strategy of delivering the offer in partnership with community based organizations with strong links to social service agencies as well as the communities have been found to be an effective way of connecting with this hard-to-reach customer segment. This strategy is effective due to the high level of trust built between the customer and the business partner.



We see the greatest energy savings in homes that are 35 years and older.

How to qualify

In order to qualify for this great program, you will need to meet the customer and income requirements described below:

- 1 Is your home heated by natural gas?
- 2 Are you a customer of Enbridge Gas Distribution?
- 3 Do you pay your own natural gas bill?

How to apply

- 1  Visit winterproofing.ca and complete the online Program application form then submit the form to the Program Delivery Agent in your Area. The Program Delivery Agent will contact you within a few weeks.
- 2  Call the Enbridge Program Delivery Agent in your area. They may be able to pre-qualify your home over the phone.
 - Signed application, proof of income
 - The account number on your gas bill
 - A copy of your last income tax assessment or benefit statement
- 3  Mail or fax the attached Program application form to the Program Delivery Agent in your area listed on the back of this brochure.

Yes, it's free. No catch. Just coziness.

Prepare your home for winter by applying to our Home Winterproofing Program. If you qualify, you can save and stay that much warmer during the long winter months. Now that's something to cozy up to.

Increase comfort

We want to help you afford home improvements that will keep you warm and comfortable

Be healthier

Living in drafty conditions can be hard on your health. Fewer drafts mean a more comfortable home for you and your family.

If you qualify, you could receive

New insulation and draft proofing installed by experienced professionals.

Enjoy savings of up to 30% of your energy use and lower energy bills.

This program is absolutely free to all homes that qualify. Enbridge will pay for the cost of energy saving improvements such as insulation and draft proofing, preventing against cold drafts that are common in old homes. We want to help you afford home improvements that will keep you warm and comfortable.

- Despite challenges onboarding social housing providers, due to their internal board approvals and upfront engagement efforts to obtain resident support, Enbridge continues to diligently work with these stakeholders given the remaining opportunities in most regions within this segment. Enbridge hosts regular working

group meetings with social housing providers to identify their needs and opportunities as well as provide information regarding the Affordable Housing offer.

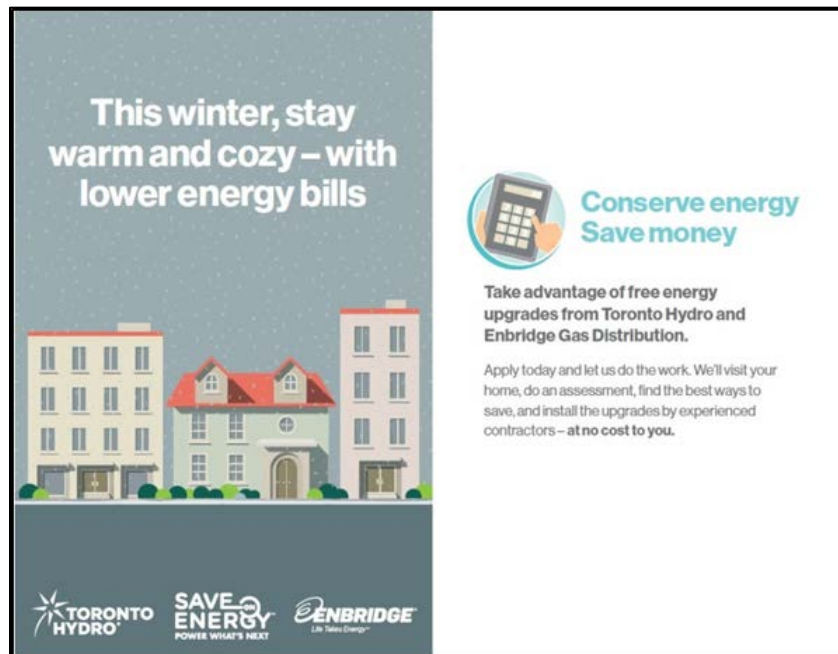
- In 2017, Enbridge continued to work collaboratively with community based organizations to ensure the Company uncovered opportunities to assist customers requiring financial assistance by encouraging them to participate in the Home Winterproofing offer when applying for the LEAP program. For example, Enbridge continued successfully working with the United Way of Simcoe Muskoka. The agency promoted Home Winterproofing and assisted the customer with program enrollment through the United Way's database expediting the process to the Delivery Agent for follow-up. A total of 338 leads were generated through this initiative in 2017.
- Enbridge engaged an independent third party agency to facilitate four focus groups in Niagara Falls, Toronto, Peterborough and Ottawa to gather feedback from past Home Winterproofing participants. The overall customer experience was positive across all four markets with only minor issues related to clean up and finishes. Participants overwhelmingly indicated that they would highly recommend the offer. Many had already referred friends and neighbours to participate. Some participants also confirmed they saw improvements to home comfort and benefited from cost savings on their utility bills as a result of the upgrades.

*"Enbridge reinsulated all of my walls, which saved me a lot of money and heat.
The last winter was the best I've had yet. It's improved my house tenfold"*

- Home Winterproofing Participant

- Enbridge and Toronto Hydro collaborated on joint program delivery utilizing a single delivery agent for both the Home Winterproofing and Home Assistance Programs (HAP) throughout 2017. This collaboration included two co-branding direct mail marketing campaigns of brochures that promoted both the Home

Winterproofing offer as well as HAP. This combined effort supported 339 low income households.



- To continue with this collaborative approach, Enbridge explored opportunities to expand efforts with other LDCs (Veridian Connection, Peterborough Utilities, and Niagara on the Lake Hydro) in the Enbridge franchise area. Unfortunately, Enbridge was required to temporarily halt collaboration efforts with LDCs in October 2017 due to a decision by the Independent Electricity System Operator's (IESO) to re-design the Home Assistance Program (HAP) under a single province-wide delivery agent to be launched in 2018.
- In an effort to investigate new opportunities, Enbridge worked with Toronto Community Housing (TCH) on a specialized initiative utilizing external cladding technologies as a means to achieve gas savings. It is anticipated that TCH residents will benefit from this customized approach through the Home Winterproofing offer in 2018. This technology is increasingly being utilized within the social housing sector, as it is more feasible and less disruptive to residents versus traditional interior insulation upgrades.

- In 2017, Enbridge worked with Delivery Agents and external agencies to develop a multi-channel marketing plan. These efforts focused on engaging private homeowners and tenants to encourage them to participate in the Home Winterproofing offer. This multi-channel marketing plan included:

- Bill inserts
- Website information
- Direct mail campaigns
- Conferences, Tradeshows and Social Events
- Delivery Agent Outreach
- Social Agency Campaigns
- Social Media Campaigns
- Radio Ad Campaigns

Bill inserts continue to be the number one lead generator for this offer.

- Enbridge is working with Ecobee and Nest to explore the possibility of adding Smart Thermostats as a measure available to participants in the 2018 Home Winterproofing offer.

6.2 Multi-Residential (Part 3)

Custom Projects and Prescriptive Measures

Objectives	The goal of the Affordable Housing (Low Income) Multi-Residential offer is to enable energy savings through a reduction of space heating demand and hot water use in Low Income Part 3 Multi-Residential buildings through the installation of thermal envelope improvements, space heating, water savings measures, and technologies.
Target Customer	<p>The Affordable Housing Multi-Residential offer is intended for social and assisted housing providers who own and operate Part 3 buildings that provide housing to low income households. In addition, shelters and supported housing are eligible.</p> <p>The offer also targets eligible owners and property managers of privately-owned multi-unit residential buildings (MURBs), based on screening criteria established in collaboration with Enbridge's Low Income Consultative Working Group, which provide housing to a market that includes low income customers and families.</p>
Metrics	The primary metric for the Affordable Housing Multi-Residential offer is lifetime natural gas savings - CCM savings.
Offer Description	<p>The Affordable Housing Multi-Residential offer includes the following:</p> <ul style="list-style-type: none"> Custom incentives are determined based on projected annual natural gas savings at a rate of \$0.40/m³ (\$0.50/m³ for eligible boilers) saved, up to 50% of the cost of the retrofit. Eligible measures that would result in gas savings include, but are not limited to:

	<ul style="list-style-type: none"> ○ Boilers– Space and Water Heating; ○ Ventilation Systems; and, ○ Building Controls. <p>As with Commercial custom projects, the savings for each custom project are calculated on an individual basis. Each custom project includes a project documentation checklist that outlines key parameters for the project and applicable supporting documentation to support gas savings calculations.</p> <ul style="list-style-type: none"> • Prescriptive incentives calculated based on a fixed dollar amount. Eligible measures that would result in gas savings include: <ul style="list-style-type: none"> ○ Condensing boilers; ○ High efficiency boilers; ○ Energy recovery ventilation systems; ○ Heat recovery ventilation systems; and, ○ Condensing Water Heaters. • Free in-suite direct install measures will be as follows: <ul style="list-style-type: none"> ○ Showerheads supplied and installed; and, ○ Supply and installation of heat reflector panels. • Financial support is also provided to fund half the cost of an energy audit up to \$5,000 per building or \$0.01/m³ of gas consumed in the past calendar year (whichever is less); • Free Gas Savings Opportunity Assessment (similar to an ASHRAE Level 1 Building Assessment); and, • Resident engagement programs. <p>Enbridge outlines the following eligibility criteria for the Affordable Housing offer:</p>
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	<ul style="list-style-type: none"> Part 3 Buildings owned and operated by social housing providers as well as privately owned buildings identified as low income; and Social housing and assisted housing buildings as described in the Housing Reform Act of 2011 and 2015-2020 DSM Framework.
2017 Results	The Low Income Part 3 Multi-Residential offer achieved 69 million CCM natural gas savings in 2017.

Table 6.4 2017 Multi-Residential (Part 3) Low Income Results

Low Income Component	2017 Net CCM (m ³)	# of Projects ¹	# of Units ²
<i>Multi-Residential (Part 3)</i>	69,363,767	126	1,544

1. # of Projects summarizes the number of unique projects for custom offers.

2. # of Units summarizes the number of units installed for prescriptive offers.

2017 Commentary and Lessons Learned

- Based on feedback obtained from participants, this program continues to be positively received throughout the affordable housing sector. This can be attributed to:
 - Approaching the market with a customer centric approach that includes consulting and advising customers on long term energy plans
 - Undertaking site walkthroughs and providing audit funding assistance to proactively identify efficiency opportunities
 - Developing strategic partnerships with customers and providing savings and incentive estimates that will help offset capital investment to validate projects and provide assistance in developing the business case
 - Focusing on tenant engagement to ensure support of the constituents in the community

- A large portion of Part 3 participation in 2017 is a result of the on-going cultivation of collaborative and supportive relationships with staff and management throughout Municipal Social Housing providers. Enbridge continues to work closely with Toronto Community Housing (TCH) as a key partner and hosts regular working group meetings to identify needs and opportunities for this largest housing provider in Canada. In addition, Enbridge established new partnerships with groups including Centretown Citizens Ottawa Cooperation (CCOC), Maurice Coulter Co-op, Mainstay Housing and Lanark County Housing to better understand the needs of some of these smaller organizations.
- Key stakeholders, including the Low-Income Energy Network (LIEN), Federation of Rental-Housing Providers of Ontario (FRPO), and Ontario Non-Profit Housing Association (ONPHA) continue to be valuable partners as the Company works within this unique sector. Enbridge join forces with these associations to promote programs through webinars, conference sponsorships, and speaking engagements at various events.
- The Company partnered with the City of Toronto Tower Renewal team to promote Enbridge's affordable housing support efforts with the STEP Assessment and High-Rise Retrofit Improvement Support (Hi-RIS) initiative. This collaboration created many opportunities for joint site visits and Enbridge participation in multiple Tower Renewal events, which provided an opportunity to further promote the offer.
- Enbridge also collaborated with Toronto Atmospheric Fund and TCH on an affordable housing multi residential smart thermostat investigation. This project aims to explore the potential of supporting this upgrade for the Affordable Housing Multi-Residential portfolio.

- Further, although this program delivers critical support for affordable housing providers by offering facilitation assistance, technical advice and financial support, the affordable housing sector continues to face additional challenges:
 - Despite offering a higher financial incentive through the Affordable Housing Multi-Residential offer relative to the Commercial offer for custom projects, the low income sector continues to face inherent financial obstacles due to limited capital availability. With the aging affordable housing portfolio, endless upgrades are required for buildings beyond considerations for energy efficiency opportunities.
 - There are often a variety of languages spoken by tenants in these multi-residential buildings and Enbridge works to ensure that the residents are informed of upcoming work. Consequently, marketing materials are produced in multiple languages to best accommodate the residents of a particular building. In the case of in-suite improvements, for example heat reflector panels, this is particularly important as contractors need access directly within the units.

1234 ENBRIDGE ST.
 Heat Reflector and Radiator Cleaning



BENEFITS:

Heat reflectors will make your units more comfortable in the winter.

Radiator cleaning will help improve the indoor air quality.

Starting _____,


We will be entering your unit to install heat reflectors and clean your radiators at no cost to you.

Please move any furniture at least 4 feet (1.2 metres) away from the radiators.

If you are not able to move your furniture, please let the superintendent know and we'll make alternate arrangements.

Questions or comments? Please contact your building's superintendent or email EnergyServices@enbridge.com

1234 ENBRIDGE ST.
 Reflector de calor y Limpieza de los radiadores



BENEFICIOS:

Los reflectores de calor harán que sus unidades sean más confortables en el invierno.

La limpieza de los radiadores ayudará a mejorar la calidad del aire interior.

A partir de _____,

Estaremos ingresando a su unidad para instalar los reflectores de calor y limpiar los radiadores sin costo alguno para usted.

Traslade los muebles a una distancia de, al menos, 4 pies (1.2 metros) de los radiadores.

Si no puede trasladar los muebles, informe a su superintendente y haremos planes alternativos.

Preguntas o comentarios? Comuníquese al superintendente de su edificio o envíe un correo electrónico a EnergyServices@enbridge.com

HAGAAJINTA XIGTA
 Kuleyl Gudbiyaha iyo Nadiifinta Qaboojiyaha



FAA'IIDOOYINKA:

Gudbiyaasha kuleylka waxay qeybahaaga ka dhigi doonaan kuwa raaxo badan qaboojaha.

Nadiifinta qaboojiyuhu waxay caawin doontaa hagaajinta tayada hawada gudaha.

ka caawin doontaa hagaajinta tayada hawada gudaha.

Laga Bilaabo Luuliyo _____,

Waxaan geli doonaa qeybahaaga si aan u gelino gudbiyaha kuleylka waxaana kugu nadiifinaynaa doona qaboojiyaha lacag la'aan.

Fadlan dhacsi alaab walba ugu yaraan 4 fii (1.2 meter)

Haddii aadan awoodin inaad dhacsiyo alaabtaada, fadlan haa ogaado kormeeraha guud waxaan samayn doonaa diyaarin kale.

Su'aalo ama faallo? Fadlan laxiriir isudwaha sartaada ama imail EnergyServices@enbridge.com



- Enbridge continues to research new technologies that will benefit the affordable housing sector. In 2017 Enbridge partnered with a third party to investigate the introduction of a new savings measure, Advance Building Automation System (ABAS). Applications within the Toronto Community Housing portfolio of buildings appear to offer opportunities to support this new measure in 2018.
- Enbridge undertook a second phase of the Private Low Income Cold Water Laundry Initiative in partnership with Summerhill. The initiative intended to change tenant behavior through engagement, education, and other non-financial

interventions. The initiative included four private low income buildings. Data collection is on-going and any potential next steps remain to be determined.

- Continuing on work done in 2015 & 2016 with the Toronto Chapter of the United Way and the Low Income Consultative to establish criteria for determining privately owned low income buildings in the City of Toronto, Enbridge engaged Dunsky Energy Consulting to undertake a study. This aim of this study was to establish a similar eligibility criteria for use outside of the GTA. Privately owned Part 3 multi residential building eligibility was established as follows:

- Building owner receives rent supplements to offset the costs of tenants from the Service Manager Office (as confirmed by Service Managers who are municipalities and district social services administration boards designated under the Social Housing Reform Act in 2000 to manage social housing programs across the province);

OR

- Has participated in the Ontario Renovates program in the last five years (as confirmed by the Service Manager);

OR

- Is located in a census tract where greater than 40% of building residents are low income, and more than 50% of households are paying less than the average regional rent.

In 2018, Enbridge will continue to work on re-classifying buildings that now fall within this criteria and move them into the affordable housing portfolio.

- Reflector panel installations in this sector have been particularly successful and have provided benefits to both the tenants (in-suite) and the building as a whole beyond energy savings, in that they offer increased comfort and improved air quality due to the process of cleaning convectors.
- Enbridge looks forward to continuing to execute on opportunities to successfully deliver the Affordable Housing Multi-Residential offer in 2018.

Enbridge Gas Distribution

Affordable Housing Multi-Residential Program

Upgrade and Save

Investing in efficient equipment will help lower your building energy costs and improve resident comfort.

Receive up to \$100,000 in Incentives

... under our Custom Program when you undertake an energy retrofit to upgrade equipment and improve efficiency.



Free In-Suite Measures

We will install in all eligible units: • Low-Flow Showerheads • Novitherm Heat Panels

Energy Audits

Do an energy audit and receive either half the cost back, up to \$5,000 per building, or \$0.01/m³ of natural gas consumed in the last calendar year (whichever is less).

Contact Cam Black, your Enbridge Energy Solutions Consultant, at **cam.black@enbridge.com**

416-758-4748

 enbridgegas.com/affordablehousing

6.3 Low Income New Construction (Affordable Housing New Construction)

Objectives	<p>The overarching goal of the Low Income New Construction initiative marketed as the Affordable Housing New Construction offer is to promote the adoption of higher levels of energy efficiency among developers and builders of affordable housing. This offer is designed to encourage stakeholders to take a proactive role by providing financial incentives and enabling support in incorporating higher energy efficiency levels in affordable housing planning and design.</p> <p>The Affordable Housing New Construction offer aims to increase the efficiency of new construction developments to a level that is above current building code. Builders and developers of affordable housing are able to benefit through needed financial support to offset the costs of implementing energy efficiency. In addition, the Affordable Housing New Construction offer provides added benefit to offset the energy costs that are ultimately borne by low income residents or social housing providers.</p>
Target Customer	<p>The offer is specifically directed to builders and developers of residential and multi-residential affordable housing projects.</p> <p>Eligible participants must meet the following criteria:</p> <ul style="list-style-type: none"> • Developers and builders of new “affordable housing” as qualified by a municipal, provincial and/or federal housing program. • Developers and builders of both single family Part 9 houses and multi-residential Part 3 buildings are eligible to participate.

Metrics	Affordable housing projects enrolled by builders and developers to participate in the offer are eligible to be counted towards performance targets.
Offer Description	<p>The Affordable Housing New Construction offer was originally informed by the Company's Savings By Design offers. However, due to the wide range of builders, types and sizes of construction projects, certain offer elements have been modified to meet the needs of this particular target market. The offer provides financial incentives and extends technical support to assist affordable housing builders in exceeding the 2017 Ontario Building Code (OBC) requirements by at least 7% for multi-residential projects, or in the case of single family homes achieving ENERGY STAR for New Homes. The additional societal benefit of this offer and why Enbridge is engaging the affordable housing builder community in encouraging the adoption of energy efficiency measures and technologies is to assist with maintaining affordability for the residents of these new construction projects after they move in. In 2017 the Affordable Housing New Construction offer consisted of the following components:</p> <ul style="list-style-type: none"> • Step 1 - Plan Review: The Participant provides Enbridge and its consultants copies of design plans (including mechanical, electrical and lighting drawings and specifications, as available) for review and modelling analysis. A plan review summary is generated for further discussions during the Design Consultation Process. • Step 2 - Design Consultation Phase (DCP): During the DCP, the Participant takes part in a building design team meeting to identify the optimal mix of design elements and technologies to encourage maximum energy efficiency.

Incentives are provided to participants whose designs meet the prescribed level of energy efficiency determined through the DCP process. In 2017 with the introduction of the new OBC incentives were offered as follows:

- A tiered incentive for Part 3 developments (\$4,000 for 7-12% above OBC, \$5,000 for 13-17% above OBC, and \$7,500 for 18% or more above OBC)
- \$5,000 for Part 9 developments that achieve ENERGY STAR for New Homes.

At this stage, participants are enrolled and counted towards the metric for this offer. Enrollment entails a signed application with the eligible builder or developer committing to participate in the Affordable Housing New Construction offer. Reports for each DCP are maintained to document completion of the Design Consultation Phase.

- Step 3 – Multi-Residential (Part 3) Projects

- Energy Efficiency Design Implementation: Following construction, an “as-built” energy model is completed and an energy performance report is provided to confirm incentive payout, up to a maximum of \$120,000 per building as follows:

Building Energy Efficiency Achieved Above OBC	Energy Efficiency Implementation Incentive
7%-12%	\$750/unit
13%-17%	\$850/unit
>18%	\$1,000/unit

- Step 3 – Single Family Homes (Part 9) Projects

	<ul style="list-style-type: none"> ○ Energy Performance: An incentive of \$5,000 is paid to Participants whose as-built design achieves ENERGY STAR for New Homes. • Step 4 – Multi-Residential (Part 3) Projects <ul style="list-style-type: none"> ○ Commissioning: A building commissioning incentive up to \$15,000 is available to participants upon submission of a final commissioning report. • Step 4 – Single Family Homes (Part 9) Projects <ul style="list-style-type: none"> ○ Energy Efficiency Design Implementation: An incentive of \$1,500 is available for each residential home that achieves ENERGY STAR certification, up to a maximum of \$120,000 per project.
2017 Results	Enbridge was successful in supporting 11 affordable housing developments in the Affordable Housing New Construction offer in 2017 as shown in Table 6.5.

Table 6.5 2017 Low Income New Construction Results

Component	Metric	Targets			2017 Result
		Lower Band	Target	Upper Band	
Affordable Housing New Construction	Participants	21	28	42	11

2017 Commentary and Lessons Learned

- Due to the multi-year nature of participation in this offer, from enrolling a participant through to construction completion, expenditures related to a specific participant are not all fully realized within the same program year.
- Spending on this offer in 2016, the first year in market, was limited to only those costs associated with supporting participants through Step 2, the design consulting phase. However, most of the funding available to participants in this

offer is directed towards financial incentives that will be paid upon building completion of the units at a later date. As a result, the majority of the 2016 budget was not paid out during the 2016 program year. This underspend resulted in a significant impact to the 2017 target for this offer based on the Board's direction to apply the Target Adjustment Mechanism (TAM). Consequently, Enbridge's target for 2017 has been artificially inflated and is unrealistic.

- This offer, now in its second year in market was created as a response to the Federal-Provincial Investment in Affordable Housing (IAH) Program. Through the IAH Program, municipal governments own and develop their own affordable housing plans, but do not specifically prescribe how to ensure energy efficiency is a consideration for their affordable housing projects. The Affordable Housing New Construction (AHNC) offer was developed because the IAH Program presented an opportunity to educate affordable housing builders as well as support the design and construction of these newly financed projects, to achieve increased levels of energy efficiency.
- This offer continues to encourage municipalities and other affordable housing builders to take a proactive role in incorporating energy efficiency standards in their own affordable housing plans. This offer also provides the residents of newly constructed affordable housing unit with educational material on how to reduce energy use within their building through energy efficient practices and behaviours.
- As a result of learnings in the first year in market, effective 2017, a more comprehensive, interactive and collaborative in-person design charrette was introduced for multi residential projects. This move was well received by participants and deemed to be highly beneficial.

"It was such a wonderful and educational day that brought forward critical information for us to consider in the design to actualize our vision for a healing, therapeutic and sustainable space. Thanks for all your hard work – I'm beyond impressed at the calibre of work and that this program is even available!"

-2017 participant

- In an effort to continue to refine the offer, Enbridge continued to engage C2C Strategies to conduct interviews with program participants to determine ongoing improvements for the offer.
- The C2C Strategies report can be found in Appendix C. Findings and recommendations include:
 - Overall participants were satisfied with the offer's design. Specifically, the Design Consultation Phase was noted as extremely valuable in educating participants on how to achieve improved levels of energy efficiency through building design changes.
 - There is an opportunity for increased communication between Enbridge and participants following completion of the Design Consultation Phase and prior to construction, as well as following construction, in order to complete the cycle of learning of the design teams involved.
 - Expansion of the full day comprehensive design charrette would be beneficial to participants with Part 9 (low-rise) developments. The day-long, in-person charrette format allows more material to be covered in greater depth, and is more conducive to interaction and discussion.

New Construction Program for Affordable Housing



Multi-Residential?

Enbridge Gas Distribution is providing financial incentives and technical support to help affordable housing builders exceed Ontario Building Code requirements by at least 7% and build more energy efficiently. The first step is to complete your application for the New Construction Program.

There are four stages to the program:

Plan Review. Participants provide design plans and specifications to Enbridge for review and analysis. A report is generated for discussions during the Design Consultation Process.	Energy Efficiency Design Implementation. Depending on the achieved energy performance of the building once constructed, receive financial incentives depending on the number of housing units, up to \$120,000.*
Design Consulting Phase. Teams identify design elements and technologies to maximize energy efficiency. Participants receive a Technical Assistance incentive up to \$7,500* to help offset consultation fees.	Commissioning. Participants receive an incentive up to \$15,000* when they meet the requirements for the Energy Efficiency Design Enbridge Implementation incentive and submit their final commissioning report to Enbridge.

Act now! Contact Cam Black at cam.black@enbridge.com

416-758-4748
enbridgegas.com/affordablehousing

*Incentives are based on the building performance as a percentage above the Ontario Building Code. For complete terms and conditions please visit the website.

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- Working with our sector business partners, specifically the Ontario Non-Profit Housing Association (ONPHA) and the Low-Income Energy Network (LIEN) proved to be a successful strategy in promoting this offer to the affordable housing building community.
- In March 2017, the federal government announced \$11.2 billion in investment in affordable housing over the next 11 years. This funding could influence the market to increase the number of new affordable housing units that will be constructed over the next several years. This Affordable Housing New Construction offer is a key driver in capitalizing on this opportunity to persuade these affordable housing builders to build with energy efficiency in mind.
- Moving forward in 2018, Enbridge will attempt to seize this opportunity to enroll potential affordable housing projects in the AHNC offer.

7. Market Transformation and Energy Management Scorecard

The Market Transformation and Energy Management (MTEM) program is designed with the aim of influencing consumer behaviour and attitudes in support of reducing energy consumption. MTEM activities focus on enabling fundamental changes that lead to increased acceptance and market shares of energy efficient products, services, and practices, as well as on influencing consumer behaviour and attitudes that support reductions in natural gas consumption.

Enbridge's MTEM program is comprised of five offers. Savings by Design – Residential and Savings by Design – Commercial target the new construction sector, Run it Right (RiR) and Comprehensive Energy Management (CEM) focus on supporting the adoption of a culture of energy efficiency at existing Commercial and Industrial facilities, and the School Energy Competition (SEC) aims to educate and build awareness of energy efficiency in the younger generation.

All MTEM offers are aimed at continuing to build awareness and recognition in the marketplace, with the objective of educating and influencing the respective target market groups in support of reductions in natural gas consumption. Results for Enbridge's 2017 MTEM program are provided below in Table 7.0.

Table 7.0 2017 Market Transformation and Energy Management Scorecard

Market Transformation						
Component	Metric	Weight	Lower Band	Targets		2017 Result
				Target	Upper Band	
Residential Savings by Design	<i>Builders</i>	10%	24	32	48	24
	<i>Homes Built</i>	15%	1,705	2,273	3,410	2,570
Commercial Savings by Design	<i>New Developments</i>	25%	24	32	48	30
School Energy Competition	<i>Schools</i>	10%	43	57	86	65
Run it Right	<i>Participants</i>	20%	88	117	176	29
Comprehensive Energy Management	<i>Participants</i>	20%	41	55	83	5

7.1 Savings by Design – Residential

Objectives	The goal of the Savings by Design (SBD) Residential offer is to demonstrate to builders the potential for achieving higher levels of energy and environmental performance through the application of alternative design approaches through the use of an Integrated Design Process (IDP). In order to realize the potential that the IDP demonstrates to the builder, performance incentives are provided. These incentives encourage the construction of new homes to an energy efficiency standard 15% above the level prescribed in the 2017 Ontario Building Code (OBC). The Residential SBD offer is intended to help builders see the value of the IDP approach, and encourage adoption of higher efficiency design on an ongoing basis.
Target Customer	The offer targets builders and designers of new, Part 9 residential low rise houses (townhouses, semi-detached and detached homes)

	<p>in the Enbridge franchise area. The intent is to engage builders who construct multiple homes in a given year. Ultimately, Rate 1 Residential customers who purchase these properties will be the beneficiaries of better designed, more energy efficient homes.</p>
Metrics	<p>There are two metrics for SBD Residential. The first metric tracks the number of eligible builders/developments that enroll and take part in the IDP process; the second metric tracks the number of homes built to the SBD specifications over the course of the year.</p>
Offer Description	<p>SBD Residential is designed to provide a variety of support activities for builders of new homes from the early design phase through to construction. The primary means to educate and change the marketplace remains the IDP. The SBD offer incorporates a total energy approach, as opposed to a gas only approach in encouraging builders to build to higher levels of energy efficiency. Savings by Design is a process-based approach involving:</p> <ul style="list-style-type: none"> • Visioning Session – to define the builder’s sustainability priorities and opportunities; • Integrated Design Process (IDP) Session – to identify and evaluate strategies and educate builder's to meet sustainability goals and the SBD energy reduction target of 15% beyond 2017 OBC through application of energy modelling; • Building Energy Modelling – to evaluate energy performance baselines and proposed improvements. <p>This SBD consultation process involves connecting participating design teams with leading industry experts and other stakeholders to encourage improved approaches to energy and environmental performance.</p>

	<p>Through this process, the team works with the builder to explore opportunities to achieve higher energy performance. Starting with the building envelope (windows, wall structure, insulation) and moving inward with HVAC mechanicals and lighting, the Savings by Design team guides the builder through a design process to achieve a modelled building that performs to at least 15% better than the 2017 OBC.</p> <p>In addition, depending on the specific priorities identified during the visioning session, experts from fields such as lighting, storm water management, sustainable land-use planning, indoor air quality and renewable energy can be engaged to provide further value to the IDP.</p> <p>Channel Consultants maintain regular contact with builders to follow up on builder commitments, to ensure energy audits are completed, and required documentation is submitted as required for the builders to receive incentives.</p> <p>Commitment letters and eligibility documents along with IDP reports are tracked for all participants and a third-party service provider undertakes testing and verification to ensure that constructed homes are built with 15% greater energy efficiency than required under the 2017 OBC to support incentive payments.</p> <p>As introduced in the 2015-2020 DSM Plan, beginning in 2016 the Company has established a descending incentive scale for continued participation. Performance incentives for the offer are as follows:</p> <ul style="list-style-type: none">• Builders that complete the IDP portion of the offer for the first time are eligible to receive \$2,000 per home completed to the SBD standard (up to 50 homes);
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	<ul style="list-style-type: none"> • Builders that complete the IDP portion of the offer for the second time are eligible to receive \$1,000 per home completed to the SBD standard (up to 100 homes); • Builders that complete the IDP portion of the offer for the third time are eligible to receive \$500 per home completed to the SBD standard (up to 200 homes). <p>A repeated incentive over time better supports the sustainability of a market change. An incentive that is reduced each time a builder goes through the SBD process allows participants to apply the IDP across their portfolio considering different communities or developments.</p>
2017 Results	<p>As illustrated in Table 7.0, Residential SBD was successful in enrolling 24 participants who completed the IDP process in 2017. In addition, there were 2,570 new homes claims through this initiative that were constructed with features consistent with SBD standards in relation to the completed units metric.</p>

2017 Commentary and Lessons Learned

- The Savings by Design (SBD) Residential offer continues to encourage the design and construction of more efficient homes. In addition to educating builders and encouraging the building of better homes, the offer supports designing and building better communities.
- The visioning session is intended to help identify the technologies suitable for each development. In turn, the appropriate panel of experts is assembled to explore opportunities and design considerations. Builders who participate in the IDP benefit from educational content focusing on the incorporation of existing and new technologies as well as design considerations customized for each

project. This aspect of the SBD Residential offer continues to be received positively by participants.

“The IDP is a requirement of Savings by Design- however, it is also an opportunity for builders. It brings together a group of individuals from different sectors to explore, evaluate and ultimately decide on the best path forward to achieve greater energy efficiency in our homes. Included in this group were: home designers, construction management staff and executive staff from [Builder]; staff members from plans examination, building inspections and planning from the municipalities involved; energy evaluators; and building product manufacturers. Through-out the IDP, Enbridge program administrators were available to quickly answer questions. A very knowledgeable facilitator provided by Enbridge led the day-long process.”

- SBD participant

- The most recent Ontario Building Code update effective January 1, 2017, introduced several changes raising the energy efficiency bar for new home construction across the province, and placed a particular emphasis on improving the building envelope as a means to enhance energy efficiency. Though the objective of the SBD offer targets a 15% above 2017 OBC goal, the SBD Residential team strives to higher standards where appropriate and in some cases in 2017 has worked with builders to attain energy efficiency improvements more than 20% better than 2017 OBC.
- A successful initiative undertaken in 2017 focused on including Municipalities in a number of the IDP sessions. Not only was feedback from these Municipalities very positive, but also this outreach allowed participating builders to benefit from more timely building permits and approvals as the Municipalities recognized the energy efficiency design considerations being proposed for developments in their communities.

- Enbridge continues to work with local and regional Home Builder Associations including the Canadian Home Builders' Association (CHBA) and the Ontario Home Builders' Association (OHBA) to promote SBD to the new builder community. In addition, the Company leverages its partnerships with Certified Energy Advisors (CEAs) to gain more trust with potential builder participants. In 2017, Enbridge increased the role of the CEAs in the IDP process in an effort to enhance the support and understanding for the builder of the modelling undertaken in the IDP session.
- The new housing market continued to be strong in Ontario in 2017 and in particular throughout the Greater Toronto Area. As a result builders have not prioritized energy efficiency with new homes being in such high demand. Nonetheless, the SBD Residential team has been successful working to influence builders to participate in the offer, highlighting that improving energy efficiency above building code can be a competitive market tool with added value to the consumer.
- SBD continues to demonstrate a unique ability to bring the various new home construction stakeholders together, providing builders with an effective and focused facilitation and encouraging builders to achieve energy efficient building goals. The SBD offer will continue to be an important part of the portfolio in 2018.

7.2 Savings by Design – Commercial

Objectives	The goal of the Commercial Savings by Design offer is to use the Integrated Design Process (IDP) to demonstrate to builders of commercial and multi-residential buildings the potential for achieving higher levels of energy and environmental performance through the application of alternative design approaches. The offer supports participants in this process with incentives that encourage builders to use the knowledge gained in the IDP to design and build
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	buildings that are more energy efficient. Enbridge expects that Commercial SBD will help builders see the value of the IDP approach, and encourage adoption on an ongoing basis.
Target Customer	This offer is targeted at builders and designers of new, Part 3 commercial, institutional, multi-residential or industrial buildings in the Enbridge franchise territory. Enbridge targets its promotional activity to owners, builders and developers, design teams including architects, design engineers and energy modelers.
Metrics	<p>Builders and developers who enroll in the offer and complete the IDP process are eligible to be counted towards performance targets. Metrics are based on the number of projects to which a developer commits. Eligibility criteria include the following:</p> <ul style="list-style-type: none"> • Commercial, institutional, multi-residential or industrial buildings covered under the Ontario Building Code Part 3; • A minimum threshold of 50,000 square feet per project (including aggregate multi-location projects); • Building(s) must be within Enbridge's franchise area, or for aggregate projects 75% of the project square footage must be in the franchise area; and, • Building(s) must be in the design phase or earlier in the process
Offer Description	<p>The SBD Commercial offer is delivered by an internal sales team directly to builders and developers.</p> <p>The offer consists of an Integrated Design Process and continues with post charrette support. The IDP is comprised of a Visioning Session and a charrette, which addresses energy efficiency, site sustainability, sales and marketing, design commissioning, energy modelling, and additional educational support as required. The IDP</p>

	<p>culminates with a final SBD report and includes the completion of an energy model.</p> <p>The offer also provides for performance incentives. With the finalization of the pre-construction certified energy model demonstrating that the building will be built 15% above the 2017 Ontario Building Code, along with final design stage plans and specifications, builders are eligible to receive \$15,000. Upon completion of a post-construction certified model demonstrating that the building has been built 15% above the 2017 Ontario Building Code, along with the final certified commissioning report, builders are eligible to receive \$15,000.</p> <p>Enrollment entails a signed memorandum of understanding with a builder or developer containing a commitment to participate in the Commercial Savings by Design offer and participate in the IDP. Enbridge Channel Consultants maintain regular contact with builders to track project status to project completion. Charrette reports for each IDP are maintained to provide a record of information on preliminary estimated savings for each project.</p>
2017 Results	<p>As illustrated in Table 7.0, Enbridge was successful in enrolling 30 new developments in 2017 that met eligibility requirements and completed the IDP process.</p>

2017 Commentary and Lessons Learned

- Extensive promotion throughout the industry on behalf of Enbridge consultants has resulted in increased recognition of the Savings by Design (SBD) Commercial offer within the new commercial construction sector. In 2017 a greater focus on engaging architects and municipal leaders proved to be successful in identifying opportunities where SBD participation could influence

projects in the early stages of design. Participation in the offer has become a marketable achievement to showcase the pursuit of energy efficiency and can be a selling feature for properties.

- The offer continues to receive positive feedback from the new construction community. For example, a leading architect firm that participated in this offer shared the following:

“The program brings together a great bunch of people whose focus is to stay current with issues of sustainability. Having so many like-minded people in the same room invites the discussion to go further than it would had there been only a single advocate in the mix. The real-time modelling allows the team to explore energy savings measures in groups or individually with immediate feedback on the energy impacts.”

- SBD Participant

- In an effort to continue to build offer awareness throughout the building community, Enbridge has seen positive results highlighting past participant experiences through case studies and testimonials delivered at speaking engagements and conferences. In addition, Enbridge continues to leverage strong relationships among industry association stakeholders which provide a primary channel to promote SBD Commercial. In the six years since the offer launched, SBD Commercial has evolved to encompass projects across the building industry and across the Enbridge franchise, including multi-residential, academic, community and public buildings.
- The intent of the SBD offer is to inform builders that achieving higher energy efficiency can be sustainable and economically beneficially to the client. Builders want to take steps to be more energy efficient, particularly in light of increased pressure from local municipalities (e.g. climate change action plan), but many do not have the knowledge to construct energy efficient buildings. The Savings by Design Commercial offer provides education and expertise to highlight existing

and new technologies to achieve energy efficiency for Commercial new construction stakeholders.

- Introduced in 2013, “Net Zero” is a label that is being adopted by stakeholders of the building industry, including municipalities, the Home Builders Associations, and the Canadian Green Building Council. Net Zero focuses on buildings that produce as much energy as they use. Initially, the concept of Net Zero was applied to single homes, but now includes six storey wood buildings and will eventually progress to larger buildings. Through the SBD Commercial offer, Enbridge continues to support builders in navigating a path to Net Zero. For instance, one SBD project was featured in the National Conference for Canada Green Building Council (CaGCB) that was hosted by Enbridge, which highlighted the success of the IDP in educating the builder on how to potentially achieve Net Zero.
- In January 2017, Ontario Building Code requirements increased energy efficiency by approximately 13% from the 2012 Ontario Building Code. As a result, Enbridge changed the offer requirement to 15% greater energy efficiency than required under the 2017 OBC for buildings from builders that signed up in 2017 and onwards.



Helping design a more sustainable future.

Get started and help ensure Ontario is a leader in sustainable, green building at savingsbydesign.ca

Enbridge's Savings by Design program offers expert support and financial incentives that will help you through the design, construction and commissioning stages of your commercial project. To date, Savings by Design has helped over 80 buildings meet or exceed the building code. Our energy efficiency programs have reduced customer consumption by 10.3 cubic metres of natural gas. These savings have resulted in a reduction of greenhouse gas emissions by 19.4 million tonnes—that's enough to heat 4.3 million homes for an entire year.

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savingsbydesign.ca

- In 2017, Savings by Design was recognized as a leader in promoting energy efficiency and sustainability in Ontario. Enbridge received a number of awards including the Ontario Energy Association (OEA) award for innovation in energy efficiency and sustainability as well as a Special Recognition Award for Excellence in Conservation from the Ontario Sustainable Energy Association (OSEA).
- SBD Commercial Offer continues to be successful and will continue in 2018. Moving forward Enbridge will attempt to increase participation for this offer by engaging architects through multi-media channels such as the Ontario Architects Association Conference.

