



ONTARIO GAS DSM EVALUATION CONTRACTOR

# 2024 Natural Gas Demand Side Management Annual Verification Report

Ontario Energy Board

**Date:** March 18, 2026





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# 1 AUDIT OPINION

Enbridge Gas Inc. implemented energy conservation programs designed to reduce natural gas use at participating customer’s homes and businesses throughout the 2024 calendar year. The programs were approved by the Ontario Energy Board (OEB) and were available to all types of natural gas customers, including residential, low-income, commercial, and industrial.

The energy conservation programs, called demand side management (DSM) programs, are regulated by the OEB. The OEB establishes policy guidance, holds public hearings to determine the merit of utility proposals, and approves the use of ratepayer funding for the utility to implement the programs. Depending on the level of success in meeting its annual OEB-approved targets, Enbridge may be eligible for a performance incentive, called the shareholder incentive. The maximum possible shareholder incentive is \$22,321,200, although this amount is only available if performance meets 125% of all OEB-approved targets. Enbridge may claim lost revenue as a result of the lower natural gas sales.

The Evaluation Contractor (EC) team<sup>1</sup> (DNV and Dunsky) provides the following opinion on the achieved natural gas savings, lost revenue, shareholder incentive, and cost-effectiveness of the DSM programs offered by Enbridge for the calendar year ending December 31, 2024. Our opinion stems from our review of the program documentation, utility shareholder incentive calculations, and lost revenue calculations as set forth in the report that follows. It is also based on the information available at the time that this report was published.

The EC confirmed that the method to determine the cost-effectiveness results followed the framework and past practice consistently and correctly; however, some key assumptions in 2024 do not match the reality of the current market. The resulting value is biased downward and is lower than in previous years. Specifically, three things individually affected the portfolio result enough to drive it below 1.0. These were an outlier inflation value across the portfolio, an unusual measure mix within one offering, and the approach to measure costs for some of the measures in the same offering. The EC expects these three concerns to be short-term and not representative of the long-term performance of the portfolio.

| Definition                                  | Enbridge Results |
|---|------------------|
| Shareholder Incentive                       | \$12,731,622     |
| Lost Revenue                                | \$273,517        |
| Verified Net Annual Energy Savings (m3)     | 160,919,553      |
| Verified Net Cumulative Energy Savings (m3) | 2,707,959,439    |
| Total Dollars Spent (not reviewed)          | \$302,109,812    |
| Benefit Cost Ratio (TRC-plus test)*         | 0.64             |

\* Some key assumptions in 2024 which do not match the reality of the current market biased the benefit cost ratio result lower than previous years. This value is not representative of the long-term performance of the portfolio. Please see the discussion in Appendix Q of this report for more detail.

<sup>1</sup> DNV leads the Evaluation Contractor team and led the evaluation of the 2024 DSM programs, with contributions from Dunsky.

## 2 EXECUTIVE SUMMARY

Enbridge Gas Inc.<sup>2</sup> delivers demand side management (DSM) programs under the Natural Gas Demand Side Management Framework<sup>3</sup> developed by the Ontario Energy Board (OEB). Through development of the framework and approval of DSM plans, the OEB sets budgets, targets, and cost-effectiveness thresholds, in addition to establishing a shareholder incentive for the successful delivery of the approved programs.

The OEB verifies, on an annual basis, natural gas savings and other aspects of energy conservation programs provided by Enbridge and funded by ratepayers. The energy conservation programs are designed to reduce customer demand for gas through increases in energy efficient technologies, equipment, and behaviours, using various methods such as financial incentives, building modifications, education, and outreach. These programs attempt to impact customers' energy usage (demand) rather than utility energy capacity (supply), which is why they are referred to as demand side management programs.

This report provides the results of the annual verification of natural gas DSM programs delivered in 2024 and offered by Enbridge. The verification was conducted on behalf of the OEB by its independent, third-party evaluation contractor (EC), the team of DNV and Dunsky.

Figure 2-1 provides a general depiction of the broader process of creating DSM programs and their evaluation that led to this evaluation report.

**Figure 2-1. Creation and evaluation process for DSM programs**



\*The OEB's EC conducts an expert, independent review to verify the program results, including natural gas savings and participants, and provides an opinion on the utility performance related to OEB-approved targets

\*\*Eligible amounts include performance incentives the utility may be eligible to receive due to meeting or exceeding OEB-approved targets, lost revenues related to program-related natural gas savings, and changes to costs previously approved by the OEB

Independently verified program results, such as natural gas savings and the number of participants, provide important information to the OEB on the success and effectiveness of the programs and prudent use of ratepayer funding. Additionally, the utility needs verified results to seek approval of any performance incentive related to OEB-approved targets. The financial incentive goes to Enbridge's shareholders. The financial incentive is determined by reviewing the utility's accomplishments against their OEB-set targets, assembled in groupings called scorecards, along with associated metrics that are used to determine program achievements. The degree of verified achievement (relative to the metric target) determines the shareholder incentive for the utility DSM plan. The shareholder incentive is paid to the utility shareholders to encourage the utility to deliver DSM programs.

The annual verification uses the findings of any program-specific evaluation study applicable to the 2024 programs and applies them to the natural gas energy savings and achieved scorecard values reported by the utility to the OEB. For programs or metrics where no evaluation studies have been completed during the current evaluation, the EC conducts a due diligence review of program documentation to verify the savings or metrics reported by the utilities.

<sup>2</sup> For ease of reference, throughout this report, the EC has referred to Enbridge Gas Inc. as Enbridge.

<sup>3</sup> EB-2021-0002

The overall objectives are to provide an independent opinion on whether natural gas savings achieved through programs are reasonable, and that the corresponding DSM shareholder incentives and lost revenue amounts have been accurately calculated. Table 2-1 shows the verified, comprehensive scorecard results.

The OEB also requires the utility to deliver DSM programs that are cost-effective, which means the benefits produced by the programs (including the benefits of reductions in the use of natural gas, electricity, water, and carbon emissions) outweigh their costs (including the utility's program costs and additional costs borne by customers to purchase efficiency measures). The methods that the EC used to calculate cost-effectiveness in 2024 are the same ones used in the 2023 analysis. The overall cost-effectiveness of Enbridge's 2024 portfolio was 0.64 as measured by the TRC-Plus test (Program Administrator Cost (PAC) test results were 3.04).

The cost-effectiveness results (in terms of TRC-Plus benefit-cost ratio) for each program are found in Table 2-1 in the rightmost column. The bigger the number, the more cost-effective the program. This table also shows the amount of money spent by Enbridge to implement the energy efficiency programs. The EC confirmed that the method to determine the cost-effectiveness results followed the framework and past practice consistently and correctly. However, some key assumptions in 2024 do not match the reality of the current market. Specifically, three things individually biased the portfolio result downward enough to drive it below 1.0:

- First, an outlier inflation value of 4.26%<sup>4</sup> artificially devalued savings and benefits above more reasonable inflation forecasts, while having no effect on costs, which are incurred in the first year.
- Second, an unusual measure mix within Enbridge's joint HER+ offering with Natural Resources Canada included a high proportion of cost inefficient measures.
- Third, the approach to measure costs for some of the measures in the HER+ offering was conservatively high.

The EC expects these three concerns to be short-term and not representative of the long-term performance of the portfolio.<sup>5</sup>

Table 2-2 shows the verified revenues that Enbridge lost as a result of implementing DSM programs. The lost revenue is shown by rate class and is only the revenue lost during the 2024 calendar year.<sup>6</sup> A rate class is a group of customers that pay the same rate for their gas usage and service.

To ensure the approved DSM plan maintains sufficient longer-term benefits, Enbridge is also required to annually maintain a minimum weighted average measure life (WAML) of 14 years, excluding the Large Volume Program. Table 2-3 shows the WAML of Enbridge DSM programs in 2024.