7.3 School Energy Competition

Objectives	This offer is aimed at educating and empowering students to take action on energy use within their schools, homes and communities. The offer builds on the premise that students are the future leaders of society and influencing energy management awareness, education, and behavior from a young age will help to permeate deeper values of conservation in society.
Target Customer	This offer is targeted to primary and secondary schools, which are primarily Rate 6 customers.
Metrics	Participants eligible for this offer are schools that register, implement activities, and have access to an Energy Management Information System (EMIS) to track natural gas consumption. Participating schools must be part of a school board within one of the publicly funded systems in the Enbridge franchise area in Ontario.
Offer Description	<p>The School Energy Competition (SEC) was launched in 2016 to increase engagement in conservation initiatives. The offer focused on students and teachers, providing them with information on energy use generally, and natural gas in particular, including safety, conservation, and greenhouse gas emissions. Educational efforts are intended to build awareness of energy efficiency and begin to influence behavioural modification. Enbridge sponsors a school competition to encourage participation through a combination of engaging activities and educational challenges.</p> <p>The objective is to have students gain a deeper understanding of how their school consumes energy and how their actions can help reduce energy consumption at school and at home. Marketed under</p>

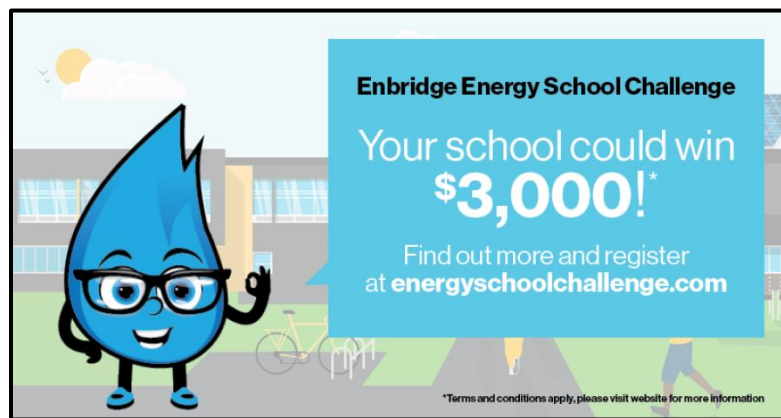
	<p>the Energy School Challenge (the “Challenge”), which engages schools in a friendly competition, the offer has five main elements:</p> <ul style="list-style-type: none">i. Education – The educational component consists of curriculum developed for elementary and secondary school grade levels focusing on real world energy consumption. The curriculum covers topics ranging from natural gas safety to understanding how consumers utilize and are billed for natural gas. An interactive website provides participants with energy efficiency tips at school and at home. In addition, educational materials about residential energy use are available for students to highlight how they use energy in their own homes.ii. Behavioural Change – Community based social marketing (CBSM) research indicates that goal-setting and providing rewards and community awareness is an effective behaviour change tool. In addition to promoting events such as Sweater Day in schools to encourage reduction in heating, specific actions and topic areas targeted include:<ul style="list-style-type: none">o Building envelope – reducing consumption via windows/door openings;o Safety – natural gas safety in schools and homes;o Water conservation; and,o Utilization of the interactive website to keep students engaged in the competition.iii. Implementation of Activities – Participants are encouraged to complete an Activities List to achieve points in the Challenge. Activities included:<ul style="list-style-type: none">o Participation in or staging an event for Earth Day;o Completion of home energy audits by students;o Creation of an Energy Savings Plan for the school
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	<ul style="list-style-type: none"> ○ Creation of a Communications Strategy to implement the energy savings plan, utilizing various posters, assemblies, or guest speakers to encourage energy and water conservation; ○ Participation in Earth Hour events; and, ○ Submissions for Enbridge to utilize and promote participating schools' engagement on social media <p>iv. Monitoring – Participants confirm they have access to an EMIS. EMIS information provides historical consumption comparisons for participating schools.</p> <p>v. Performance – Through the Competition each school is awarded points and is scored on the completion of activities.</p> <p>Enrollment entails a signed application from the school board and a website registration for the individual school (the participant).</p>
2017 Results	As detailed in Table 7.0 above, 65 schools participated in 2017, representing five different school boards across the Enbridge franchise.

2017 Commentary and Lessons Learned

- In 2017, a total of 65 schools registered in the School Energy Competition (SEC) offer from five school boards across the Enbridge franchise area as outlined in Table 7.0.
- In the previous program year, only included secondary schools participated in the SEC offer. However, as outlined in the original plan, in 2017 Enbridge targeted both elementary and secondary schools.

- The winners were selected based on their final points achievement in the Challenge. The top elementary and secondary schools completed various recommended activities, including:
 - Conducting a School Energy Audit;
 - Creating a Communications Strategy;
 - Encouraging energy savings at home through the promotion of a home energy audit
 - Completing an Art Project; and,
 - Developing an Energy Savings Action Plan;
- In order for schools to participate in the Challenge, Enbridge has to obtain school boards endorsement prior to offer enrollment. In 2017, to increase potential enrollment of participants, Enbridge engaged school boards earlier in the year to allow schools adequate time to register for the Challenge.



- The school board previously provided authorization on a program year basis for schools to participate. Going forward, to streamline the registration process, the Company will investigate the possible extension of the school board's application agreement on a multi-year basis.
- Following the initial launch of the offer, Enbridge has come to appreciate that the students have limited ability to impact the energy consumption in their schools.

Therefore, Enbridge will place emphasis on the activity portion of the Challenge to encourage and empower students to make a positive change regarding energy use.

- The SEC offer will continue in 2018. Moving forward, Enbridge will expand and leverage existing partnerships to broaden awareness of the offer to increase school enrollment and participation.

7.4 Run it Right

Objectives	<p>The goal of the Run it Right (RiR) offer is to engage Commercial and smaller Industrial customers in the pursuit of enhanced energy performance. RiR supports this outcome through the identification of low cost/no cost operational improvement opportunities, monitoring, measurement, and benchmarking.</p> <p>Along with energy savings opportunity assessments and the identification of low cost/no cost operational improvement measures, this offer promotes the awareness and visibility of building consumption patterns through an Energy Management Information System (EMIS). Ultimately, this offer aims to lead customers toward data-driven decision-making.</p> <p>The objective of RiR is to align with the Board's identified priority for the utility's Multi-Year 2015-2020 DSM Program, as outlined in the Framework, specifically implement DSM programs that are evidence-based and rely on detailed customer data.</p>
Target Customer	<p>This offer is available to customers in the Rate 6, 110, 115, 135, 145, and 170 classes. More specifically, the offer is designed for energy managers and building operators of commercial and small industrial buildings where daily consumption data is accessible.</p>

Metrics	As part of the MTEM scorecard, the RiR offer includes a participant metric. In addition, gas savings resulting from operational improvements identified through this offer also contribute to the CCM metric in the RA scorecard in the year following implementation.
Offer Description	<p>Run it Right supports building managers through the identification and implementation of no cost/low cost operational improvements and facilitates continuous monitoring to increase and maintain efficiency. Efforts can help lower operating costs, improve occupant comfort and functionality of building systems, as well as identify future capital improvements. The RiR offer is designed to motivate customers to optimize the operation of their buildings. The provision and analysis of detailed energy data aims to allow building operators and managers to make strategic data-driven decisions regarding energy savings and future capital investments.</p> <div> <p>Support Every Step of the Way</p> <ul style="list-style-type: none"> Register Operational Tune Up <ul style="list-style-type: none"> Investigate <ul style="list-style-type: none"> Free Building Investigation by our Investigation Agents Receive an Investigation Report including: <ul style="list-style-type: none"> Energy consumption analysis & load profile List of operational opportunities & recommendations Implement <ul style="list-style-type: none"> Implementation incentive between \$3,500 to \$10,000* depending on building consumption and complexity. Receive a customizable checklist and calculation tool to select measures with your Service Provider/Contractor Enhanced Operations & Maintenance <ul style="list-style-type: none"> Monitor <ul style="list-style-type: none"> Free access to an Energy Management Information System (EMIS) for the 12 month monitoring term Training and Support </div> <p>Following enrollment, Enbridge's Investigation Agents take participants through a facility investigation. Upon completion, an Investigation Report is generated outlining facility specific measures (low cost/no cost operational improvements) recommended for the</p>


	<p>achievement of energy savings. In support of this effort, Enbridge provides incentives to offset the implementation cost of identified improvements. RiR participants have access to an EMIS, which allows for the analysis of consumption data (relative to a baseline) to illustrate the impact of improvements over a one year monitoring period. Ongoing consumption data tracking occurs through a 3rd party EMIS for all participants.</p> <p>Customers are deemed a “participant” in Enbridge’s RiR offer for the purpose of the MTEM scorecard once they have entered the monitoring stage of the offer. Gas savings results associated with improvements undertaken by RiR participants who previously completed the implementation of measures are included in the CCM metric of the Resource Acquisition scorecard in 2017.</p> <p>Applicant information includes site address and building details, also consumption information is tracked. In addition, details regarding recommendations made by the investigation agent conducting the assessment, milestone dates, measures implemented and incentive amounts are recorded.</p> <p>A third party firm is retained to determine the claimed savings for the RiR offer. Gas consumption data for 12 months prior to implementation (the base year) is used as the base case. Gas consumption is then monitored for 12 months following implementation (the reference year). Gas savings results are weather normalized and are based on a standardized statistical regression analysis for each participant. Final regression analysis reports for each participant are completed and calculated savings are tracked.</p>
2017 Results	<p>As outlined in Table 7.0 above, for 2017 results, 29 participants enrolled in the offer, completed their implementation and proceeded to the monitoring stage of RiR. Gas savings achieved through the</p>

	<p>operational improvements implemented by these customers will be assessed following their respective 12 month monitoring periods.</p> <p>For RiR participants who enrolled in the offer and implemented measures in 2016, a total of 869,455 net CCM of natural gas savings was achieved contributing to the RA scorecard CCM metric. These gas savings were achieved by 59 eligible participants with an average of 2.9% savings per project. A further 26 participants were ultimately deemed ineligible for savings determinations attributable to RiR as these customers either: i) undertook capital projects (seven participants); or, ii) the consumption data did not provide statistical confidence required for regression analysis (19 participants).</p>
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2017 Commentary and Lessons Learned

- RiR is a highly resource intensive offer demanding a significant commitment from customers as well as Enbridge staff. Beginning with customer engagement and the determination of suitability following enrollment, customers undergo an investigation of their facility(ies), and an investigation report is completed. Based on this assessment, customers are encouraged to implement recommended measures, and can then proceed to the monitoring stage. EMIS access is arranged as necessary and consumption monitoring is completed.
- Customers have responded positively to RiR, as participation encourages the achievement of gas savings through the implementation of low cost/no cost operational improvements. Though these behavioural and operational improvements do not generally drive significant gas savings relative to capital improvements and despite the perceived ease of identifying such opportunities, the improvements recommended through the RiR identification process would have gone undiscovered without this focus on building optimization.

- In order to quantify only those gas savings resulting from these improvements, customers are expected to not undertake capital improvement projects during the monitoring period. This can prove challenging since the offer spans multiple years. However, it is important to recognize that beyond the CCM savings generated through RiR participation, the education provided to participants, their increased understanding of energy usage, and the identification of further potential energy efficiency opportunities, provide value in influencing customers towards energy awareness.
- Previously, Enbridge has utilized contracted Investigation Agents to complete the building investigation required with RiR participation. Effective 2017, delivery of the offer was modified to allow a broader number of third party efficiency partners, to work with customers to undertake the investigation required in the RiR offer. Marketing literature such as brochures, infographics and flyers were provided to facilitate RiR delivery by efficiency partners. In addition Enbridge utilized training webinars to outline the various phases of the offer as well as detailing process execution for efficiency partners.



Run/Right

**Reduce energy consumption.
Boost your bottom line.**

Run/Right helps commercial buildings identify and implement no cost / low cost operational improvements, and provides continuous monitoring to increase and maintain efficiency, lower operating and maintenance costs, improve occupant comfort and improve functionality of building systems.

Run/Right is designed to help commercial building customers achieve continuous operational savings through no cost / low cost energy efficient operational improvement solutions.

- Assessing and interpreting metered data to determine RiR savings remains challenging. Although metered data reflects building consumption, it does not necessarily reflect building and operating conditions that can change daily, monthly, or yearly. Because operational improvements only generate small savings relative to capital improvements, isolating those savings can be challenging using metered data.
- In addition to providing important educational benefits and training for building operators, the objective of the RiR offer aligns with one of the Board's identified priorities outlined in the current Framework, specifically, "Implement DSM programs that are evidence-based and rely on detailed customer data." Despite the fact that this offer continues to present a number of operational challenges, the RiR offer will continue as part of the 2018 portfolio.

7.5 Comprehensive Energy Management

Objectives	The goal of Enbridge's Comprehensive Energy Management (CEM) offer is to help customers reduce operational costs by presenting energy as a controllable input cost, and seek to create a sustainable culture of energy efficiency. This offer intends to build and expand on the Company's existing offers to guide and help customers with a structured approach to identifying, quantifying and implementing energy efficient measures.
Target Customer	The CEM offer is targeted to Commercial and Industrial consumers in the rate classes 6, 110, 115, 135, 145, and 170. The primary target market is Industrial and Institutional customers.
Metrics	As part of the MTEM scorecard, the CEM offer has a participant metric. In addition, gas savings results identified through participation in CEM also contribute to the CCM metric in the RA scorecard following implementation.
Offer Description	<p>As a facilitator and educator, Enbridge leads and assists customers through a set of tools, guidelines, resources and technical expertise, to support a sustainable culture of energy efficiency for the client. Enbridge works with participants in the offer by examining their unique energy usage, creating an energy model, and guiding customers to undertake recommended actions suitable to their operation, including:</p> <ul style="list-style-type: none"> • Make energy usage a specific performance goal; • Provide resources to follow through with energy management;

	<ul style="list-style-type: none"> • Create energy or sustainability teams (at least one dedicated energy manager or champion who allocates some time towards energy efficiency activities); • Demonstrate commitment to improve operations and maintenance practices; • Provide the data for Enbridge to create an energy consumption model and be willing to invest in energy management tools, as applicable, to better control and manage their energy; and, • Participate in training to support sustained energy management. <p>Energy Solution Consultants (ESCs) have established relationships with the majority of the target customer base. Therefore, the ESCs serve as the primary point of contact for customers. Through the CEM offer, ESCs further engage with participants both at the energy manager and senior management levels to develop and reinforce their corporate energy plans and identify energy goals. Depending on the requirements of each CEM participant, ESCs help customers justify energy management activities and resource needs based on their business.</p> <p>CEM offers financial incentives as follows:</p> <ul style="list-style-type: none"> • Funds to offset the cost of energy assessments and monitoring systems where necessary • Incentives for gas savings achieved through identified projects • Funds to promote energy awareness and encourage energy efficiency training
2017 Results	As outlined in Table 7.0, five participants enrolled in the CEM offer in 2017.

2017 Commentary and Lessons Learned

- In 2017 for the Comprehensive Energy Management (CEM) offer, Enbridge's ESCs enrolled five customers to participate. Each participant undergoes a detailed analysis of the energy consumption of their facility which is completed by Enbridge. Based on the energy use, production data and weather data each facility a representative energy model is created. The energy model is utilized to determine where energy management efforts should be focused as well as identify specific opportunities for potential improvements in energy consumption.
- The main objective of the CEM offer is to assist customers reduce operational costs through energy management practices by presenting energy as a controllable input cost. As a starting point, participation in CEM provides customers with a roadmap to guide them through energy based decisions and to support building a culture of sustained energy efficiency at the customer facility. However, commitment to energy efficiency investments is often dependent on the customer's operational cycle, which can be several years. Energy management is a transformational process, which requires a multi-year commitment in effort, time, and funding. Thus ESCs will continue to work with participants to support actionable energy improvements beyond the first year of participation in this offer.
- In some cases, where energy use is complex, Enbridge recommends there is value in installing an EMIS system. Over the past two year Enbridge has provided funding to support the installation of an EMIS for a number of the CEM participants. Enbridge has learned, however, that some customers have had difficulty obtaining corporate approval for the funding of these systems despite the assistance of Enbridge incentives, particularly when compared to undertaking other capital investments. In these cases, for modelling and monitoring purposes, Enbridge and the customer have alternatively utilized existing on-site metering and data collection infrastructure. Though not optimal, this has lessened some of

the financial requirement while still engaging the customer in energy management practices.

- To create natural gas consumption models on a facility level Enbridge has used the existing energy consumption data of the participant's facility, looking forward, ESCs will continue to focus efforts on the identification of additional metering structure required to create energy models on a smaller scale. It is anticipated this initiative may have a greater effect in allowing detailed day-to-day operations to be analyzed and further identify opportunities for energy efficient improvements.
- Ontario electricity customers pay a global adjustment on their electricity bills. As this charge is becoming increasingly significant in cost, affected customers are often understandably paying relatively less attention to their natural gas consumption and costs. In an effort to address this barrier, Enbridge ESC's also work with customers to investigate the electric savings potential that might also be realized through participation in the CEM offer.
- Customers often do not recognize the value of adopting a formal energy management plan. Looking forward, Enbridge will need to continue to leverage opportunities to educate target customers about CEM and the benefits of creating a sustainable culture of energy efficiency. In 2017, Enbridge gave presentations on the CEM offer at the following events:
 - Dollars and Sense Workshop on Energy Management
 - The Canadian Manufacturers & Exporters (CME) Energy Conference
 - The Greening Healthcare workshop
 - Powering Up Durham – Save on energy Symposium
 - Enbridge hosted Customer Workshops

Enbridge also focused on engaging customers to participate in the CEM offer through advertisements in trade magazine.

- Customer response to the CEM offer continues to be positive. In particular, one 2017 participant, a strong advocate for the CEM offer, agreed to participate in the Energy Summit conference as well as Enbridge customer workshops highlighting the benefits of creating a sustainable culture of energy efficiency that could be achieved through participation in the CEM offer.
- As the Company's intention is to change energy management in participant's facilities from a transactional activity to a transformational one, Enbridge will continue to refine this offer and determine how to best assist customers. Enbridge will accomplish this by making energy a visible, and therefore controllable, input for the customer. The CEM offer will continue in 2018.

Our Approach

Comprehensive Energy Management Program

Whether for environmental stewardship, emission reduction or cost savings purposes, managing energy is becoming increasingly important in industrial settings.

Succeeding in energy management requires the ability to set the right strategy and make it happen. Enbridge Gas Distribution's Comprehensive Energy Management (CEM) Program is designed to help you do just that. Through the program, you will gain a better understanding of your key energy drivers so you can shape your energy goals and set the right strategy.

The program will also help you "make it happen" by ensuring you put an action plan in place that is flexible and responsive enough to withstand changing business conditions.

CEM Program participants will:

- Identify key energy drivers and establish baselines
- Identify areas of improvement and set targets to:
 - Reduce energy consumption and emissions
 - Improve process efficiencies and productivity
 - Save money across the organization
- Empower and engage employees to work together towards a common energy saving goal



8. Lost Revenue Adjustment Mechanism Variance Account

The Lost Revenue Adjustment Mechanism (LRAM) allows the Company to recover the lost distribution revenue associated with DSM activity. The LRAMVA is a mechanism to adjust for margins the utility loses/gains if its DSM program is more/less successful in the period after rates are set than was planned in setting the rates. As outlined in the Guidelines, LRAMVA is used to track, by rate class, the impact of DSM activities undertaken in relation to the forecasted impact included in distribution rates.

LRAM is calculated using the volumetric impact of the measures implemented on a monthly basis over the course of the program year. The LRAMVA amount is an adjustment which may be an amount refundable to, or receivable from, the Company's customers (depending on whether the actual natural gas savings resulting from the natural gas utility's DSM activities are less than or greater than what was included in the forecast for rate-setting purposes). The 2017 LRAM calculation is provided in Table 8.0.

Table 8.0 2017 LRAM Calculation

Based on 52,513,236 FE m3 built into rates						
Rate Class	Budget Net Partially Effective	Actual Net Partially Effective	Volume Variance	Distribution Margin	LRAM Allocation \$	Actual LRAM \$
Rate 110	2,698,098	732,247	(1,965,851)	0.4144	(\$8,147)	\$3,035
Rate 115	2,157,728	192,430	(1,965,297)	0.0504	(\$990)	\$97
Rate 135	85,369	285,969	200,600	1.6435	\$3,297	\$4,700
Rate 145	384,545	1,418	(383,127)	0.9543	(\$3,656)	\$14
Rate 170	575,188	114,721	(460,467)	0.1911	(\$880)	\$219
Totals	5,900,927	1,326,785	(\$4,574,142)		(\$10,377)	\$8,064
Amount to be paid back to Ratepayers					\$10,377	

* Rate 1 and Rate 6 are not included in the LRAM amount for clearance above as these rate classes are covered under the Average Use True-Up Variance Account (AUTUVA)

9. DSM Shareholder Incentive (DSMI)

Enbridge earns a shareholder incentive based on its performance against targets outlined for Resource Acquisition, Low Income and Market Transformation scorecards. Based on the approved maximum DSMI outlined in EB-2015-0049, Table 9.0 summarizes how the maximum incentive available in 2017 is allocated across each program.

Table 9.0 2017 DSM Maximum Incentive Allocation

Program	Maximum Incentive Available
<i>Resource Acquisition</i>	\$7,025,881
<i>Low Income</i>	\$2,228,894
<i>Market Transformation</i>	\$1,195,225
	\$10,450,000

Scorecard results and the corresponding DSMI earned for each program is detailed in the following tables.

Table 9.1 2017 Resource Acquisition Scorecard & DSMI

Resource Acquisition						
Component	Metric	Weight	Targets			2017 Result
			Lower Band	Target	Upper Band	
Large Volume Customers	Cumulative Savings (million m ³)	40%	327.1	436.1	654.1	401.23
Small Volume Customers	Cumulative Savings (million m ³)	40%	277.8	370.4	555.6	296.98
Deep Residential Savings	Participants	20%	6,837	9,116	13,674	11,390
Total Weighted Scorecard Target Achieved						93.9%
Scorecard Incentive Achieved						\$2,120,130

Table 9.2 2017 Low Income Scorecard & DSMI

Low Income						
Component	Metric	Weight	Targets			2017 Result
			Lower Band	Target	Upper Band	
Single Family (Part 9)	Cumulative Savings (million m ³)	45%	30.5	40.7	61.0	19.60
Multi-Residential (Part 3)	Cumulative Savings (million m ³)	45%	94.8	126.4	189.6	69.36
New Construction	Participants	10%	21	28	42	11
Total Weighted Scorecard Target Achieved						50.3%
Scorecard Incentive Achieved						\$0

Table 9.3 2017 Market Transformation Scorecard & DSMI

Market Transformation						
Component	Metric	Weight	Targets			2017 Result
			Lower Band	Target	Upper Band	
Residential Savings by Design	<i>Builders</i>	10%	24	32	48	24
	<i>Homes Built</i>	15%	1,705	2,273	3,410	2,570
Commercial Savings by Design	<i>New Developments</i>	25%	24	32	48	30
School Energy Competition	<i>Schools</i>	10%	43	57	86	65
Run it Right	<i>Participants</i>	20%	88	117	176	29
Comprehensive Energy Management	<i>Participants</i>	20%	41	55	83	5
Total Weighted Scorecard Target Achieved						66.3%
Scorecard Incentive Achieved						\$0

Table 9.4 2017 DSMIDA Summary

Program	DSMIDA by Program
<i>Resource Acquisition</i>	\$2,120,130
<i>Low Income</i>	\$0
<i>Market Transformation</i>	\$0
TOTAL	\$2,120,130

10. 2017 Budget and Program Spending

10.1 Budget

Table 10.0 provides the 2017 DSM budget as outlined in the 2015-2020 Multi-Year DSM Plan (EB-2015-0049). The Board approved a 2017 budget of \$62,933,844 in its Decision on January 20th, 2016.

Table 10.0 2017 DSM Plan Budget

Program	Program Budget	Overheads	Total Budget
<i>Resource Acquisition</i>	\$34,384,381	\$5,104,327	\$39,488,708
<i>Low Income</i>	\$10,908,121	\$1,619,299	\$12,527,420
<i>Market Transformation</i>	\$5,849,381	\$868,335	\$6,717,716
Total Program Budget	\$51,141,883	\$7,591,961	\$58,733,844
<i>Portfolio Overheads</i>			\$4,200,000
Total 2017 DSM Budget			\$62,933,844

10.2 2017 Spending

Table 10.1 2017 OEB Approved Budget vs. Spending

Program	OEB Approved Budget (Built Into Rates)	2017 Spending	Variance
Resource Acquisition	\$39,488,708	\$40,290,431	\$801,723
Home Energy Conservation	\$15,180,000	\$22,644,994	\$7,464,994
Residential Adaptive Thermostats	\$1,525,000	\$1,479,319	-\$45,681
Commercial & Industrial Custom	\$7,157,145	\$7,240,134	\$82,989
Commercial & Industrial Prescriptive	\$2,241,134	\$1,113,533	-\$1,127,601
Commercial & Industrial Direct Install	\$5,060,872	\$1,807,641	-\$3,253,231
Small Commercial New Construction	\$1,305,566	\$0	-\$1,305,566
Energy Leaders (Large & Small C/I)	\$400,000	\$78,613	-\$321,387
Run it Right (RA)	\$1,434,480	\$872,005	-\$562,475
Comprehensive Energy Management (RA)	\$80,184	\$0	-\$80,184
Overheads	\$5,104,327	\$5,054,191	-\$50,136
Low Income	\$12,527,420	\$9,419,100	-\$3,108,320
Home Winterproofing	\$6,290,000	\$4,539,420	-\$1,750,580
Low-Income Multi-Residential - Affordable Housing	\$3,418,121	\$2,765,831	-\$652,290
Low-Income New Construction	\$1,200,000	\$510,456	-\$689,544
Overheads	\$1,619,299	\$1,603,394	-\$15,905
Market Transformation	\$6,717,716	\$5,783,035	-\$934,681
Residential Savings by Design	\$3,250,000	\$2,596,284	-\$653,716
Commercial Savings by Design	\$950,000	\$1,210,688	\$260,688
School's Energy Competition	\$600,000	\$460,396	-\$139,604
Run it Right (MT)	\$285,520	\$421,777	\$136,257
Comprehensive Energy Management (MT)	\$763,861	\$234,085	-\$529,776
Overheads	\$868,335	\$859,806	-\$8,529
Program Cost Subtotal	\$51,141,883	\$47,975,175	-\$3,166,708
Overhead Subtotal	\$7,591,961	\$7,517,391	-\$74,570
Residential Savings by Design Incentive Accrual ¹	\$0	\$1,620,000	\$1,620,000
Commercial Savings by Design Incentive Accrual ¹	\$0	\$60,000	\$60,000
Low-Income New Construction Incentive Accrual ¹	\$0	\$648,500	\$648,500
Accrued Incentives Subtotal	\$0	\$2,328,500	\$2,328,500
Program Costs Total	\$58,733,844	\$57,821,067	-\$912,777
Portfolio Overheads	\$4,200,000	\$5,085,923	\$885,923
Grand Total	\$62,933,844	\$62,906,989	-\$26,855

1. Accrued Incentive Amounts reflect updated direction provided by the Board outlined in EB-2017-0127/0128, Report of the Ontario Energy Board: Mid-Term Review of the DSM Framework for Natural Gas Distributors (2015-2020), November 29, 2018, page 16.

As outlined in Table 10.1 above, total spending in 2017 amounted to \$62,906,989. Total spending includes accrued amounts for future incentive payment commitments for applicable offers.

10.3 Collaboration and Innovation Fund

In the 2015-2020 Multi-Year Decision, released January 20, 2016, the Board approved Enbridge's proposal for a \$6 million Collaboration and Innovation Fund (CIF) to be spent over the term of the 2015-2020 Multi-Year DSM Plan¹³. The purpose of the CIF is to designate funding to support the mandate of pursuing greater integration and coordination with industry partners including electric Local Distribution Companies (LDSs) on collaborative pilots, programs and projects. In addition, the CIF also allows the Company to pursue innovation initiatives that have the potential to drive meaningful energy savings and greenhouse gas (GHG) reductions.

In 2016, as detailed in the 2016 DSM Annual Report¹⁴, the Company leveraged the CIF to develop and implement various collaborative pilots and innovation initiatives that focused on raising the level of awareness and engagement on joint gas and electric programming or testing energy use designs or concepts. This work set the foundation for future CIF efforts.

In 2017, the Company continued many of the initiatives started in 2016 and was able to expand its portfolio of collaborative initiatives and innovative projects. 2017 spending in the Collaboration and Innovation Fund was \$486,247.

Table 10.2 below provides an outline of the CIF initiatives that were undertaken by Enbridge throughout the 2017 program year. The chart below includes only the collaborative or innovative efforts that received funding from the CIF in 2017 and is not a comprehensive list of all of Enbridge's collaborative or innovative initiatives.

¹³ Decision and Order (EB-2015-0049); Ontario Energy Board, pg. 82.

¹⁴ EB-2018-0301, Exhibit B, Tab 2, Schedule 1, 2016 DSM Annual Report, November 17, 2018, page 131

Table 10.2 CIF Overview

Partner	Customer Segment/ Topic	Overview
IESO and Union Gas	Commercial & Industrial	Enbridge, Union Gas and the IESO partnered to deliver a joint training incentive initiative. Through this collaboration, customers received an incentive for participation and completion of Energy Manager Certification, Building Operator Certification and/or Dollars to \$ense Energy Management Workshop. Participants use the knowledge gained to directly influence the decision to improve the energy performance of the buildings they manage.
Multiple LDCs	Commercial	Enbridge participated in a bi-annual energy conservation information and networking event with electric LDCs from the Greater Toronto and Hamilton Areas. These events connect customers, industry partners and utilities to share industry trends and enhance knowledge sharing and networks. Enbridge participated to provide perspective and influence to a predominately electric conference for a more holistic energy understanding.
Multiple LDCs	Commercial & Industrial	LDCs initiated various information and networking events such as Energy into Action, Energy into Action Niagara and Power-Up Durham. These events targeted Commercial and Industrial customers as well as business partners. At these events, Enbridge promoted a customer centric approach to energy efficiency as well as information regarding programs offered by Enbridge.
Alectra Utilities and	Net Zero Energy	Researching the benefits of a comprehensive integration of gas and electricity systems using new

Partner	Customer Segment/ Topic	Overview
City of Markham	Emission Technology Research	technologies such as air source heat pumps and micro Combined Heat and Power (MCHP) to reduce energy demand and lower carbon emissions in the residential sector.
Multiple Industry Partners	Geothermal Heat Pumps	Enbridge, San Diego Homes, and the IESO embarked on a pilot aimed to test and measure the performance of geothermal heat pumps for the residential new construction market. Consistent with the objective of the Savings by Design offers, this pilot encourages residential developers to construct projects more energy efficient than required by the building code.
Multiple Industry Partners	Multi-Residential	Energy Star multi-family building pilot is a three year pilot led by Enerquality and supported by Enbridge, IESO as well as Natural Resources Canada. This pilot aims to design, develop and implement a third party energy efficiency certification program for mid to high-rise residential buildings in Ontario. This pilot aligns with Enbridge's holistic building approach to energy efficiency programming.
London Hydro and Union Gas	Residential & Commercial	The customer energy management initiative seeks to expand London Hydro's smart phone application to allow customers to access both their electricity and natural gas consumption on a real time basis. This application will enhance customer awareness of natural gas consumption and potentially positively influence the customer's behavior towards energy efficiency and conservation programs.

10.4 Demand Side Management IT (DSMIT)

Enbridge continued working towards the goal of implementing a new IT application throughout 2017. Having completed the RFP and blue print exercises in 2016, the Company selected a vendor through a competitive bidding process in order to start the design and development phases of the project in 2017. The main elements for the design and development phases included:

Design Phase:

- Technical design
- Mapping requirements to functions
- Creating the solution architecture
- Creating the data migration and data management plan
- Creating the integration plan
- Creating the test strategy

Development Phase:

- Field mapping and schema design
- Screen designs
- System template creation
- Initialize meta data
- Data migration and integration working sessions

Financial Summary:

As per the Decision, Enbridge has an annual \$1 million chargeback for DSMTP. In 2016, Enbridge spent \$100,000 and in 2017, Enbridge spent \$3,109,366 on DSMTP, primarily on the technical design and development project phases.

During 2019, the Company determined that the costs related to the IT system were not capital in nature. Therefore, all costs incurred have been recorded as O&M costs in the respective year they have been incurred.

Since spending for a project of this nature is not linear, it is understood that some years will have a significant underspend and some years will have a significant overspend. These imbalances will flow through the DSMVA as a credit or debit to ratepayers.

10.5 Demand Side Management Variance Account

As specified in the Guidelines, the DSMVA “should be used to track the variance between actual DSM spending by rate class versus the budgeted amount included in rates by rate class.”¹⁵

In addition, as outlined by the Board in its Mid-Term Report, Enbridge was instructed to use the DSMVA to track future financial commitments for offers with deferred customer incentives.

The DSM budget built into rates for the 2017 calendar year was \$62,933,844. This amount was approved by the Board in its Decision and Order in EB-2015-0049 on January 20th, 2016.

In 2017, the full OEB approved budget was not spent. The total amount of unspent dollars, pre accrual, in the DSMVA is \$2,355,355. Of this amount, \$2,328,500 represents amounts accrued for incentive payment commitments to be paid out in future years and tracked in the DSMVA. \$26,855 is to be refunded to ratepayers.

¹⁵ EB-2014-0134. Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020), OEB, December 22, 2014, page 38.

Table 10.3 DSMVA Summary: 2017 Spending vs. DSM Budget Built Into Rates

DSM Budget Previously Built Into Rates	A	\$62,933,844
2017 DSM Spending	B	\$60,578,489
DSMVA (Pre Accruals)	C=B-A	-\$2,355,355
Deferred Incentive Accruals	D	\$2,328,500
DSMVA amount to be Returned to Ratepayers	=C+D	-\$26,855

Table 10.3 shows the variance between the approved DSM budget built into rates and the 2017 DSM spending, including accrued amounts for future incentive payment commitments (as summarized previously in Table 10.1).

10.6 Demand Side Management Cost-Efficiency Incentive Deferral Account

As noted in the OEB's revised Decision and Order, dated February 24, 2016, "The purpose of the DSMCEIDA is to record, as a credit in Deferral Account No. 179-046, the differences between Enbridge Gas Distribution Inc.'s (Enbridge or the Company) annual approved DSM budget and the actual amounts spent to achieve the total aggregate annual lifetime savings (cumulative cubic meters of natural gas, or CCM) targets made up of all 100% CCM targets across all programs, in accordance with the program evaluation results."¹⁶

For the 2017 program year, Enbridge is not proposing any amount be recorded in the DSMCEIDA.

¹⁶ EB-2015-0049, Decision and Order, OEB, February 24, 2016, page 6.

10.7 DSM Rate Allocation

Table 10.4 illustrates the allocation to rate classes of the various 2017 deferral and variance accounts.¹⁷

Table 10.4 2017 Rate Allocation

Rate Class	DSMIDA	LRAMVA ^{1 2}	DSMVA ³	TOTAL
Rate 1	\$1,453,433	N/A	\$9,442,681	\$10,896,114
Rate 6	\$574,160	N/A	-\$4,616,806	-\$4,042,646
Rate 9	\$75	\$0	-\$454	-\$379
Rate 100	\$0	\$0	\$0	\$0
Rate 110	\$47,962	-\$8,147	-\$404,500	-\$364,686
Rate 115	\$19,315	-\$990	-\$806,943	-\$788,619
Rate 125	\$2,819	\$0	-\$17,031	-\$14,212
Rate 135	\$12,471	\$3,297	\$102,183	\$117,951
Rate 145	\$2,951	-\$3,656	-\$1,584,697	-\$1,585,402
Rate 170	\$5,778	-\$880	-\$2,134,247	-\$2,129,349
Rate 200	\$977	\$0	-\$5,904	-\$4,927
Rate 300	\$188	\$0	-\$1,135	-\$947
Total	\$2,120,130	-\$10,377	-\$26,855	\$2,082,898

1. Rate 1 and Rate 6 are not included in the LRAM amount as these rate classes are covered under the Average Use True-Up Variance Account (AUTUVA).

2. Rates 9, 125, 200 & 300 do not have any LRAM component in the rate allocation since customers in these rate classes are not eligible for DSM programs. These rate classes will however be subject to rate allocations for DSMVA and applicable DSMIDA related to Low Income Program.

3. DSMVA rate allocation amounts include the impact of accrued incentives

¹⁷ As in prior years, Low Income DSM spending is allocated to all rate classes, to be consistent with the electricity conservation framework, as well as the LEAP Emergency Financial Assistance program. Allocation for the LEAP fund was outlined in EB-2008-0150 Report of the Board: Low Income Energy Assistance Program on page 11 Section 5.1.1 Funding LEAP.