In summary:

- The EC verified that Enbridge programs offered in 2024 achieved:
  - Savings in 2024 of 160,919,553 m<sup>3</sup>
  - Cumulative savings of 2,707,959,439 m<sup>3</sup> (translating to emissions reductions of 5,201,990 tons of CO<sub>2</sub> equivalent<sup>7</sup>)

In this report, we make several recommendations for the programs, focusing primarily on issues related to energy modelling, appropriate adjustment values, and cost-effectiveness.

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<sup>4</sup> Inflation was calculated in accordance with the OEB's 2022 DSM Framework (Section 11.1 – Inflation Rate, p. 33) as the four-quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index for Final Domestic Demand, based on the most recently available information. While the resulting 4.26% inflation rate is anomalous and not representative of Bank of Canada or other forecasts of future inflation (which are closer to 2% per year), the 4.26% rate gets applied to the entire life of energy efficiency measures.

<sup>5</sup> See Appendix Q for greater detail.

<sup>6</sup> The lost revenue shown in this table is not the entire lost revenue the utility realizes from its DSM programs. A forecast DSM amount, built into natural gas rates, accounts for a large majority of lost revenues.

<sup>7</sup> This calculation uses CO<sub>2</sub> emission factors for natural gas provided by the [Government of Canada](#).



## 2.1 Results tables

Table 2-1. Savings, spend, cost-effectiveness, and incentive results\*

| Programs and Offerings               | Metric                                     | Verified Savings or Other Metric | Cumulative Savings   | Percent of Target Achieved | DSM Shareholder Incentive | OEB-Approved Program Budget | Utility Spending     | Budget/Spending Variance | Benefit Cost Ratio (TRC Plus Test)** | Net Present Value (TRC Plus)** |                      |                      |             |
|--------------------------------------|--|----------------------------------|----------------------|----------------------------|---------------------------|-----------------------------|----------------------|--------------------------|--------------------------------------|--------------------------------|----------------------|----------------------|-------------|
| <b>Residential Program</b>           |  | <b>56,482,829</b>                | <b>1,373,715,844</b> |                            |                           | <b>\$78,855,831</b>         | <b>\$203,014,220</b> | <b>\$124,158,389</b>     | <b>0.39</b>                          | <b>-\$865,869,482</b>          |                      |                      |             |
| Residential Whole Home               | Net Annual Gas Savings (m3)                | 52,647,340                       | 1,316,183,507        | 208.5%                     | \$4,910,664               | \$67,771,524                | \$197,439,979        | \$129,668,455            | 0.37                                 | -\$888,496,901                 |                      |                      |             |
| Residential Single Measure           | Net Annual Gas Savings (m3)                | 0                                | 0                    |                            |                           | \$4,931,408                 | \$73,670             | -\$4,857,739             | 0.00                                 | -\$73,670                      |                      |                      |             |
| Residential Smart Home               | Net Annual Gas Savings (m3)                | 3,835,489                        | 57,532,337           |                            |                           | \$4,247,687                 | \$3,525,791          | -\$721,896               | 3.50                                 | \$22,701,088                   |                      |                      |             |
| Residential Administration           | N/A  | N/A                              | N/A                  |                            |                           | N/A                         | \$1,905,211          | \$1,974,779              | \$69,568                             | N/A                            | N/A                  |                      |             |
| <b>Low-Income Program</b>            |  | <b>7,888,570</b>                 | <b>163,046,292</b>   |                            |                           | <b>\$24,550,848</b>         | <b>\$32,646,728</b>  | <b>\$8,095,880</b>       | <b>1.92</b>                          | <b>\$32,572,193</b>            |                      |                      |             |
| Home Winterproofing                  | Net Annual Gas Savings (m3)                | 3,865,194                        | 86,286,043           | 142.5%                     | \$4,130,554               | \$15,352,623                | \$21,866,467         | \$6,513,844              | 1.73                                 | \$15,572,202                   |                      |                      |             |
| Affordable Housing Multi-Residential | Net Annual Gas Savings (m3)                | 4,023,376                        | 76,760,249           | 94.3%                      |                           | \$7,624,376                 | \$9,394,725          | \$1,770,349              | 2.21                                 | \$16,999,991                   |                      |                      |             |
| Low-Income Administration            | N/A  | N/A                              | N/A                  | N/A                        |                           | \$1,573,850                 | \$1,385,537          | -\$188,313               | N/A                                  | N/A                            |                      |                      |             |
| <b>Commercial Program</b>            |  | <b>28,276,348</b>                | <b>392,114,043</b>   |                            |                           | <b>\$26,838,855</b>         | <b>\$25,352,080</b>  | <b>-\$1,486,775</b>      | <b>2.22</b>                          | <b>\$93,804,223</b>            |                      |                      |             |
| Commercial Custom                    | Large Customer Net Annual Gas Savings (m3) | 19,639,721                       | 282,470,205          | 82.5%                      | \$1,167,795               | \$12,618,196                | \$10,340,226         | -\$2,277,970             | 1.91                                 | \$54,468,401                   |                      |                      |             |
| Prescriptive Downstream              |  | 2,265,086                        | 31,080,060           |                            |                           | \$2,601,901                 | \$2,496,649          | -\$105,253               | 2.89                                 | \$9,765,934                    |                      |                      |             |
| Direct Install                       | Small Customer Net Annual Gas Savings (m3) | 4,792,542                        | 55,889,849           | 97.2%                      |                           | \$5,090,069                 | \$6,149,253          | \$1,059,184              | 4.35                                 | \$21,091,281                   |                      |                      |             |
| Prescriptive Midstream               |  | 1,578,999                        | 22,673,929           |                            |                           | \$2,585,754                 | \$2,156,112          | -\$429,642               | 2.66                                 | \$8,478,607                    |                      |                      |             |
| Commercial Administration            | N/A  | N/A                              | N/A                  | N/A                        |                           | \$3,942,935                 | \$4,209,840          | \$266,906                | N/A                                  | N/A                            |                      |                      |             |
| <b>Industrial Program</b>            |  | <b>56,794,944</b>                | <b>747,187,490</b>   |                            |                           | <b>\$19,040,425</b>         | <b>\$15,484,831</b>  | <b>-\$3,555,594</b>      | <b>4.23</b>                          | <b>\$172,607,524</b>           |                      |                      |             |
| Industrial Custom                    | Net Annual Gas Savings (m3)                | 56,794,944                       | 747,187,490          | 87.3%                      | \$966,677                 | \$14,815,296                | \$11,767,282         | -\$3,048,014             | 4.23                                 | \$172,607,524                  |                      |                      |             |