Appendix A: Input Assumptions

For prescriptive input assumptions related to the calculation of savings claims and the calculation of the DSM Shareholder Incentive:

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

This filing can be found on the OEB website:

<https://www.oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm>

For custom measure life values related to the calculation of savings claims and the calculation of the DSM Shareholder Incentive:

- Final Report: Custom Measure Life Review, Michaels Energy, May 10, 2018

This report can be found on the OEB website:

<https://www.oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm-evaluation>

The EC's 2017 Annual Verification report, 2017/2018 Custom Savings Verification report and 2018 Custom Free Rider Evaluation (all March 13, 2020), which document all 2017 verification activities and the calculation of the EC's verified DSMIDA, LRAM and DSMVA amounts can be found at:

<https://www.oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm-evaluation>

Appendix B: 2017 Avoided Costs

The 2017 Avoided Costs used in the determination of 2017 results are included here for reference in the following charts:

Year	2017 Gas Avoided Costs							
	Water Heating		Space Heating		Combined Space & Water Heating		Industrial	
	Baseload (\$/m ³)		Baseload (\$/m ³)		Baseload (\$/m ³)		Baseload (\$/m ³)	
	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV
1	0.1510	0.1548	0.1682	0.1803	0.1650	0.1761	0.1533	0.1568
2	0.1607	0.3063	0.1863	0.3559	0.1778	0.3437	0.1661	0.3134
3	0.1926	0.4776	0.2107	0.5433	0.2141	0.5342	0.1920	0.4842
4	0.1850	0.6328	0.2041	0.7145	0.2035	0.7048	0.1856	0.6398
5	0.1906	0.7835	0.2102	0.8808	0.2096	0.8706	0.1912	0.7910
6	0.1963	0.9299	0.2165	1.0423	0.2159	1.0316	0.1969	0.9379
7	0.2022	1.0721	0.2230	1.1992	0.2223	1.1880	0.2028	1.0806
8	0.2082	1.2102	0.2297	1.3516	0.2290	1.3399	0.2089	1.2191
9	0.2145	1.3443	0.2366	1.4996	0.2359	1.4874	0.2152	1.3537
10	0.2209	1.4746	0.2437	1.6434	0.2430	1.6307	0.2216	1.4845
11	0.2275	1.6012	0.2510	1.7830	0.2502	1.7699	0.2283	1.6114
12	0.2344	1.7242	0.2586	1.9187	0.2578	1.9052	0.2351	1.7348
13	0.2414	1.8436	0.2663	2.0504	0.2655	2.0365	0.2422	1.8546
14	0.2486	1.9596	0.2743	2.1784	0.2734	2.1641	0.2494	1.9710
15	0.2561	2.0723	0.2825	2.3027	0.2817	2.2880	0.2569	2.0840
16	0.2638	2.1817	0.2910	2.4235	0.2901	2.4084	0.2646	2.1938
17	0.2717	2.2880	0.2997	2.5407	0.2988	2.5253	0.2726	2.3005
18	0.2798	2.3913	0.3087	2.6547	0.3078	2.6388	0.2808	2.4041
19	0.2882	2.4916	0.3180	2.7653	0.3170	2.7491	0.2892	2.5047
20	0.2969	2.5890	0.3275	2.8728	0.3265	2.8563	0.2979	2.6024
21	0.3058	2.6836	0.3374	2.9772	0.3363	2.9604	0.3068	2.6974
22	0.3150	2.7755	0.3475	3.0786	0.3464	3.0615	0.3160	2.7896
23	0.3244	2.8648	0.3579	3.1771	0.3568	3.1597	0.3255	2.8792
24	0.3341	2.9515	0.3687	3.2728	0.3675	3.2550	0.3352	2.9662
25	0.3442	3.0358	0.3797	3.3657	0.3785	3.3477	0.3453	3.0507
26	0.3545	3.1176	0.3911	3.4560	0.3899	3.4377	0.3556	3.1328
27	0.3651	3.1971	0.4028	3.5437	0.4016	3.5251	0.3663	3.2125
28	0.3761	3.2743	0.4149	3.6289	0.4136	3.6100	0.3773	3.2900
29	0.3874	3.3493	0.4274	3.7116	0.4260	3.6924	0.3886	3.3652
30	0.3990	3.4221	0.4402	3.7919	0.4388	3.7725	0.4003	3.4383

The Nominal Inflation Rate used in the table is 1.96%

The Real Discount Factor used in the table is 4.0%

2017 Water and Electricity Avoided Costs																
Year	Water Heating				Space Heating				Combined Space & Water Heating				Industrial			
	Electricity (¢/kwh)		Water (\$/1000 litre)		Electricity (¢/kwh)		Water (\$/1000 litre)		Electricity (¢/kwh)		Water (\$/1000 litre)		Electricity (¢/kwh)		Water (\$/1000 litre)	
	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV
1	0.1354	\$0.14	0.9114	\$0.91	0.1354	\$0.14	0.9114	\$0.91	0.1354	\$0.14	0.9114	\$0.91	0.1354	\$0.14	0.9114	0.9114
2	0.1381	\$0.27	0.9298	\$1.79	0.1381	\$0.27	0.9298	\$1.79	0.1381	\$0.27	0.9298	\$1.79	0.1381	\$0.27	0.9298	1.7883
3	0.1408	\$0.39	0.9476	\$2.63	0.1408	\$0.39	0.9476	\$2.63	0.1408	\$0.39	0.9476	\$2.63	0.1408	\$0.39	0.9476	2.6310
4	0.1431	\$0.51	0.9635	\$3.44	0.1431	\$0.51	0.9635	\$3.44	0.1431	\$0.51	0.9635	\$3.44	0.1431	\$0.51	0.9635	3.4391
5	0.1461	\$0.63	0.9837	\$4.22	0.1461	\$0.63	0.9837	\$4.22	0.1461	\$0.63	0.9837	\$4.22	0.1461	\$0.63	0.9837	4.2171
6	0.1492	\$0.74	1.0045	\$4.97	0.1492	\$0.74	1.0045	\$4.97	0.1492	\$0.74	1.0045	\$4.97	0.1492	\$0.74	1.0045	4.9663
7	0.1523	\$0.84	1.0250	\$5.69	0.1523	\$0.84	1.0250	\$5.69	0.1523	\$0.84	1.0250	\$5.69	0.1523	\$0.84	1.0250	5.6873
8	0.1553	\$0.95	1.0454	\$6.38	0.1553	\$0.95	1.0454	\$6.38	0.1553	\$0.95	1.0454	\$6.38	0.1553	\$0.95	1.0454	6.3807
9	0.1584	\$1.05	1.0666	\$7.05	0.1584	\$1.05	1.0666	\$7.05	0.1584	\$1.05	1.0666	\$7.05	0.1584	\$1.05	1.0666	7.0479
10	0.1617	\$1.14	1.0882	\$7.69	0.1617	\$1.14	1.0882	\$7.69	0.1617	\$1.14	1.0882	\$7.69	0.1617	\$1.14	1.0882	7.6898
11	0.1650	\$1.23	1.1104	\$8.31	0.1650	\$1.23	1.1104	\$8.31	0.1650	\$1.23	1.1104	\$8.31	0.1650	\$1.23	1.1104	8.3075
12	0.1683	\$1.32	1.1327	\$8.90	0.1683	\$1.32	1.1327	\$8.90	0.1683	\$1.32	1.1327	\$8.90	0.1683	\$1.32	1.1327	8.9017
13	0.1716	\$1.41	1.1550	\$9.47	0.1716	\$1.41	1.1550	\$9.47	0.1716	\$1.41	1.1550	\$9.47	0.1716	\$1.41	1.1550	9.4731
14	0.1750	\$1.49	1.1778	\$10.02	0.1750	\$1.49	1.1778	\$10.02	0.1750	\$1.49	1.1778	\$10.02	0.1750	\$1.49	1.1778	10.0226
15	0.1785	\$1.57	1.2012	\$10.55	0.1785	\$1.57	1.2012	\$10.55	0.1785	\$1.57	1.2012	\$10.55	0.1785	\$1.57	1.2012	10.5511
16	0.1820	\$1.64	1.2253	\$11.06	0.1820	\$1.64	1.2253	\$11.06	0.1820	\$1.64	1.2253	\$11.06	0.1820	\$1.64	1.2253	11.0595
17	0.1857	\$1.72	1.2499	\$11.55	0.1857	\$1.72	1.2499	\$11.55	0.1857	\$1.72	1.2499	\$11.55	0.1857	\$1.72	1.2499	11.5486
18	0.1894	\$1.79	1.2751	\$12.02	0.1894	\$1.79	1.2751	\$12.02	0.1894	\$1.79	1.2751	\$12.02	0.1894	\$1.79	1.2751	12.0191
19	0.1933	\$1.85	1.3010	\$12.47	0.1933	\$1.85	1.3010	\$12.47	0.1933	\$1.85	1.3010	\$12.47	0.1933	\$1.85	1.3010	12.4718
20	0.1971	\$1.92	1.3266	\$12.91	0.1971	\$1.92	1.3266	\$12.91	0.1971	\$1.92	1.3266	\$12.91	0.1971	\$1.92	1.3266	12.9071
21	0.2010	\$1.98	1.3530	\$13.33	0.2010	\$1.98	1.3530	\$13.33	0.2010	\$1.98	1.3530	\$13.33	0.2010	\$1.98	1.3530	13.3258
22	0.2051	\$2.04	1.3804	\$13.73	0.2051	\$2.04	1.3804	\$13.73	0.2051	\$2.04	1.3804	\$13.73	0.2051	\$2.04	1.3804	13.7286
23	0.2092	\$2.10	1.4084	\$14.12	0.2092	\$2.10	1.4084	\$14.12	0.2092	\$2.10	1.4084	\$14.12	0.2092	\$2.10	1.4084	14.1163
24	0.2135	\$2.15	1.4370	\$14.49	0.2135	\$2.15	1.4370	\$14.49	0.2135	\$2.15	1.4370	\$14.49	0.2135	\$2.15	1.4370	14.4892
25	0.2177	\$2.21	1.4657	\$14.85	0.2177	\$2.21	1.4657	\$14.85	0.2177	\$2.21	1.4657	\$14.85	0.2177	\$2.21	1.4657	14.8479
26	0.2221	\$2.26	1.4950	\$15.19	0.2221	\$2.26	1.4950	\$15.19	0.2221	\$2.26	1.4950	\$15.19	0.2221	\$2.26	1.4950	15.1930
27	0.2265	\$2.31	1.5249	\$15.52	0.2265	\$2.31	1.5249	\$15.52	0.2265	\$2.31	1.5249	\$15.52	0.2265	\$2.31	1.5249	15.5249
28	0.2311	\$2.35	1.5554	\$15.84	0.2311	\$2.35	1.5554	\$15.84	0.2311	\$2.35	1.5554	\$15.84	0.2311	\$2.35	1.5554	15.8442
29	0.2357	\$2.40	1.5865	\$16.15	0.2357	\$2.40	1.5865	\$16.15	0.2357	\$2.40	1.5865	\$16.15	0.2357	\$2.40	1.5865	16.1513
30	0.2404	\$2.44	1.6183	\$16.45	0.2404	\$2.44	1.6183	\$16.45	0.2404	\$2.44	1.6183	\$16.45	0.2404	\$2.44	1.6183	16.4467

The Nominal Inflation Rate used in the table is 1.96%

The Real Discount Factor used in the table is 4.0%

	2017 Carbon Avoided Costs	
Year	Rate	NPV
1	0.0300	0.0300
2	0.0200	0.0489
3	0.0400	0.0844
4	0.0600	0.1348
5	0.0800	0.1980
6	0.1000	0.2726
7	0.1000	0.3429
8	0.1000	0.4093
9	0.1000	0.4718
10	0.1100	0.5367
11	0.1100	0.5979
12	0.1100	0.6556
13	0.1100	0.7100
14	0.1100	0.7614
15	0.1200	0.8142
16	0.1200	0.8639
17	0.1200	0.9109
18	0.1200	0.9552
19	0.1300	1.0004
20	0.1300	1.0431
21	0.1300	1.0833
22	0.1300	1.1212
23	0.1400	1.1598
24	0.1400	1.1961
25	0.1400	1.2304
26	0.1500	1.2650
27	0.1500	1.2976
28	0.1500	1.3284
29	0.1500	1.3575
30	0.1600	1.3867

**Appendix C: Enbridge Gas Distribution Inc.
Affordable Housing New Construction Program –
Stakeholder Research and Analysis, Phase 2 of 2,
C2C Strategies**



engage wisely

Enbridge Gas Distribution Inc. Affordable Housing New Construction Program

Stakeholder Research and Analysis

Phase 2 of 2

Final REPORT

7 December 2017

Prepared by:
Emay Cowx CPF, Principal

www.c2cstrategies.ca



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INTRODUCTION

The Affordable Housing New Construction Program (Program) was rolled out in 2016 as part of Enbridge Gas Distribution's (Enbridge) 2016-2020 natural gas demand side management (DSM) Low Income Program portfolio. The Program was implemented by way of a 'soft launch' during the first half of 2016 with participants brought in through Enbridge's regular DSM work in the social and affordable housing, and building development sectors.

C2C Strategies was asked by Enbridge to undertake an early review of the Program during Fall 2016 by conducting a series of interviews with soft launch participants. The purpose of the research was to assess the incentive approach, program delivery effectiveness and participants' general experience with the Program during the soft launch period. A report of these research findings is contained in a Phase 1 Final Report dated December 2016.

Participants' experience with the Program was limited during the earlier research period. No Participant had completed a full cycle of the Program at that time. That is, no Housing Provider had completed construction of their affordable housing project and applied for their final Energy Efficiency Design Implementation or Commissioning Incentive (if a Part 3 project).

Over the past 12 months Enbridge has made minor modifications to the Program process¹ based on Phase 1 findings, and has further added new and repeat affordable housing Participants to the Program. This report contains findings from Phase 2 of stakeholder research that builds on earlier research efforts, which includes a review of ongoing experience of the Program by existing and new Program participants.

Findings from this qualitative research initiative are expected to inform continuous improvement of the Program methodology and approach.

¹ The process and approach adopted for Part 3 buildings now more closely aligns with the Enbridge Savings by Design green building initiative.



RESEARCH METHODOLOGY

Similar to the research conducted in 2016, Enbridge identified six different projects that are currently enrolled in the Program as the basis for Phase 2 review. The projects included a sample of both Part 3 multi-residential buildings and Part 9 single family dwellings. For this research C2C conducted one-on-one telephone interviews with seven individuals, including

- Participants who were the project owners (also known as Housing Providers); and/or
- Selected members of a Participant's consulting, project management, or architectural design team.

Unlike Phase 1 research, interviewees did not include consultant representatives working on behalf of Enbridge to provide technical energy modeling support in the delivery of the Program.

The research approach consisted of a telephone interview lasting approximately 30 minutes and was conducted in a conversational style guided by questions designed to elicit interviewee perspectives on the following topics:

- Level of knowledge of the Program generally, the participation process and incentive structure.
- Experience to date with various Program elements.
- Thoughts, ideas and suggestions for building Program awareness and marketing.

Respondents were assured of confidentiality in respect to their specific input.

The following table outlines each Interviewee's association with a building project and experience with a relative AHNC incentive stream:

Table 1

Interviewee	Interviewee Project Role	Part 9 Incentive Stream	Part 3 Incentive Stream
1	Housing Provider	Project A Project B	Project A Project B
2	Construction Manager	Project B	Project B
3	Project Manager/Architect	–	Project C
4	Project Manager	–	Project D
5	Housing Provider	–	Project E
6	Project Manager/Architect	–	Project E
7	Project Manager/Architect	–	Project F



Evident from the table above is that two of the participants have housing developments that include both multi-residential buildings and low-rise single family homes. In these cases, the housing development is enrolled in the AHNC program's Part 3 stream for the multi-residential buildings and the Part 9 stream for the low-rise single family homes. Therefore, only two of the seven interviewees were able to share thoughts on their experience with the Part 9 application stream.

Due to the small sample size underpinning the research it is important to note that results are not to be construed in any way as statistically significant.



RESEARCH FINDINGS

Phase 1 research produced a sufficiently detailed process map constructed from a Program participant perspective. Phase 2 revealed no changes necessary to the defined process but provided deeper insight on perceptions held by interviewees about the incentives and how they were earned by participating in the program process.

1. Application Process

As in earlier research, interviewees described the application process as *simple and straightforward, easy, and very good*. This round of research emphasized that regardless of project size, Housing Providers or project owners did not fill out the application themselves. In two projects, the forms were signed by the Housing Provider, but submitted by a member of their design team. In another case it appeared that the energy efficiency consultant submitted the application on behalf of the Housing Provider.

In all of these cases the supporting consultants voluntarily assumed the administrative responsibility of project enrollment in the Program, and would presumably retain accountability for completing administrative requirements (e.g., applications for incentives) at each stage of program completion on behalf of their client, the Housing Provider.

2. Design Consultation Phase

All interviewees had completed a full cycle of the Plan Review and Design Consultation Phases (DCP). EnerQuality facilitated the technical modeling for Part 9 projects while Sustainable Buildings Canada (SBC) did the same for Part 3 projects; which the Weidt Group previously supported during the Phase 1 research period.

Although Enbridge selected two of the seven interviewees for their involvement in the Part 9 application stream, the projects they were involved in consisted of both single-family townhomes (Part 9) and mid-rise condominiums (Part 3). Interestingly, when prompted about their experience with the energy modeling process they both chose to speak more about the Part 3 process. Each had varying memory of their experience with the Part 9 modeling experience, which is reported in detail after the Part 3 feedback below.

a) Part 3 DCP Feedback

All interviewees gave positive feedback on participating in the Design Consultation Phase particularly with the change of facilitators for Part 3 buildings from the Weidt Group to Sustainable Buildings Canada. Interviewees listed two key outcomes from the workshop:

1. Focused technical learning for all members of a project team.
 - *Yeah that was very well done and that was a more beneficial way of doing it then the bundled approach that they had previously done.*



- *It was really, really, well done. From the mechanics of it, it was really well arranged.*
- *They truly were detail experts. It was clear what they were telling us was good solid information. So that did help us in our decision-making going forward.*
- *It also gave us a bunch of really great context for further advice because we've been reaching out to a few of the experts asking follow-up questions on some of the topics that were discussed during the charette.*
- *We didn't want to be lectured on what they thought we should be doing. We didn't want to get into that scenario, so they were really good about staying on point, which they did.*
- *I was kind of impressed with it. I don't know, I guess I was expecting a lot of criticism, this isn't going to work, and that's not right, and why are you doing this kind of thing. I kinda had that fear in mind. But it wasn't quite that way at all. They kind of accepted the fact that we had done certain things and that we could make improvements, and that wasn't so hard to take.*
- *It's been brought to our attention that there is a new way of dealing with things.*

2. An opportunity to communicate the value of improved building performance to Housing Providers.

- *The architect made a comment at the end of it all going forward from that point, he said "You know, it's going to make it a lot easier for me to make the pitch to the owner", us, "that if we do this it's going to cost a bit more, but now demonstrate there are some energy efficiencies from sustainability and some pay back from these design improvements".*
- *There was a breakout session about indoor air quality and materials, and things like that and occupant health. That was really great for them [Housing Provider]. They really liked that.*

Key Finding: All interviewees indicated that DCP planning meetings and design charette/workshops implemented by SBC were of high quality. The single project-focused approach was noted as effective in delivering high value learning and outcomes to all attendees.

b) Part 3 DCP Areas for Improvement

Minor areas of the DCP process were identified for continued monitoring. First, as found during Phase 1, interviewees again stated the importance of getting into the Program early, at a time when the design is still at a high level.



- *Generally for the program when we had this workshop I think we had it a little bit late in the design process. I'm not sure why the lag occurred. We had already submitted for a building permit. And we were on the verge of tendering.²*
- *The key is to get in early, work through the design, look at aspects of the design that are subject to incentives, apply them to the contract documents, put out for tender, and at that point in time you know exactly what you're supposed to get. And then commission that.*
- *It helped us define our systems because at the time we hadn't yet had that discussion at our project steering committees. So it was the right time to start that conversation.*

Second, a few interviewees mentioned that the day long workshop began with some highly idealistic energy designs as one described "*What they [SBC experts] would recommend if there was no budget*", which left some feeling disheartened initially. As one person noted, "*We don't have endless pockets of money.*" It was recounted how architects/designers were "*feeling a little bit beat up*" as they were questioned about the designs they submitted for the workshop. As the day progressed SBC experts did, as noted above, temper designs "*to attempt to give a more realistic, palatable range of upgrades*" for modeling purposes, which in turn led to positive outcomes.

It is unclear if SBC was consistent in its approach to narrowing the scope of review for design charrette purposes during participant pre-workshop meetings, or whether choosing to start the day with a visionary design was a way of maximizing attendee learning about advanced energy performance options. Regardless of the reasons, it points to an opportunity for SBC to clarify with the project lead during the Plan Review Meeting what would be an appropriate starting design point for the day (i.e., idealistic or budget constrained), and then follow up after the Design Consultation Charrette with a participant feedback form that would inform continuous improvement of their workshop design approach and process. Negativity at the start of a day can potentially cause disengagement by workshop attendees, which fortunately did not seem to occur.

² This quote came from a project manager who was not aware that the housing provider was pursuing participation in the program; and that a design workshop would be conducted where design changes might be recommended. This lack of awareness resulted in a misalignment of process for the project manager who was moving ahead with the existing design for building permit application purposes.



Key Finding: Consistent with Phase 1 findings, maximum benefit from the Design Consultation Phase with the assigned technical consultant is derived when a project is at its early design stage.

Opportunity: Initiate ongoing continuous improvement by having technical consultants obtain feedback from DCP participants after the Design Consultation Charette on the approach, learning, and arrangements.

c) Part 9 DCP Feedback

Despite probing, minimal feedback was obtained from either of the two Part 9 project interviewees as to their experience with the Part 9 DCP facilitator, EnerQuality. What was uncovered was a situation where the Part 9 project owner/Housing Provider already had a pre-established energy consultant on board as part of the design team prior to enrolling in the AHNC Program. This building performance consultancy was working with the Housing Provider on a larger project of which the Part 9 buildings were only one element. Subsequent to enrolling in the Program for the Part 9 stream of incentives, and after being contacted by EnerQuality, there was initial confusion about who could/should conduct energy modeling for the Part 9 design for the purposes of the Program. At this point the Housing Provider came to the realization that having two energy modelers working on the Part 9 design was not ideal, and they were able to work out an arrangement with EnerQuality to utilize the energy consultant³ already under contract to support the project.

Key Finding: Identified a need for Program flexibility to accommodate participants' pre-established contracts for in-house energy modeling expertise.

Opportunity: Add a question to both Part 9 and Part 3 application forms to determine if there are pre-existing arrangements or relationships with energy performance consultants.

³ This consultant was not part of the EnerQuality roster of Certified Energy Advisors.



3. Energy Efficiency Design Implementation and Commissioning

Of the six projects covered within this body of research, only one had completed a full cycle of the Program on a post- construction basis. This participant had since applied and received a post-construction Energy Efficiency Design Implementation Incentive for their Part 3 project. All other projects were in various post-DCP stages with most having received, and one waiting delivery of the formal report containing modeling outcomes/recommendations determined from the one-day design charette. Timing of workshop report delivery was noted within 4-6 weeks after the session.

a) Adoption of design recommendations

In regard to attitudes and expectations of adopting design recommendations that would improve energy efficiency results, most interviewees provided some indication of intention, or qualified intention to build to the recommended design options discussed during the charette.

- *I believe all were being considered. We are just starting the process of actually tendering out the work now. So a lot of the feasibility of these recommendations will be determined through the tendering process.*
- *It helped us confirm our wall assembly, our mechanical systems and our storm water approach. Truthfully we're still working on some of them. A few things are still fluid.*
- *I think it was beneficial. I know our architect was going to try to implement some of the building science components that were brought up. Some items we just couldn't implement because they didn't make sense financially or didn't make sense size-wise for the site.*

In one case – for unknown reasons – the project was subject to a redesign after having completed the charette. According to this interviewee it put into question *the feasibility of the options that were presented in the report*. This situation pointed to the *fluid* nature of design decisions as a project evolved, highlighting an extreme example where participation in the Program might potentially be stymied. In this circumstance would the participant be eligible for another design consultation charette based on the significantly revised initial design? Or would the Program design accommodate some form of additional support to the participant by the technical consultant (i.e., SBC or EnerQuality) to help move the project through the rest of the Program as designed?

Key Finding: Participation in the Design Consultation Phase has created a solid platform for participants to move ahead with at least some number of recommended energy efficiency design and equipment changes.



b) Commissioning

When asked their thoughts about the timing of equipment commissioning (pre or post-occupancy) and the influence of associated Program incentives on those decisions, the responses from interviewees were consistently vague.

- *It's really early in the project. We've got so many other issues that were dealing with that are more current that we probably won't get to deciding that until a little later.*
- *I haven't given that some thought. Generally in our contract documents the general contractor is responsible, along with their respective trade, to make sure everything is fully operational, balanced, and then test results sent over to engineering when they're confirmed.*
- *In the past we have done the commissioning pre-occupancy. The program hasn't influenced my thoughts on this one way or the other.*
- *No thought on that yet. Definitely something that we're thinking about, just that we haven't got a detailed plan for that yet.*

From these comments, it appears that when Part 3 projects are in the design stage, building commissioning is perceived as being too far in the future for the availability of a Commissioning Incentive to have much impact on decisions regarding the timing for equipment commissioning. That said, some interviewees did mention that if payment was made based on when commissioning would be completed, then a Housing Provider would certainly be interested in receiving payment earlier rather than later.

- *People always perform better if they have deadlines to do things. I think any time there is money on the table especially for a non-profit group, then that's good incentive.*
- *In terms of the timing of the commissioning of a building, generally you want to commission prior to occupancy so I don't think it impacts highly on commissioning. But it's definitely a further incentive. Any added costs an owner would incur and if that cost can be either recovered or reduced there would be added benefit.*

Key Finding: At this time, receipt of the Commissioning Incentive has little influence on the timing of equipment commissioning. When given more thought, interviewees saw commissioning on a pre-occupancy basis slightly more desirable as it would put money into the hands of Housing Provider earlier.



4. Program Knowledge and Support

Knowledge of the program was rated as moderately clear to newly enrolled participants. Similar to Phase 1 findings, it wasn't until interviewees had actively participated in the DCP - particularly the charette - that they fully understood how all program steps fit with the incentive structure and were matched to completion of certain project milestones. They explicitly mentioned appreciation of having individuals to ask questions of, and some acknowledged that an Enbridge representative was in attendance for at least part of the day.

- *The second time going through this program I felt like I had a better understanding of what to expect. But that could be because it was my second time going through it even though the process was different.*
- *Not having participated in the program before, we really didn't know what to expect so it [access to energy modeling] wasn't as big a motivator. I would say in the future it would be more of a motivator.*
- *I didn't know what to think. To be honest I didn't really know what we were walking into. But it was really well run. It was really good.*

From a process perspective, one of the interviewees felt they could have benefitted from more pro-active interaction with the Enbridge representative. The representative was always available to answer questions, but once things were passed to SBC, they said it *"felt strange not to have Enbridge involved."* And that *"Enbridge could've taken a little bit stronger facilitation approach [to the Program]."* This interviewee was a repeat participant, had experience with the former Part 3 energy modeling provider, had projects that were currently enrolled in both Part 9 and Part 3 streams, and had an energy consultant already contracted as part of their design team prior to applying to the Program. They felt that proactive process leadership by the Enbridge representative might have mitigated confusion around who could provide energy modeling advice on their Part 9 project (as described earlier on page 7), and provided them with clarity on the new process for Part 3 projects given the change in energy modeling consultants to SBC.

Aside from these process 'hiccups', all interviewees felt that there was adequate support from Enbridge and that DCP experience had provided them with useful resources and available expertise as they moved forward on their projects.

- *Each of the presenters had a deck of slides, a PowerPoint presentation that they sent to us after the charette so that that was very useful.*
- *It [the charette] also gave us a bunch of really great context for further advice because we've been reaching out to a few of the experts asking follow-up questions on some of the topics that were discussed during the charette. So that's been a really great resource.*



- *What I did afterwards, because there were things they brought up that I wasn't that familiar with that I thought well, I could investigate that. So I investigated a few things, some products ... some design features that they talked about and felt much more comfortable. When I actually saw the products they were talking about, and read about them, I realized that they weren't just selling me something. This is something that legitimately had benefit.*

In summary, interviewees provided a few suggestions that might help to support the broader process for future Program participants:

- *If they had a one pager, like a cheat sheet of the overall program guidelines, I would share those with the design team.*
- *Maybe more of a loose schedule of expectations and milestones. It keeps people, not necessarily the consulting team, but maybe more the owners involved and up to speed on what they may expect to have happen.*
- *The City of Toronto has a Hydro program that has incentives. So that was a bit of a question and the relationship between this [City of Toronto] program, the Enbridge program, energy modeling, and the energy modeling that would be needed to be done for the building permits submission.*
- *They followed up and actually encouraged you to apply for that incentive which is important because everybody's really busy. And you just put stuff on the back burner and if you don't have someone who reminds you, sometimes you just don't get around to it.*

Key Finding: The level of Program knowledge and support currently provided appears to be adequate from interviewees' perspectives. It is unclear, however, whether accountability for assisting participants through the complete program process should be held by the Enbridge-contracted energy modeling firms (SBC/EnerQuality) or Enbridge directly.

Opportunity: More frequent periodic follow-up by the Enbridge representative with Program participants would be viewed as pro-active.



5. Program Incentive Structure

Interviewees generally noted that the Program's phased incentive structure was sound.

- *Being able to get incentives back no matter what. We're not going to lose money on [participating in] the Program, which was good.*
- *When I'm building my financial performance, I'm not factoring the Enbridge program into anything like a financial calculation line. When we get those incentive dollars that's going to be great, but timing around it isn't something that we're overly concerned about. It's going to be bonus.*

To further explain this last quote, the interviewee explained that in their case the capital dollars were approved and received upfront to construct the building; which is why incentive dollars would not play a big role in the project moving ahead. They were more interested in the potential energy savings obtained by building a "good product", which would help defray ongoing operating costs. In their words: "We have a mortgage and we have to pay the bills. There's nobody coming in after us to bail us out if things go sideways."

What did become apparent was how the incentive structure appealed differently to different Program participants. As mentioned in the Application Process section (see p. 4) a Program applicant might be a Housing Provider, but the Project Manager would hold administrative responsibility for tracking of project documentation and milestones for the purposes of filing for incentive payments. Among the interviewee group this Project Manager tended to be a member of the design team.

When considering the suite of Program incentives in terms of those earned from participating in the design process, separate from those earned after construction following validation of equipment installation and performance, the interest in either group of incentives was clearly different between Housing Providers and design team members. Design team members perceived direct value in receiving compensation for the additional upfront work required during early project stages, while Housing Providers were seen to reap the implementation incentives and sustained rewards of energy savings.

Table 2

Incentive Type	Part 3 Project	Part 9 Projects
Design Incentives: Seen as most beneficial by design team members	Technical Assistance Incentive	Technical Assistance Incentive
Validation Incentives: Seen as most beneficial by Housing Providers	Energy Efficiency Design Implementation Incentive Commissioning Incentive	Energy Performance Incentive Energy Efficiency Design Implementation Incentive



- *Obviously for the owner the second [validation incentives] is the most important one. But for the architects the consulting fee incentive is a good thing because often our fees are stretched and it's good if we were doing extra work like this. To know that we can get those fees covered.*
- *I think consideration of some of the work and effort between ourselves and the engineering consultants and getting consideration for that work was very good incentive all around.*
- *So in terms of the real savings at the end, only the owners know what the real efficiency savings are.*
- *I don't think the client would have proceeded down this road if there wasn't some incentive. I think we could've talked to them about energy efficiency and then tried to get better than standard building code requirement, but they would've not paid as much attention to it.*
- *If we are able to achieve the energy savings that we're currently targeting, we're receiving a pretty decent incentive return. And we're getting a building that's supposedly more energy efficient. So it's better for the long run costs as well.*

From a Housing Provider's perspective, participating in the Program is considered an investment of time (theirs and their project team) and possibly more money in the upgrades that might be required to deliver improved performance in energy efficiency. It was common knowledge among the building community that *"purchasers are fairly unwilling to pay any extra for that additional efficiency that they could realize as the inevitable owner"*.

- *If there were more incentives I would apply more resources and it would be a more robust program. As it is now the scale has such a wide variance that if we're not going for that maximum building energy efficiency then the effort needs to be proven.*

The combination of moving through both a design stage with expected implementation of increased energy efficient options has, however, provided Housing Providers with early evidence of a reasonable return on investment.

- *With a design that's 24 ½% over and above the base, we've been able to get the maximum incentive dollars. So that was great just from a budget point of view. It's the sort of thing that we talked about when we talk to stakeholders to say that, it's a point of pride to say that we were successful through this process of building information modeling and we can demonstrate this. That's a great sell for us.*

Consistent with earlier research, financial incentives were found to be always welcomed with one interviewee stating the obvious, *"It's an affordable housing project, so it's constrained with the funding."*



Key Finding: Phase 2 research provides additional evidence that a 2-phase design-implementation incentive approach is effective for bringing improved energy efficiency options into the affordable building community. This ‘systems’ approach appeals in different ways to different Program participants.

6. Developing Program Awareness

There appears to be minor confusion in a few interviewees’ minds about the Program’s brand, with some participants using the words “*Save on Energy*” or “*Save on design*” when referring to an Enbridge Program. In another instance where an interviewee had two Projects – A and B as noted in Table 1 (p. 2) – enrolled in both streams of incentives, the interviewee thought only their mid-rise Part 3 buildings were participating in the Enbridge Program. This lapse in memory that their Part 9 projects were also enrolled in the Program may be in part due to EnerQuality managing the application process behind the scene for the Housing Provider in a situation where the energy consultant was not part of EnerQuality’s official roster.⁴ It is also possible that brand affirmation would only occur after incentives are received, given that most interviewees has not yet applied for any; that said, additional monitoring of brand awareness might be desired.

The learning opportunity derived from participation in the Program process has clearly been high among all members of a project team: encompassing individuals in construction, building design, and building owners and their staff. A few interviewees indicated that communication to all project team members of post-construction evaluation reports and validation of final building energy performance outcomes was desired. This comprehensive sharing of final results with Program participants would serve to complete the learning cycle, further providing positive reinforcement of the Program’s effectiveness and creating buy-in of participants as informal ambassadors to the Program.

Even after having participated only in the Program’s early phase (the DCP), there is clear evidence that informal ambassadors exist.

- *I think the program itself, I would certainly recommend it to others. It’s a very easy exercise and I think there’s a definite reward at the end of it too.*
- *I have recommended to other clients that they should think about it. Even in the private sector we do have clients who are going after affordable funding.*

⁴ This situation was described earlier in the DCP Feedback section on page 7.



- *From a colleague in my office. It wasn't in the affordable housing program. It was the other save on design program that he has done and he found out about the affordable housing.*

When asked what more Enbridge could do to expand awareness of the Program, one suggested scheduling “*lunch and learns*” with design professionals and architects. Rather than this target audience, another interviewee emphasized the importance of focusing on Housing Providers.

- *I think you need to educate, better educate those clients. They are the risk takers. We're going to follow what they've asked us to do within reason and we understand the benefits.*
- *There's a group of people in the building committee that come from different factions and experiences, don't quite understand the building industry in general, are little concerned about cost. Almost making them understand the value, although there is an initial upfront cost to some of this equipment and or lighting etc. but the long-term benefits are huge.*

Key Finding: Experience with the DCP enhanced participants' learning of building energy saving strategies and options to such a positive extent that it naturally created informal ambassadors for the Program: individuals who can speak to the Program's effectiveness.

Opportunity: Suggest to Housing Providers that post construction evaluation results are shared with all project team members (i.e., architect, engineers, etc.) to promote and crystallize benefits and learning.



CONCLUSION

For the participant that had completed a full Program cycle from design right through to validation of results following construction of their Part 3 project, the Affordable Housing New Construction Program had delivered on all fronts. For others, experiential learning of the Program process and participation in the Design Consultation Phase had exceeded their collective expectations, which was highly positive. They indicated that the time invested was well worth the learning and project improvement outcomes.

The simple project process was defined as design, plan, build to plan, and receive incentives. This research has revealed that in reality, for some projects, designs change after the DCP. These situations highlighted a need for clarification on how these projects could proceed towards completion of Program requirements if the recommended design options resulting from the DCP were no longer applicable. This appeared to be the first case of its kind in the current life of the AHNC Program and helpful to informing how added flexibility might be incorporated into the process.

In summary, Phase 2 research speaks to a Program design and incentive structure that currently meets and exceeds the expectations of the affordable housing construction community.



About C2C Strategies

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2018 Demand Side Management Annual Report - EGD Rate Zone

Enbridge Gas Inc.
June 26, 2020



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Executive Summary

Enbridge Gas Inc. (“Enbridge Gas” or “the Company”) reports 807 million lifetime cubic meters of natural gas saved from its DSM activities in 2018 within the EGD rate zone.¹ These savings are a direct result of the Company’s ongoing efforts delivering resource acquisition programs to residential, commercial, and industrial customers. Results attributable to market transformation programs are not included in this total, as results for these programs are not measured by cubic meters of natural gas saved.

A summary of the Company’s 2018 DSM results, budgets, and spend for the EGD rate zone is provided in Table ES.1 below.

Table ES.1 2018 DSM Results, Budgets, and Spend Summary

ITEM	EGD RATE ZONE
Net Cumulative Natural Gas Savings	807,474,357 m ³
Budget	\$67,554,087
Actual Spend	\$66,154,466
Shareholder Incentive Achievement	\$3,982,872
LRAMVA amount payable to Ratepayers	-\$15,107

¹ Union rate zones results are provided in a separate report.



1. Introduction

Enbridge Gas has been designing and delivering DSM programs within OEB frameworks for nearly 25 years. Between 1995 and 2018, Enbridge Gas has saved its customers 27.6 billion lifetime cubic meters of natural gas and 51.7 million tonnes of greenhouse gas emissions, the equivalent of taking 11.2 million cars off the road for a year.²

As outlined in the OEB's Demand Side Management Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134) ("DSM Framework"), the Board indicated it "is of the view that it is in the best position to coordinate the evaluation process throughout the DSM framework period"³. As such, the 2018 audit and evaluation process was completed concurrently with the 2017 audit and evaluation process, to leverage time and resource efficiencies. Due to the simultaneous nature of the 2017 and 2018 audits, the development of the Company's 2018 draft annual reports was not appropriate, as the previous year's evaluation and audit process had not concluded. Without the conclusion of the 2017 evaluation and audit process, certain 2018 results could not be reported even in pre-audit/draft format, as 2018 targets rely on final 2017 results.

With the conclusion of the 2017 and 2018 evaluation and audit processes on March 13, 2020, the Company developed final 2018 annual reports for the EGD rate zone and the Union rate zones, separately. While the 2018 reports are more concise than the Company's typical annual reports, they include all elements required by the OEB's DSM Guidelines.

This 2018 Annual Report provides a summary of Enbridge Gas' DSM results for the EGD rate zone during the 2018 program year, in the following format:

- OEB data reporting requirements (Section 2);
- Highlights of any major offering changes and lessons learned from the 2018 program year, and future changes for 2019 (Section 3);
- Results, including scorecard results, shareholder incentive achievement, lost distribution revenue calculations, cost-effectiveness results, budgets and spending (Section 4).

² Figures include results from the EGD rate zone and the Union rate zones.

³ DSM Framework, p. 30



2. OEB Data Reporting Requirements

Table 2.0 Annual and Long-Term DSM Budgets

OEB APPROVED ANNUAL AND LONG-TERM BUDGETS							
	2015	2016	2017	2018	2019	2020	TOTAL
Resource Acquisition (RA)							
Residential	\$1,872,720	\$13,024,688	\$16,705,000	\$20,175,000	\$20,578,500	\$20,990,070	\$93,345,978
Commercial / Industrial	\$12,571,070	\$16,278,937	\$17,679,381	\$17,737,977	\$16,355,713	\$16,685,480	\$97,308,558
RA Program Costs	\$14,443,790	\$29,303,625	\$34,384,381	\$37,912,977	\$36,934,213	\$37,675,550	\$190,654,536
RA Overheads	\$4,731,485	\$5,033,048	\$5,104,327	\$5,249,479	\$5,122,057	\$5,232,967	\$30,473,363
Total RA	\$19,175,275	\$34,336,673	\$39,488,708	\$43,162,456	\$42,056,270	\$42,908,517	\$221,127,899
Low Income (LI)							
LI Program Costs	\$6,864,090	\$10,201,788	\$10,908,121	\$11,690,496	\$11,923,306	\$12,160,772	\$63,748,573
LI Overheads	\$517,988	\$1,743,622	\$1,619,299	\$1,618,681	\$1,653,531	\$1,689,078	\$8,842,199
Total LI	\$7,382,078	\$11,945,410	\$12,527,420	\$13,309,177	\$13,576,837	\$13,849,850	\$72,590,772
Market Transformation & Energy Management (MT)							
MT Program Costs	\$4,890,900	\$5,614,683	\$5,849,381	\$6,045,400	\$6,174,079	\$6,305,335	\$34,879,778
MT Overheads	\$1,353,687	\$964,351	\$868,335	\$837,054	\$856,225	\$875,783	\$5,755,435
Total MT	\$6,244,587	\$6,579,034	\$6,717,716	\$6,882,454	\$7,030,304	\$7,181,118	\$40,635,213
Total Program Costs (without overheads)	\$26,198,780	\$45,120,096	\$51,141,883	\$55,648,873	\$55,031,598	\$56,141,657	\$289,282,887
Total Program Overheads	\$6,603,160	\$7,741,021	\$7,591,961	\$7,705,214	\$7,631,813	\$7,797,828	\$45,070,997
Total Program Costs (with overheads)	\$32,801,940	\$52,861,117	\$58,733,844	\$63,354,087	\$62,663,411	\$63,939,485	\$334,353,884
Portfolio Overheads							
EM&V	n/a	\$1,500,000	\$1,700,000	\$1,700,000	\$1,736,746	\$1,774,228	\$8,410,974
Collaboration & Innovation ^{1 2}	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,021,616	\$1,043,663	\$6,065,279
DSM IT ³	n/a	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$5,000,000
Energy Literacy	n/a	\$0	\$500,000	\$500,000	\$0	\$0	\$1,000,000
Total Portfolio Overheads ^{1 2 3}	n/a	\$3,500,000	\$4,200,000	\$4,200,000	\$3,758,362	\$3,817,891	\$19,476,253
2015 Incremental Budget ^{1 2}	\$4,920,291	n/a	n/a	n/a	n/a	n/a	n/a
Total Portfolio Budget	\$37,722,231	\$56,361,117	\$62,933,844	\$67,554,087	\$66,421,773	\$67,757,376	\$358,750,428

¹In 2015, the Collaboration & Innovation amount of \$1M was included in the incremental budget of \$4.92M.

²Total Collaboration & Innovation budget as approved by the Board is \$6M for 2015-2020.

³Total DSMIT budget as approved by the Board is \$5M for 2015-2020 with \$1M accrued per year between 2016-2020.



Table 2.1 Actual Annual Total DSM Costs*

RATE CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ^{1,2}	2018 ^{2,3}
RATE 1	\$11,894,135	\$12,545,981	\$14,794,795	\$12,467,796	\$14,214,627	\$17,935,484	\$13,881,901	\$23,507,037	\$26,855,974	\$42,390,914	\$44,578,671	\$50,047,814
RATE 6	\$2,848,384	\$7,519,262	\$7,486,577	\$10,713,308	\$15,103,141	\$17,127,050	\$15,172,590	\$13,901,251	\$15,646,361	\$17,001,090	\$17,610,239	\$17,616,144
RATE 9	\$0	\$0	\$0	\$0	\$0	\$1,425	\$1,420	\$1,712	\$1,839	\$2,030	\$2,306	\$2,943
RATE 100	\$8,949,764	\$3,201,527	\$2,667,170	\$86,297	\$17,677	\$0	\$0	\$0	\$0	\$0	\$0	\$0
RATE 110	\$3,658,449	\$1,041,758	\$1,943,819	\$1,470,858	\$1,048,222	\$783,904	\$937,258	\$1,189,687	\$1,899,864	\$1,250,531	\$1,474,088	\$917,995
RATE 115	\$643,144	\$1,716,735	\$1,314,146	\$545,382	\$602,386	\$1,329,072	\$1,420,390	\$567,271	\$657,559	\$532,093	\$592,505	\$273,754
RATE 125	\$0	\$0	\$0	\$0	\$0	\$53,449	\$53,268	\$64,223	\$68,967	\$76,131	\$86,462	\$110,358
RATE 135	\$1,762	\$79,757	\$11,685	\$59,163	\$121,756	\$441,318	\$320,401	\$123,739	\$58,863	\$85,564	\$387,197	\$406,859
RATE 145	\$855,487	\$901,590	\$676,730	\$729,534	\$655,237	\$495,925	\$369,074	\$253,864	\$152,227	\$84,478	\$90,532	\$550,941
RATE 170	\$294,508	\$1,860,562	\$1,843,628	\$2,040,735	\$2,195,089	\$536,445	\$149,399	\$457,841	\$403,107	\$574,392	\$177,446	\$175,961
RATE 200	\$0	\$0	\$0	\$0	\$0	\$18,529	\$18,466	\$22,264	\$23,909	\$26,392	\$29,973	\$38,257
RATE 300	\$0	\$0	\$0	\$0	\$0	\$3,563	\$3,551	\$4,281	\$4,598	\$5,075	\$5,764	\$7,357
TOTAL	\$29,145,632	\$28,867,172	\$30,738,550	\$28,113,075	\$33,958,134	\$38,726,165	\$32,327,718	\$40,093,170	\$45,773,267	\$62,028,692	\$65,035,183	\$70,148,384

* Values include spend, shareholder incentive amounts and LRAM

¹2017 values are subject to Board approval.

²2017 & 2018 DSM Spending includes accrued incentive amounts.

³2018 values are subject to Board approval.