| Industrial Administration            | N/A  | N/A                              | N/A                  | N/A                        |                           | \$4,225,129                 | \$3,717,549          | -\$507,580               | N/A                                  | N/A                            |                      |                      |             |
| <b>Large Volume Program</b>          |  | <b>11,200,723</b>                | <b>29,134,390</b>    |                            |                           | <b>\$2,954,755</b>          | <b>\$2,475,139</b>   | <b>-\$479,616</b>        | <b>2.57</b>                          | <b>\$3,464,009</b>             |                      |                      |             |
| Direct Access                        | Net Annual Gas Savings (m3)                | 11,200,723                       | 29,134,390           | 47.2%                      | \$0                       | \$2,723,400                 | \$2,244,899          | -\$478,501               | 2.57                                 | \$3,464,009                    |                      |                      |             |
| Large Volume Administration          | N/A  | N/A                              | N/A                  | N/A                        |                           | \$231,355                   | \$230,241            | -\$1,114                 | N/A                                  | N/A                            |                      |                      |             |
| <b>Energy Performance Program</b>    |  | <b>276,138</b>                   | <b>2,761,380</b>     |                            |                           | <b>\$1,281,378</b>          | <b>\$1,081,465</b>   | <b>-\$199,914</b>        | <b>1.67</b>                          | <b>\$505,748</b>               |                      |                      |             |
| Whole Building Pay for Performance   | Participants                               | 27                               | N/A                  | 108.0%                     | \$223,212                 | \$1,171,140                 | \$1,033,739          | -\$137,401               | 1.67                                 | \$505,748                      |                      |                      |             |
|                                      | Net Annual Gas Savings (m3)                | 276,138                          | 2,761,380            | 220.9%                     |                           | \$110,238                   | \$47,726             | -\$62,513                | N/A                                  | N/A                            |                      |                      |             |
| Energy Performance Administration    | N/A  | N/A                              | N/A                  | N/A                        |                           |                             |                      |                          |                                      |                                |                      |                      |             |
| <b>Building Beyond Code Program</b>  |  | <b>N/A</b>                       | <b>N/A</b>           |                            |                           | <b>\$9,951,354</b>          | <b>\$7,467,314</b>   | <b>-\$2,484,040</b>      | <b>N/A</b>                           | <b>N/A</b>                     |                      |                      |             |
| Residential Savings by Design        | Energy Star Homes                          | 747                              | N/A                  | 37.4%                      | \$1,332,720               | \$4,909,760                 | \$2,602,898          | -\$2,306,862             | N/A                                  | N/A                            |                      |                      |             |
|                                      | Net Zero Ready Homes                       | 18                               |                      | 180.0%                     |                           | \$1,406,328                 | \$974,375            | -\$431,953               |                                      |                                |                      |                      |             |
| Commercial Savings by Design         | Participants                               | 26                               |                      | 83.9%                      |                           | \$2,562,624                 | \$2,883,904          | \$321,280                |                                      |                                |                      |                      |             |
| Affordable Housing Savings by Design | Participants                               | 28                               |                      | 133.3%                     |                           | \$515,436                   | \$348,760            | -\$166,676               |                                      |                                |                      |                      |             |
| Commercial Air Tightness Testing     | Participants                               | 8                                |                      | 133.3%                     |                           | \$557,206                   | \$657,377            | \$100,171                |                                      |                                |                      |                      |             |
|                                      | Qualified Agents                           | 24                               |                      | 240.0%                     |                           |                             |                      |                          |                                      |                                |                      |                      |             |
| Building Beyond Code Administration  | N/A  | N/A                              |                      | N/A                        |                           | N/A                         |                      |                          |                                      |                                |                      |                      |             |
| <b>Enbridge Program Total</b>        |  | <b>160,919,553</b>               |                      | <b>2,707,959,439</b>       |                           |                             | <b>\$12,731,622</b>  | <b>\$163,473,447</b>     |                                      |                                | <b>\$287,521,777</b> | <b>\$124,048,330</b> | <b>0.64</b> |
| Portfolio Administrative Costs       |  |                                  |                      |                            |                           | \$19,608,480                | \$14,588,035         | -\$5,020,445             |                                      |                                |                      |                      |             |
| <b>Enbridge Portfolio Total</b>      |  |                                  |                      |                            |                           | <b>\$183,081,927</b>        | <b>\$302,109,812</b> | <b>\$119,027,885</b>     |                                      |                                |                      |                      |             |