Table 2.2 Historic Annual Total DSM Spending (\$ million)

	2007	2008	2009	2010	2011	2012	2013	2014	2015 ²	2016	2017 ³	2018 ³
Total DSM Spending ¹	\$21.20	\$23.03	\$25.42	\$24.00	\$27.24	\$30.61	\$27.84	\$32.51	\$35.78	\$55.65	\$62.91	\$66.15

¹Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

²2015 DSM Spending includes incremental spending of \$559,378

³2017 & 2018 DSM Spending includes accrued incentive amounts



Table 2.3 DSM Spending as a Percent of Distribution Revenue

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total DSM Spending (\$ million) ¹	\$21.2	\$23.0	\$25.4	\$24.0	\$27.2	\$30.6	\$27.8	\$32.5	\$35.8	\$55.6	\$62.9	\$66.2
Total Distribution Revenue (\$ million) ^{2,3,4}	\$980.9	\$995.9	\$1,012.1	\$960.4	\$978.8	\$972.0	\$1,055.0	\$1,044.0	\$1,055.4	\$1,115.6	\$1,128.3	\$1,231.6
DSM Spending as % of Distribution Revenue	2.2%	2.3%	2.5%	2.5%	2.8%	3.1%	2.6%	3.1%	3.4%	5.0%	5.6%	5.4%

¹Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

²Distribution Revenue includes gas sales and transportation of gas less gas commodity cost

³Distribution Revenue excludes transmission, compression, and storage

⁴Distribution Revenue is based on data unnormalized for weather

Table 2.4 Historic Annual DSM Shareholder Incentive Amounts Available and Earned (\$ million)

	2007	2008	2009	2010	2011	2012 ¹	2013	2014	2015	2016	2017 ²	2018 ³
Total Shareholder Incentive Earned	\$8.25	\$5.80	\$5.36	\$4.16	\$6.77	\$8.16	\$4.54	\$7.65	\$10.08	\$6.37	\$2.12	\$3.98
Maximum Shareholder Incentive Available	\$9.00	\$9.22	\$9.24	\$9.40	\$10.16	\$10.45	\$10.66	\$10.87	\$11.09	\$10.45	\$10.45	\$10.45

¹2012 Shareholder Incentive includes reduction of -\$657,223 per Board's decision (EB-2013-0352)

²2017 Shareholder Incentive subject to Board approval

³2018 Shareholder Incentive subject to Board approval

Table 2.5 DSM Shareholder Incentive Earned as a Percent of DSM Spending

	2007	2008	2009	2010	2011	2012 ²	2013	2014	2015	2016	2017 ^{3,4}	2018 ⁵
Total Shareholder Incentive (\$ million)	\$8.25	\$5.80	\$5.36	\$4.16	\$6.77	\$8.16	\$4.54	\$7.65	\$10.08	\$6.37	\$2.12	\$3.98
Total DSM Spending (\$ million) ¹	\$21.20	\$23.03	\$25.42	\$24.00	\$27.24	\$30.61	\$27.84	\$32.51	\$35.78	\$55.65	\$62.91	\$66.15
Shareholder Incentive Earned as a % of DSM Spending	39%	25%	21%	17%	25%	27%	16%	24%	28%	11%	3%	6%

¹Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

²2012 Shareholder Incentive includes reduction of -\$657,223 per Board's decision (EB-2013-0352)

³2017 Shareholder Incentive subject to Board approval

⁴2017 & 2018 DSM Spending includes accrued incentive amounts

⁵2018 Shareholder Incentive subject to Board approval



Table 2.6 Annual and Long-Term Natural Gas Savings Targets (million m³)

SCORECARD	2015	2016	2017	2018	2019	2020
Resource Acquisition	1,011.9	631.1	806.5	805.5	Targets are formulaic based on past year's performance	
Low-Income	92.8	96.7	167.1	126.1		

Table 2.7 Total Annual and Cumulative Natural Gas Savings for 2018 (Gross and Net)

	2018 ANNUAL GAS SAVINGS ¹		2018 CUMULATIVE GAS SAVINGS ¹	
	GROSS	NET	GROSS	NET
Resource Acquisition	55,526,307	36,156,883	1,011,021,869	677,327,071
Low-Income	6,074,313	6,069,722	130,193,197	130,147,286
Total	61,600,620	42,226,605	1,141,215,066	807,474,357

¹2018 DSM results subject to Board approval



Table 2.8 Total Historic Annual Natural Gas Savings (Gross and Net) (million m³)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
Total <u>Net</u> Gas Savings	85.07	77.25	69.86	64.58	76.40	60.14	47.74	43.54	48.97	50.52	44.02	42.23
Total <u>Gross</u> Gas Savings	85.99	121.98	117.62	98.82	114.14	92.53	66.06	60.62	67.09	90.03	71.28	61.60

¹2017 DSM results subject to Board approval

²2018 DSM results subject to Board approval

Table 2.9 Total Historic Cumulative Natural Gas Savings (Gross and Net) (million m³)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
Total <u>Net</u> CCM	1,214.10	1,118.98	1,039.18	951.40	1,253.82	1,068.98	826.91	719.84	826.17	837.11	787.17	807.47
Total <u>Gross</u> CCM	1,233.54	1,809.65	1,801.77	1,455.74	1,811.35	1,593.05	1,148.12	993.62	1,114.13	1,479.09	1,215.44	1,141.22

¹2017 DSM results subject to Board approval

²2018 DSM results subject to Board approval

Table 2.10 Total Annual Natural Gas Savings as a Percent of Total Annual Natural Gas Sales (Gross and Net)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
<u>Net</u> Annual Gas Savings (million m ³)	85.1	77.3	69.9	64.6	76.4	60.1	47.7	43.5	49.0	50.5	44.0	42.2
<u>Net</u> Annual Gas Savings as % of Natural Gas Sales	0.7%	0.7%	0.6%	0.6%	0.7%	0.6%	0.4%	0.4%	0.4%	0.5%	0.4%	0.3%
<u>Gross</u> Annual Gas Savings (million m ³)	86.0	122.0	117.6	98.8	114.1	92.5	66.1	60.6	67.1	90.0	71.3	61.6
<u>Gross</u> Annual Gas Savings as % of Natural Gas Sales	0.7%	1.0%	1.1%	0.9%	1.0%	0.9%	0.6%	0.5%	0.6%	0.8%	0.6%	0.5%
Total Natural Gas Sales (million m ³) ³	11,862.9	11,686.5	11,114.9	10,742.3	11,303.2	10,304.4	11,338.3	12,434.3	11,728.3	10,736.2	11,172.6	12,361.6

¹2017 DSM results subject to Board approval

²2018 DSM results subject to Board approval

³Total Gas Sales include only rate classes that are eligible for DSM and subject to DSM costs



Table 2.11 Total Cumulative Natural Gas Savings as a Percent of Total Annual Gas Sales (Gross and Net)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
Net Cumulative Gas Savings (million m ³)	1,214.1	1,119.0	1,039.2	951.4	1,253.8	1,069.0	826.9	719.8	826.2	837.1	787.2	807.5
Net CCM Gas Savings as % of Natural Gas Sales	10.2%	9.6%	9.3%	8.9%	11.1%	10.4%	7.3%	5.8%	7.0%	7.8%	7.0%	6.5%
Gross Cumulative Gas Savings (million m ³)	1,233.5	1,809.7	1,801.8	1,455.7	1,811.3	1,593.0	1,148.1	993.6	1,114.1	1,479.1	1,215.4	1,141.2
Gross CCM Gas Savings as % of Natural Gas Sales	10.4%	15.5%	16.2%	13.6%	16.0%	15.5%	10.1%	8.0%	9.5%	13.8%	10.9%	9.2%
Total Natural Gas Sales (million m ³) ³	11,862.9	11,686.5	11,114.9	10,742.3	11,303.2	10,304.4	11,338.3	12,434.3	11,728.3	10,736.2	11,172.6	12,361.6

¹2017 DSM results subject to Board approval

²2018 DSM results subject to Board approval

³Total Gas Sales include only rate classes that are eligible for DSM and subject to DSM costs

Table 2.12 Actual Annual Gas Operating Revenue (\$ million)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Operating Revenue ¹	\$3,095.0	\$3,233.8	\$2,952.3	\$2,394.1	\$2,393.6	\$2,240.9	\$2,613.4	\$2,861.3	\$2,892.1	\$2,588.7	\$2,788.1	\$2,863.5
Less Total Gas Cost ²	\$2,113.0	\$2,236.1	\$1,938.6	\$1,432.3	\$1,413.3	\$1,267.6	\$1,556.8	\$1,815.5	\$1,834.8	\$1,466.7	\$1,640.8	\$1,612.7
Total Distribution Revenue³	\$982.0	\$997.7	\$1,013.7	\$961.8	\$980.3	\$973.3	\$1,056.6	\$1,045.8	\$1,057.3	\$1,122.0	\$1,147.3	\$1,250.8

¹Operating Revenue includes gas sales and transportation, transmission, compression, and storage. All values are unnormalized for weather

²Gas Cost is based on data unnormalized for weather

³Distribution revenue is equal to the gas distribution margin and is the gas sales plus transportation less the cost of gas

Table 2.13 Total Natural Gas Sales (Volumes) (million m³)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Natural Gas Sales ¹	11,862.90	11,686.50	11,114.90	10,742.30	11,303.20	10,304.40	11,338.30	12,434.30	11,728.30	10,736.20	11,172.60	12,361.60

¹Annual consumption volumes include rate classes that are subject to DSM costs only. Rates 9, 125, 200 and 300 are excluded as they do not participate in DSM



Table 2.14 **Number of Customers by Customer Type**

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	TOTAL CUSTOMERS
Number of Customers (2018) ¹	2,017,128	162,158	5,880	2,185,166

¹Residential customers include Low Income, which cannot be differentiated

Table 2.15 **Number of Customers by Rate Class**

RATE CLASS	# OF CUSTOMERS 2018
General Service	
Rate 1	2,017,128
Rate 6	167,626
Rate 9	2
Total General Service	2,184,756
Contract Service	
Rate 100	3
Rate 110	273
Rate 115	25
Rate 125	4
Rate 135	43
Rate 145	32
Rate 170	27
Rate 200	1
Rate 300	1
Rate 315	1
Total Contract Service	410
Total	2,185,166



3. Programs and Offerings

This section provides highlights of any major offering changes and lessons learned from the 2018 program year, and future changes for 2019.

3.1 RESOURCE ACQUISITION PROGRAM

- Enbridge Gas' residential partnerships with the Government of Ontario and IESO, which began in 2016 and 2017 respectively, concluded during the 2018 program year. As a result of the conclusion of these partnerships, non-Enbridge Gas natural gas homes and homes heated by fuels other than natural gas were no longer eligible to enroll in the home retrofit and adaptive thermostat offerings. For 2019 offering details without the inclusion of these partnerships, refer for the Company's 2019 DSM Annual Report.
- As of January 1, 2019, Union Gas Ltd. and Enbridge Gas Distribution amalgamated to become Enbridge Gas Inc. From the customer's perspective, the residential home retrofit offerings of the legacy utilities will be harmonized in 2019 to facilitate clarity and consistency across Ontario.
- In light of internal market research, Enbridge Gas made some modifications to the residential adaptive thermostats offering. The first modification is in response to the declining price per unit of adaptive thermostats, which will result in a reduction of the incentive from \$100 to \$75 per unit effective January 1, 2019. Another change for 2019 will be the introduction of an 'instant rebate' option to increase uptake in Ontario. Participants will be able to receive an instant rebate at the point of sale across multiple retail channels. This enhancement will improve the customer experience and reduce dropout rates associated with downstream and manually-processed rebates.
- Due to declining results for the commercial/industrial prescriptive offering in recent years, Enbridge Gas anticipates growing and enhancing relationships with midstream partners, and investigating which downstream incentives can be moved to a midstream initiative.
- In addition to focusing on driving uptake of shipping air doors in 2018, the prescriptive direct install offering was expanded to include pedestrian air doors for small commercial customers and DCKV for food service, long term care, and the hospitality sectors. The pedestrian air curtain offer will be discontinued in 2019 due to a lack of customer interest in the offer.
- Limited time offer incentive campaigns were introduced to drive additional participation in the custom commercial offering earlier in the program year in response to previous lessons learned; that many businesses spend most of their capital budgets before Q4. Building on lessons from 2018, Enbridge Gas expects to expand the early year limited time incentive offer to include all technologies, which should relieve some customer confusion. Furthermore, to better support smaller customers and simplify the incentive process, Enbridge Gas will explore reducing the custom commercial incentive structure from three tiers to two tiers in 2019.
- In 2018, Enbridge Gas helped a newly identified energy leader to pilot a new technology, as part of the Energy Leaders Offering. Specifically, the pilot project tested the feasibility of switching from natural gas to two fuel sources, biomass (wood chips) and bio-oil made from wood by-products. Although it was determined that the bio-oil was not feasible, the team was able to install a new water heating plant that utilized a reliable supply of carbon neutral biomass. If this pilot is determined to be successful, it may pave the way for similar projects in the future.



- As in previous years, Enbridge Gas did not deliver the Small Commercial New Construction Offering in 2018. The 2018 budget was not used nor was it allocated to any other offerings, and was credited back to the Demand Side Management Variance Account.

3.2 LOW-INCOME PROGRAM

- From an internal program delivery standpoint, Enbridge Gas has been working with EnergyX to create a project tracking interface that provides real-time insight into project status and the savings associated with them. Not only will this tool reduce the administrative burden on the delivery agents, enabling them to focus more time on project implementation, it also creates a standardized reporting platform across all projects.
- In 2018, Enbridge Gas included the installation of adaptive thermostats to the low-income home retrofit offering.
- In 2018, Enbridge Gas reviewed its incentive structure for the low-income multi-family offering and made some adjustments with the intention of decreasing the cost barrier for boiler and custom projects. Additionally, Enbridge Gas added free building energy audits. As a result of the free energy audits, eligible multi-unit residential building (MURB) customers identified over 50 energy saving opportunities. Advanced building automation was introduced also in 2018 as a new energy efficiency measure. This technology represents significant gas savings potential moving forward.

3.3 MARKET TRANSFORMATION & ENERGY MANAGEMENT PROGRAM

- Enbridge Gas implemented two changes in 2018 that helped expand the reach of the Residential Savings by Design Offering. First, Enbridge Gas engaged in contracts with five additional service organizations (an increase from one service organization). In addition, Enbridge Gas designed a small builder education initiative to address the needs of small to mid-size builders.
- Enbridge Gas has had success in securing projects early in the design stage in 2018 for the Commercial Savings by Design Offering, by targeting architects and energy modelers. In addition, Enbridge Gas has found that municipalities have been supportive of Commercial Savings by Design Offering, both in municipal buildings and in the promotion of the offering among developers and builders.
- Enbridge Gas improved the application and communication processes in 2018 to make the School Energy Competition more efficient. These changes will reduce the delay associated with school enrolment and improve the project submission experience for schools.
- Multi-building college campuses were added to the eligible sectors for the Comprehensive Energy Management Offering. Prior to 2018, multi-building universities were eligible to participate in the offering, while multi-building colleges were not. The similarity in energy usage between multi-building college and university campuses provided an opportunity to expand the offering to include college campuses.



4. Results and Spend

4.1 SCORECARD RESULTS AND SHAREHOLDER INCENTIVE

Enbridge Gas is eligible to earn a shareholder incentive of up to \$10.45M for the EGD rate zone, for DSM results measured against the EGD rate zone's Resource Acquisition, Low-Income and Market Transformation & Energy Management scorecards. The DSM shareholder incentive is established by the OEB to "effectively motivate the gas utilities to both actively and efficiently pursue DSM savings and to recognize exemplary performance."⁴ The maximum incentive available is allocated to each scorecard based on the allocation of budget to each scorecard. For more information on the DSM shareholder incentive, refer to Section 5.0 of the DSM Framework and Section 5.0 of the DSM Guidelines.

In 2019, Enbridge Gas earned \$4.0M in DSM incentive for the EGD rate zone, as outlined in Table 4.0 below.

Table 4.0 2018 DSM Maximum Scorecard Incentive Allocation & Achievement by Scorecard

SCORECARD	MAXIMUM DSM INCENTIVE	DSM SHAREHOLDER INCENTIVE ACHIEVED
Resource Acquisition	\$7,119,472	\$2,955,435
Low Income	\$2,195,295	\$422,199
Market Transformation	\$1,135,233	\$605,238
Total	\$10,450,000	\$3,982,872

Detailed scorecard results for the EGD rate zone are provided in Table 4.1 to Table 4.3 below.

Table 4.1 2018 Resource Acquisition Scorecard Achievement & DSMI

METRICS	WEIGHT	METRIC TARGET LEVELS			2018 RESULT
		LOWER BAND	TARGET	UPPER BAND	
Large Volume Customers – Cumulative Savings (million m ³)	40%	381.3	508.5	762.7	377.79
Small Volume Customers – Cumulative Savings (million m ³)	40%	222.8	297.1	445.6	299.54
Deep Residential Savings Participants	20%	6,926	9,235	13,853	14,413
Total Weighted Scorecard Target Achieved					101.3%
Scorecard Incentive Achieved					\$2,955,435

⁴ Report of the Board: DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, p. 20.



Table 4.2 2018 Low-Income Scorecard Achievement & DSMI

METRICS	WEIGHT	METRIC TARGET LEVELS			2018 RESULT
		LOWER BAND	TARGET	UPPER BAND	
Single Family (Part 9) – Cumulative Savings (million m³)	45%	21.4	28.5	42.8	15.98
Multi-Residential (Part 3) – Cumulative Savings (million m³)	45%	73.2	97.5	146.3	114.17
New Construction – Participants	10%	11	14	21	13
Total Weighted Scorecard Target Achieved					87.0%
Scorecard Incentive Achieved					\$422,199

Table 4.3 2018 Market Transformation & Energy Management Scorecard Achievement & DSMI

METRICS	WEIGHT	METRIC TARGET LEVELS			2018 RESULT
		LOWER BAND	TARGET	UPPER BAND	
Residential Savings by Design – Builders	10%	15	20	30	35
Residential Savings by Design – Homes Built	15%	1,634	2,179	3,269	2,956
Commercial Savings by Design – New Developments	25%	21	28	42	31
School Energy Competition – Schools	10%	59	78	117	14
Run it Right – Participants	20%	18	24	36	62
Comprehensive Energy Management – Participants	20%	16	21	32	5
Total Weighted Scorecard Target Achieved					111.1%
Scorecard Incentive Achieved					\$605,238

Natural gas savings results by offering for the EGD rate zones is provided in Table 4.4 below.



Table 4.4 2018 Annual and Cumulative Natural Gas Savings

	PROGRAM/SECTOR/OFFER	GROSS ANNUAL GAS SAVINGS (M ³)	NET ANNUAL GAS SAVINGS (M ³)	GROSS CCM (M ³)	NET CCM (M ³)
RESOURCE ACQUISITION	Residential				
	Home Energy Conservation	7,433,371	6,318,365	185,834,276	157,959,135
	Adaptative Thermostats	3,008,470	2,888,131	45,127,050	43,321,968
	Total Residential	10,441,841	9,206,497	230,961,326	201,281,103
	Commercial & Industrial				
	Custom Industrial	19,086,385	9,938,280	313,313,279	163,142,223
	Custom Commercial	18,248,818	9,861,695	334,075,520	189,808,402
	Run It Right	51,919	25,991	259,595	129,953
	Prescriptive	2,506,079	2,132,394	42,931,613	36,473,435
	Direct Install	3,984,799	3,785,559	59,771,991	56,783,410
	Energy Leaders	1,206,466	1,206,466	29,708,545	29,708,545
	Total Commercial & Industrial	45,084,466	26,950,386	780,060,543	476,045,968
LOW INCOME	Low Income				
	Single Family (Part 9)	698,549	697,146	15,992,420	15,978,389
	Multi-Residential (Part 3)	5,375,764	5,372,576	114,200,777	114,168,897
	Total Low Income	6,074,313	6,069,722	130,193,197	130,147,286
	Grand Total	61,600,620	42,226,605	1,141,215,066	807,474,357

4.2 LOST REVENUE ADJUSTMENT MECHANISM

The Lost Revenue Adjustment Mechanism ("LRAM") allows the Enbridge Gas to recover the lost distribution revenue associated with DSM activity in the EGD rate zones. For more information on the LRAM, refer to Section 11.3 of the DSM Guidelines.

In 2018, the variance of the lost distribution revenues associated with DSM activity for the EGD rate zone was -\$0.015M, as outlined in Table 4.5 below.



Table 4.5 2018 LRAM Statement

RATE CLASS	BUDGET NET PARTIALLY EFFECTIVE (M ³)	ACTUAL NET PARTIALLY EFFECTIVE (M ³)	VOLUME VARIANCE (M ³)	DISTRIBUTION MARGIN (\$)	LRAM ALLOCATION (\$)	ACTUAL LRAM (\$)
Rate 110	2,860,406	380,452	(2,479,955)	0.5449	(\$13,513)	\$2,073
Rate 115	2,283,490	171,445	(2,112,045)	0.1275	(\$2,692)	\$219
Rate 135	90,655	170,629	79,974	1.7010	\$1,360	\$2,902
Rate 145	406,752	498,347	91,595	1.1394	\$1,044	\$5,678
Rate 170	609,446	71,293	(538,153)	0.2427	(\$1,306)	\$173
Totals	6,250,749	1,292,166	(4,958,583)		(\$15,107)	\$11,045
Amount to be paid back to Ratepayers					\$15,107	

* Rate 1 and Rate 6 are not included in the LRAM amount for clearance above as these rate classes are covered under the Average Use True-Up Variance Account (AUTUVA)

4.3 COST-EFFECTIVENESS RESULTS

Cost-effectiveness screening for the 2015-2020 DSM Framework uses the “TRC-Plus” test. A secondary reference tool is the Program Administrator Cost (“PAC”) test. The cost-effectiveness tests are performed at the program and portfolio level. Table 4.6 and Table 4.7 provide the program and portfolio TRC-Plus and PAC results, respectively, for the EGD rate zone.

Table 4.6 2018 TRC-Plus Summary

PROGRAM	NPV TRC-PLUS BENEFITS	TRC-PLUS PROGRAM COSTS	INCREMENTAL COSTS	TOTAL TRC COSTS	NET TRC-PLUS	TRC-PLUS RATIO
Resource Acquisition Total	\$152,598,000	\$9,385,000	\$58,000,000	\$67,385,000	\$85,213,000	2.26
Low Income Total	\$28,288,000	\$5,058,000	\$7,157,000	\$12,215,000	\$16,073,000	2.32
Total DSM Portfolio	\$180,886,000	\$14,443,000	\$65,157,000	\$79,600,000	\$101,286,000	2.27

Table 4.7 2018 PAC Summary

PROGRAM	NPV PAC BENEFITS	TOTAL PAC COSTS	NET PAC BENEFIT	PAC RATIO
Resource Acquisition Total	\$133,014,000	\$43,161,000	\$89,853,000	3.08
Low Income Total	\$25,123,000	\$11,237,000	\$13,886,000	2.24
Total DSM Portfolio	\$158,137,000	\$54,398,000	\$103,739,000	2.91



4.4 BUDGETS AND SPENDING

Total 2018 DSM spend for the EGD rate zones was \$66.2M, compared to an OEB-approved budget of \$67.6M. See Table 4.8 for more details.

Table 4.8 2018 OEB Approved Budget vs Spending

PROGRAM	OEB APPROVED BUDGET (BUILT INTO RATES)	2018 SPENDING	VARIANCE
Resource Acquisition	\$43,162,456	\$41,427,686	(\$1,734,770)
Home Energy Conservation	\$18,000,000	\$23,256,751	\$5,256,751
Residential Adaptive Thermostats	\$2,175,000	\$1,578,427	(\$596,573)
Commercial & Industrial Custom	\$7,361,562	\$7,696,271	\$334,709
Commercial & Industrial Prescriptive	\$2,232,905	\$1,164,036	(\$1,068,869)
Commercial & Industrial Direct Install	\$4,758,344	\$1,726,487	(\$3,031,857)
Small Commercial New Construction	\$1,305,566	\$0	(\$1,305,566)
Energy Leaders (Large & Small C/I)	\$400,000	\$324,138	(\$75,862)
Run it Right (RA)	\$1,584,600	\$522,385	(\$1,062,215)
Comprehensive Energy Management (RA)	\$95,000	\$0	(\$95,000)
Overheads	\$5,249,479	\$5,159,191	(\$90,288)
Low Income	\$13,309,177	\$12,984,841	(\$324,336)
Home Winterproofing	\$6,477,200	\$5,224,730	(\$1,252,470)
Low-Income Multi-Residential - Affordable Housing	\$3,813,296	\$4,417,079	\$603,783
Low-Income New Construction	\$1,400,000	\$1,752,191	\$352,191
Overheads	\$1,618,681	\$1,590,841	(\$27,840)
Market Transformation	\$6,882,454	\$7,486,514	\$604,060
Residential Savings by Design	\$3,250,000	\$4,257,045	\$1,007,045
Commercial Savings by Design	\$1,075,000	\$1,234,997	\$159,997
School's Energy Competition	\$500,000	\$248,768	(\$251,232)
Run it Right (MT)	\$315,400	\$608,623	\$293,223
Comprehensive Energy Management (MT)	\$905,000	\$314,424	(\$590,576)
Overheads	\$837,054	\$822,657	(\$14,397)
Program Cost Subtotal	\$55,648,873	\$54,326,352	(\$1,322,521)
Overhead Subtotal	\$7,705,214	\$7,572,689	(\$132,525)
Program Costs Total	\$63,354,087	\$61,899,041	(\$1,455,046)
Portfolio Overheads	\$4,200,000	\$4,255,425	\$55,425
Grand Total	\$67,554,087	\$66,154,466	(\$1,399,621)



Included in the spend amounts above are customer incentives deferred to future years, for offerings where incentives are paid when future milestones/activities are reached. The deferred amounts will be used when the customer incentive commitment is due. For more information on customer incentive deferrals, please refer to Section 5.3.2 of the OEB's Mid-Term Report.

Specifically, the amounts are:

- Low-Income New Construction: \$814,200
- Residential Savings by Design: \$1,890,000
- Commercial Savings by Design: \$75,000



Appendix A: 2018 Avoided Costs

The inflation factor used is 2.1%. The discount rate is 4.0%. Avoided costs are presented in nominal dollars.

YEAR	2018 GAS AVOIDED COSTS							
	WATER HEATING		SPACE HEATING		COMBINED SPACE & WATER HEATING		INDUSTRIAL	
	BASELOAD (\$/M³)		BASELOAD (\$/M³)		BASELOAD (\$/M³)		BASELOAD (\$/M³)	
	RATE	NPV	RATE	NPV	RATE	NPV	RATE	NPV
1	0.1607	0.1640	0.1863	0.1984	0.1778	0.1889	0.1661	0.1696
2	0.1926	0.3453	0.2107	0.3968	0.2141	0.3905	0.1920	0.3503
3	0.1850	0.5094	0.2041	0.5777	0.2035	0.5709	0.1856	0.5149
4	0.1906	0.6685	0.2102	0.7533	0.2096	0.7459	0.1912	0.6745
5	0.1963	0.8228	0.2165	0.9235	0.2159	0.9156	0.1969	0.8293
6	0.2022	0.9724	0.2230	1.0886	0.2223	1.0802	0.2028	0.9795
7	0.2082	1.1175	0.2297	1.2487	0.2290	1.2398	0.2089	1.1251
8	0.2145	1.2583	0.2366	1.4040	0.2359	1.3946	0.2152	1.2663
9	0.2209	1.3948	0.2437	1.5547	0.2430	1.5448	0.2216	1.4033
10	0.2275	1.5273	0.2510	1.7008	0.2502	1.6904	0.2283	1.5361
11	0.2344	1.6557	0.2586	1.8425	0.2578	1.8317	0.2351	1.6650
12	0.2414	1.7802	0.2663	1.9799	0.2655	1.9686	0.2422	1.7899
13	0.2486	1.9010	0.2743	2.1131	0.2734	2.1015	0.2494	1.9111
14	0.2561	2.0182	0.2825	2.2424	0.2817	2.2304	0.2569	2.0287
15	0.2638	2.1318	0.2910	2.3678	0.2901	2.3553	0.2646	2.1427
16	0.2717	2.2420	0.2997	2.4894	0.2988	2.4765	0.2726	2.2532
17	0.2798	2.3489	0.3087	2.6073	0.3078	2.5941	0.2808	2.3605
18	0.2882	2.4526	0.3180	2.7217	0.3170	2.7081	0.2892	2.4645
19	0.2969	2.5531	0.3275	2.8326	0.3265	2.8187	0.2979	2.5653
20	0.3058	2.6506	0.3374	2.9402	0.3363	2.9259	0.3068	2.6632
21	0.3150	2.7452	0.3475	3.0445	0.3464	3.0299	0.3160	2.7581
22	0.3244	2.8369	0.3579	3.1457	0.3568	3.1308	0.3255	2.8501
23	0.3341	2.9259	0.3687	3.2438	0.3675	3.2286	0.3352	2.9393
24	0.3442	3.0122	0.3797	3.3390	0.3785	3.3235	0.3453	3.0259
25	0.3545	3.0958	0.3911	3.4314	0.3899	3.4156	0.3556	3.1098
26	0.3651	3.1770	0.4028	3.5209	0.4016	3.5048	0.3663	3.1913
27	0.3761	3.2557	0.4149	3.6077	0.4136	3.5914	0.3773	3.2702
28	0.3874	3.3321	0.4274	3.6920	0.4260	3.6754	0.3886	3.3468
29	0.3990	3.4061	0.4402	3.7737	0.4388	3.7568	0.4003	3.4211
30	0.4110	3.4779	0.4534	3.8529	0.4520	3.8358	0.4123	3.4931



YEAR	2018 AVOIDED CARBON COSTS	
	RESIDENTIAL & COMMERCIAL & INDUSTRIAL	
	(\$/M ³)	
	RATE	NPV
1	0.02	0.0200
2	0.04	0.0577
3	0.06	0.1109
4	0.08	0.1777
5	0.10	0.2563
6	0.10	0.3303
7	0.10	0.4000
8	0.10	0.4656
9	0.11	0.5336
10	0.11	0.5976
11	0.11	0.6579
12	0.11	0.7147
13	0.11	0.7681
14	0.12	0.8230
15	0.12	0.8747
16	0.12	0.9234
17	0.12	0.9692
18	0.13	1.0160
19	0.13	1.0600
20	0.13	1.1014
21	0.13	1.1405
22	0.14	1.1801
23	0.14	1.2173
24	0.14	1.2524
25	0.15	1.2878
26	0.15	1.3212
27	0.15	1.3526
28	0.15	1.3821
29	0.16	1.4118
30	0.16	1.4398



Y E A R	2018 WATER AND ELECTRICITY AVOIDED COSTS															
	WATER HEATING				SPACE HEATING				COMBINED SPACE & WATER HEATING				INDUSTRIAL			
	ELECTRICITY (\$/KWH)		WATER (\$/1000 LITRE)		ELECTRICITY (\$/KWH)		WATER (\$/1000 LITRE)		ELECTRICITY (\$/KWH)		WATER (\$/1000 LITRE)		ELECTRICITY (\$/KWH)		WATER (\$/1000 LITRE)	
	RATE	NPV	RATE	NPV	RATE	NPV	RATE	NPV	RATE	NPV	RATE	NPV	RATE	NPV	RATE	NPV
1	0.1369	0.1369	0.8864	0.8864	0.1369	0.1369	0.8864	0.8864	0.1369	0.1369	0.8864	0.8864	0.1369	0.1369	0.8864	0.8864
2	0.1399	0.2687	0.9060	1.7394	0.1399	0.2687	0.9060	1.7394	0.1399	0.2687	0.9060	1.7394	0.1399	0.2687	0.9060	1.7394
3	0.1429	0.3953	0.9249	2.5595	0.1429	0.3953	0.9249	2.5595	0.1429	0.3953	0.9249	2.5595	0.1429	0.3953	0.9249	2.5595
4	0.1458	0.5171	0.9441	3.3477	0.1458	0.5171	0.9441	3.3477	0.1458	0.5171	0.9441	3.3477	0.1458	0.5171	0.9441	3.3477
5	0.1489	0.6341	0.9638	4.1054	0.1489	0.6341	0.9638	4.1054	0.1489	0.6341	0.9638	4.1054	0.1489	0.6341	0.9638	4.1054
6	0.1522	0.7467	0.9851	4.8347	0.1522	0.7467	0.9851	4.8347	0.1522	0.7467	0.9851	4.8347	0.1522	0.7467	0.9851	4.8347
7	0.1551	0.8549	1.0044	5.5348	0.1551	0.8549	1.0044	5.5348	0.1551	0.8549	1.0044	5.5348	0.1551	0.8549	1.0044	5.5348
8	0.1582	0.9587	1.0241	6.2069	0.1582	0.9587	1.0241	6.2069	0.1582	0.9587	1.0241	6.2069	0.1582	0.9587	1.0241	6.2069
9	0.1613	1.0583	1.0441	6.8522	0.1613	1.0583	1.0441	6.8522	0.1613	1.0583	1.0441	6.8522	0.1613	1.0583	1.0441	6.8522
10	0.1644	1.1540	1.0646	7.4717	0.1644	1.1540	1.0646	7.4717	0.1644	1.1540	1.0646	7.4717	0.1644	1.1540	1.0646	7.4717
11	0.1676	1.2459	1.0854	8.0665	0.1676	1.2459	1.0854	8.0665	0.1676	1.2459	1.0854	8.0665	0.1676	1.2459	1.0854	8.0665
12	0.1709	1.3341	1.1067	8.6375	0.1709	1.3341	1.1067	8.6375	0.1709	1.3341	1.1067	8.6375	0.1709	1.3341	1.1067	8.6375
13	0.1743	1.4188	1.1284	9.1858	0.1743	1.4188	1.1284	9.1858	0.1743	1.4188	1.1284	9.1858	0.1743	1.4188	1.1284	9.1858
14	0.1777	1.5001	1.1505	9.7121	0.1777	1.5001	1.1505	9.7121	0.1777	1.5001	1.1505	9.7121	0.1777	1.5001	1.1505	9.7121
15	0.1812	1.5781	1.1730	10.2174	0.1812	1.5781	1.1730	10.2174	0.1812	1.5781	1.1730	10.2174	0.1812	1.5781	1.1730	10.2174
16	0.1847	1.6530	1.1960	10.7025	0.1847	1.6530	1.1960	10.7025	0.1847	1.6530	1.1960	10.7025	0.1847	1.6530	1.1960	10.7025
17	0.1883	1.7250	1.2195	11.1683	0.1883	1.7250	1.2195	11.1683	0.1883	1.7250	1.2195	11.1683	0.1883	1.7250	1.2195	11.1683
18	0.1920	1.7940	1.2434	11.6155	0.1920	1.7940	1.2434	11.6155	0.1920	1.7940	1.2434	11.6155	0.1920	1.7940	1.2434	11.6155
19	0.1958	1.8604	1.2677	12.0448	0.1958	1.8604	1.2677	12.0448	0.1958	1.8604	1.2677	12.0448	0.1958	1.8604	1.2677	12.0448
20	0.1996	1.9240	1.2926	12.4570	0.1996	1.9240	1.2926	12.4570	0.1996	1.9240	1.2926	12.4570	0.1996	1.9240	1.2926	12.4570
21	0.2036	1.9851	1.3179	12.8527	0.2036	1.9851	1.3179	12.8527	0.2036	1.9851	1.3179	12.8527	0.2036	1.9851	1.3179	12.8527
22	0.2075	2.0438	1.3437	13.2327	0.2075	2.0438	1.3437	13.2327	0.2075	2.0438	1.3437	13.2327	0.2075	2.0438	1.3437	13.2327
23	0.2116	2.1002	1.3701	13.5974	0.2116	2.1002	1.3701	13.5974	0.2116	2.1002	1.3701	13.5974	0.2116	2.1002	1.3701	13.5974
24	0.2158	2.1543	1.3970	13.9476	0.2158	2.1543	1.3970	13.9476	0.2158	2.1543	1.3970	13.9476	0.2158	2.1543	1.3970	13.9476
25	0.2200	2.2062	1.4243	14.2838	0.2200	2.2062	1.4243	14.2838	0.2200	2.2062	1.4243	14.2838	0.2200	2.2062	1.4243	14.2838
26	0.2243	2.2560	1.4523	14.6066	0.2243	2.2560	1.4523	14.6066	0.2243	2.2560	1.4523	14.6066	0.2243	2.2560	1.4523	14.6066
27	0.2287	2.3039	1.4807	14.9165	0.2287	2.3039	1.4807	14.9165	0.2287	2.3039	1.4807	14.9165	0.2287	2.3039	1.4807	14.9165
28	0.2332	2.3499	1.5098	15.2141	0.2332	2.3499	1.5098	15.2141	0.2332	2.3499	1.5098	15.2141	0.2332	2.3499	1.5098	15.2141
29	0.2378	2.3940	1.5394	15.4998	0.2378	2.3940	1.5394	15.4998	0.2378	2.3940	1.5394	15.4998	0.2378	2.3940	1.5394	15.4998
30	0.2424	2.4363	1.5695	15.7740	0.2424	2.4363	1.5695	15.7740	0.2424	2.4363	1.5695	15.7740	0.2424	2.4363	1.5695	15.7740

EGD RATE ZONE: RATE ALLOCATION

1. The following evidence describes the three DSM-related deferral and variance accounts specific to the EGD rate zone for which Enbridge Gas requests clearance of balances recorded relating to 2017 and 2018 DSM activities. This evidence also describes the basis on which these amounts will be allocated to rate classes within the EGD rate zone, as well as the methodology for their incorporation into rates.

Demand Side Management Variance Account

2. The DSMVA is used to track the variance between actual DSM spending by rate class versus the budgeted amount included in rates by rate class. The actual DSMVA spending variance amount relative to the amount budgeted for each rate class is allocated to that rate class for disposition purposes.¹
3. Enbridge Gas followed the OEB-approved methodology for the EGD rate zone to calculate the 2017 and 2018 DSMVA balances. All DSM costs are allocated to rate classes based on the allocation of customer incentive costs between rate classes, with the exception of Low Income Program Costs, which are allocated based on OEB approved LEAP revenues.²

DSMVA 15% Overspend

4. As per the Guidelines, Enbridge Gas is eligible to recover up to an additional 15% overspend above its annual OEB-approved DSM budget through the DSMVA as long as its overall weighted scorecard target on a pre-audited basis for one or more of its scorecards has been achieved, provided the overspend was on program expenses.³ Enbridge Gas did not utilize the incremental budget in either of the 2017 or 2018 DSM program years in the EGD rate zone.

Budget Transfers Between Programs

5. Section 6.6 of the Guidelines states that Enbridge Gas should inform the OEB and stakeholders in the event that cumulative fund transfers among OEB-approved DSM programs exceed 30% of the approved annual DSM budget for an individual DSM program. Enbridge Gas did not transfer more than 30% of program budget funds between programs in either of the 2017 or 2018 DSM program years for the EGD rate zone.

¹ Guidelines, pp. 36-38.

² Guidelines, pp. 36-38; EB-2015-0049, EGD 2015-2020 DSM Plan, Exhibit B, Tab 2, Schedule 4, p. 14.

³ Guidelines, pp. 36-38.

EGD DSM Tracking and Reporting System (IT) Project

6. As part of Enbridge Gas's (formerly EGD) 2015-2020 DSM Plan (EB-2015-0049) Enbridge Gas requested and the OEB subsequently approved, a total of \$5 million of incremental budget for the development of a new Tracking and Reporting System for the EGD rate zone, upon which the tracking, monitoring, evaluation and verification of DSM program offers and results is dependent.⁴ In 2015, Enbridge Gas (EGD) originally estimated the cost of this system upgrade to be approximately \$5 million and forecast that the majority of these costs would be incurred in 2015 and 2016. Accordingly, the OEB approved, and Enbridge Gas has incorporated, a \$1 million annual DSM IT chargeback to be included in rates from 2016 through 2020.
7. As set out in Table 1, Enbridge Gas incurred costs associated with the development of its upgraded Tracking and Reporting System from 2016 through 2019. The system was ultimately implemented in March 18, 2019, at a total final cost of \$6.087 million. For the 2016 DSM program year, the first year that the annual DSM IT charge back was included in rates, Enbridge Gas (EGD) credited ratepayers back the amounts not actually spent on its upgraded Tracking and Reporting System (approximately \$900,000). In 2017 and 2018, Enbridge Gas (EGD) spent more than the IT charge back amount included in rates (approximately \$3.644 million). In 2019, Enbridge Gas spent less than the IT charge back amount included in rates (approximately \$658,000). Following implementation of its upgraded Tracking and Reporting System in March 2019, Enbridge Gas has not spent any amounts in 2020 and no further expenses are anticipated in the future.

Table 1
DSM IT Tracking and Reporting System Development Costs – EGD Rate Zone

<i>(\$millions)</i>	2015	2016	2017	2018	2019	2020	Total
Approved Budget	\$0.000	\$1.000	\$1.000	\$1.000	\$1.000	\$1.000	\$5.000
Actual Spend	\$0.000	\$0.100	\$3.109	\$2.535	\$0.342	\$0.000	\$6.087
Variance⁵	\$0.000	(\$0.900)	\$2.109	\$1.535	(\$0.658)	(\$1.000)	\$1.087

8. Comparatively, Enbridge Gas (formerly Union) requested, and the OEB subsequently approved, a total of \$6 million of incremental budget for similar system upgrades in the Union rate zones (\$1 million more than EGD), comprised of \$1 million in 2015 and \$5 million in 2016.⁶ Similarly, as set out in Enbridge Gas's

⁴ EB-2015-0029/0049, OEB Decision and Order, January 20, 2016, p. 57 and Schedule A, Enbridge Gas Distribution Inc. 2016 to 2020 DSM Budget and Targets.

⁵ Negative values indicate amounts being credited/reimbursed to ratepayers.

⁶ EB-2015-0029, OEB Decision and Order, January 20, 2016, p. 57 and Schedule A, Union Gas Limited 2016 to 2020 DSM Budget and Targets.

(Union) 2016 DSM Deferral and Variance Account Clearance application for the Union rate zones (EB-2018-0300), costs were incurred in each of 2015 through 2018 for the Union rate zones' upgraded Tracking and Reporting System and recovered through the associated DSMVA. Enbridge Gas's (Union) upgraded Tracking and Reporting System for the Union rate zones went into service in January 2018 at a total final cost of \$5.077 million. Enbridge Gas (Union) credited ratepayers for the variance of \$0.923 million relative to its OEB-approved budget as part of its 2016 DSM Deferral and Variance Account Clearance application for the Union rate zones.⁷

9. Similar to Enbridge Gas's upgraded Tracking and Reporting System for the Union rate zones, Enbridge Gas's original high-level cost estimate for the upgraded Tracking and Reporting System for the EGD rate zone was not fully reflective of the final project scope and schedule and did not take into account certain rate zone specific key elements, including:
- Data Migration Complexities – Costs associated with the storage of years of historic records for various programs which has significantly enhanced the efficiency of DSM program execution by Enbridge Gas, were higher than anticipated.
 - Timing – Implementation of the system took longer than expected resulting in increased costs due to a mandatory upgrade that occurred during the development period.
 - One-Stop-Shop – In order to have all DSM information in one place, it was necessary to build a robust system with the ability to handle unique offer-specific information delivered in different ways. This included the development of custom uploader tools, for offers with large numbers of participants such as residential and low income offers.
 - Vendor Delay – In 2017, the selected system developer experienced significant delays due to unforeseen turnover of support staff, resulting in increased project costs.

The variance of \$1.087 million (debit) incurred (see Table 1) as well as the delayed implementation date for the upgraded Tracking and Reporting System in the EGD rate zone are a direct result of these unforeseen rate zone-specific elements. As such, Enbridge Gas is bringing forward the variance between the original estimated cost and actual costs incurred for review by the Board as a debit in its DSMVA in this proceeding.⁸

10. Following the amalgamation of EGD and Union in January 2019, it became apparent that EGD and Union had different financial treatments for their DSM IT/Tracking and

⁷ EB-2018-0300, Union Application Exhibit A, Tab 3, November 30, 2018, pp. 9-10.

⁸ EB-2015-0049, Exhibit B, Tab 4, Schedule 5, p. 6.

Reporting Systems. Union treated system development costs as O&M while EGD treated system development costs as capital. In the interest of harmonizing accounting methodologies Enbridge Gas assessed both treatments in 2019 and determined that because both systems are cloud-based solutions for which Enbridge Gas does not 'own' any intellectual property (code), both systems should be treated in the manner originally proposed by Union, as O&M. Accordingly, the total final costs for the EGD rate zone set out in Table 1, are correctly reflected as O&M costs, including the 2019 values which have been filed as part of the EGD rate zone 2019 Draft Annual Report.⁹

11. The company believes this correction to the financial treatment is the correct course of action as it:
- (i) harmonizes accounting treatment across all rate zones based on the final project scopes/designs and schedules;
 - (ii) reduces the final total cost to rate payers by eliminating any revenue requirement on capital costs;¹⁰
 - (iii) smooths rate impacts by eliminating the need to clear material credit/debit balances in the DSMVA resulting from project spend that does not match cost incurrence (e.g. as part of its 2016 DSM Deferral and Variance Account Clearance application for the EGD rate zone, EGD cleared a credit to ratepayers for amounts collected through rates that were not spent).

Deferred Incentives

12. Consistent with section 5.3.2 of the OEB's Mid-Term Review Report and the OEB-approved DSMVA accounting orders as set out in the OEB's Decision and Order on Enbridge Gas's 2016 DSM Deferral and Variance Account Disposition Proceeding (EB-2018-0300/0301),¹¹ Table 10.1 of the final 2017 DSM Annual Report and Table 4.8 of the final 2018 DSM Annual Report for the EGD rate zone include amounts for customer incentive spend deferred to future years for offerings where incentives are paid when future milestones/activities are reached.
13. See Table 2 and Table 3 for continuity schedules of the deferred incentive balances for the Residential Savings by Design ("RSBD"), the Commercial Savings by Design ("CSBD") and the Affordable Housing New Construction ("AHNC") offerings for the 2017 and 2018 DSM program years in the EGD rate zone being tracked within the

⁹ <https://www.oeb.ca/sites/default/files/EGI-2019-Draft-DSM-Annual-Report-20200529.pdf>

¹⁰ At the time that Enbridge Gas assessed the benefits of harmonizing accounting treatments, it was estimated that treating EGD rate zone costs as O&M would reduce ratepayer costs by more than \$1 million by eliminating the revenue requirement on capital costs.

¹¹ EB-2018-0300/0301, OEB Decision and Order, April 11, 2019, Appendixes A and B.

DSMVA.

Table 2
2017 DSM Deferred Incentives Schedule - EGD Rate Zone

Offering	<u>TOTAL</u>	<u>2017</u>	<u>TOTAL</u>	2017 Deposit Expiration
	Beginning of Year Balance	Deposits	End of Year Balance	
	<i>a</i>	<i>b</i>	<i>c = a + b</i>	
RSBD	\$0.000	\$1.620	\$1.620	31-Dec-20
CSBD	\$0.000	\$0.060	\$0.060	31-Dec-22
AHNC	\$0.000	\$0.649	\$0.649	31-Dec-22
TOTAL	\$0.000	\$2.329	\$2.329	

Table 3
2018 DSM Deferred Incentives Schedule - EGD Rate Zone

Offering	2017				2018	TOTAL	2018 Deposit Expiration
	Beginning of Year Balance	Withdrawals		End of Year Balance	Deposits	End of Year Balance	
		Utilized	Expired				
<i>a</i>	<i>b</i>	<i>c</i>	<i>d = a - b - c</i>	<i>e</i>	<i>f = d + e</i>		
RSBD	\$1.620	\$0.000	\$0.000	\$1.620	\$1.890	\$3.510	31-Dec-21
CSBD	\$0.060	\$0.030	\$0.000	\$0.030	\$0.075	\$0.105	31-Dec-23
AHNC	\$0.649	\$0.000	\$0.000	\$0.649	\$0.814	\$1.463	31-Dec-23
TOTAL	\$2.329	\$0.030	\$0.000	\$2.299	\$2.779	\$5.078	

Demand Side Management Incentive Deferral Account

14. The purpose of the DSMIDA is to record the shareholder incentive amount earned by a natural gas utility as a result of its DSM programs.¹² DSM shareholder incentive amounts are allocated to the rate classes in proportion to the actual DSM spending by rate class in 2017 and 2018.
15. Tables 9.0 – 9.4 of the final 2017 DSM Annual Report and Tables 4.0 – 4.3 of the final 2018 DSM Annual Report for the EGD rate zone provide details of the DSM incentive achieved by scorecard.

Lost Revenue Adjustment Mechanism Variance Account

16. The LRAMVA is used to track, at the rate class level, the variance between the

¹² Guidelines, p. 39.

actual impact of DSM activities (volume savings) undertaken by the natural gas utility and the forecasted impact included in distribution rates.¹³ The LRAMVA balance is allocated to rate classes on the same basis as lost revenues were experienced such that the LRAMVA provides a true-up by rate class.

17. Consistent with historical practice, the annual rate setting process in the EGD rate zone includes a DSM volumetric adjustment for the expected natural gas savings that are partially effective for the current year, and the balance of DSM volumes not captured in the previous years' base rate volumes. Therefore, the 2017 and 2018 LRAMVA balances contain a variance related to the applicable DSM program years only. See Table 8.0 of the final 2017 DSM Annual Report and Table 4.5 of the final 2018 DSM Annual Report for further information on LRAM for the 2017 and 2018 DSM program years, respectively.

Rate Allocation

18. Tables 4 and 5 summarize the allocation of Enbridge Gas's EGD rate zone-related DSM deferral and variance account balances for the 2017 and 2018 DSM program years to rate classes, respectively.

¹³ Guidelines, p. 39.

Table 4
2017 DSM Deferral and Variance Account Balances by Rate Class – EGD Rate Zone

Rate Class	DSMIDA	LRAMVA ^{1, 2}	DSMVA	TOTAL DEFERRAL/ VARIANCE BALANCE
RATE 1	\$1,453,433	N/A	\$9,442,681	\$10,896,114
RATE 6	\$574,160	N/A	(\$4,616,806)	(\$4,042,646)
RATE 9	\$75	\$0	(\$454)	(\$379)
RATE 100	\$0	\$0	\$0	\$0
RATE 110	\$47,962	(\$8,147)	(\$404,500)	(\$364,686)
RATE 115	\$19,315	(\$990)	(\$806,943)	(\$788,619)
RATE 125	\$2,819	\$0	(\$17,031)	(\$14,212)
RATE 135	\$12,471	\$3,297	\$102,183	\$117,951
RATE 145	\$2,951	(\$3,656)	(\$1,584,697)	(\$1,585,402)
RATE 170	\$5,778	(\$880)	(\$2,134,247)	(\$2,129,349)
RATE 200	\$977	\$0	(\$5,904)	(\$4,927)
RATE 300	\$188	\$0	(\$1,135)	(\$947)
TOTAL	\$2,120,130	(\$10,377)	(\$26,855)	\$2,082,898

NOTES:

(1) Rate 1 and Rate 6 are not included in the LRAM amount as these rate classes are covered under the Average Use True-Up Variance Account ("AUTUVA").

(2) Rates 9, 125, 200 & 300 do not have any LRAM component in the rate allocation since customers in these rate classes are not eligible for DSM programs. These rate classes will be subject to rate allocations for DSMVA and DSMIDA balances related to Low Income Programs.

Table 5
2018 DSM Deferral and Variance Account Balances by Rate Class - EGD Rate Zone

Rate Class	DSMIDA	LRAMVA ^{1, 2}	DSMVA	TOTAL DEFERRAL/ VARIANCE BALANCE
RATE 1	\$2,842,053	N/A	\$9,120,547	\$11,962,600
RATE 6	\$1,000,364	N/A	(\$5,233,153)	(\$4,232,789)
RATE 9	\$167	\$0	(\$63)	\$105
RATE 100	\$0	\$0	\$0	\$0
RATE 110	\$52,012	(\$13,513)	(\$969,520)	(\$931,021)
RATE 115	\$15,533	(\$2,692)	(\$1,124,855)	(\$1,112,014)
RATE 125	\$6,267	\$0	(\$2,345)	\$3,922
RATE 135	\$22,939	\$1,360	\$112,930	\$137,230
RATE 145	\$30,964	\$1,044	(\$1,161,003)	(\$1,128,995)
RATE 170	\$9,982	(\$1,306)	(\$2,141,190)	(\$2,132,514)
RATE 200	\$2,173	\$0	(\$813)	\$1,360
RATE 300	\$418	\$0	(\$156)	\$261
TOTAL	\$3,982,872	(\$15,107)	(\$1,399,621)	\$2,568,144

NOTES:

(1) Rate 1 and Rate 6 are not included in the LRAM amount as these rate classes are covered under the AUTUVA.

(2) Rates 9, 125, 200 & 300 do not have any LRAM component in the rate allocation since customers in these rate classes are not eligible for DSM programs. These rate classes will be subject to rate allocations for DSMVA and applicable DSMIDA related to Low Income Programs.

Disposition Methodology

19. Enbridge Gas proposes to dispose of the 2017 and 2018 DSM-related deferral and variance account balances as a one-time billing adjustment for the EGD rate zone. The one-time billing adjustment will be derived for each customer individually by applying the disposition unit rates to each customer's actual consumption volume for the period January 1, 2018 to December 31, 2018.
20. Enbridge Gas proposes to dispose of the approved 2017 and 2018 DSM deferral and variance account balances with the first available QRAM application following the Board's approval, as early as January 1, 2021.
21. Enbridge Gas anticipates that starting in mid-2021 at the earliest it will be able to adopt a common disposition period, as well as a common disposition approach between the EGD and Union rate zones once integrated systems and processes are implemented.

22. The allocation of 2017 and 2018 DSM Deferral and Variance account balances and the derivation of clearance unit rates for the EGD rate zone are consistent with the treatment in prior years. Three sets of unit rates (2017, 2018 and total) for each rate class and type of service are set out at Exhibit B, Tab 3, Schedule 1, Appendix A1.
23. Exhibit B, Tab 3, Schedule 1, Appendixes A2 to A7 provide details of the derivation of proposed unit rates:
- Appendixes A2 and A5 determine the balances (principal and interest) to be cleared for each DSM deferral and variance account for the 2017 and 2018 DSM program years, respectively;
 - Appendixes A3 and A6 show account balance allocations by rate class and type of account based on cost drivers for each type of account for the 2017 and 2018 DSM program years, respectively; and
 - Appendixes A4 and A7 illustrate the derivation of unit rates for the 2017 and 2018 DSM program years, respectively, based on the balances and actual 2018 consumption volumes for each rate class and service type.

UNIT RATE AND TYPE OF SERVICE: CLEARING IN JANUARY 2021

		COL.1	COL.2	COL.3
		Unit Rate		
		2017	2018	Total
		(¢/m³)	(¢/m³)	(¢/m³)
<u>Bundled Services:</u>				
RATE 1	- SYSTEM SALES	0.2167	0.2341	0.4508
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	0.2167	0.2341	0.4508
	- DAWN T-SERVICE	0.2167	0.2341	0.4508
	- WESTERN T-SERVICE	0.2167	0.2341	0.4508
RATE 6	- SYSTEM SALES	(0.0815)	(0.0836)	(0.1651)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	(0.0815)	(0.0836)	(0.1651)
	- DAWN T-SERVICE	(0.0815)	(0.0836)	(0.1651)
	- WESTERN T-SERVICE	(0.0815)	(0.0836)	(0.1651)
RATE 9	- SYSTEM SALES	(3.1767)	0.8334	(2.3433)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	0.0000	0.0000	0.0000
	- DAWN T-SERVICE	0.0000	0.0000	0.0000
	- WESTERN T-SERVICE	0.0000	0.0000	0.0000
RATE 100	- SYSTEM SALES	0.0000	0.0000	0.0000
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	0.0000	0.0000	0.0000
	- DAWN T-SERVICE	0.0000	0.0000	0.0000
	- WESTERN T-SERVICE	0.0000	0.0000	0.0000
RATE 110	- SYSTEM SALES	(0.0460)	(0.1146)	(0.1606)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	(0.0460)	(0.1146)	(0.1606)
	- DAWN T-SERVICE	(0.0460)	(0.1146)	(0.1606)
	- WESTERN T-SERVICE	(0.0460)	(0.1146)	(0.1606)
RATE 115	- SYSTEM SALES	(0.1674)	(0.2317)	(0.3991)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	(0.1674)	(0.2317)	(0.3991)
	- DAWN T-SERVICE	(0.1674)	(0.2317)	(0.3991)
	- WESTERN T-SERVICE	(0.1674)	(0.2317)	(0.3991)
RATE 135	- SYSTEM SALES	0.1993	0.2273	0.4266
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	0.1993	0.2273	0.4266
	- DAWN T-SERVICE	0.1993	0.2273	0.4266
	- WESTERN T-SERVICE	0.1993	0.2273	0.4266
RATE 145	- SYSTEM SALES	(3.8778)	(2.7132)	(6.5910)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	(3.8778)	(2.7132)	(6.5910)
	- DAWN T-SERVICE	(3.8778)	(2.7132)	(6.5910)
	- WESTERN T-SERVICE	(3.8778)	(2.7132)	(6.5910)
RATE 170	- SYSTEM SALES	(0.6873)	(0.6762)	(1.3635)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	(0.6873)	(0.6762)	(1.3635)
	- DAWN T-SERVICE	(0.6873)	(0.6762)	(1.3635)
	- WESTERN T-SERVICE	(0.6873)	(0.6762)	(1.3635)
RATE 200	- SYSTEM SALES	(0.0029)	0.0007	(0.0021)
	- BUY/SELL	0.0000	0.0000	0.0000
	- ONTARIO T-SERVICE	(0.0029)	0.0007	(0.0021)
	- DAWN T-SERVICE	(0.0029)	0.0007	(0.0021)
	- WESTERN T-SERVICE	(0.0029)	0.0007	(0.0021)
<u>Unbundled Services (Billing based on CD):</u>				
RATE 125	- All	(0.1638)	0.0430	(0.1208)
	- Customer-specific (\$)	0.0000	0.0000	0.0000
RATE 300	- All	(6.4806)	1.7002	(4.7804)
RATE 332	- All	0.0000	0.0000	0.0000

**DETERMINATION OF BALANCES TO BE CLEARED
FROM THE 2017 DSM DEFERRAL AND VARIANCE ACCOUNTS**

Filed: 2020-07-17
EB-2020-0067
Exhibit B
Tab 3
Schedule 1
Appendix A2
Page 1 of 1

ITEM NO.		COL. 1	COL. 2	COL. 3
		PRINCIPAL For CLEARING (\$000)	INTEREST (\$000)	TOTAL For CLEARING (\$000)
1.	DEMAND SIDE MANAGEMENT 2017	(26.9)	(1.6)	(28.4)
2.	LOST REVENUE ADJ MECHANISM 2017	(10.4)	(1.8)	(12.2)
3.	DEMAND SIDE MANAGEMENT INCENTIVE 2017	2,120.1	38.3	2,158.5
	TOTAL	<u>2,082.9</u>	<u>35.0</u>	<u>2,117.9</u>

2017 CLASSIFICATION AND ALLOCATION OF DEFERRAL AND VARIANCE ACCOUNT BALANCES

Filed: 2020-07-17

EB-2020-0067

Exhibit B

Tab 3

Schedule 1

Appendix A3

Page 1 of 1

ITEM NO.	COL.1	
	TOTAL	
	(\$000)	
CLASSIFICATION		
1. DEMAND SIDE MANAGEMENT (DSMVA) 2017	(28.4)	
2. LOST REVENUE ADJ MECHANISM (LRAM) 2017	(12.2)	
3. DEMAND SIDE MANAGEMENT INCENTIVE (DSMIVA) 2017	2,158.5	
TOTAL	<u>2,117.9</u>	

		COL. A	COL. B	COL. C	COL. D = A + B + C
		DSMVA	LRAM	DSMIVA	TOTAL
		(\$000)	(\$000)	(\$000)	(\$000)
ALLOCATION					
1.1	RATE 1	9,998.9	0.0	1,479.7	11,478.6
1.2	RATE 6	(4,888.7)	0.0	584.5	(4,304.2)
1.3	RATE 9	(0.5)	0.0	0.1	(0.4)
1.4	RATE 100	0.0	0.0	0.0	0.0
1.5	RATE 110	(428.3)	(9.5)	48.8	(389.0)
1.6	RATE 115	(854.5)	(1.2)	19.7	(836.0)
1.7	RATE 125	(18.0)	0.0	2.9	(15.2)
1.8	RATE 135	108.2	3.9	12.7	124.8
1.9	RATE 145	(1,678.0)	(4.3)	3.0	(1,679.3)
1.10	RATE 170	(2,260.0)	(1.0)	5.9	(2,255.1)
1.11	RATE 200	(6.3)	0.0	1.0	(5.3)
1.12	RATE 300	(1.2)	0.0	0.2	(1.0)
1.13	RATE 332	0.0	0.0	0.0	0.0
1.14	TOTAL	<u>(28.4)</u>	<u>(12.2)</u>	<u>2,158.5</u>	<u>2,117.9</u>

2017 ALLOCATION AND UNIT RATE DERIVATION BY TYPE OF SERVICE

		COL. 1	COL. 2	COL. 3
		TOTAL BALANCE	VOLUME	UNIT RATE*
		(\$000)	m ³	(¢/m ³)
<u>Bundled Services:</u>				
RATE 1	- SYSTEM SALES	11,083.8	5,114,159,642	0.2167
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	68.0	31,394,456	0.2167
	- DAWN T-SERVICE	149.3	68,901,512	0.2167
	- WBT	177.4	81,837,579	0.2167
RATE 6	- SYSTEM SALES	(2,614.5)	3,209,591,171	(0.0815)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	(244.7)	300,424,934	(0.0815)
	- DAWN T-SERVICE	(1,020.6)	125,294,640	(0.0815)
	- WBT	(424.3)	520,933,082	(0.0815)
RATE 9	- SYSTEM SALES	(0.4)	12,730	(3.1767)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	0.0	0	0.0000
	- DAWN T-SERVICE	0.0	0	0.0000
	- WBT	0.0	0	0.0000
RATE 100	- SYSTEM SALES	0.0	1,512,139	0.0000
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	0.0	0	0.0000
	- DAWN T-SERVICE	0.0	564,907	0.0000
	- WBT	0.0	176	0.0000
RATE 110	- SYSTEM SALES	(26.0)	56,452,050	(0.0460)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	(35.9)	78,160,901	(0.0460)
	- DAWN T-SERVICE	(285.2)	620,050,926	(0.0460)
	- WBT	(41.9)	91,194,026	(0.0460)
RATE 115	- SYSTEM SALES	(0.5)	280,547	(0.1674)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	(405.4)	242,222,234	(0.1674)
	- DAWN T-SERVICE	(428.7)	256,112,558	(0.1674)
	- WBT	(1.4)	809,401	(0.1674)
RATE 135	- SYSTEM SALES	4.0	1,992,309	0.1993
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	10.7	5,357,808	0.1993
	- DAWN T-SERVICE	80.2	402,640,28	0.1993
	- WBT	29.9	15,001,135	0.1993
RATE 145	- SYSTEM SALES	(239.0)	6,162,959	(3.8778)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	(152.5)	3,931,744	(3.8778)
	- DAWN T-SERVICE	(1,224.8)	315,843,79	(3.8778)
	- WBT	(63.1)	1,626,891	(3.8778)
RATE 170	- SYSTEM SALES	(196.3)	28,554,658	(0.6873)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	(1,125.3)	163,715,904	(0.6873)
	- DAWN T-SERVICE	(931.8)	135,570,993	(0.6873)
	- WBT	(1.7)	251,316	(0.6873)
RATE 200	- SYSTEM SALES	(4.0)	139,951,333	(0.0029)
	- BUY/SELL	0.0	0	0.0000
	- T-SERVICE EXCL WBT	(0.2)	6,067,120	(0.0029)
	- DAWN T-SERVICE	(0.3)	112,104,93.48	(0.0029)
	- WBT	(0.8)	27,155,083	(0.0029)
<u>Unbundled Services: (Billing based on CD)</u>				
RATE 125		(15.2)	9,260,357	(0.1638)
RATE 300		(1.0)	15,600	(6.4806)
RATE 332		0.0	31,838,684	0.0000
TOTAL		<u>2,117.9</u>		

*Unit Rate = Total Balance / Volume

**DETERMINATION OF BALANCES TO BE CLEARED
FROM THE 2018 DSM DEFERRAL AND VARIANCE ACCOUNTS**

ITEM NO.		COL. 1	COL. 2	COL. 3
		PRINCIPAL	INTEREST	TOTAL
		For CLEARING	For CLEARING	For CLEARING
		(\$000)	(\$000)	(\$000)
1.	DEMAND SIDE MANAGEMENT 2018	(1,399.6)	(56.4)	(1,456.0)
2.	LOST REVENUE ADJ MECHANISM 2018	(15.1)	(0.3)	(15.4)
3.	DEMAND SIDE MANAGEMENT INCENTIVE 2018	3,982.9	96.2	4,079.0
	TOTAL	<u>2,568.1</u>	<u>39.6</u>	<u>2,607.7</u>

2018 CLASSIFICATION AND ALLOCATION OF DEFERRAL AND VARIANCE ACCOUNT BALANCES

ITEM NO.	COL.1 TOTAL (\$000)
CLASSIFICATION	
1. DEMAND SIDE MANAGEMENT (DSMVA) 2018	(1,456.0)
2. LOST REVENUE ADJ MECHANISM (LRAM) 2018	(15.4)
3. DEMAND SIDE MANAGEMENT INCENTIVE (DSMIVA) 2018	4,079.0
TOTAL	<u>2,607.7</u>

	COL. A	COL. B	COL. C	COL. D = A +B + C
ALLOCATION				
	DSMVA (\$000)	LRAM (\$000)	DSMIVA (\$000)	TOTAL (\$000)
1.1 RATE 1	9,487.9	0.0	2,910.7	12,398.6
1.2 RATE 6	(5,443.9)	0.0	1,024.5	(4,419.4)
1.3 RATE 9	(0.1)	0.0	0.2	0.1
1.4 RATE 100	0.0	0.0	0.0	0.0
1.5 RATE 110	(1,008.6)	(13.7)	53.3	(969.0)
1.6 RATE 115	(1,170.2)	(2.7)	15.9	(1,157.0)
1.7 RATE 125	(2.4)	0.0	6.4	4.0
1.8 RATE 135	117.5	1.4	23.5	142.4
1.9 RATE 145	(1,207.8)	1.1	31.7	(1,175.0)
1.10 RATE 170	(2,227.4)	(1.3)	10.2	(2,218.5)
1.11 RATE 200	(0.8)	0.0	2.2	1.4
1.12 RATE 300	(0.2)	0.0	0.4	0.3
1.13 RATE 332	0.0	0.0	0.0	0.0
1.14 TOTAL	<u>(1,456.0)</u>	<u>(15.4)</u>	<u>4,079.0</u>	<u>2,607.7</u>

2018 ALLOCATION AND UNIT RATE DERIVATION BY TYPE OF SERVICE

	COL. 1	COL. 2	COL. 3
	TOTAL BALANCE	VOLUME	UNIT RATE*
	(\$000)	m ³	(¢/m ³)
<u>Bundled Services:</u>			
RATE 1			
- SYSTEM SALES	11,972.2	5,114,159,642	0.2341
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	73.5	31,394,456	0.2341
- DAWN T-SERVICE	161.3	68,901,512	0.2341
- WBT	191.6	81,837,579	0.2341
RATE 6			
- SYSTEM SALES	(2,684.5)	3,209,591,171	(0.0836)
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	(251.3)	300,424,934	(0.0836)
- DAWN T-SERVICE	(1,048.0)	125,294,640	(0.0836)
- WBT	(435.7)	520,933,082	(0.0836)
RATE 9			
- SYSTEM SALES	0.1	12,730	0.8334
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	0.0	0	0.0000
- DAWN T-SERVICE	0.0	0	0.0000
- WBT	0.0	0	0.0000
RATE 100			
- SYSTEM SALES	0.0	1,512,139	0.0000
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	0.0	0	0.0000
- DAWN T-SERVICE	0.0	564,907	0.0000
- WBT	0.0	176	0.0000
RATE 110			
- SYSTEM SALES	(64.7)	56,452,050	(0.1146)
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	(89.5)	78,160,901	(0.1146)
- DAWN T-SERVICE	(710.3)	620,050,926	(0.1146)
- WBT	(104.5)	91,194,026	(0.1146)
RATE 115			
- SYSTEM SALES	(0.6)	280,547	(0.2317)
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	(561.1)	242,222,234	(0.2317)
- DAWN T-SERVICE	(593.3)	256,112,558	(0.2317)
- WBT	(1.9)	809,401	(0.2317)
RATE 135			
- SYSTEM SALES	4.5	1,992,309	0.2273
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	12.2	5,357,808	0.2273
- DAWN T-SERVICE	91.5	402,640,28	0.2273
- WBT	34.1	15,001,135	0.2273
RATE 145			
- SYSTEM SALES	(167.2)	6,162,959	(2.7132)
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	(106.7)	3,931,744	(2.7132)
- DAWN T-SERVICE	(857.0)	315,843,79	(2.7132)
- WBT	(44.1)	1,626,891	(2.7132)
RATE 170			
- SYSTEM SALES	(193.1)	28,554,658	(0.6762)
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	(1,107.0)	163,715,904	(0.6762)
- DAWN T-SERVICE	(916.7)	135,570,993	(0.6762)
- WBT	(1.7)	251,316	(0.6762)
RATE 200			
- SYSTEM SALES	1.0	139,951,333	0.0007
- BUY/SELL	0.0	0	0.0000
- T-SERVICE EXCL WBT	0.0	6,067,120	0.0007
- DAWN T-SERVICE	0.1	112,104,93.48	0.0007
- WBT	0.2	27,155,083	0.0007
<u>Unbundled Services: (Billing based on CD)</u>			
RATE 125	4.0	9,260,357	0.0430
RATE 300	0.3	15,600	1.7002
RATE 332	0.0	31,838,684	0.0000
TOTAL	<u>2,607.7</u>		

*Unit Rate = Total Balance / Volume

EGD RATE ZONE: ESTIMATED ANNUAL BILL IMPACT

1. For a Rate 1 customer in the EGD rate zone with annual consumption of 2,400 m³, the one-time billing adjustment charge is \$10.80.
2. Bill impacts of the proposed disposition for the EGD rate zone are set out at Exhibit B, Tab 3, Schedule 2, Appendix A1.

Enbridge Gas Distribution Inc.
2017 and 2018 DSM Deferral and Variance Account Clearing
Bill Adjustment in January 2021 for Typical Customers

ITEM NO.	COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8	COL. 9	COL. 10
		ANNUAL VOLUME m³	UNIT RATES				BILL ADJUSTMENT			
			Sales	Ontario TS	Dawn TS	Western TS	Sales Customers	Ontario TS Customers	Dawn TS Customers	Western TS Customers
			c/m³	c/m³	c/m³	c/m³	\$	\$	\$	\$
<u>GENERAL SERVICE</u>										
1.1	RATE 1 RESIDENTIAL									
1.2	Heating & Water Heating	2,400	0.4508	0.4508	0.4508	0.4508	10.8	10.8	10.8	10.8
2.1	RATE 6 COMMERCIAL									
2.2	Commercial - Heating & Other Uses	22,606	(0.1651)	(0.1651)	(0.1651)	(0.1651)	(37.3)	(37.3)	(37.3)	(37.3)
2.3	General Use	43,285	(0.1651)	(0.1651)	(0.1651)	(0.1651)	(71.5)	(71.5)	(71.5)	(71.5)
<u>CONTRACT SERVICE</u>										
3.1	RATE 100									
3.2	Industrial - small size	339,188	0.0000	0.0000	0.0000	0.0000	-	-	-	-
4.1	RATE 110									
4.2	Industrial - small size, 50% LF	598,568	(0.1606)	(0.1606)	(0.1606)	(0.1606)	(961.0)	(961.0)	(961.0)	(961.0)
4.3	Industrial - avg. size, 75% LF	9,976,121	(0.1606)	(0.1606)	(0.1606)	(0.1606)	(16,017.3)	(16,017.3)	(16,017.3)	(16,017.3)
5.1	RATE 115									
5.2	Industrial - small size, 80% LF	4,471,609	(0.3991)	(0.3991)	(0.3991)	(0.3991)	(17,844.0)	(17,844.0)	(17,844.0)	(17,844.0)
5.3	Industrial - large size, 80% LF	69,832,850	(0.3991)	(0.3991)	(0.3991)	(0.3991)	(278,668.1)	(278,668.1)	(278,668.1)	(278,668.1)
6.1	RATE 135									
6.2	Industrial - Seasonal Firm	598,567	0.4266	0.4266	0.4266	0.4266	2,553.5	2,553.5	2,553.5	2,553.5
7.1	RATE 145									
7.2	Commercial - avg. size	598,568	(6.5910)	(6.5910)	(6.5910)	(6.5910)	(39,451.7)	(39,451.7)	(39,451.7)	(39,451.7)
8.1	RATE 170									
8.2	Industrial - avg. size, 75% LF	9,976,121	(1.3635)	(1.3635)	(1.3635)	(1.3635)	(136,027.1)	(136,027.1)	(136,027.1)	(136,027.1)

UNION RATE ZONES: ACCOUNT BALANCES AND APPROVALS SOUGHT

Account Balances for Disposition

1. The Union rate zones account balances set out in Table 1, which are the subject of this application in-part, are consistent with the EC's Verification Reports and the EC's opinion on energy savings, lost revenue, shareholder incentive amounts and cost-effectiveness.

Table 1

2017 & 2018 DSM Deferral and Variance Account Balances - Union Rate Zones

Account	2017	2018	Total
DSM Variance Account	\$6,011,037	\$5,850,616	\$11,861,653
DSM Incentive Deferral Account	\$5,519,140	\$6,366,226	\$11,885,366
LRAM Variance Account	\$468,352	\$402,098	\$870,450
Interest	\$721,371	\$492,788	\$1,214,159
Total	\$12,719,900	\$13,111,728	\$25,831,628

2. Final 2017 and 2018 DSM Annual Reports for the Union rate zones are set out at Exhibit C, Tab 2, Schedules 1 and 2.

Approvals Sought

3. Enbridge Gas is seeking the following approvals:
 - Approval of the Union rate zones' DSMVA, DSMIDA, and LRAMVA balances, as set out in Table 1.
 - An Order providing for the clearance through to rates of the amounts set out in Table 1 as a one-time adjustment for contract rate classes and a six-month prospective recovery for general service rate classes in the Union rate zones, to be cleared within Enbridge Gas's next available QRAM application following the Board's approval, effective as soon as January 1, 2021.

2017 Demand Side Management Annual Report - Union Rate Zones

June 19, 2020

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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.

<i>Incentive</i>	An incentive is a payment from Union to DSM participants to encourage participation in a DSM program.
<i>Incremental Cost</i>	The incremental cost is the difference in price between the high efficiency case and the base case.
<i>Input Assumptions</i>	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.
<i>Lifetime Cumulative cubic meters (“cumulative m³”)</i>	<p>Total natural gas savings over the effective useful life of a DSM measure.</p> <p>Frequently used at the measure or program level and can also summarize the benefits of an entire portfolio.</p>
<i>Lost Revenue Adjustment Mechanism Variance Account (“LRAMVA”)</i>	<p>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.</p>
<i>Market Transformation</i>	<p>Market transformation facilitates fundamental changes that lead to greater market shares of energy-efficient products and services.</p>
<i>Measure</i>	A measure is any particular energy-efficient technology (e.g. an energy recovery ventilator, condensing boiler, etc.)
<i>National Account</i>	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)	1,182,739,242
DSM Shareholder Incentive amount recoverable from Ratepayers	\$5,519,140
DSM Variance amount recoverable from Ratepayers*	\$6,011,037
Lost Revenue Adjustment Mechanism amount recoverable from Ratepayers	\$176,823

* 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 70 million cubic metres (m³) or 1,182.7 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	7,785,004	194,625,102	\$9,880,000	\$21,375,224	1.18	1.50
Overheads			\$1,488,828	\$2,659,037		
Commercial/Industrial Program						
C/I Prescriptive	10,249,139	196,341,071	\$6,763,000	\$5,202,184		
C/I Direct Install	1,922,435	28,836,528	\$2,500,000	\$1,449,230	2.58	6.90
C/I Custom	37,907,520	579,288,646	\$7,808,000	\$9,216,161		
Overheads			\$4,964,334	\$4,338,478		
Total Resource Acquisition	57,864,098	999,091,347	\$33,404,162	\$44,240,314	2.00	3.97
Low-Income Program						
Home Weatherization	1,197,217	29,828,405	\$6,136,000	\$6,432,937		
Furnace End-of-Life Upgrade	24,570	442,260	\$784,000	\$168,790		
Indigenous	16,675	406,272	\$419,000	\$212,185	1.21	0.98
Multi-Family	1,357,941	26,790,582	\$3,359,000	\$2,939,186		
Overheads			\$1,644,841	\$1,129,624		
Total Low-Income	2,596,403	57,467,519	\$12,342,841	\$10,882,721	1.21	0.98
Large Volume Program						
Direct Access	9,474,468	125,804,115	\$3,150,000	\$2,127,205	1.80	7.73
Overheads			\$850,000	\$495,557		
Total Large Volume	9,474,468	125,804,115	\$4,000,000	\$2,622,762	1.80	7.73
Market Transformation Program						
Optimum Home	NA	NA	\$841,000	\$685,326		
Commercial Savings by Design	NA	NA	\$1,000,000	\$706,158	NA	NA
Overheads			\$497,070	\$306,762		
Total Market Transformation	-	-	\$2,338,070	\$1,698,246		
Performance-Based Program						
RunSmart	72,252	376,261	\$200,000	\$162,052		
Strategic Energy Management	NA	NA	\$392,000	\$193,887	NA	NA
Overheads			\$251,000	\$176,837		
Total Performance-Based	75,252	376,261	\$843,000	\$532,776		
Portfolio Overheads			\$5,642,000	\$4,604,292		
Union's Total DSM Portfolio	70,010,222	1,182,739,242	\$58,570,073	\$64,581,110	1.91	3.58

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 2017, Union's DSM programs have saved an estimated \$3.3 billion in total resource costs and 13.4 billion in cubic meters of natural gas. These gas savings translate to a reduction of 25 million² metric tonnes of greenhouse gas emissions, roughly equal to removing 4.9 million cars³ from Ontario's roads for a year.

The current framework⁴ 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"⁵ 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 Incentive Deferral Account and

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

² Assumes 1.875kg of CO₂e emitted for each m³ gas that is consumed

³ Assuming the average automobile produces 5.1 tonnes of CO₂ per year

⁴ Report of the Board: DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134

⁵ Achieving Balance, Ontario's Long-Term Energy Plan, December 2013, Conservation First, pg. 21

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 guidelines⁶ (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 is being 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.

⁶Filing 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, 2015.⁷

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;

⁷ The plan was amended July 3, 2015 to capture minor corrections

- 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;
- 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.⁸

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.

⁸ Report of the Board, DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, Section 1.2, p.3

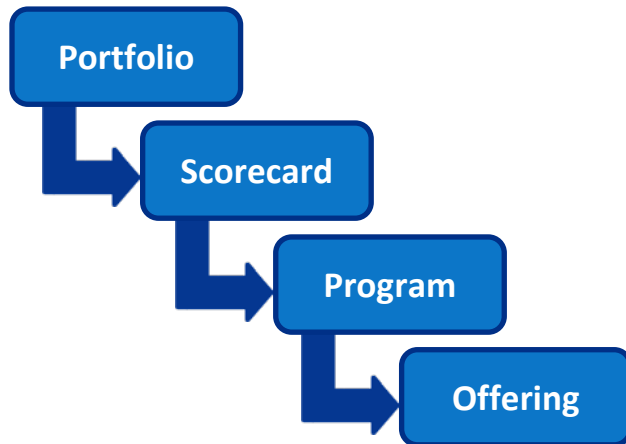


Figure 2.0 – Union’s DSM Portfolio

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.

Prior to 2017, Union’s cost-effectiveness screening considered benefits related to natural gas, electricity and water savings over the life of the energy-efficient equipment. Starting with the 2017 program year, benefits attributed to reduced carbon emissions were also incorporated into cost-effectiveness screening

TRC costs include the incremental equipment costs⁹ 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.¹⁰ 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 and carbon are used. PAC Test costs include all costs incurred by the program

⁹ Incremental costs include capital, cost of removal less salvage value, installation, operating and maintenance and/or fuel costs.

¹⁰ By definition of the TRC test, incentive costs provided to program participants are benefits to participants and are not included as TRC costs.

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.¹¹ Impact evaluation activities proposed by the EC are provided in its 2016-2018 Natural Gas DSM Evaluation, Measurement, and Verification ("EM&V") Plan available on the OEB's DSM Evaluation webpage.¹² 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.

¹¹ OEB letter, 2015-2020 DSM Evaluation Process of Program Results, EB-2015-0245, August 21, 2015

¹² oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm-evaluation

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 & Company¹³

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

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

¹³ Marion Frasier resigned from the EAC on February 26, 2019 and had limited involvement in the evaluation of 2017 program activities.

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.

The EC's 2017 Annual Verification report, 2017/2018 Custom Savings Verification report and 2018 Custom Free Rider Evaluation¹⁴ (all March 13, 2020), which document all 2017 verification activities and the calculation of the EC's verified DSMIDA, LRAM and DSMVA amounts can be found at:

<https://www.oeb.ca/industry/policy-initiatives-and-consultations/natural-gas-demand-side-management-dsm-evaluation>.

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.

¹⁴ While this study was conducted on 2018 custom projects, its findings were also applied to the 2017 program year.

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.