\*Not all values may compute exactly due to rounding.

\*\* Some key assumptions in 2024, which do not match the reality of the current market, biased the result lower than previous years. This value is not representative of the long-term performance of the portfolio. Please see the discussion in Appendix Q of this report for more detail.



**Table 2-2. Lost revenue results\***

| Rate Zone    | Rate Class | Verified Lost Revenue |
|--------------|------------|-----------------------|
| EGD          | Rate 100   | \$6,084               |
|              | Rate 110   | \$71,735              |
|              | Rate 115   | \$0                   |
|              | Rate 135   | \$40,472              |
|              | Rate 145   | \$5,049               |
|              | Rate 170   | \$3,450               |
| Union South  | Rate M4    | \$79,293              |
|              | Rate M5    | \$15,227              |
|              | Rate M7    | \$25,595              |
|              | Rate T1    | \$1,495               |
|              | Rate T2    | \$1,881               |
| Union North  | Rate 20    | \$21,181              |
|              | Rate 100   | \$2,054               |
| <b>Total</b> |            | <b>\$273,517</b>      |

\*Not all values may compute exactly due to rounding.

**Table 2-3. Weighted average measure life results\***

| Metric  | Value         |
|---|---------------|
| <b>Verified Net Cumulative Natural Gas Savings (m3)**</b> | 2,678,825,049 |
| <b>Verified Net Annual Natural Gas Savings (m3)**</b>     | 149,718,829   |
| <b>Weighted Average Measure Life</b>                      | 17.89         |

\*Not all values may compute exactly due to rounding.

\*\*Excludes the Large Volume Program

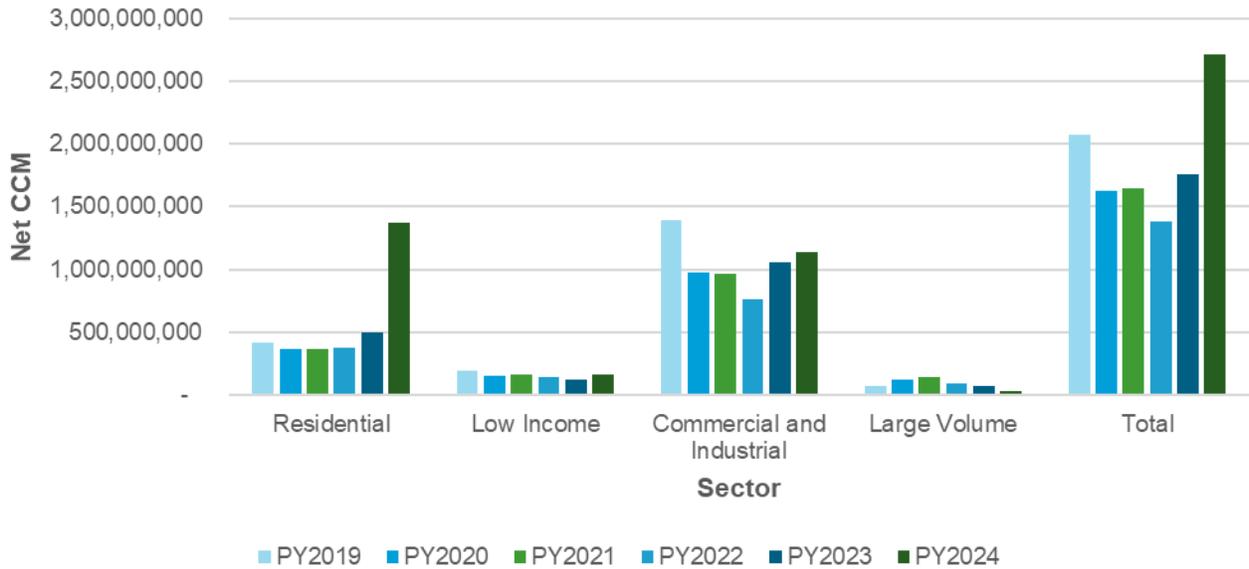
## 2.2 Historical Performance

This section places the PY2024 results in the context of final verified results of recent years. Figure 2-2 and Figure 2-3 show historical portfolio performance for PY2019 through PY2024. For each sector, performance over time is displayed in order from left to right. These figures provide a point of comparison to program performance over time and highlight the efficacy of programs within their respective sectors.