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

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	2017
M1	NA	\$ 12.107	\$ 12.743	\$ 11.348	\$ 11.498	\$ 13.502	\$ 13.657	\$ 15.415	\$ 16.752	\$ 23.338	\$ 37.204
M2	\$ 11.619	\$ 2.486	\$ 2.023	\$ 2.117	\$ 4.097	\$ 4.968	\$ 5.818	\$ 6.728	\$ 4.958	\$ 6.505	\$ 8.166
M4	\$ 1.488	\$ 1.353	\$ 0.828	\$ 1.098	\$ 1.817	\$ 3.319	\$ 3.244	\$ 3.296	\$ 3.645	\$ 3.808	\$ 5.892
M5	\$ 0.294	\$ 1.044	\$ 1.226	\$ 1.086	\$ 3.150	\$ 2.660	\$ 3.484	\$ 2.394	\$ 1.421	\$ 2.453	\$ 1.459
M7	\$ 0.886	\$ 0.116	\$ 0.256	\$ 1.474	\$ 1.304	\$ 0.538	\$ 0.571	\$ 2.143	\$ 3.370	\$ 3.760	\$ 1.258
T1	\$ 3.147	\$ 3.988	\$ 5.596	\$ 3.965	\$ 7.749	\$ 6.111	\$ 2.265	\$ 1.078	\$ 0.889	\$ 1.409	\$ 2.578
T2	NA	NA	NA	NA	NA	NA	\$ 3.365	\$ 2.875	\$ 2.673	\$ 3.758	\$ 3.006
Rate 01	\$ 2.229	\$ 2.162	\$ 2.093	\$ 1.869	\$ 3.050	\$ 3.532	\$ 3.560	\$ 4.161	\$ 3.555	\$ 4.447	\$ 6.209
Rate 10	\$ 1.612	\$ 1.371	\$ 2.292	\$ 0.510	\$ 1.109	\$ 1.939	\$ 1.637	\$ 1.613	\$ 0.953	\$ 1.322	\$ 2.144
Rate 20	\$ 0.323	\$ 0.496	\$ 0.771	\$ 0.881	\$ 1.030	\$ 1.607	\$ 1.573	\$ 1.791	\$ 1.005	\$ 0.806	\$ 1.554
Rate 100	\$ 1.535	\$ 4.542	\$ 3.950	\$ 4.471	\$ 1.614	\$ 2.305	\$ 1.828	\$ 1.517	\$ 0.799	\$ 0.541	\$ 0.809
Total	\$ 23.133	\$ 29.664	\$ 31.778	\$ 28.818	\$ 36.418	\$ 40.481	\$ 41.002	\$ 43.011	\$ 40.019	\$ 52.146	\$ 70.277

Table 3.2 **Historic Actual Annual DSM Spending**

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total DSM Spending*	\$ 16.13	\$ 20.26	\$ 22.04	\$ 21.61	\$ 27.97	\$ 31.32	\$ 32.84	\$ 33.71	\$ 32.39	\$ 50.67	\$ 64.58

* 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	2017
Total DSM Spending*	\$ 16	\$ 20	\$ 22	\$ 22	\$ 28	\$ 31	\$ 33	\$ 34	\$ 32	\$ 51	\$ 65
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	2017
DSM Shareholder Incentive Earned	\$ 6.23	\$ 8.70	\$ 8.75	\$ 6.58	\$ 7.64	\$ 8.21	\$ 7.78	\$ 8.99	\$ 7.47	\$ 4.12	\$ 5.52
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

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

\$ millions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
DSM Shareholder Incentive Earned*	\$ 6.23	\$ 8.70	\$ 8.75	\$ 6.58	\$ 7.64	\$ 8.21	\$ 7.78	\$ 8.99	\$ 7.47	\$ 4.12	\$ 5.52
Total DSM Spending*	\$ 16.13	\$ 20.26	\$ 22.04	\$ 21.61	\$ 27.97	\$ 31.32	\$ 32.84	\$ 33.71	\$ 32.39	\$ 50.67	\$ 64.58
Shareholder Incentive Earned as a % of DSM Spending	39%	43%	40%	30%	27%	26%	24%	27%	23%	8%	9%

* 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	976,464,106	Targets are formulaic based on past year's performance.		
Low-Income	43,600,000	59,238,065	80,179,602			
Large Volume	1,236,097,404	890,890,721	463,100,400			

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

† 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	Annual Gas Savings		Cumulative Gas Savings	
	Gross	Net	Gross	Net
Resource Acquisition	118,538	57,864	2,005,294	999,091
Low-Income	2,667	2,596	58,856	57,468
Large Volume	61,884	9,474	821,712	125,804
Performance-Based	151	75	753	376
Total	183,240	70,010	2,886,615	1,182,739

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	2017
Net Annual Natural Gas Savings	55,852	61,852	92,604	121,116	139,027	137,438	179,967	131,825	125,077	55,970	70,010
Gross Annual Natural Gas Savings	Not reported for 2007 – 2011					282,177	370,474	267,465	255,169	188,741	183,240

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

10 ³ m ³	2007-2011	2012	2013	2014	2015	2016	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	1,182,739
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	2,886,615

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	2017
Net Annual Natural Gas Savings	55,852	61,852	92,604	121,116	139,027	137,438	179,967	131,825	125,077	55,970	70,010
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%	0.56%
Gross Annual Natural Gas Savings	Not reported for 2007 – 2011					282,177	370,474	267,465	255,169	188,741	183,240
Gross Annual Natural Gas Savings as a % of Natural Gas Sales						2.11%	2.65%	1.88%	1.90%	1.46%	1.48%
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	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	1,182,739
<u>Net</u> Cumulative Natural Gas Savings as a % of Natural Gas Sales		17.44%	20.16%	13.30%	13.06%	7.42%	9.53%
<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	2,886,615
<u>Gross</u> Cumulative Natural Gas Savings as a % of Natural Gas Sales		35.67%	41.11%	26.42%	25.98%	21.33%	23.26%
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	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	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	1,076,703
Low-Income*	303,685
Commercial	124,469
Industrial	486
Wholesale	6
Total	1,505,349

* 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	1,141,279
M2	7,783
01	353,643
10	2,144
Total	1,504,849
<u>Contract</u>	
M4	232
M5	42
M7	36
T1	37
T2	25
20	54
100	12
Total	438
<u>Non-DSM Rate Classes</u>	
M9	4
M10	2
T3	1
25	55
30	0
77	0
Total	1,505,349

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 \$5.52M 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	Cumulative Natural Gas Savings (m ³)*	75%	732.3	976.5	1,464.7	999.1
	C/I Prescriptive						
	C/I Direct Install						
	C/I Custom	Participants	25%	5,145	6,859	10,289	13,729
	Home Reno Rebate						
Low-Income	Home Weatherization	Cumulative Natural Gas Savings (m ³)*	60%	33.8	45.0	67.5	30.7
	Furnace End-of-Life Upgrade						
	Indigenous	Cumulative Natural Gas Savings (m ³)*	35%	14.5	19.4	29.0	22.4
	Social and Assisted Housing Multi-Family						
	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%	347.3	463.1	694.7	125.8
Market Transformation	Optimum Home	Participating Builders	20%	8	10	15	10
		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%	8%	10%	15%	1.49%
	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	8,194,741	7,785,004	204,868,528	194,625,102
Residential Total		13,729	8,194,741	7,785,004	204,868,528	194,625,102
Commercial/ Industrial	C/I Prescriptive	4,540	11,175,778	10,249,139	212,950,797	196,341,071
	C/I Custom	581	97,144,048	37,907,520	1,557,120,813	579,288,646
	C/I Direct Install	228	2,023,616	1,922,435	30,354,240	28,836,528
Commercial/Industrial Total		5,349	110,343,442	50,079,094	1,800,425,850	804,466,245
Low-Income	Home Weatherization	1,611	1,197,301	1,197,217	29,829,466	29,828,405
	Furnace End-of-Life Upgrade	464	24,570	24,570	442,260	442,260
	Indigenous	68	16,683	16,675	406,369	406,272
	Multi-Family	210	1,428,148	1,357,941	28,177,609	26,790,582
Low-Income Total		2,353	2,666,702	2,596,403	58,855,704	57,467,519
Large Volume	Direct Access	48	61,884,178	9,474,468	821,712,050	125,804,115
Large Volume Total		48	61,884,178	9,474,468	821,712,050	125,804,115
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	183,239,568	70,010,222	2,886,614,655	1,182,739,242

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

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

the required TRC-Plus thresholds and the portfolio as a whole had a positive TRC-Plus ratio of 1.91.

The TRC-Plus and PAC ratios by program and for the portfolio are presented in Table 4.2.

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	\$48,993,000	\$37,064,000	\$11,929,000	1.32	
<i>Program Costs</i>		\$4,552,243			
Total Residential Program	\$48,993,000	\$41,616,243	\$7,376,757	1.18	1.50
Commercial/Industrial Program	\$154,178,000	\$53,834,000	\$100,344,000	2.86	
<i>Program Costs</i>		\$6,010,076			
Total Commercial/Industrial Program	\$154,178,000	\$59,844,076	\$94,333,924	2.58	6.90
Resource Acquisition Scorecard	\$203,171,000	\$101,460,319	\$101,710,681	2.00	3.97
Low-Income Program	\$13,217,000	\$6,259,000	\$6,958,000	2.11	
<i>Program Costs</i>		\$4,639,006			
Low-Income Program and Scorecard	\$13,217,000	\$10,898,006	\$2,318,994	1.21	0.98
Large Volume Program	\$22,668,000	\$12,074,000	\$10,594,000	1.88	
<i>Program Costs</i>		\$508,427			
Large Volume Program and Scorecard	\$22,668,000	\$12,582,427		1.80	7.73
Market Transformation Scorecard	NA	NA	NA	NA	NA
Performance-Based Scorecard	NA	NA	NA	NA	NA
Union's Total DSM Portfolio	\$239,056,000	\$124,940,752	\$114,115,248	1.91	3.58

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

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	\$6,243,715	\$3,509,383	\$153,900	\$975,724	\$10,882,721
Large Volume	\$2,114,335	\$12,870		\$495,557	\$2,622,762
Market Transformation	\$704,401	\$687,083		\$306,762	\$1,698,246
Performance-Based	\$118,386	\$237,553		\$176,837	\$532,776
Program Total	\$42,858,833	\$8,011,692	\$2,213,400	\$6,892,894	\$59,976,819
<i>Portfolio Costs</i>					
Research					\$555,846
Evaluation					\$654,214
Administration					\$2,911,324
Pilot Programs					\$290,675
Portfolio Total					\$4,412,059
Incremental DSM Project Spend*					\$192,233
Total Spend	\$42,858,833	\$8,011,692	\$2,213,400	\$6,892,894	\$64,581,110

* 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, measurable 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 \$4.75 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)	732,348,080	976,464,106	1,464,696,159	75%	999,091,347	102%	77%
Home Reno Rebate Participants (Homes)	5,145	6,859	10,289	25%	13,729	200%	50%
Total Scorecard Target Achieved							127%
Scorecard Utility Incentive Achieved							\$4,753,191

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
Residential	Home Reno Rebate	13,729	7,785,004	194,625,102	\$24,034,261
Commercial / Industrial	C/I Prescriptive	4,540	10,249,139	196,341,071	\$20,206,054
	C/I Custom	581	37,907,520	579,288,646	
	C/I Direct Install	228	1,922,435	28,836,528	
Resource Acquisition Total		19,078	57,864,098	999,091,347	\$44,240,315

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
Residential	Home Reno Rebate	13,729	7,785,004	194,625,102	\$24,034,261
Residential Total		13,729	7,785,004	194,625,102	\$24,034,261

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	\$48,993,000	\$37,064,000	\$11,929,000	1.32
Program		\$4,552,243		
Residential Program Total	\$48,993,000	\$41,616,243	\$7,376,757	1.18

* 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.

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

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 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.

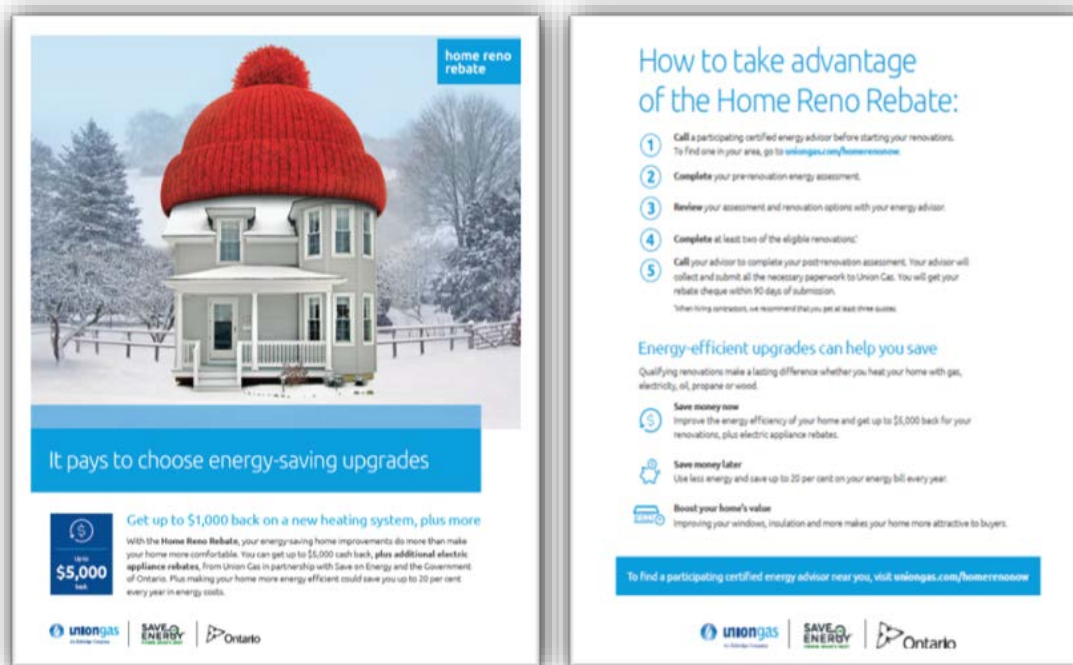


Figure 5.1 - HRR Customer Brochure

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 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
Commercial/ Industrial	C/I Prescriptive	4,540	10,249,139	196,341,071	
	C/I Custom	581	37,907,520	579,288,646	\$20,206,054
	C/I Direct Install	228	1,922,435	28,836,528	
Commercial/Industrial Total		5,349	50,079,094	804,466,245	\$20,206,054

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	\$154,178,000	\$53,834,000	\$100,344,000	2.86
Program		\$6,010,076		
Commercial/Industrial Program Total	\$154,178,000	\$59,844,076	\$94,333,924	2.58

* 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 though 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

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

offers. The calls included an energy target questionnaire to 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 (m^3) 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

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
Low-Income	Home Weatherization	1,611*	1,197,217	29,828,405	\$10,882,721
	Furnace End-of-Life Upgrade	464	24,570	442,260	
	Indigenous	68*	16,675	406,272	
	Multi-Family	210	1,357,941	26,790,582	
Low-Income Total		2,353	2,596,403	57,467,519	\$10,882,721

* Includes homes as well as basic measures

Table 6.2 2017 Low-Income Program Spend

Item	Total
Incentives	\$6,243,715
Promotion	\$3,509,383
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	\$13,217,000	\$6,259,000	\$6,958,000	2.11
Program		\$4,639,006		
Low-Income Program Total	\$13,217,000	\$10,898,006	\$2,318,994	1.21

* 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).

AFFORDABLE HOUSING CONSERVATION PROGRAM

uniongas
by Enbridge Energy

UPGRADE YOUR EQUIPMENT. LOWER YOUR ENERGY BILLS. WE'LL COVER UP TO 50% OF THE COST.

MULTI-FAMILY RESIDENTIAL

BUILDING ASSESSMENTS

Description	Customer Incentive*
Building assessments to determine energy savings in buildings four stories or more	Rebate up to \$5,000 per building, with a maximum of \$45,000 per building provider per year. Contact your Customer Account Manager for qualification criteria.

SPACE HEATING PROGRAMS

Description	Eligible Equipment	Customer Incentive	Potential Incentive*	Service Provider Incentive
Condensing Boilers	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler	\$4,000 per Boiler
Energy Recovery Ventilators	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler	\$4,000 per Boiler
Heat Recovery Ventilators	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler	\$4,000 per Boiler
Condensing Water Air Units	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler	\$4,000 per Boiler

IN-SUITE MEASURES

Description	Eligible Equipment	Customer Incentive	Service Provider Incentive
Boiler up to 10,000 BTU/hr	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler
Energy Recovery Ventilators	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler
Heat Recovery Ventilators	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler
Condensing Water Air Units	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler

WATER HEATING PROGRAMS

Description	Eligible Equipment	Customer Incentive	Potential Incentive*	Service Provider Incentive
Condensing Boilers	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler	\$4,000 per Boiler
Condensing Gas Water Heaters	Boiler up to 10,000 BTU/hr	\$4,000**	\$4,000 per Boiler	\$4,000 per Boiler

CUSTOM BUILDING EFFICIENCY IMPROVEMENTS

Description	Customer Incentive
Custom projects to reduce gas consumption in your building	Up to a maximum of 50% of the fully installed project cost.

SINGLE-FAMILY RESIDENTIAL

HOME WEATHERIZATION PROGRAM

Description	Customer Incentive
Basement, Wall and Attic Insulation	Rebate up to \$5,000 per building, with a maximum of \$45,000 per building provider per year. Contact your Customer Account Manager for qualification criteria.

SUCCESSFUL PROJECTS

Single Family Townhouse (East End)

Six 15 to 30 Unit Apartment Buildings

12-Storey Multi-Family 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.

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 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.

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)	347,325,300	463,100,400	694,650,600	100%	125,804,115	27%	27%
Total Scorecard Target Achieved							27%
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
Large Volume	Direct Access Offering	48	9,474,468	125,804,115	\$2,622,762
Large Volume Program Total		48	9,474,468	125,804,115	\$2,622,762

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	\$22,668,000	\$12,074,000	\$10,594,000	1.88
Program		\$508,427		
Large Volume Program Total	\$22,668,000	\$12,582,427		1.80

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.

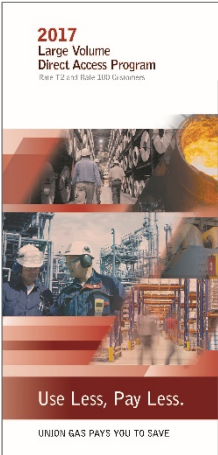
Market Delivery

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).



2017 Large Volume Direct Access Program
Open 12 to 18 Hours 240 Customers

Use Less, Pay Less.

UNION GAS PAYS YOU TO SAVE

2017 LARGE VOLUME DIRECT ACCESS PROGRAM
Union Gas energy experts can help you find opportunities to save money and energy

The Large Volume Direct Access Program is a voluntary, non-exclusive program that allows large volume customers to opt into the program and receive a credit on their gas bill for the amount of energy they save. The program is designed to help customers reduce their energy costs and improve their energy efficiency. Customers who opt into the program will receive a credit on their gas bill for the amount of energy they save. The credit is calculated based on the difference between the customer's actual energy usage and the program's target energy usage. The credit is applied to the customer's gas bill for the next billing cycle. Customers who opt into the program will also receive a credit on their gas bill for the amount of energy they save. The credit is calculated based on the difference between the customer's actual energy usage and the program's target energy usage. The credit is applied to the customer's gas bill for the next billing cycle.

Program Deadlines

Direct Access Budget 2017
 January 15 to December 31, 2017

Large Volume Aggregate Pool (LAP) April to December 2017

Early application deadline: October 15, 2017

Project Planning
 January to March 2017

Building Your Energy Plan and Increasing Your Funding
 April 17 to December 31, 2017

Energy Efficiency Plan Deadline
 April 17, 2017

Required Direct Access Budget Documentation Due
 November 17, 2017

ENERGY EFFICIENCY OFFERINGS FOR THE LARGE VOLUME DIRECT ACCESS PROGRAM

Customer Projects	Available per offer	Description
Engineering Feasibility Study	\$10,000	Engineering Feasibility Study
Process Improvement Study	\$10,000	Process Improvement Study
Energy Traps Service	\$10,000	Energy Traps Service
Waters	\$10,000	Waters
Customer Education	\$10,000	Customer Education
Energy Report/Engineering, Process Improvement & Remediation	\$10,000	Energy Report/Engineering, Process Improvement & Remediation

For more information about energy saving opportunities, visit uniongas.com/energyefficiency

uniongas
an energy company

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 60% 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	\$704,401
Promotion	\$687,083
Administration	\$306,762
Evaluation*	\$0
Total Market Transformation Spend	\$1,698,246

* 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")²⁴. 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.

²⁴ ESNH v17 standard is, on average, 20% more energy-efficient than OBC 2017.

The Optimum Home phases are shown below in Table 8.2:

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 builders²⁵ and consumers²⁶.

- 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 unseen features, such as better insulation, heating and cooling,

²⁵ <https://www.uniongas.com/business/your-business/builders/residential/energy-star-new-homes>

²⁶ <https://www.uniongas.com/residential/save-money-energy/energy-star-homes>

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%	1.49%	15%	9%
Strategic Energy Management (SEM) Participants	24	32	48	20%	0	0%	0%
				Total Scorecard Target Achieved			18%
				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 and revised for 2018-2020 in the Board's report on Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020) (EB-2017-0127).

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 50001.²⁷

²⁷ 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.

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 System²⁸ in place; and,
- Has not previously participated in Union's integrated energy management system offering.

²⁸ A system used to track, report and plan continuous improvement energy efficiency activities.

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.

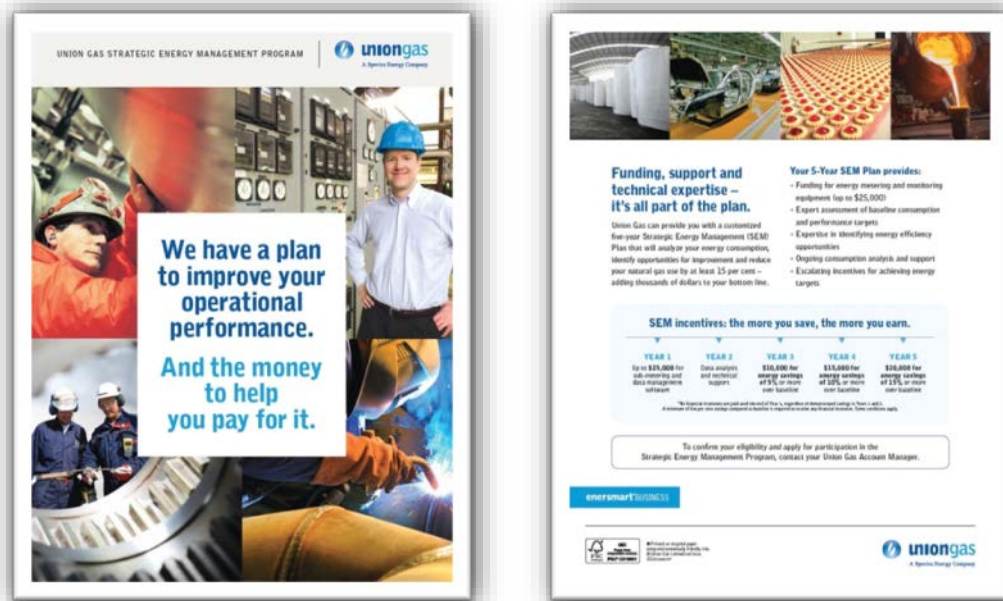


Figure 9.1 - SEM Brochure

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 Submission²⁹, Union 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. The Board's decision³⁰ was to revise the target formula to replace "annual actual program costs" with "annual accrued program costs". Accrued program costs are those costs that the gas utility is subject to providing to the customer in

²⁹ EB-2017-0127; Union Gas Limited DSM Mid-Term Review: Part Two Requirement Two Submission

³⁰ EB-2017-0127; Report of the Ontario Energy Board: Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020)

latter years should the customer fulfill its commitments to the program and be eligible for the financial incentives. The updated target adjustment formula will be applied to the 2018, 2019 and 2020 scorecards

RunSmart Offering

National account approach

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)	732,348,080	976,464,106	1,464,696,159	75%	999,091,347	102%	77%
Home Reno Rebate Participants (Homes)	5,145	6,859	10,289	25%	13,729	200%	50%
Total Scorecard Target Achieved							127%
Scorecard Utility Incentive Achieved							\$4,753,191

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)	33,770,520	45,027,360	67,541,041	60%	30,676,937	68%	41%
Social and Assisted Multi-Family Cumulative Natural Gas Savings (m ³)	14,512,897	19,350,530	29,025,795	35%	22,426,926	116%	41%
Market Rate Multi-Family Cumulative Natural Gas Savings (m ³)	11,851,284	15,801,711	23,702,567	5%	4,363,656	28%	1%
Total Scorecard Target Achieved							83%
Scorecard Utility Incentive Achieved							\$304,325

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)	347,325,300	463,100,400	694,650,600	100%	125,804,115	27%	27%
Total Scorecard Target Achieved							27%
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%	1.49%	15%	9%
Strategic Energy Management (SEM) Participants	24	32	48	20%	0	0%	0%
Total Scorecard Target Achieved							18%
Scorecard Utility Incentive Achieved							\$0

Union achieved a total of \$5.519M 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	\$4,753,191
Low-Income	\$304,325
Large Volume	\$0
Market Transformation	\$461,623
Performance-Based	\$0
Total 2017 DSM Shareholder Incentive	\$5,519,140

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 \$67.195M with \$59.977M 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 \$6.011M.

In addition, as outlined by the Board in its Mid-Term Report, Union was instructed to use the DSMVA to track future financial commitments for offers with deferred customer incentives.

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 DMSVA 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*	\$1,698,246	\$2,301,250	\$(603,004)	\$(153,488)	\$(449,516)
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	\$59,976,819	\$52,928,073	\$7,048,746	\$1,037,709	\$6,011,037
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)	
Portfolio Sub-total	\$4,412,059	\$5,642,000	\$(1,229,942)	\$(1,229,942)	\$0
Incremental DSM Projects 2017 Spend					
Future Infrastructure Planning Study	\$192,233		\$192,233	\$192,233	
Total 2017 DSM Spending	\$64,581,110	\$58,570,073	\$6,011,037	\$0	\$6,011,037

* 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.

Included in the spend amounts above are customer incentives deferred to future years, for offerings

where incentives are paid when future milestones/activities are reached. The deferred amounts will be used when the customer incentive commitment is due. For more information on customer incentive deferrals, please refer to Section 5.3.2 of the OEB's Mid-Term Report.

Specifically, the amounts are:

- Commercial Savings by Design Offering (Market Transformation Program) : \$78,000

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 \$0.176M is based on 2017 delivery rates, TRM version 2.0 filed December 22, 2017, and net annual natural gas savings of 21.532 10^3m^3 . The 2017 LRAMVA statement is detailed in Table 12.0 on the following page.

Table 12.0 2017 LRAMVA Statement

DSM Volumes (10 ³ m ³)													Total Volumes (10 ³ m ³)	2017 Delivery Rates (\$/10 ³ m ³)	Revenue Impact
Rate class	Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	(a)	(b)	(a) x (b)
South															
M4 Industrial	2,528	1,772	340	1,357	72	314	248	265	249	153	519	532	8,349	13.79	\$115,133
M5 Industrial	905	-	59	35	121	23	101	234	3	21	5	121	1,628	26.86	\$43,720
M7 Industrial	1,005	34	19	3	5	82	96	54	106	308	135	-	1,847	4.15	\$7,664
T1 Industrial	444	1,280	59	35	176	27	118	4	9	463	249	32	2,896	1.36	\$3,938
T2 Industrial	3,327	446	193	191	-	359	67	291	445	179	28	-	5,527	0.41	\$2,244
South Total	8,209	3,533	670	1,621	375	805	630	847	812	1,124	936	685	20,247		\$172,699
North															
20 Industrial	225	-	13	7	29	5	4	3	53	47	7	-	393	5.49	\$2,158
100 Industrial	212	83	245	-	-	39	213	6	-	82	12	-	892	2.20	\$1,966
North Total	438	83	258	7	29	44	217	9	53	129	19	-	1,285		\$4,124
Total	8,647	3,615	929	1,628	404	849	847	856	865	1,253	955	685	21,532		\$176,823

13. CONCLUSIONS AND NEXT STEPS

In 2017, DSM programs generated 1.183 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 programing 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 60% 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	\$3,109,031	\$12,544,684	NA
M2	\$772,700	\$(2,598,309)	NA
M4	\$497,709	\$2,250,792	\$115,133
M5	\$97,464	\$(850,807)	\$43,720
M7	\$106,852	\$(885,182)	\$7,664
T1	\$218,127	\$824,041	\$3,938
T2	\$0	\$(601,300)	\$2,244
	\$4,801,883	\$10,683,919	\$172,699
North			
Rate 01	\$432,147	\$(2,323,037)	NA
Rate 10	\$164,337	\$(971,534)	NA
Rate 20	\$120,772	\$(303,648)	\$2,158
Rate 100	\$0	\$(1,074,662)	\$1,966
	\$717,256	\$(4,672,882)	\$4,124
Total	\$5,519,140	\$6,011,037	\$176,823

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. Table 13.2 to Table 13.6 present the current approved methodology for calculating scorecards, as provided in Schedule C of the OEB's 2015-2020 DSM Plan Decision and revised as per the Board's report on Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020) (EB-2017-0127).

In its report on the Mid-Term Review, the Board adjusted the target adjustment formula for Union's RunSmart and SEM offerings. The revised target formula for these offerings will replace "annual actual program costs" with "annual accrued program costs". Accrued program costs are those costs that the gas utility is subject to providing to the customer in latter years should the customer fulfill its commitments to the program and be eligible for the financial incentives. The 2018 Market Transformation and Performance-Based scorecards will also have new performance metrics.

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	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	5%

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%

Table 13.6 is the Performance-based scorecard as provided in the Board's report on Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020) Appendix A (EB-2017-0127) .

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 accrued program costs without overheads x 2018 program budget without overheads x 1.1	150% of Target	10%
	Savings (%)	75% of Target	2017 metric achievement / 2017 accrued program costs 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 / accrued program costs 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							Water and Electricity Avoided Costs				
	Residential and Commercial				Industrial		Residential/Commercial/Industrial				
	Baseload (\$/m ³)		Weather Sensitive (\$/m ³)		Baseload (\$/m ³)		Water (\$/m ³)		Electricity (\$/kWh)		
	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV	Rate	NPV	
1	0.14090	0.14090	0.18283	0.18283	0.13078	0.13078	1	0.70128	0.70128	0.13905	0.13905
2	0.14402	0.27669	0.18849	0.36055	0.13351	0.25666	2	0.71516	1.37558	0.14180	0.27275
3	0.14634	0.40679	0.19206	0.53130	0.13893	0.38017	3	0.72932	2.02395	0.14461	0.40131
4	0.15074	0.53314	0.19738	0.69674	0.14318	0.50019	4	0.74376	2.64738	0.14747	0.52493
5	0.14250	0.64576	0.19006	0.84695	0.13479	0.60672	5	0.75849	3.24684	0.15039	0.64379
6	0.15878	0.76408	0.20729	1.00141	0.15092	0.71918	6	0.77351	3.82324	0.15337	0.75807
7	0.15680	0.87425	0.20628	1.14635	0.14878	0.82371	7	0.78882	4.37747	0.15641	0.86797
8	0.16224	0.98172	0.21271	1.28726	0.15406	0.92577	8	0.80444	4.91038	0.15951	0.97363
9	0.17946	1.09382	0.23093	1.43150	0.17112	1.03266	9	0.82037	5.42280	0.16266	1.07524
10	0.20137	1.21241	0.25387	1.58102	0.19286	1.14624	10	0.83661	5.91550	0.16588	1.17293
11	0.19928	1.32307	0.25283	1.72141	0.19061	1.25209	11	0.85318	6.38926	0.16917	1.26687
12	0.20920	1.43260	0.26381	1.85953	0.20036	1.35699	12	0.87007	6.84480	0.17252	1.35719
13	0.20921	1.53587	0.26492	1.99031	0.20020	1.45581	13	0.88730	7.28281	0.17593	1.44404
14	0.23324	1.64443	0.29005	2.12531	0.22404	1.56010	14	0.90487	7.70398	0.17942	1.52755
15	0.25041	1.75433	0.30836	2.26064	0.24103	1.66587	15	0.92278	8.10895	0.18297	1.60785
16	0.27219	1.86696	0.33130	2.39773	0.26263	1.77455	16	0.94105	8.49835	0.18659	1.68506
17	0.26658	1.97096	0.32687	2.52526	0.25683	1.87475	17	0.95969	8.87276	0.19029	1.75930
18	0.26892	2.06989	0.33041	2.64680	0.25897	1.97001	18	0.97869	9.23278	0.19406	1.83068
19	0.27632	2.16572	0.33903	2.76439	0.26617	2.06233	19	0.99807	9.57895	0.19790	1.89932
20	0.28581	2.25919	0.34979	2.87878	0.27547	2.15242	20	1.01783	9.91181	0.20182	1.96532
21	0.29564	2.35035	0.36089	2.99006	0.28509	2.24032	21	1.03798	10.23186	0.20581	2.02878
22	0.30578	2.43925	0.37234	3.09831	0.29503	2.32609	22	1.05853	10.53960	0.20989	2.08980
23	0.31627	2.52595	0.38416	3.20361	0.30530	2.40978	23	1.07949	10.83551	0.21404	2.14847
24	0.32712	2.61049	0.39635	3.30605	0.31593	2.49144	24	1.10087	11.12004	0.21828	2.20489
25	0.33833	2.69294	0.40895	3.40571	0.32692	2.57111	25	1.12266	11.39362	0.22260	2.25914
26	0.34991	2.77334	0.42193	3.50265	0.33828	2.64883	26	1.14489	11.65668	0.22701	2.31130
27	0.36188	2.85174	0.43535	3.59697	0.35002	2.72466	27	1.16756	11.90963	0.23150	2.36145
28	0.37425	2.92818	0.44918	3.68872	0.36215	2.79864	28	1.19068	12.15284	0.23609	2.40967
29	0.38703	3.00273	0.46345	3.77798	0.37469	2.87080	29	1.21425	12.38670	0.24076	2.45604
30	0.40024	3.07541	0.47819	3.86481	0.38766	2.94120	30	1.23830	12.61157	0.24553	2.50063

Avoided Carbon Costs		
	Res/Com/Ind	
	Baseload/Weather Sensitive	
	Rate	NPV
1	0.03000	0.03000
2	0.02000	0.04886
3	0.04000	0.08442
4	0.06000	0.13471
5	0.08000	0.19793
6	0.10000	0.27245
7	0.10000	0.34270
8	0.10000	0.40895
9	0.10000	0.47141
10	0.11000	0.53618
11	0.11000	0.59726
12	0.11000	0.65485
13	0.11000	0.70914
14	0.11000	0.76034
15	0.12000	0.81300
16	0.12000	0.86264
17	0.12000	0.90946
18	0.12000	0.95359
19	0.13000	0.99868
20	0.13000	1.04118
21	0.13000	1.08126
22	0.13000	1.11905
23	0.14000	1.15742
24	0.14000	1.19360
25	0.14000	1.22771
26	0.15000	1.26217
27	0.15000	1.29466
28	0.15000	1.32529
29	0.15000	1.35417
30	0.16000	1.38322

2018 Demand Side Management Annual Report - Union Rate Zones

Enbridge Gas Inc.
June 26, 2020



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Executive Summary

Enbridge Gas Inc. (“Enbridge Gas” or “the Company”) reports 1.1 billion lifetime cubic meters of natural gas saved from its DSM activities in 2018 within the Union rate zones.¹ These savings are a direct result of the Company’s ongoing efforts delivering resource acquisition programs to residential, commercial, and industrial customers. Results attributable to market transformation programs are not included in this total, as results for these programs are not measured by cubic meters of natural gas saved.

A summary of the Company’s 2018 DSM results, budgets, and spend for the Union rate zones is provided in Table ES.1 below.

Table ES.1 2018 DSM Results, Budgets, and Spend Summary

ITEM	UNION RATE ZONES
Net Cumulative Natural Gas Savings	1,124,517,262 m ³
Budget	\$63,272,305
Actual Spend	\$69,122,921
Shareholder Incentive Achievement	\$6,366,226
Lost Distribution Revenue	\$159,308

¹ EGD rate zone results are provided in a separate report.



1. Introduction

Enbridge Gas has been designing and delivering DSM programs within OEB frameworks for nearly 25 years. Between 1995 and 2018, Enbridge Gas has saved its customers 27.6 billion lifetime cubic meters of natural gas and 51.7 million tonnes of greenhouse gas emissions, the equivalent of taking 11.2 million cars off the road for a year.²

As outlined in the OEB's Demand Side Management Framework for Natural Gas Distributors (2015-2020) (EB-2014-0134) ("DSM Framework"), the Board indicated it "is of the view that it is in the best position to coordinate the evaluation process throughout the DSM framework period"³. As such, the 2018 audit and evaluation process was completed concurrently with the 2017 audit and evaluation process, to leverage time and resource efficiencies. Due to the simultaneous nature of the 2017 and 2018 audits, the development of the Company's 2018 draft annual reports was not appropriate, as the previous year's evaluation and audit process had not concluded. Without the conclusion of the 2017 evaluation and audit process, certain 2018 results could not be reported even in pre-audit/draft format, as 2018 targets rely on final 2017 results.

With the conclusion of the 2017 and 2018 evaluation and audit processes on March 13, 2020, the Company developed final 2018 annual reports for the EGD rate zone and the Union rate zones, separately. While the 2018 reports are more concise than the Company's typical annual reports, they include all elements required by the OEB's DSM Guidelines.

This 2018 Annual Report provides a summary of Enbridge Gas' DSM results for the Union rate zones during the 2018 program year, in the following format:

- OEB data reporting requirements (Section 2);
- Highlights of any major offering changes and lessons learned from the 2018 program year, and future changes for 2019 (Section 3);
- Results, including scorecard results, shareholder incentive achievement, lost distribution revenue calculations, cost-effectiveness results, budgets and spending (Section 4).

² Figures include results from the EGD rate zone and the Union rate zones.