Figure 2-2 shows net cumulative natural gas savings (net cumulative cubic meters, or net CCM) for PY2019 through PY2024 by sector and overall. As the figure illustrates, overall savings in 2024 were significantly higher than in any of the previous years, appearing as a significant outlier. While the Commercial and Industrial sector has consistently accounted for the largest portion of verified savings, the Residential sector nearly tripled from 2023 to account for the largest portion. Both the Low-Income and Large Volume sectors have shown a general decline in net savings over the last several years.



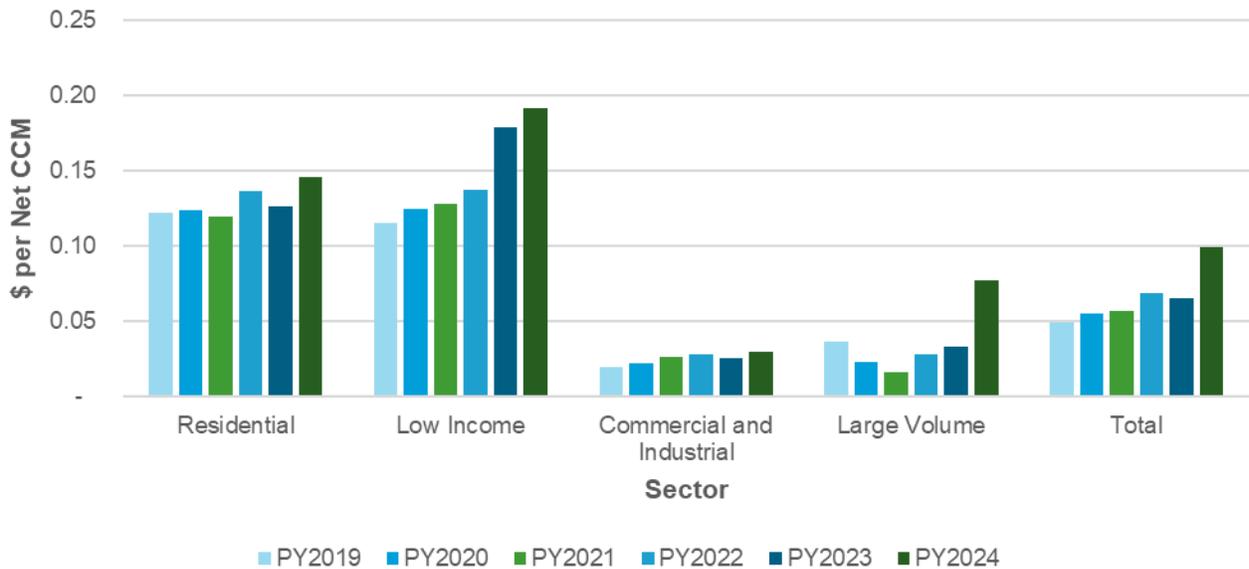
**Figure 2-2. Historical performance: net cumulative natural gas savings over time by sector\*†**



\*Net CCM savings values were taken from past Annual Verification reports.  
 †The primary savings metric shifted in PY2023 from cumulative savings (shown in the figure) to annual savings.

Figure 2-3 shows dollars spent per net cumulative natural gas savings for PY2019 through PY2024 by sector. Lower values of dollars per CCM indicate more “efficient” programs or programs that achieved greater savings at a lower cost. The figure shows that the most “expensive” CCM achieved are consistently in the Low-Income or Residential sectors; Low-Income had the highest cost per CCM in 2024. The Commercial and Industrial and Large Volume sectors are typically similar in dollars per CCM, but Large Volume costs per CCM spiked in 2024. Overall, costs per CCM increased significantly in 2024, largely due to the increase in costs for Large Volume.

**Figure 2-3. Historical performance: dollars spent per net cumulative natural gas savings over time**



\*Net CCM savings and dollars spent values were taken from past Annual Verification reports. The dollars spent value has not been adjusted for inflation.  
 †The dollars spent in this figure do not include overheads.