³ DSM Framework, p. 30



2. OEB Data Reporting Requirements

Table 2.0 Annual and Long-Term DSM Budgets (\$ million)

PROGRAM	2015 ¹	2016 ²	2017 ²	2018 ²	2019 ³	2020 ³	TOTAL (6YEARS)
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	-	\$0.548	\$0.843	\$1.088	\$0.833	\$1.053	\$4.365
Portfolio Level	\$4.717	\$11.235	\$5.642	\$5.642	\$5.642	\$5.642	\$38.520
Inflation	\$2.497						\$2.497
Total³	\$33.988	\$56.821	\$58.570	\$63.272	\$63.269	\$64.350	\$340.270

¹2015 includes budget amounts for the Achievable Potential Study, Future Infrastructure Planning Study and DSM Tracking and Reporting System Upgrades

²2016-2020 includes budget amounts for pilots and DSM Tracking and Reporting System Upgrades

³The total budget shown for 2019-2020 does not include budget related to the Residential Adaptive Thermostat offering approved through the Mid-Term Review. Expenditures for this offering will be tracked in the DSMVA

Table 2.1 Actual Annual Total DSM Costs (\$ million)

RATE CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
M1	N/A	\$12.107	\$12.743	\$11.348	\$11.498	\$13.502	\$13.657	\$15.415	\$16.752	\$23.338	\$37.204	\$41.948
M2	\$11.619	\$2.486	\$2.023	\$2.117	\$4.097	\$4.968	\$5.818	\$6.728	\$4.958	\$6.505	\$8.166	\$7.851
M4	\$1.488	\$1.353	\$0.828	\$1.098	\$1.817	\$3.319	\$3.244	\$3.296	\$3.645	\$3.808	\$5.892	\$6.775
M5	\$0.294	\$1.044	\$1.226	\$1.086	\$3.150	\$2.660	\$3.484	\$2.394	\$1.421	\$2.453	\$1.459	\$0.657
M7	\$0.886	\$0.116	\$0.256	\$1.474	\$1.304	\$0.538	\$0.571	\$2.143	\$3.370	\$3.760	\$1.258	\$2.714
T1	\$3.147	\$3.988	\$5.596	\$3.965	\$7.749	\$6.111	\$2.265	\$1.078	\$0.889	\$1.409	\$2.578	\$1.962
T2	N/A	N/A	N/A	N/A	N/A	N/A	\$3.365	\$2.875	\$2.673	\$3.758	\$3.006	\$3.375
Rate 01	\$2.229	\$2.162	\$2.093	\$1.869	\$3.050	\$3.532	\$3.560	\$4.161	\$3.555	\$4.447	\$6.209	\$7.403
Rate 10	\$1.612	\$1.371	\$2.292	\$0.510	\$1.109	\$1.939	\$1.637	\$1.613	\$0.953	\$1.322	\$2.144	\$1.686
Rate 20	\$0.323	\$0.496	\$0.771	\$0.881	\$1.030	\$1.607	\$1.573	\$1.791	\$1.005	\$0.806	\$1.554	\$0.842
Rate 100	\$1.535	\$4.542	\$3.950	\$4.471	\$1.614	\$2.305	\$1.828	\$1.517	\$0.799	\$0.541	\$0.809	\$0.963
Total	\$23.133	\$29.664	\$31.778	\$28.818	\$36.418	\$40.481	\$41.001	\$43.011	\$40.019	\$52.146	\$70.277	\$76.178

*Figures include all DSM spend, shareholder incentive, and lost distribution revenue



Table 2.2 **Historic Annual Total DSM Spending (\$ million)**

ITEM	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total DSM Spending ¹	\$16.13	\$20.26	\$22.04	\$21.61	\$27.97	\$31.32	\$32.84	\$33.71	\$32.39	\$50.67	\$64.58	\$69.12

¹Total DSM spending includes direct, indirect, incremental projects and DSMVA where applicable

Table 2.3 **DSM Spending as a Percent of Distribution Revenue**

ITEM	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total DSM Spending (\$ million) ¹	\$16	\$20	\$22	\$22	\$28	\$31	\$33	\$34	\$32	\$51	\$65	\$69
Total Distribution Revenue (\$ million) ²	\$655	\$675	\$658	\$699	\$713	\$727	\$772	\$778	\$800	\$812	\$834	\$893
DSM Spending as a % of Distribution Revenue	2%	3%	3%	3%	4%	4%	4%	4%	4%	6%	8%	8%

¹Total DSM Spending includes variable costs, fixed costs and DSMVA where applicable

²Distribution 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 2.4 **Historic Annual DSM Shareholder Incentive Amounts Available and Earned**

ITEMS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
DSM Shareholder Incentive Earned (\$ million)	\$6.23	\$8.70	\$8.75	\$6.58	\$7.64	\$8.21	\$7.78	\$8.99	\$7.47	\$4.12	\$5.52	\$6.37
DSM Shareholder Incentive Available (\$ million)	\$8.50	\$8.70	\$8.92	\$8.94	\$9.24	\$10.45	\$10.68	\$10.82	\$11.00	\$10.45	\$10.45	\$10.45

¹2017 Shareholder Incentive subject to Board approval

²2018 Shareholder Incentive subject to Board approval

Table 2.5 **DSM Shareholder Incentive Earned as a Percent of DSM Spending**

\$ MILLIONS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ²	2018 ³
DSM Shareholder Incentive Earned (\$ million)	\$6.23	\$8.70	\$8.75	\$6.58	\$7.64	\$8.21	\$7.78	\$8.99	\$7.47	\$4.12	\$5.52	\$6.37
Total DSM Spending (\$ million) ¹	\$16.13	\$20.26	\$22.04	\$21.61	\$27.97	\$31.32	\$32.84	\$33.71	\$32.39	\$50.67	\$64.58	\$69.12
Shareholder Incentive Earned as a % of DSM Spending	39%	43%	40%	30%	27%	26%	24%	27%	23%	8%	9%	9%

¹Total DSM spending includes direct, indirect and DSMVA where applicable

²2017 Shareholder Incentive subject to Board approval

³2018 Shareholder Incentive subject to Board approval



Table 2.6 Annual and Long-Term Natural Gas Savings Targets¹

SCORECARD	2015	2016	2017	2018	2019 ²	2020
Resource Acquisition	816,561,818	1,120,259,599	976,464,106	818,345,497	<i>Targets are formulaic based on past year's performance</i>	
Low-Income	43,600,000	59,238,065	80,179,602	68,750,915		
Large Volume	1,236,097,404	890,890,721	463,100,400	195,727,941		

¹Values are cumulative m³ gas savings at the target (100%) band

²2019 targets require OEB-approved 2018 DSM audited results

Table 2.7 Total Annual and Cumulative Natural Gas Savings for 2018 (Gross and Net) (10³m³)

SCORECARD	DRAFT ANNUAL NATURALGAS SAVINGS		DRAFT CUMULATIVE NATURALGAS SAVINGS	
	GROSS	NET	GROSS	NET
Resource Acquisition	105,514	55,433	1,809,039	976,938
Low-Income	2,752	2,679	59,729	58,344
Large Volume	52,604	8,056	582,380	89,197
Performance-Based	4	8	18	39
Total	160,874	66,176	2,451,166	1,124,517



Table 2.8 Total Historic Annual Natural Gas Savings (Gross and Net) (10³m³)

ITEM	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
Total <u>Net</u> Annual Natural Gas Savings	55,852	61,852	92,604	121,116	139,027	137,438	179,967	131,825	125,077	55,970	70,010	66,176
Total <u>Gross</u> Annual Natural Gas Savings	Not reported for 2007-2011					282,177	370,474	267,465	255,169	188,741	183,240	160,874

¹2017 DSM results subject to Board approval

²2018 DSM results subject to Board approval

Table 2.9 Total Historic Cumulative Natural Gas Savings (Gross and Net) (10³m³)

ITEM	2007-2011	2012	2013	2014	2015	2016	2017 ¹	2018 ²
Total <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	1,182,739	1,124,517
Total <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	2,886,615	2,451,166

¹2017 DSM results subject to Board approval

²2018 DSM results subject to Board approval

Table 2.10 Total Annual Natural Gas Savings as a Percent of Total Annual Natural Gas Sales (Gross and Net)

ITEM	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<u>Net</u> Annual Natural Gas Savings (10 ³ m ³)	55,852	61,852	92,604	121,116	139,027	137,438	179,967	131,825	125,077	55,970	70,010	66,176
<u>Net</u> 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%	0.56%	0.50%
<u>Gross</u> Annual Natural Gas Savings (10 ³ m ³)	Not reported for 2007-2011					282,177	370,474	267,465	255,169	188,741	183,240	160,874
<u>Gross</u> Annual Natural Gas Savings as a % of Natural Gas Sales						2.11%	2.65%	1.88%	1.90%	1.46%	1.48%	1.22%
Total Natural Gas Sales (10 ³ m ³) ¹	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	13,210,007

¹Total Natural Gas Sales only includes rate classes eligible for DSM and subject to DSM costs



Table 2.11 Total Cumulative Natural Gas Savings as a Percent of Total Annual Gas Sales (Gross and Net)

ITEM	2017-2011	2012	2013	2014	2015	2016	2017	2018
Net Cumulative Natural Gas Savings (10 ³ m ³)	Not reported for 2007-2011	2,336,351	2,820,834	1,889,459	1,750,765	959,435	1,182,739	1,124,517
Net Cumulative Natural Gas Savings as a % of Natural Gas Sales		17.44%	20.16%	13.30%	13.06%	7.42%	9.53%	8.51%
Gross Cumulative Natural Gas Savings (10 ³ m ³)	Not reported for 2007-2011	4,777,826	5,752,390	3,752,366	3,482,496	2,758,895	2,886,615	2,451,166
Gross Cumulative Natural Gas Savings as a % of Natural Gas Sales		35.67%	41.11%	26.42%	25.98%	21.33%	23.26%	18.56%
Total Natural Gas Sales (10 ³ m ³) ¹		13,396,120	13,992,688	14,204,104	13,404,980	12,935,767	12,408,726	13,210,007

¹Total Natural Gas Sales only includes rate classes eligible for DSM and subject to DSM costs

Table 2.12 Actual Annual Gas Operating Revenue (\$ million)

ITEM	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
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	\$1,813
Less Total Cost of Gas	\$1,156	\$1,177	\$1,026	\$794	\$755	\$638	\$849	\$977	\$875	\$717	\$1,039	\$920
Total Distribution Revenue¹	\$655	\$675	\$658	\$699	\$713	\$727	\$772	\$778	\$800	\$812	\$834	\$893

¹Distribution 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 2.13 Total Natural Gas Sales (Volumes) (10³m³)¹

ITEM	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
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	13,210,007

¹Only includes rate classes eligible for DSM and subject to DSM costs



Table 2.14 Number of Customers by Customer Type

CUSTOMER TYPE	2015	2016	2017	2018
Residential	1,026,656	1,042,748	1,076,703	1,064,172
Low-Income ¹	289,569	294,108	303,685	300,151
Commercial	120,237	121,385	124,469	121,971
Industrial	457	473	486	472
Wholesale	5	6	6	7
Total	1,436,924	1,458,720	1,505,349	1,486,773

¹Low-Income customers are estimated to be 22% of all Residential customer

Table 2.15 Number of Customers by Rate Class

RATE CLASS	2018
General Service	
M1	1,127,353
M2	7,469
O1	349,354
10	2,118
Total	1,486,294
Contract	
M4	208
M5	38
M7	30
T1	37
T2	24
20	44
100	13
Total	394
Non-DSM Rate Classes	
M9	3
M10	3
T3	1
25	78
Total	1,486,773



3. Programs and Offerings

This section provides highlights of any major offering changes and lessons learned from the 2018 program year, and future changes for 2019.

3.1 RESIDENTIAL PROGRAM

- Enbridge Gas' partnerships with the Government of Ontario and IESO, which began in 2016 and 2017 respectively, concluded during the 2018 program year. As a result of the conclusion of these partnerships, non-Enbridge Gas natural gas homes and homes heated by fuels other than natural gas were no longer eligible to enroll in the home retrofit offering. For 2019 offering details without the inclusion of these partnerships, refer for the Company's 2019 DSM Annual Report.
- In December 2017, the Government of Ontario launched the GreenON Rebates ("GreenON") program funded through the Green Ontario Fund, which provided rebates for the purchase and installation of home upgrades, such as insulation and energy efficient windows. Enbridge Gas and IESO established a process to ensure that homeowners did not receive both a GreenON and Home Reno Rebate incentive for the same upgrade. In October 2018, however, it came to the Company's attention that homeowners were receiving conflicting communications, which led to homeowner frustration. Enbridge Gas and the IESO worked quickly and effectively to resolve the issue. This experience highlights the importance of coordination between program administrators when there are multiple offerings in the market and how addressing issues quickly and collaboratively is critical.
- As of January 1, 2019, Union Gas Ltd. and Enbridge Gas Distribution amalgamated to become Enbridge Gas Inc. From the customer's perspective, the residential home retrofit offerings of the legacy utilities will be harmonized in 2019 to facilitate clarity and consistency across Ontario.
- In its January 15, 2018 mid-term review submission for the Union rate zones, the Company proposed the development of a new adaptive thermostat offering within its Residential Program. As per the direction from the Board in its November 29, 2018 Mid-Term Report, the Company began delivering the offering in 2019. For details on the new offering, refer to the Company's 2019 DSM Annual Report.

3.2 LOW-INCOME PROGRAM

- Enbridge Gas relies on experienced Delivery Agents ("DAs") to deliver the low-income home retrofit offering, including providing energy assessments, installing measures, and calculating savings. There were two DAs contracted by Enbridge Gas in early 2018. In July, their contracts expired, and through a competitive RFP process, Enbridge Gas contracted with the successful bidder, GreenSaver as the new, sole DA for the offering.
- In 2018, Enbridge Gas included the installation of adaptive thermostats to the low-income home retrofit offering.
- There was no uptake for the Furnace End-of-Life Upgrade Offering in 2018. This is likely due to the low incentives associated with the offering and an exhausted pool of interested social or assisted housing providers within the Union rate zones.



3.3 COMMERCIAL/INDUSTRIAL PROGRAM

- In 2018, the Commercial/Industrial Direct Install Offering was expanded into three additional geographic regions: Hamilton, London, and Kingston. As a result, a second vendor was engaged to serve these participants. Furthermore, the incentive structure was changed slightly in 2018. Previously, the participant received 90% of the total cost to install. In 2018, the participant received 80% of the total cost plus an additional incentive of \$750 per door when a customer signs an agreement and confirms participation within 30 days of receiving a quote. While the total incentive received by the participant did not change substantially, the 30-day offer helped encourage customers to move forward with the project.
- Low uptake for the prescriptive foodservice instant rebate offer was identified due in part to resistance from sales staff at the local store level (caused by a misalignment with the sales staff commission structure). A midstream approach to the foodservice market may be more appropriate and will be explored for the 2019 program year.
- Enbridge Gas partnered with IESO's Save on Energy program to offer joint training incentives. Participants could receive incentives for attending Dollars to \$ense Energy Management Workshops, Building Operation Certification, and Certified Energy Manager Training. The overall goal of this initiative is to promote education in the area of energy efficiency, which in turn can lead to additional energy efficiency projects.
- Enbridge Gas expects a change to the custom incentive structure in 2019, as meter installation has become more expensive.

3.4 LARGE VOLUME PROGRAM

- In 2018, more funding was allocated to feasibility and process improvement studies in order to influence customers to investigate changes and upgrades that would result in natural gas savings. Furthermore, Enbridge Gas no longer supports the restoration of wet and damaged insulation to its original condition as this is now considered standard practice.
- Enbridge Gas expects a change to the incentive structure in 2019, as meter installation has become more expensive.

3.5 MARKET TRANSFORMATION PROGRAM

- In 2018, Enbridge Gas designed a pilot for the Optimum Home Offering to address the needs of small to mid-size builders (6-30 builds annually). The pilot will be a streamlined delivery model of the Optimum Home Offering. Enbridge Gas will measure its success based on the same metrics as the original offering. This pilot will be launched in the spring of 2019.
- A limited time offer was launched for the Commercial Savings by Design Offering in early Q3 to increase participation and to encourage participants to progress through the offering. The limited time offer had a positive result and was a helpful tool in achieving the 2018 participant target.

3.6 PERFORMANCE-BASED PROGRAM

- Enbridge Gas' ability to connect with the decision maker and maintenance personnel during site visits has proven to be critical. Although it is the customer's decision who will engage with Enbridge Gas through the offering process, Enbridge Gas has put efforts towards ensuring the appropriate contact is available, in order to improve results.
- In 2019 the program screened below the 1.0 TRC-Plus threshold due to natural gas savings results being significantly lower than forecasted. Enbridge Gas is assessing potential changes to improve cost-effectiveness.



4. Results and Spend

4.1 SCORECARD RESULTS AND SHAREHOLDER INCENTIVE

Enbridge Gas is eligible to earn a shareholder incentive of up to \$10.45M for the Union rate zones, for DSM results measured against the Union rate zones' Resource Acquisition, Low-Income, Performance-Based, Large Volume, and Market Transformation Scorecards. The DSM shareholder incentive is established by the OEB to "effectively motivate the gas utilities to both actively and efficiently pursue DSM savings and to recognize exemplary performance."⁴ The maximum incentive available is allocated to each scorecard based on the allocation of budget to each scorecard. For more information on the DSM shareholder incentive, refer to Section 5.0 of the DSM Framework and Section 5.0 of the DSM Guidelines.

In 2018, Enbridge Gas earned \$6.4M in DSM incentive for the Union rate zones, as outlined in Table 4.0 below.

Table 4.0 2018 DSM Maximum Scorecard Incentive Allocation & Achievement by Scorecard

SCORECARD	MAXIMUM DSM INCENTIVE	DSM SHAREHOLDER INCENTIVE ACHIEVED
Resource Acquisition	\$6,584,609	\$5,809,659
Low-Income	\$2,564,994	\$350,811
Large Volume T2/R1000	\$725,357	\$0
Market Transformation	\$423,984	\$205,755
Performance-Based	\$151,056	\$0
Total	\$10,450,000	\$6,366,226

Detailed scorecard results for the Union rate zones are provided in Table 4.1 to Table 4.5 below.

Table 4.1 2018 Resource Acquisition Scorecard Results

METRICS	METRIC TARGET LEVELS			WEIGHT	ACHIEVEMENT
	LOWER BAND	TARGET	UPPER BAND		
Cumulative Natural Gas Savings (m ³)	613,759,123	818,345,497	1,227,518,245	75%	976,937,927
Home Reno Rebate Participants (Homes)	6,007	8,010	12,014	25%	16,118
Total Scorecard Target Achieved					140%
Scorecard Utility Incentive Achieved					\$5,809,659

⁴ Report of the Board: DSM Framework for Natural Gas Distributors (2015-2020), EB-2014-0134, p. 20.



Table 4.2 2018 Low-Income Scorecard Results

METRICS	METRIC TARGET LEVELS			WEIGHT	ACHIEVEMENT
	LOWER BAND	TARGET	UPPER BAND		
Single Family Cumulative Natural Gas Savings (m ³)	30,755,897	41,007,862	61,511,794	60%	32,052,375
Social and Assisted Multi-Family Cumulative Natural Gas Savings (m ³)	17,418,195	23,224,260	34,836,389	35%	19,718,214
Market Rate Multi-Family Cumulative Natural Gas Savings (m ³)	3,389,095	4,518,793	6,778,190	5%	6,573,109
Total Scorecard Target Achieved					84%
Scorecard Utility Incentive Achieved					\$350,811

Table 4.3 2018 Large Volume Scorecard Results

METRICS	METRIC TARGET LEVELS			WEIGHT	ACHIEVEMENT
	LOWER BAND	TARGET	UPPER BAND		
Cumulative Natural Gas Savings (m ³)	146,795,956	195,727,941	293,591,911	100%	89,196,896
Total Scorecard Target Achieved					46%
Scorecard Utility Incentive Achieved					\$0

Table 4.4 2018 Market Transformation Scorecard Results

METRICS	METRIC TARGET LEVELS			WEIGHT	ACHIEVEMENT
	LOWER BAND	TARGET	UPPER BAND		
Optimum Home: Participating Builders (Regional Top 10)	6	8	12	10%	8
Optimum Home: Prototype Homes Built	45%	60%	90%	30%	83%
Optimum Home: Percentage of Homes Built (>15% above OBC 2017) by Participating Builders	3.75%	5.00%	7.50%	10%	3.97%
Commercial Savings by Design: New Developments Enrolled by Participating Builders	14	19	29	50%	18
Total Scorecard Target Achieved					107%
Scorecard Utility Incentive Achieved					\$205,755



Table 4.5 2018 Performance-Based Scorecard Results

METRICS	METRIC TARGET LEVELS			WEIGHT	ACHIEVEMENT
	LOWER BAND	TARGET	UPPER BAND		
RunSmart Participants	33	44	66	10%	44
RunSmart Savings (%)	1.47%	1.96%	2.93%	40%	0.51%
Strategic Energy Management (SEM) Participants	2	3	5	10%	3
Strategic Energy Management (SEM) Savings (%)	4%	5%	8%	40%	3.86%
Total Scorecard Target Achieved					59%
Scorecard Utility Incentive Achieved					\$0

Natural gas savings results by offering for the Union rate zones is provided in Table 4.6 below.

Table 4.6 2018 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	16,118	8,637,765	8,205,877	215,944,134	205,146,928
Residential Total		16,118	8,637,765	8,205,877	215,944,134	205,146,928
Commercial/Industrial	C/I Prescriptive	3,195	11,164,741	10,318,033	220,660,622	204,967,606
	C/I Custom	358	82,136,252	33,512,717	1,318,801,709	515,872,191
	C/I Direct Install	222	3,575,523	3,396,747	53,632,845	50,951,203
Commercial/Industrial Total		3,775	96,876,515	47,227,497	1,593,095,176	771,791,000
Low-Income	Home Weatherization	1,885	1,278,623	1,278,504	31,816,819	31,815,336
	Furnace End-of-Life Upgrade	-	-	-	-	-
	Indigenous	61	9,941	9,932	237,146	237,039
	Multi-Family	303	1,463,575	1,390,397	27,675,077	26,291,324
Low-Income Total		2,249	2,752,139	2,678,833	59,729,042	58,343,698
Large Volume	Direct Access	43	52,604,257	8,055,743	582,379,894	89,196,896
Large Volume Total		43	52,604,257	8,055,743	582,379,894	89,196,896
Market Transformation	Optimum Home	-	NA	NA	NA	NA
	Commercial Savings by Design	-	NA	NA	NA	NA
Market Transformation Total		-	NA	NA	NA	NA
Performance-Based	RunSmart	-	-8,420	-4,210	-42,100	-21,050
	Strategic Energy Management	-	11,958	11,958	59,791	59,791
Performance-Based Total		-	3,538	7,748	17,691	38,741
Portfolio Total		22,185	160,874,215	66,175,698	2,451,165,937	1,124,517,262



4.2 LOST REVENUE ADJUSTMENT MECHANISM

The Lost Revenue Adjustment Mechanism (“LRAM”) allows the Enbridge Gas to recover the lost distribution revenue associated with DSM activity in the Union rate zones. For more information on the LRAM, refer to Section 11.3 of the DSM Guidelines.

In 2018, lost distribution revenues associated with DSM activity for the Union rate zones was \$0.159M, as outlined in Table 4.7 below.

Table 4.7 2018 LRAM Statement

	LRAM VOLUMES (10 ³ M ³)	DELIVERY RATES (\$/10 ³ M ³)	REVENUE IMPACT
	(A)	(B)	(A) X (B)
South - M4 Industrial	8,301	\$15.47	\$128,384
South - M5 Industrial	305	\$27.19	\$8,296
South - M7 Industrial	2,914	\$3.39	\$9,883
South - T1 Industrial	1,402	\$1.09	\$1,534
South - T2 Industrial	4,893	\$0.26	\$1,262
South Total	17,814		\$149,359
North - 20 Industrial	1,789	\$5.37	\$9,607
North - 100 Industrial	155	\$2.20	\$342
North Total	1,945		\$9,949
TOTAL	19,759		\$159,308

4.3 COST-EFFECTIVENESS RESULTS

Cost-effectiveness screening for the 2015-2020 DSM Framework uses the “TRC-Plus” test. A secondary reference tool is the Program Administrator Cost (“PAC”) test. The cost-effectiveness tests are performed at the program and portfolio level.

Table 4.8 and Table 4.9 provide the program and portfolio TRC-Plus and PAC results, respectively, for the Union rate zones.

In 2018, the Performance-Based Program screened below the 1.0 TRC-Plus threshold. This is due to natural gas savings results for RunSmart Offering participants being significantly lower than forecasted. Enbridge Gas is reviewing the design of the offering to improve cost-effectiveness. Similarly, natural gas savings from the Strategic Energy Management Offering were lower than initially forecast, as some participants limited their efficiency improvements due to competing financial priorities.



Table 4.8 2018 TRC-Plus Summary

PROGRAM	NPV TRC-PLUS BENEFITS	TRC-PLUS PROGRAM COSTS	INCREMENTAL COSTS	TOTAL TRC COSTS	NET TRC-PLUS	TRC-PLUS RATIO
Residential Program	\$58,056,000	\$5,926,000	\$38,594,000	\$44,520,000	\$13,536,000	1.30
Commercial / Industrial Program	\$153,554,000	\$5,496,000	\$53,057,000	\$58,553,000	\$95,001,000	2.62
Low-Income Program	\$13,411,000	\$4,381,000	\$5,940,000	\$10,321,000	\$3,090,000	1.30
Large Volume Program	\$16,745,000	\$481,000	\$6,309,000	\$6,790,000	\$9,955,000	2.47
Performance-Based Program	\$313,981	\$605,204	\$0	\$605,204	-\$291,223	0.52
Total DSM Portfolio	\$242,079,981	\$16,889,204	\$103,900,000	\$120,789,204	\$121,290,777	2.00

Table 4.9 2018 PAC Summary

PROGRAM	NPV PAC BENEFITS	PAC PROGRAM COSTS	NET PAC	PAC RATIO
Residential	\$39,023,000	\$27,216,000	\$11,807,000	1.43
Commercial / Industrial	\$138,823,000	\$18,931,000	\$119,892,000	7.33
Low-Income Program	\$11,110,000	\$10,806,000	\$304,000	1.03
Large Volume Program	\$15,187,000	\$2,822,000	\$12,365,000	5.38
Market Transformation Program	NA	NA	NA	NA
Performance-Based Program	\$282,759	\$694,395	\$411,635	0.41
Total DSM Portfolio	\$204,425,759	\$60,469,395	\$143,956,365	3.38

4.4 BUDGETS AND SPENDING

Total 2018 DSM spend for the Union rate zones was \$69.1M, compared to an OEB-approved budget of \$63.3M. See Table 4.10 for more details. As per the OEB's Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020), Enbridge Gas was eligible to overspend by up to 15% of the total OEB-approved budget. The ability to overspend "is meant to allow the natural gas utilities to aggressively pursue programs which prove to be very successful".⁵ For more details refer to Section 11.2 of the DSM Guidelines.

⁵ DSM Guidelines, pp. 38



Table 4.10 Summary of 2018 Budget and Spending

	2018 SPEND	2018 BUDGET	VARIANCE	BUDGET TRANSFERS	DSMVA
	A	B	C=A-B	D	E=C-D
Program Budget					
Resource Acquisition Scorecard					
Residential Program*	\$24,798,507	\$13,048,697	\$11,749,810	\$2,613,609	\$9,136,200
Residential Evaluation**	\$2,417,700	\$859,000	\$1,558,700	\$1,558,700	\$0
Commercial/Industrial Program*	\$18,930,699	\$22,536,584	-\$3,605,885	-\$3,451,783	-\$154,102
Commercial/Industrial Evaluation**	\$0	\$189,000	-\$189,000	-\$189,000	\$0
Low-Income Scorecard					
Low-Income Program*	\$10,650,530	\$13,345,006	-\$2,694,476	-\$439,138	-\$2,255,339
Low-Income Evaluation**	\$155,925	\$225,948	-\$70,023	-\$70,023	\$0
Large Volume Scorecard					
Large Volume Program*	\$2,821,881	\$3,937,000	-\$1,115,119	-\$306,181	-\$808,939
Large Volume Evaluation**	\$0	\$63,000	-\$63,000	-\$63,000	\$0
Market Transformation Scorecard					
Market Transformation Program*	\$2,156,909	\$2,301,250	-\$144,341	-\$144,341	\$0
Market Transformation Evaluation**	\$0	\$36,820	-\$36,820	-\$36,820	\$0
Performance-Based Scorecard					
Performance-Based Program*	\$694,395	\$1,053,000	-\$358,605	-\$291,400	-\$67,205
Performance-Based Evaluation**	\$0	\$35,000	-\$35,000	-\$35,000	\$0
Programs Sub-total	\$62,626,545	\$57,630,305	\$4,996,240	-\$854,375	\$5,850,616
Portfolio Budget					
Research	\$672,614	\$1,000,000	-\$327,386	-\$327,386	\$0
Evaluation**	\$868,505	\$1,300,000	-\$431,495	-\$431,495	\$0
Administration	\$3,858,510	\$2,842,000	\$1,016,510	\$1,016,510	\$0
Pilot Programs	\$192,887	\$500,000	-\$307,113	-\$307,113	\$0
Portfolio Sub-total	\$5,592,517	\$5,642,000	-\$49,483	-\$49,483	\$0
Incremental DSM Projects 2018 Budget Spend					
Achievable Potential Study	\$0	\$0	\$0	\$0	\$0
Open Bill Project	\$821,395	\$0	\$821,395	\$821,395	\$0
Future Infrastructure Planning Study	\$82,464	\$0	\$82,464	\$82,464	\$0
Total 2018 DSM Budget (before Adjustments)	\$69,122,921	\$63,272,305	\$5,850,616	\$0	\$5,850,616

*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.

Included in the spend amounts above are customer incentives deferred to future years, for offerings where incentives are paid when future milestones/activities are reached. The deferred amounts will be used when the customer incentive commitment is due. For more information on customer incentive deferrals, please refer to Section 5.3.2 of the OEB's Mid-Term Report.

Specifically, the amounts are:

- Commercial Savings by Design Offering: \$149,760



Appendix A: 2018 Avoided Costs

The inflation factor used is 1.27%. The discount rate is 5.32%. Avoided costs are presented in nominal dollars.

GAS AVOIDED COSTS						
YEAR	RESIDENTIAL/COMMERCIAL				INDUSTRIAL	
	BASELOAD (\$/M ³)		WEATHER SENSITIVE (\$/M ³)		BASELOAD (\$/M ³)	
	RATE	NPV	RATE	NPV	RATE	NPV
1	0.17996	0.17996	0.23988	0.23988	0.17785	0.17785
2	0.15852	0.33047	0.21454	0.44358	0.15747	0.32736
3	0.15705	0.47206	0.21264	0.63527	0.15654	0.46849
4	0.15713	0.60655	0.21372	0.81821	0.15661	0.60254
5	0.16092	0.73734	0.21853	0.99582	0.16040	0.73290
6	0.17882	0.87533	0.23747	1.17907	0.17829	0.87048
7	0.17621	1.00443	0.23594	1.35194	0.17567	0.99919
8	0.18850	1.13556	0.24931	1.52537	0.18795	1.12994
9	0.21431	1.27712	0.27622	1.70782	0.21375	1.27113
10	0.21577	1.41244	0.27882	1.88269	0.21521	1.40610
11	0.20897	1.53688	0.27316	2.04535	0.20840	1.53020
12	0.20940	1.65527	0.27475	2.20069	0.20882	1.64827
13	0.20817	1.76702	0.27473	2.34817	0.20759	1.75971
14	0.21756	1.87791	0.28532	2.49359	0.21697	1.87030
15	0.22886	1.98866	0.29786	2.63774	0.22826	1.98077
16	0.23484	2.09657	0.30511	2.77794	0.23424	2.08840
17	0.23554	2.19934	0.30709	2.91192	0.23493	2.19090
18	0.23632	2.29723	0.30918	3.04000	0.23570	2.28854
19	0.24238	2.39257	0.31656	3.16451	0.24175	2.38363
20	0.24858	2.48540	0.32413	3.28555	0.24795	2.47622
21	0.25494	2.57580	0.33187	3.40323	0.25430	2.56639
22	0.26145	2.66382	0.33979	3.51763	0.26080	2.65419
23	0.26812	2.74953	0.34790	3.62884	0.26747	2.73969
24	0.27497	2.83298	0.35620	3.73695	0.27430	2.82295
25	0.28198	2.91425	0.36471	3.84205	0.28131	2.90401
26	0.28916	2.99337	0.37340	3.94422	0.28848	2.98295
27	0.29652	3.07040	0.38231	4.04354	0.29583	3.05980
28	0.30406	3.14540	0.39143	4.14010	0.30336	3.13463
29	0.31178	3.21843	0.40075	4.23396	0.31107	3.20749
30	0.31970	3.28952	0.41031	4.32520	0.31898	3.27842



AVOIDED CARBON COSTS		
YEAR	RESIDENTIAL/COMMERCIAL/INDUSTRIAL	
	(\$/M ³)	
	RATE	NPV
1	0.02	0.02000
2	0.04	0.05798
3	0.06	0.11207
4	0.08	0.18055
5	0.10	0.26182
6	0.10	0.33899
7	0.10	0.41225
8	0.10	0.48182
9	0.11	0.55448
10	0.11	0.62347
11	0.11	0.68897
12	0.11	0.75116
13	0.11	0.81021
14	0.12	0.87137
15	0.12	0.92945
16	0.12	0.98459
17	0.12	1.03694
18	0.13	1.09079
19	0.13	1.14193
20	0.13	1.19047
21	0.13	1.23657
22	0.14	1.28370
23	0.14	1.32846
24	0.14	1.37095
25	0.15	1.41417
26	0.15	1.45522
27	0.15	1.49419
28	0.15	1.53119
29	0.16	1.56866
30	0.16	1.60424



YEAR	ELECTRICITY AVOIDED COSTS (\$/KWH)		WATER AVOIDED COSTS (\$/1000L)	
	RATE	NPV	RATE	NPV
1	0.16137	0.16137	0.85365	0.85365
2	0.16342	0.31653	0.86449	1.67447
3	0.16549	0.46572	0.87547	2.46372
4	0.16759	0.60918	0.88659	3.22262
5	0.16972	0.74712	0.89785	3.95233
6	0.17188	0.87975	0.90925	4.65397
7	0.17406	1.00728	0.92080	5.32862
8	0.17627	1.12991	0.93250	5.97733
9	0.17851	1.24782	0.94434	6.60108
10	0.18078	1.36119	0.95633	7.20085
11	0.18307	1.47020	0.96848	7.77755
12	0.18540	1.57503	0.98078	8.33206
13	0.18775	1.67582	0.99323	8.86525
14	0.19014	1.77273	1.00585	9.37794
15	0.19255	1.86591	1.01862	9.87090
16	0.19500	1.95552	1.03156	10.34490
17	0.19747	2.04167	1.04466	10.80068
18	0.19998	2.12451	1.05793	11.23892
19	0.20252	2.20417	1.07136	11.66031
20	0.20509	2.28076	1.08497	12.06549
21	0.20770	2.35441	1.09875	12.45508
22	0.21034	2.42522	1.11270	12.82969
23	0.21301	2.49331	1.12683	13.18990
24	0.21571	2.55878	1.14114	13.53625
25	0.21845	2.62173	1.15564	13.86928
26	0.22123	2.68227	1.17031	14.18949
27	0.22404	2.74047	1.18518	14.49740
28	0.22688	2.79643	1.20023	14.79346
29	0.22976	2.85025	1.21547	15.07813
30	0.23268	2.90199	1.23091	15.35186

UNION RATE ZONES: RATE ALLOCATION

1. The following evidence describes the three DSM-related deferral and variance accounts specific to the Union rate zones for which Enbridge Gas requests clearance of balances recorded relating to 2017 and 2018 DSM activities. This evidence also describes the basis on which these amounts will be allocated to rate classes within the Union rate zones, as well as the methodology for their incorporation into rates.

Demand Side Management Variance Account

2. The DSMVA is used to track the variance between actual DSM spending by rate class versus the budgeted amount included in rates by rate class. The actual DSMVA spending variance amount relative to the amount budgeted for each rate class is allocated to that rate class for disposition purposes.¹
3. Enbridge Gas followed the OEB-approved methodology for the Union rate zones to calculate the 2017 and 2018 DSMVA balances.² The customer incentive was allocated based on the amount spent within each rate class. All other program costs were allocated by customer class (e.g. Residential, Commercial/Industrial) and assigned by rate class based on the percentage allocation of the customer incentive costs. All portfolio-level costs that cannot be attributed to an individual program were allocated to a rate class based on the percentage allocation of the program costs by rate class. The variance between the Low-Income DSM budget included in rates and the actual amount spent on Low-Income DSM programs is recovered in proportion to the OEB-approved distribution revenue by rate class for the respective year. The overall 2017 Low-Income budget spend of \$11.718 million, which includes the allocated portfolio costs, is allocated in proportion to the 2017 distribution revenue.³ The overall 2018 Low-Income budget spend of \$11.925 million, which includes the allocated portfolio costs, is allocated in proportion to the 2018 distribution revenue.⁴
4. Consistent with the pooled DSM budget costs included in rates for 2017 and 2018, Enbridge Gas has pooled Rate M4, Rate M5 and Rate M7 DSMVA balances for the purposes of disposition. Variances between the DSM budget included in rates and actual DSM spending in these rate classes has been allocated based on volumes for all three rate classes. Accordingly, there is a single common unit rate calculated to determine the disposition of the DSMVA balance to individual customers in these

¹ Guidelines, pp. 36-38.

² Guidelines, pp. 36-38; EB-2015-0029, Union 2015-2020 DSM Plan, Exhibit A, Tab 2, pp. 22-23.

³ Per Union's 2017 Rates application (EB-2016-0245).

⁴ Per Union's 2018 Rates application (EB-2017-0087).

rate classes. This approach is consistent with Union's OEB-approved 2016 DSM Deferral Disposition Application (EB-2018-0300).

DSMVA 15% Overspend

5. As per the Guidelines and OEB-approved 2015-2020 DSM Plan for the Union rate zones, Enbridge Gas is eligible to recover up to an additional 15% overspend above its annual OEB-approved DSM budget through the DSMVA as long as its overall weighted scorecard target on a pre-audited basis for one or more of its scorecards has been achieved, provided the overspend was on program expenses.⁵ Enbridge Gas utilized the DSMVA mechanism to overspend on the Residential Program contained within the Resource Acquisition scorecard in the Union rate zones in both of the 2017 and 2018 DSM program years. The Resource Acquisition scorecard achieved pre-audit results above the weighted scorecard targets required for the 15% overspend to be accessed. The pre-audit scorecard results are summarized in Table 1.

Table 1
2017 & 2018 DSM Scorecard Results (Pre-Audit)

Scorecard	Total Scorecard Target Achieved
2017 Resource Acquisition	136%
2018 Resource Acquisition	135%

6. As set out in Table 11.0 of the final 2017 DSM Annual Report dated June 19, 2020 (see Exhibit C, Tab 2, Schedule 1), and in Table 4.10 of the final 2018 DSM Annual Report dated June 26, 2020 (see Exhibit C, Tab 2, Schedule 2) for the Union rate zones, the overspend on the Residential Program portion of the Resource Acquisition scorecard was offset by underspend on administration and other program level costs in both of the 2017 and 2018 DSM program years in the Union rate zones.

Budget Transfers Between Programs

7. Section 6.6 of the Guidelines states that Enbridge Gas should inform the OEB and stakeholders in the event that cumulative fund transfers among OEB-approved DSM programs exceed 30% of the approved annual DSM budget for an individual DSM program. Enbridge Gas did not transfer more than 30% of program budget funds between programs in either of the 2017 or 2018 DSM program years for the Union

⁵ Guidelines, pp. 36-38; EB-2015-0029, Union Gas Limited 2015-2020 DSM Plan, Exhibit A, Tab 2, pp. 22-23.

rate zones.

DSM and Infrastructure Planning Study

8. In both 2017 and 2018, Enbridge Gas (Union) incurred costs related to an Infrastructure Planning Study, also known as the Integrated Resource Planning (“IRP”) Study. In both years, Enbridge Gas (Union) funded these costs through budget transfers from available funds in its OEB-approved budget for Pilot Programs, as detailed in Table 11.0 of the final 2017 DSM Annual Report and Table 4.10 of the final 2018 DSM Annual Report for the Union rate zones.

Open Bill Access Project

9. In 2018, Enbridge Gas (Union) incurred costs of \$0.821 million related to the development of its Open Bill Access program. These costs have been funded through budget transfers, as directed by the OEB, from available OEB-approved program funding and as detailed in Table 4.10 of the final 2018 DSM Annual Report for the Union rate zones.⁶

Large Volume Program Budget Transfers – Rate T2 & Rate 100 Customers

10. In accordance with the OEB-approved 2015-2020 DSM Plan for the Union rate zones, Enbridge Gas (Union) continued to offer its Large Volume direct access program and adhered to the OEB-approved maximum program budget transfer rules between Rate T2 and Rate 100 in 2017 and 2018.⁷ The overall underspend of \$1.126 million in 2017 and \$0.809 million in 2018 for the Large Volume Program is credited in the DSMVA. Enbridge Gas (Union) did not transfer budget dollars from any other part of the overall DSM budget into Rate T2 or Rate 100 rate classes.

Deferred Incentives

11. Consistent with section 5.3.2 of the OEB’s Mid-Term Review Report and the OEB-approved DSMVA accounting orders as set out in the OEB’s Decision and Order on Enbridge Gas’s 2016 DSM Deferral and Variance Account Disposition Proceeding (EB-2018-0300/0301),⁸ Table 11.0 of the final 2017 DSM Annual Report and Table 4.10 of the final 2018 DSM Annual Report for the Union rate zones also includes amounts for customer incentive spend deferred to future years, for offerings where

⁶ EB-2015-0029, OEB Decision and Order, January 20, 2016, pp. 55.

⁷ EB-2015-0029, OEB Decision and Order, January 20, 2016, pp. 50–52; EB-2012-0337, 2013-2014 DSM Plan for Large Volume Customers, Exhibit A, Tab 1, p. 14.

⁸ EB-2018-0300/0301, OEB Decision and Order, April 11, 2019, Appendixes A and B.

incentives are paid when future milestones/activities are reached.

12. See Table 2 and Table 3 for continuity schedules of the deferred incentive balances for the Commercial Savings by Design (“CSBD”) offering for the 2017 and 2018 DSM program years in the Union rate zones being tracked within the DSMVA.

Table 2
2017 DSM Deferred Incentives Schedule - Union Rate Zones

Offering	<u>TOTAL</u>	<u>2017</u>	<u>TOTAL</u>	<i>2017 Deposit Expiration</i>
	Beginning of Year Balance	Deposits	End of Year Balance	
	<i>a</i>	<i>b</i>	<i>c = a + b</i>	
CSBD	\$0.000	\$0.078	\$0.078	31-Dec-22
TOTAL	\$0.000	\$0.078	\$0.078	

Table 3
2018 DSM Deferred Incentives Schedule – Union Rate Zones

Offering	<u>2017</u>				<u>2018</u>	<u>TOTAL</u>	2018 Deposit Expiration
	Beginning of Year Balance	Withdrawals		End of Year Balance	Deposits	End of Year Balance	
		Utilized	Expired				
		<i>a</i>	<i>b</i>				
CSBD	\$0.078	\$0.015	\$0.000	\$0.063	\$0.150	\$0.213	31-Dec-23
TOTAL	\$0.078	\$0.015	\$0.000	\$0.063	\$0.150	\$0.213	

Demand Side Management Incentive Deferral Account

13. The purpose of the DSMIDA is to record the shareholder incentive amount earned by a natural gas utility as a result of its DSM programs.⁹ DSM shareholder incentive amounts are allocated to the rate classes in proportion to the actual DSM spending by rate class in 2017 and 2018.
14. Tables 10.0 – 10.5 of the final 2017 DSM Annual Report and Tables 4.0 – 4.5 of the final 2018 DSM Annual Report for the Union rate zones provide details of the DSM incentive achieved by scorecard.

Lost Revenue Adjustment Mechanism Variance Account

15. The LRAMVA is used to track, at the rate class level, the variance between the

⁹ Guidelines, p. 39.

actual impact of DSM activities (volume savings) undertaken by the natural gas utility and the forecasted impact included in distribution rates.¹⁰ The LRAMVA balance is allocated to rate classes on the same basis as lost revenues were experienced such that the LRAMVA provides a true-up by rate class.

16. There is an inherent time lag between the date that Enbridge Gas receives the audit of volume savings from the EC and the date that these audited volume savings are reflected in the Union rate zones' distribution rates. Depending on the timing of audited volume savings and Enbridge Gas's annual rate filings, the impacts captured in the LRAM variance account can span multiple DSM program years, and can include:
- **Full-Year Impacts** - for prior DSM program years if no volume savings were reflected in rates;
 - **Partial-Year Impacts** - for the monthly impact of volume savings resulting from the current DSM program year, if no forecast volume savings were reflected in rates; and,
 - **True-Ups** - to true-up pre-audit volume savings reflected in rates with audited actual volume savings for prior DSM program years.
17. LRAM amounts are only recorded in the variance account until such time as the OEB approves new distribution rates for the utility that reflect the actual audited impact of a DSM program year's activities (volume savings). Please see Tables 4 and 5 for a summary of LRAM volume savings adjustments for each of the 2013-2020 DSM program years included or expected in each of Enbridge Gas's (Union) annual rates applications (2015-2020) and DSM deferral and variance account clearance applications (2015-2020). Enbridge Gas's (Union) 2015 and 2016 Annual Volumes (as defined below) were audited as part of the 2015 and 2016 Verification Reports and are therefore not included in the 2017 and 2018 Verification Reports.

¹⁰ Guidelines, p. 39; The LRAMVA does not include volume variances for general service rate classes as these are captured in the Normalized Average Consumption ("NAC") deferral account. The 2017 and 2018 balances in the NAC deferral account were disposed of in Union's 2017 (EB-2018-0105) and 2018 (EB-2019-0105) Disposition of Deferral and Variance Account Balances proceedings.

Table 4
DSM Program Year LRAM Volume Adjustment Included in Rates

Line No.	Rates Application	(a)	(b)	(c)	(d)	(e)	(f)	(g)
		2014	2015	2016	2017	2018	2019	2020
1	2015 (EB-2014-0271)	Not Included	Not Included	N/A	N/A	N/A	N/A	N/A
2	2016 (EB-2015-0116)	Audited	Not Included	Not Included	N/A	N/A	N/A	N/A
3	2017 (EB-2016-0245)	Audited	Pre-Audit	Not Included	Not Included	N/A	N/A	N/A
4	2018 (EB-2017-0087)	Audited	Pre-Audit	Pre-Audit	Not Included	Not Included	N/A	N/A
5	2019 (EB-2018-0305)	Audited	Audited	Audited	Not Included	Not Included	Not Included	N/A
6	2020 (EB-2019-0194)	Audited	Audited	Audited	Not Included	Not Included	Not Included	Not Included

Table 5
DSM Program Year LRAM Volume Adjustment Included in LRAM Variance Account

Line No.	DSM Deferral Application	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		2013	2014	2015	2016	2017	2018	2019	2020
1	2015 (EB-2017-0323)	None	Full-Year	Partial-Year	N/A	N/A	N/A	N/A	N/A
2	2016 (EB-2018-0300)	None	None	Full-Year	Partial-Year	N/A	N/A	N/A	N/A
3	2017 (EB-2020-0067)	None	None	True-up	Full-Year	Partial-Year	N/A	N/A	N/A
4	2018 (EB-2020-0067)	None	None	True-up	True-up	Full-Year	Partial-Year	N/A	N/A
5	2019 (Expected)	None	None	None	None	Full-Year	Full-Year	Partial-Year	N/A
6	2020 (Expected)	None	None	None	None	Full-Year	Full-Year	Full-Year	Partial-Year

2017 LRAMVA

18. As actual OEB-approved 2015, 2016 and 2017 contract rate class LRAM volume savings were not reflected in Enbridge Gas's (Union) 2017 OEB-approved distribution rates ("2017 Rates") (as the 2015, 2016 and 2017 EM&V processes were not complete), the 2017 LRAMVA balance for the Union rate zones is composed of:

- Full-year audited volume savings for contract rate classes related to the 2016 DSM program year ("2016 Annual Volumes") calculated using 2017 Rates for the Union rate zones (see Table 5, line 3, column d).
- Partial-year monthly volume savings for contract rate classes related to the 2017 DSM program year ("2017 Monthly Volumes"), beginning the month that audited volume savings were realized and for the remaining months of the 2017 DSM program year, per the Guidelines, calculated using 2017 Rates for the Union rate zones (see Table 5, line 3, column e).¹¹
- True-up of full year audited volume savings for the contract rate classes related to the 2015 DSM Program Year ("2015 Annual Volumes") calculated using 2017 Rates for the Union rate zones (given that pre-audit 2015 LRAM volumes were included) (see Table 5, line 3, column c).

19. The 2017 LRAMVA balance reflects the full-year impact of 2016 audited LRAM volumes, and the partial-year (depending upon the month the DSM measure was installed) impact of 2017 audited LRAM volumes, as well as the impact of the true-up on the variance between pre-audit and audited 2015 LRAM volumes. Accordingly, the Union rate zones' 2017 LRAMVA debit balance of \$0.468 million (as detailed at Exhibit C, Tab 3, Schedule 1, Appendices A1 through A4) is composed of:
- i) \$0.045 million credit related to a true-up on the variance between pre-audit and audited 2015 Annual Volumes of 32,451 10³m³ calculated using 2017 Rates for the Union rate zones;
 - ii) \$0.337 million related to 2016 Annual Volumes of 35,182 10³m³ calculated using 2017 Rates for the Union rate zones; and
 - iii) \$0.177 million related to 2017 Monthly Volumes of 21,532 10³m³ calculated using 2017 Rates for the Union rate zones.

2018 LRAMVA

20. As actual OEB-approved 2015, 2016, 2017 and 2018 contract rate class LRAM volume savings were not reflected in Enbridge Gas's (Union) 2018 OEB-approved distribution rates ("2018 Rates") (as the 2015, 2016, 2017 and 2018 EM&V processes were not complete), the 2018 LRAMVA balance for the Union rate zones is composed of:
- i) Full-year audited volume savings for contract rate classes related to the 2017 DSM program year ("2017 Annual Volumes") calculated using 2018 Rates for the Union rate zones (see Table 5, line 4, column e).

¹¹ Guidelines, p. 39.

- ii) Partial-year monthly volume savings for contract rate classes related to the 2018 DSM program year ("2018 Monthly Volumes"), beginning the month that audited volume savings were realized and for the remaining months of the 2018 DSM program year, per the Guidelines, calculated using 2018 Rates for the Union rate zones (see Table 5, line 4, column f).¹²
- iii) True-up of full year audited volume savings for the contract rate classes related to the 2015 and 2016 DSM Program Years ("2015 Annual Volumes" and "2016 Annual Volumes") calculated using 2018 Rates for the Union rate zones (given that pre-audit 2015 and 2016 LRAM volumes were included) (see Table 5, line 4, columns c and d).

21. The 2018 LRAMVA balance reflects the full-year impact of 2017 audited LRAM volumes, and the partial-year (depending upon the month the DSM measure was installed) impact of 2018 audited LRAM volumes, as well as the impact of the true-ups on the variance between pre-audit and audited 2015 and 2016 LRAM volumes. Accordingly, the Union rate zones' 2018 LRAMVA debit balance of \$0.402 million (as detailed at Exhibit C, Tab 3, Schedule 1, Appendixes A5 through A9) is composed of:

- i) \$0.042 million credit related to a true up on the variance between pre-audit and audited 2015 Annual Volumes of 32,451 10^3m^3 calculated using 2018 Rates for the Union rate zones;
- ii) \$0.141 million credit related to a true-up on the variance between pre-audit and audited 2016 Annual Volumes of 32,477 10^3m^3 calculated using 2018 Rates for the Union rate zones;
- iii) \$0.425 million related to 2017 Annual Volumes of 43,237 10^3m^3 calculated using 2018 Rates for the Union rate zones; and
- iv) \$0.159 million related to 2018 Monthly Volumes of 19,759 10^3m^3 calculated using 2018 Rates for the Union rate zones.

Future Recovery of 2017 and 2018 LRAM Volume Savings

22. As the 2017 and 2018 DSM audit processes were not complete when Enbridge Gas filed its 2019 Rates Application (EB-2018-0305) ("2019 Rates") or its 2020 Rates Application (EB-2019-0194) ("2020 Rates"), 2017 and 2018 audited LRAM volume savings have not yet been reflected in distribution rates for the Union rate zones, and will therefore be recovered through the LRAMVA as illustrated in Tables 4 and 5.

¹² Guidelines, p. 39.

Rate Allocation

23. Tables 6 and 7 summarize the allocation of Enbridge Gas's Union rate zones-related DSM deferral and variance account balances for the 2017 and 2018 DSM program years to rate classes, respectively.

Table 6

2017 DSM Deferral and Variance Account Balances by Rate Class – Union Rate Zones

Rate Class	DSMIDA	LRAMVA	DSMVA ¹	TOTAL DEFERRAL/ VARIANCE BALANCE
M1	\$3,109,031	N/A	\$12,544,684	\$15,653,714
M2	\$772,700	N/A	(\$2,598,309)	(\$1,825,609)
M4	\$497,709	\$208,838	\$2,250,792	\$2,957,340
M5	\$97,464	\$208,373	(\$850,807)	(\$544,969)
M7	\$106,852	\$50,079	(\$885,182)	(\$728,251)
T1	\$218,127	\$4,626	\$824,041	\$1,046,794
T2	\$0	(\$5,301)	(\$601,300)	(\$606,601)
Rate 01	\$432,147	N/A	(\$2,323,037)	(\$1,890,890)
Rate 10	\$164,337	N/A	(\$971,534)	(\$807,197)
Rate 20	\$120,772	\$6,769	(\$303,648)	(\$176,107)
Rate 100	\$0	(\$5,032)	(\$1,074,662)	(\$1,079,694)
Total	\$5,519,140	\$468,352	\$6,011,037	\$11,998,529

NOTES:

(1) Allocation to Rate M4, M5 and M7 prior to rate pooling adjustment.

Table 7
2018 DSM Deferral and Variance Account Balances by Rate Class – Union Rate Zones

Rate Class	DSMIDA	LRAMVA	DSMVA ¹	TOTAL DEFERRAL/ VARIANCE BALANCE
M1	\$3,831,473	N/A	\$13,741,640	\$17,573,112
M2	\$721,482	N/A	(\$3,312,555)	(\$2,591,073)
M4	\$656,186	\$380,951	\$2,914,127	\$3,951,264
M5	\$27,578	\$2,092	(\$1,588,968)	(\$1,559,298)
M7	\$258,078	\$19,522	\$391,007	\$668,607
T1	\$171,241	\$4,684	\$216,683	\$392,608
T2	\$0	(\$9,315)	(\$279,874)	(\$289,189)
Rate 01	\$548,003	N/A	(\$2,268,936)	(\$1,720,933)
Rate 10	\$143,696	N/A	(\$1,407,304)	(\$1,263,608)
Rate 20	\$8,489	\$9,171	(\$1,479,883)	(\$1,462,223)
Rate 100	\$0	(\$5,007)	(\$1,075,320)	(\$1,080,327)
Total	\$6,366,226	\$402,098	\$5,850,616	\$12,618,940

NOTES:

(1) Allocation to Rate M4, M5 and M7 prior to rate pooling adjustment.

Disposition Methodology

24. For general service customers in the Union rate zones (Rate M1, Rate M2, Rate 01 and Rate 10), Enbridge Gas proposes to dispose of the 2017 and 2018 DSM-related deferral and variance account balances prospectively over six-months. The prospective refund/recovery disposition is consistent with Enbridge Gas's current practice of disposition of deferral and variance account balances to general service customers.
25. Enbridge Gas proposes to dispose of the 2017 and 2018 DSM-related deferral and variance account balances as a one-time billing adjustment, for all remaining customers in the Union rate zones. The one-time billing adjustment will be derived for each customer individually by applying the disposition unit rates to each customer's actual consumption volume for the period January 1, 2018 to December 31, 2018.
26. Enbridge Gas proposes to dispose of the approved 2017 and 2018 DSM deferral and variance account balances with the first available QRAM application following the Board's approval, as early as January 1, 2021.

27. Enbridge Gas anticipates that starting in mid-2021 at the earliest it will be able to adopt a common disposition period, as well as a common disposition approach between the EGD and Union rate zones once integrated systems and processes are implemented.
28. The allocation of 2017 and 2018 DSM Deferral and Variance account balances and the derivation of clearance unit rates for the Union rate zones are consistent with the treatment in prior years. Three sets of unit rates (2017, 2018 and total) for each rate class are set out at Exhibit C, Tab 3, Schedule 1, Appendix A10.
29. Exhibit C, Tab 3, Schedule 1, Appendixes A11 to A18 provide details of the derivation of proposed unit rates:
- Appendixes A11 and A15 determine the balances (principal and interest) to be cleared for each DSM deferral and variance account for the 2017 and 2018 DSM program years, respectively;
 - Appendixes A12 and A16 show account balance allocations by rate class for the 2017 and 2018 DSM program years, respectively; and
 - Appendixes A13-A14 and A17-A18 illustrate the derivation of unit rates for the 2017 and 2018 DSM program years, respectively, based on the balances and actual 2018 consumption volumes for each rate class.

ENBRIDGE GAS INC.
UNION RATE ZONES
2017 LRAM Variance Account Balance

Line	<u>Amounts by DSM Plan Year</u>				
<u>No.</u>	<u>Particulars (\$)</u>	<u>2015 ⁽¹⁾</u>	<u>2016 ⁽²⁾</u>	<u>2017 ⁽³⁾</u>	<u>Total</u>
		<u>(a)</u>	<u>(b)</u>	<u>(c)</u>	<u>(d) = (a) + (b) + (c)</u>
	<u>South</u>				
1	M4	(5,593)	99,299	115,133	208,838
2	M5	(17,595)	182,246	43,722	208,373
3	M7	(175)	42,590	7,665	50,079
4	T1	(3,722)	4,410	3,939	4,626
5	T2	(10,208)	2,663	2,244	(5,301)
6		<u>(37,294)</u>	<u>331,207</u>	<u>172,702</u>	<u>466,615</u>
	<u>North</u>				
7	Rate 20	(432)	5,041	2,159	6,769
8	Rate 100	(7,466)	469	1,965	(5,032)
9		<u>(7,898)</u>	<u>5,510</u>	<u>4,124</u>	<u>1,736</u>
10	Total	<u>(45,192)</u>	<u>336,718</u>	<u>176,826</u>	<u>468,352</u>

Notes:

- ⁽¹⁾ EB-2020-0067, Exhibit C, Tab 3, Schedule 1, Appendix A2, column (e)
⁽²⁾ EB-2020-0067, Exhibit C, Tab 3, Schedule 1, Appendix A3, column (e)
⁽³⁾ EB-2020-0067, Exhibit C, Tab 3, Schedule 1, Appendix A4, column (e)

ENBRIDGE GAS INC.
UNION RATE ZONES
2015 LRAM Audit True Up

Line		2015	2015	2015	2017	
No.	Particulars (\$)	LRAM Volumes Adjustment ⁽¹⁾ 10 ³ m ³	LRAM Volumes Adjustment in 2017 Rates ⁽²⁾ 10 ³ m ³	True Up for LRAM Volumes Adjustment 10 ³ m ³	Delivery Rates \$/10 ³ m ³	Revenue Impact (\$)
		(a)	(b)	(c) = (a) - (b)	(d)	(e) = (c) x (d)
	<u>South</u>					
1	M4	12,602	13,007	(406)	13.790	(5,593)
2	M5	16,173	16,829	(655)	26.856	(17,595)
3	M7	1,481	1,523	(42)	4.150	(175)
4	T1	2,993	5,730	(2,737)	1.360	(3,722)
5	T2	13,126	38,269	(25,143)	0.406	(10,208)
6		<u>46,375</u>	<u>75,358</u>	<u>(28,983)</u>		<u>(37,294)</u>
	<u>North</u>					
7	Rate 20	2,792	2,870	(79)	5.494	(432)
8	Rate 100	1,742	5,132	(3,389)	2.203	(7,466)
9		<u>4,534</u>	<u>8,002</u>	<u>(3,468)</u>		<u>(7,898)</u>
10	Total	<u>50,910</u>	<u>83,360</u>	<u>(32,451)</u>		<u>(45,192)</u>

Notes:

⁽¹⁾ EB-2018-0305 Exhibit F1 Tab 2 Rate Order Working Papers Schedule 14 page 2 column f

⁽²⁾ EB-2018-0305 Exhibit F1 Tab 2 Rate Order Working Papers Schedule 14 page 2 column c

ENBRIDGE GAS INC.
UNION RATE ZONES
2016 LRAM Audited Revenue Impacts

Line No.	Particulars (\$)	2016	2016	2016	2017	Revenue
		Audited Volumes ⁽¹⁾ 10 ³ m ³ (a)	LRAM Volumes in 2017 Rates 10 ³ m ³ (b)	Net LRAM Volumes 10 ³ m ³ (c) = (a) - (b)	Delivery Rates \$/10 ³ m ³ (d)	Impact (\$) (e) = (c) x (d)
	<u>South</u>					
1	M4	7,201	-	7,201	13.790	99,299
2	M5	6,786	-	6,786	26.856	182,246
3	M7	10,263	-	10,263	4.150	42,590
4	T1	3,242	-	3,242	1.360	4,410
5	T2	6,559	-	6,559	0.406	2,663
6		<u>34,051</u>	<u>-</u>	<u>34,051</u>		<u>331,207</u>
	<u>North</u>					
7	Rate 20	918	-	918	5.494	5,041
8	Rate 100	213	-	213	2.203	469
9		<u>1,130</u>	<u>-</u>	<u>1,130</u>		<u>5,510</u>
10	Total	<u>35,182</u>	<u>-</u>	<u>35,182</u>		<u>336,718</u>

Notes:

⁽¹⁾ Volumes reflect 2016 audited volumes, not adjusted for month of install.

ENBRIDGE GAS INC.
UNION RATE ZONES
2017 LRAM Audited Revenue Impacts

Line No.	Particulars	2017 Audited Volumes ⁽¹⁾ 10 ³ m ³ (a)	2017 LRAM Volumes in 2017 Rates 10 ³ m ³ (b)	2017 Net LRAM Volumes 10 ³ m ³ (c) = (a) - (b)	2017 Delivery Rates \$/10 ³ m ³ (d)	Revenue Impact (\$) (e) = (c) x (d)
	<u>South</u>					
1	M4	8,349	-	8,349	13.790	115,133
2	M5	1,628	-	1,628	26.856	43,722
3	M7	1,847	-	1,847	4.150	7,665
4	T1	2,896	-	2,896	1.360	3,939
5	T2	5,527	-	5,527	0.406	2,244
6		<u>20,247</u>	<u>-</u>	<u>20,247</u>		<u>172,702</u>
	<u>North</u>					
7	Rate 20	393	-	393	5.494	2,159
8	Rate 100	892	-	892	2.203	1,965
9		<u>1,285</u>	<u>-</u>	<u>1,285</u>		<u>4,124</u>
10	Total	<u>21,532</u>	<u>-</u>	<u>21,532</u>		<u>176,826</u>

Notes:

⁽¹⁾ Volumes reflect 2017 audited volumes, adjusted for month of install.

ENBRIDGE GAS INC.
UNION RATE ZONES
2018 LRAM Variance Account Balance

Line		<u>Amounts by DSM Plan Year</u>				
<u>No.</u>	<u>Particulars (\$)</u>	<u>2015 ⁽¹⁾</u>	<u>2016 ⁽²⁾</u>	<u>2017 ⁽³⁾</u>	<u>2018 ⁽⁴⁾</u>	<u>Total</u>
		(a)	(a)	(a)	(b)	(c)
	<u>South</u>					
1	M4	(6,273)	(39,816)	298,653	128,387	380,951
2	M5	(17,812)	(85,856)	97,467	8,292	2,092
3	M7	(143)	(3,439)	13,221	9,884	19,522
4	T1	(2,996)	(715)	6,859	1,534	4,684
5	T2	(6,487)	(6,147)	2,056	1,262	(9,315)
6		<u>(33,711)</u>	<u>(135,972)</u>	<u>418,256</u>	<u>149,360</u>	<u>397,934</u>
	<u>North</u>					
7	Rate 20	(422)	(3,785)	3,773	9,605	9,171
8	Rate 100	(7,455)	(1,206)	3,312	341	(5,007)
9		<u>(7,876)</u>	<u>(4,990)</u>	<u>7,085</u>	<u>9,946</u>	<u>4,164</u>
10	Total	<u>(41,588)</u>	<u>(140,962)</u>	<u>425,342</u>	<u>159,306</u>	<u>402,098</u>

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A6, p. 1, column (e)
- (2) Exhibit C, Tab 3, Schedule 1, Appendix A7, p. 1, column (e)
- (3) Exhibit C, Tab 3, Schedule 1, Appendix A8, p. 1, column (e)
- (4) Exhibit C, Tab 3, Schedule 1, Appendix A9, p. 1, column (e)

ENBRIDGE GAS INC.
UNION RATE ZONES
2015 LRAM Audit True Up

Line		2015 LRAM Volumes Adjustment ⁽¹⁾ 10 ³ m ³	2015 LRAM Volumes Adjustment in 2018 Rates ⁽²⁾ 10 ³ m ³	2015 True Up for LRAM Volumes Adjustment 10 ³ m ³	2018 Delivery Rates \$/10 ³ m ³	Revenue Impact (\$)
No.	Particulars (\$)	(a)	(b)	(c) = (a) - (b)	(d)	(e) = (c) x (d)
	<u>South</u>					
1	M4	12,602	13,007	(406)	15.467	(6,273)
2	M5	16,173	16,829	(655)	27.188	(17,812)
3	M7	1,481	1,523	(42)	3.392	(143)
4	T1	2,993	5,730	(2,737)	1.095	(2,996)
5	T2	13,126	38,269	(25,143)	0.258	(6,487)
6		<u>46,375</u>	<u>75,358</u>	<u>(28,983)</u>		<u>(33,711)</u>
	<u>North</u>					
7	Rate 20	2,792	2,870	(79)	5.369	(422)
8	Rate 100	1,742	5,132	(3,389)	2.200	(7,455)
9		<u>4,534</u>	<u>8,002</u>	<u>(3,468)</u>		<u>(7,876)</u>
10	Total	<u>50,910</u>	<u>83,360</u>	<u>(32,451)</u>		<u>(41,588)</u>

Notes:

⁽¹⁾ EB-2018-0305 Exhibit F1 Tab 2 Rate Order Working Papers Schedule 14 page 2 column f

⁽²⁾ EB-2018-0305 Exhibit F1 Tab 2 Rate Order Working Papers Schedule 14 page 2 column c

ENBRIDGE GAS INC.
UNION RATE ZONES
2016 LRAM Audit True Up

Line No.	Particulars (\$)	2016 LRAM Volumes Adjustment ⁽¹⁾ 10 ³ m ³ (a)	2016 LRAM Volumes Adjustment in 2018 Rates ⁽²⁾ 10 ³ m ³ (b)	2016 True Up for LRAM Volumes Adjustment 10 ³ m ³ (c) = (a) - (b)	2018 Delivery Rates \$/10 ³ m ³ (d)	Revenue Impact (\$) (e) = (c) x (d)
	<u>South</u>					
1	M4	7,472	10,047	(2,574)	15.467	(39,816)
2	M5	12,204	15,362	(3,158)	27.188	(85,856)
3	M7	4,573	5,587	(1,014)	3.392	(3,439)
4	T1	3,242	3,895	(653)	1.095	(715)
5	T2	6,559	30,384	(23,824)	0.258	(6,147)
6		<u>34,051</u>	<u>65,275</u>	<u>(31,224)</u>		<u>(135,972)</u>
	<u>North</u>					
7	Rate 20	917	1,621	(705)	5.369	(3,785)
8	Rate 100	214	762	(548)	2.200	(1,206)
9		<u>1,130</u>	<u>2,384</u>	<u>(1,253)</u>		<u>(4,990)</u>
10	Total	<u>35,182</u>	<u>67,658</u>	<u>(32,477)</u>		<u>(140,962)</u>

Notes:

⁽¹⁾ EB-2018-0305 Exhibit F1 Tab 2 Rate Order Working Papers Schedule 14 page 3 column f

⁽²⁾ EB-2018-0305 Exhibit F1 Tab 2 Rate Order Working Papers Schedule 14 page 3 column c

ENBRIDGE GAS INC.
UNION RATE ZONES
2017 LRAM Audited Revenue Impacts

Line		2017 Audited Volumes ⁽¹⁾ 10 ³ m ³	2017 LRAM Volumes in 2017 Rates 10 ³ m ³	2017 Net LRAM Volumes 10 ³ m ³	2018 Delivery Rates \$/10 ³ m ³	Revenue Impact (\$)
No.	Particulars (\$)	(a)	(b)	(c) = (a) - (b)	(d)	(e) = (c) x (d)
	<u>South</u>					
1	M4	19,310	-	19,310	15.467	298,653
2	M5	3,585	-	3,585	27.188	97,467
3	M7	3,898	-	3,898	3.392	13,221
4	T1	6,267	-	6,267	1.095	6,859
5	T2	7,969	-	7,969	0.258	2,056
6		<u>41,028</u>	<u>-</u>	<u>41,028</u>		<u>418,256</u>
	<u>North</u>					
7	Rate 20	703	-	703	5.369	3,773
8	Rate 100	1,506	-	1,506	2.200	3,312
9		<u>2,209</u>	<u>-</u>	<u>2,209</u>		<u>7,085</u>
10	Total	<u>43,237</u>	<u>-</u>	<u>43,237</u>		<u>425,342</u>

Notes:

⁽¹⁾ Volumes reflect 2017 audited volumes, not adjusted for month of install.

ENBRIDGE GAS INC.
UNION RATE ZONES
2018 LRAM Audited Revenue Impacts

Line No.	Particulars	2018 Audited Volumes ⁽¹⁾ 10 ³ m ³ (a)	2018 LRAM Volumes in 2018 Rates 10 ³ m ³ (b)	2018 Net LRAM Volumes 10 ³ m ³ (c) = (a) - (b)	2018 Delivery Rates \$/10 ³ m ³ (d)	Revenue Impact (\$) (e) = (c) x (d)
	Realization Rate					
	<u>South</u>					
1	M4	8,301	-	8,301	15.467	128,387
2	M5	305	-	305	27.188	8,292
3	M7	2,914	-	2,914	3.392	9,884
4	T1	1,402	-	1,402	1.095	1,534
5	T2	4,893	-	4,893	0.258	1,262
6		<u>17,815</u>	<u>-</u>	<u>17,815</u>		<u>149,360</u>
	<u>North</u>					
7	Rate 20	1,789	-	1,789	5.369	9,605
8	Rate 100	155	-	155	2.200	341
9		<u>1,944</u>	<u>-</u>	<u>1,944</u>		<u>9,946</u>
10	Total	<u>19,759</u>	<u>-</u>	<u>19,759</u>		<u>159,306</u>

Notes:

⁽¹⁾ Volumes reflect 2018 audited volumes, adjusted for month of install.

ENBRIDGE GAS INC.
Union Rate Zones
Union North and Union South Combined Unit Rates - Delivery
2017 & 2018 DSM Deferral Account Disposition

Line No.	Particulars	Rate Class	2017 Unit Rate (1) (cents/m ³) (a)	2018 Unit Rate (2) (cents/m ³) (b)	Total Unit Rate (3) (cents/m ³) (c) = (a + b)
<u>Union North</u>					
1	Small Volume General Service	01	(0.3157)	(0.2828)	(0.5985)
2	Large Volume General Service	10	(0.4068)	(0.6264)	(1.0332)
3	Medium Volume Firm Service	20	(0.0387)	(0.3169)	(0.3556)
4	Large Volume High Load Factor	100	(0.1100)	(0.1082)	(0.2182)
5	Large Volume Interruptible	25	-	-	-
<u>Union South</u>					
6	Small Volume General Service	M1	0.8578	0.9453	1.8031
7	Large Volume General Service	M2	(0.2547)	(0.3560)	(0.6107)
8	Firm Com/Ind Contract	M4	0.1584	0.3084	0.4668
9	Interruptible Com/Ind Contract	M5A	0.4828	0.1852	0.6680
10	Special Large Volume Contract	M7	0.0764	0.1999	0.2763
11	Large Wholesale	M9	-	-	-
12	Small Wholesale	M10	-	-	-
13	Contract Carriage Service	T1	0.2381	0.0876	0.3257
14	Contract Carriage Service	T2	(0.0157)	(0.0073)	(0.0230)
15	Contract Carriage- Wholesale	T3	-	-	-

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendixes A13 and A14, column (c).
- (2) Exhibit C, Tab 3, Schedule 1, Appendixes A17 and A18.
- (3) Unit rate for general service rate classes represents the unit rate for prospective recovery for the period January 1, 2021 to June 30, 2021. Unit rate contract rate classes represents the unit rate for one-time adjustment applied to 2018 actual volumes by customer.

ENBRIDGE GAS INC.
Union Rate Zones
2017 DSM Deferral & Variance Account Balances

Line No.	Account Number	Account Name (\$000's)	2017		
			Balance (a)	Interest (b)	Total (c)
1	179-111	Demand Side Management VA	6,011	350	6,361
2	179-126	Demand Side Management Incentive DA	5,519	340	5,859
3	179-75	Lost Revenue Adjustment Mechanism VA	468	32	500
4	Total 2017 Union Rate Zones		<u>11,999</u>	<u>721</u>	<u>12,720</u>

ENBRIDGE GAS INC.
Union Rate Zones
Allocation of 2017 DSM Deferral Account Balances

Line No.	Particulars (\$000's)	Acct No.	Union North					Union South										
			Rate 01	Rate 10	Rate 20	Rate 100	Rate 25	M1	M2	M4	M5	M7	M9	M10	T1	T2	T3	Total (1)
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
<u>2017 DSM Deferral Account Balances</u>																		
<u>Delivery-Related Deferrals</u>																		
1	Demand Side Management VA (2)	179-111	(2,458)	(1,028)	(321)	(1,137)	-	13,275	(2,750)	288	33	225	-	-	872	(636)	-	6,361
2	Demand Side Management Incentive DA	179-126	459	174	128	-	-	3,300	820	528	103	113	-	-	232	-	-	5,859
3	Lost Revenue Adjustment Mechanism VA	179-75	-	-	7	(5)	-	-	-	223	222	53	-	-	5	(6)	-	500
4	Total Delivery-Related Deferrals		(2,000)	(854)	(186)	(1,143)	-	16,576	(1,929)	1,039	358	392	-	-	1,109	(642)	-	12,720

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A11, column (c).
(2) Demand Side Management Variance Account balances for Rate M4, M5 and M7 are allocated based on 2018 actual volumes to derive a common unit rate for disposition for all three rate classes, as illustrated below.

Rate Class	2017 Account (i) (\$000s) (a)	2017 Interest (\$000s) (b)	Total Account Balances (\$000s) (c) = (a + b)	2018 Actual Volume (10³m³) (d)	Pooled Account Balances (ii) (\$000s) (e)	Unit Rate (cents/m³) (f)=(e/d) x 100
M4	2,251	131	2,382	655,590	288	0.0439
M5	(851)	(50)	(900)	74,239	33	0.0439
M7	(885)	(52)	(937)	512,402	225	0.0439
Total	515	30	545	1,242,231	545	

(i) - Exhibit C, Tab 3, Schedule 1, Table 6.

(ii)- Allocated in proportion to column (a).

ENBRIDGE GAS INC.
Union Rate Zones
General Service Unit Rates for Prospective Recovery/(Refund) - Delivery
2017 DSM Deferral Account Disposition

Line No.	Particulars	Rate Class	Deferral Balance for Disposition (\$000's) (1) (a)	Forecast Volume (10 ³ m ³) (2) (b)	Unit Rate for Prospective Recovery/(Refund) (cents/m ³) (c) = (a / b) * 100
	<u>Union North</u>				
1	Small Volume General Service	01	(2,000)	633,352	(0.3157)
2	Large Volume General Service	10	(854)	209,830	(0.4068)
	<u>Union South</u>				
3	Small Volume General Service	M1	16,576	1,932,415	0.8578
4	Large Volume General Service	M2	(1,929)	757,396	(0.2547)
5	Total General Service		<u>11,793</u>		

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A12.
(2) Forecast volume for the period January 1, 2021 to June 30, 2021.

ENBRIDGE GAS INC.
Union Rate Zones
Contract Unit Rates for One-Time Adjustment - Delivery
2017 DSM Deferral Account Disposition

Line No.	Particulars	Rate Class	Deferral Balance for Disposition (\$000's) (1) (a)	2018 Actual Volume (10 ³ m ³) (b)	Unit Rate (cents/m ³) (c) = (a / b) * 100
	<u>Union North</u>				
1	Medium Volume Firm Service	20	(186)	479,772	(0.0387)
2	Large Volume High Load Factor	100	(1,143)	1,038,311	(0.1100)
3	Large Volume Interruptible	25	-	156,345	-
	<u>Union South</u>				
4	Firm Com/Ind Contract	M4	1,039	655,590	0.1584
5	Interruptible Com/Ind Contract	M5A	358	74,239	0.4828
6	Special Large Volume Contract	M7	392	512,402	0.0764
7	Large Wholesale	M9	-	78,356	-
8	Small Wholesale	M10	-	408	-
9	Contract Carriage Service	T1	1,109	465,539	0.2381
10	Contract Carriage Service	T2	(642)	4,099,141	(0.0157)
11	Contract Carriage- Wholesale	T3	-	278,781	-
12	Total Contract Service		<u>927</u>		

Notes:

(1) Exhibit C, Tab 3, Schedule 1, Appendix A12.

ENBRIDGE GAS INC.
Union Rate Zones
2018 DSM Deferral & Variance Account Balances

Line No.	Account Number	Account Name (\$000's)	2018		
			Balance	Interest	Total
			(a)	(b)	(c)
1	179-111	Demand Side Management VA	5,851	234	6,085
2	179-126	Demand Side Management Incentive DA	6,366	239	6,606
3	179-75	Lost Revenue Adjustment Mechanism VA	402	19	422
4	Total 2018 Union Rate Zones		<u>12,619</u>	<u>493</u>	<u>13,112</u>

ENBRIDGE GAS INC.
Union Rate Zones
Allocation of 2018 DSM Deferral Account Balances

Line No.	Particulars (\$000's)	Acct No.	Union North					Union South										
			Rate 01	Rate 10	Rate 20	Rate 100	Rate 25	M1	M2	M4	M5	M7	M9	M10	T1	T2	T3	Total (1)
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
<u>2018 DSM Deferral Account Balances</u>																		
<u>Delivery-Related Deferrals</u>																		
1	Demand Side Management VA (2)	179-111	(2,360)	(1,464)	(1,539)	(1,118)	-	14,291	(3,445)	942	107	736	-	-	225	(291)	-	6,085
2	Demand Side Management Incentive DA	179-126	569	149	9	-	-	3,976	749	681	29	268	-	-	178	-	-	6,606
3	Lost Revenue Adjustment Mechanism VA	179-75	-	-	10	(5)	-	-	-	399	2	20	-	-	5	(10)	-	422
4	Total Delivery-Related Deferrals		(1,791)	(1,314)	(1,521)	(1,124)	-	18,267	(2,696)	2,022	137	1,024	-	-	408	(301)	-	13,112

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A15, column (c).
(2) Demand Side Management Variance Account balances for Rate M4, M5 and M7 are allocated based on 2018 actual volumes to derive a common unit rate for disposition for all three rate classes, as illustrated below.

Rate Class	2018 Account (i) (\$000s) (a)	2018 Interest (\$000s) (b)	Total Account Balances (\$000s) (c) = (a + b)	2018 Actual Volume (10³m³) (d)	Pooled Account (ii) (\$000s) (e)	Unit Rate (cents/m³) (f)=(e/d) x 100
M4	2,914	117	3,031	655,590	942	0.1437
M5	(1,589)	(64)	(1,653)	74,239	107	0.1437
M7	391	16	407	512,402	736	0.1437
Total	1,716	69	1,785	1,242,231	1,785	

- (i) - Exhibit C, Tab 3, Schedule 1, Table 7.
(ii)- Allocated in proportion to column (a).

ENBRIDGE GAS INC.
Union Rate Zones
General Service Unit Rates for Prospective Recovery/(Refund) - Delivery
2018 DSM Deferral Account Disposition

Line No.	Particulars	Rate Class	Deferral Balance for Disposition (\$000's) (1) (a)	Forecast Volume (10 ³ m ³) (2) (b)	Unit Rate for Prospective Recovery/(Refund) (cents/m ³) (c) = (a / b) * 100
	<u>Union North</u>				
1	Small Volume General Service	01	(1,791)	633,352	(0.2828)
2	Large Volume General Service	10	(1,314)	209,830	(0.6264)
	<u>Union South</u>				
3	Small Volume General Service	M1	18,267	1,932,415	0.9453
4	Large Volume General Service	M2	(2,696)	757,396	(0.3560)
5	Total General Service		<u>12,465</u>		

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A16.
- (2) Forecast volume for the period January 1, 2021 to June 30, 2021.

ENBRIDGE GAS INC.
Union Rate Zones
Contract Unit Rates for One-Time Adjustment - Delivery
2018 DSM Deferral Account Disposition

Line No.	Particulars	Rate Class	Deferral Balance for Disposition (\$000's) (1) (a)	2018 Actual Volume (10 ³ m ³) (b)	Unit Rate (cents/m ³) (c) = (a / b) * 100
	<u>Union North</u>				
1	Medium Volume Firm Service	20	(1,521)	479,772	(0.3169)
2	Large Volume High Load Factor	100	(1,124)	1,038,311	(0.1082)
3	Large Volume Interruptible	25	-	156,345	-
	<u>Union South</u>				
4	Firm Com/Ind Contract	M4	2,022	655,590	0.3084
5	Interruptible Com/Ind Contract	M5A	137	74,239	0.1852
6	Special Large Volume Contract	M7	1,024	512,402	0.1999
7	Large Wholesale	M9	-	78,356	-
8	Small Wholesale	M10	-	408	-
9	Contract Carriage Service	T1	408	465,539	0.0876
10	Contract Carriage Service	T2	(301)	4,099,141	(0.0073)
11	Contract Carriage- Wholesale	T3	-	278,781	-
12	Total Contract Service		<u>647</u>		

Notes:

(1) Exhibit C, Tab 3, Schedule 1, Appendix A16.

UNION RATE ZONES: ESTIMATED ANNUAL BILL IMPACT

1. For a Rate M1 sales service and bundled DP residential customer in the Union South rate zone with annual consumption of 2,200 m³, the charge for the period January 1, 2021 to June 30, 2021 is \$27.01.
2. For a Rate 01 sales service and bundled DP residential customer in the Union North West rate zone and Union North East rate zone with annual consumption of 2,200 m³, the credit for the period January 1, 2021 to June 30, 2021 is \$8.97.
3. Bill impacts of the proposed disposition for the Union rate zones are set out at Exhibit C, Tab 3, Schedule 2, Appendix A1 for General Service customers and at Exhibit C, Tab 3, Schedule 2, Appendix A2 for Contract customers.

ENBRIDGE GAS INC.
Union Rate Zones
Calculation of General Service Bill Impacts
2017 & 2018 DSM Deferral Account Disposition

Line No.	Particulars	Unit Rate for Prospective Recovery/(Refund) (cents/m ³) (1) (a)	Volume (m ³) (2) (b)	Bill Impact (\$ (3) (c) = (a x b) / 100
<u>Union North - Delivery</u>				
1	Rate 01	(0.5985)	1,498	(8.97)
2	Rate 10	(1.0332)	54,167	(559.65)
<u>Union South - Delivery</u>				
3	Rate M1	1.8031	1,498	27.01
4	Rate M2	(0.6107)	49,129	(300.03)

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A10, column (c).
- (2) Average consumption, per customer, for the period January 1, 2021 to June 30, 2021.
Rate 01 volume based on annual consumption of 2,200 m³.
Rate 10 volume based on annual consumption of 93,000 m³.
Rate M1 volume based on annual consumption of 2,200 m³.
Rate M2 volume based on annual consumption of 73,000 m³.
- (3) Bill Impacts for sales service and direct purchase customers.

ENBRIDGE GAS INC.
Union Rate Zones
Calculation of One-Time Adjustments for Typical Small and Large Customers
2017 & 2018 DSM Deferral Account Disposition

Line No.	Particulars	Unit Rate (cents/m ³) (1)	Annual Volume (m ³)	Bill Impact (\$ (2) (c) = (a x b) / 100
	<u>Union North - Delivery</u>	(a)	(b)	
1	Small Rate 20	(0.3556)	3,000,000	(10,668)
2	Large Rate 20	(0.3556)	15,000,000	(53,340)
3	Average Rate 25	-	2,275,000	-
4	Small Rate 100	(0.2182)	27,000,000	(58,914)
5	Large Rate 100	(0.2182)	240,000,000	(523,680)
	<u>Union South</u>			
6	Small Rate M4	0.4668	875,000	4,085
7	Large Rate M4	0.4668	12,000,000	56,016
8	Small Rate M5 Interruptible	0.6680	825,000	5,511
9	Large Rate M5 Interruptible	0.6680	6,500,000	43,420
10	Small Rate M7	0.2763	36,000,000	99,468
11	Large Rate M7	0.2763	52,000,000	143,676
12	Small Rate M9	-	6,950,000	-
13	Large Rate M9	-	20,178,000	-
14	Rate M10	-	94,500	-
15	Small Rate T1	0.3257	7,537,000	24,548
16	Average Rate T1	0.3257	11,565,938	37,670
17	Large Rate T1	0.3257	25,624,080	83,458
18	Small Rate T2	(0.0230)	59,256,000	(13,629)
19	Average Rate T2	(0.0230)	197,789,850	(45,492)
20	Large Rate T2	(0.0230)	370,089,000	(85,120)
21	Large Rate T3	-	272,712,000	-

Notes:

- (1) Exhibit C, Tab 3, Schedule 1, Appendix A10, column (c).
(2) One-time adjustment for sales service and direct purchase customers.