### 3 GLOSSARY OF KEY TERMS AND CONCEPTS

| Term  | Description  |
|---|--|
| <b>Action</b>                                     | A DSM measure that generates savings through optimization, maintenance, or repair of existing systems. Actions (vs. equipment) were categorized for the populations of measures based on tracking database information provided by Enbridge for sample design.   |
| <b>Adjustment factor</b>                          | The adjustment factors are ratios of savings that allow evaluation findings from a sample of projects to be applied to and “adjust” the population of program savings. Realization rates and ratios are other common terms.  |
| <b>Attribution</b>                                | The energy savings or other benefits that are the result of a utility energy program’s influence, including free ridership and spillover effects (see definitions in this Glossary).   |
| <b>Baseline, base case</b>                        | Energy used / equipment in place if the program measure had not been done.   |
| <b>Building envelope</b>                          | Exterior surfaces (e.g., walls, windows, roof, and floor) of a building that separate the conditioned space from the outdoors.   |
| <b>C&amp;I</b>                                    | Commercial and Industrial  |
| <b>Capacity Expansion</b>                         | Measure that allows customer to increase production/productivity   |
| <b>CCM</b>  | Cumulative cubic meters (cumulative m <sup>3</sup> ). In this report, represents the volume of natural gas savings verified over the life of the measure.  |
| <b>Code</b>                                       | An action or standard required by local or federal laws for safety, environmental, or other reasons. For example, a building code that requires a minimum fuel efficiency for furnaces.  |
| <b>Cost-effectiveness</b>                         | Refers to the analysis that determines whether or not the benefits of a project/measure (see Glossary) are greater than the costs. It is based on the net present value of savings over the equipment life of the measure.   |
| <b>Cost-effectiveness test – PAC</b>              | A test that compares the utility’s avoided cost benefits with energy efficiency program expenditures (incentives plus administrative costs).   |
| <b>Cost-effectiveness test – TRC-Plus</b>         | A test that compares benefits to society as a whole (avoided cost benefits plus non-energy benefits) with the participant’s cost of installing the measure plus the cost of incentives and program administration.   |
| <b>Custom project savings verification (CPSV)</b> | Activities related to the collection, analysis, and reporting of data for purposes of measuring gross custom program impacts.  |
| <b>Customer</b>                                   | Unique customers can be identified based on the account number and the contact information provided by Enbridge. A customer may have multiple site addresses, decision makers, and account numbers. Customers can only be identified for records for which we received contact information. (i.e., records associated with account numbers that have measures in the sample or backup sample). |
| <b>Demand side management (DSM)</b>               | Modification of perceived customer demand for a product through various methods such as financial incentives, education, and other programs.   |
| <b>Domain</b>                                     | Grouping of like projects. A domain may be defined as projects within a specific sector or a category of measure types, end uses, or other.  |
| <b>Dual baseline</b>                              | Savings calculation approach which addresses or combines the savings associated with early replacement and the savings after the early replacement period. This concept is relevant to the measurement of lifetime gas savings (CCM) but not first-year annual savings.  |

| Term  | Description   |
|---|---|
| <b>Early replacement (ER)</b>               | Measure that replaces a piece of equipment that is not past its estimated useful life (EUL) and in good operating condition. A measure category where a utility energy efficiency program has caused a customer to replace operable equipment with a higher efficiency alternative (also referred to as advancement). |
| <b>Early replacement period (ER Period)</b> | Time that the existing equipment would have continued to be in use. This is the same as remaining useful life (RUL). This concept is relevant to the measurement of lifetime gas savings (CCM) but not first-year annual savings.   |
| <b>Energy solutions advisor (ESA)</b>       | Energy Solutions Advisors work with customers on a one-to-one basis to address the unique processes and opportunities within each customer facility, identify energy savings opportunities, and promote Enbridge's DSM offerings.   |
| <b>Estimated useful life (EUL)</b>          | The length of time that a measure (see definition in Glossary) is expected to provide its estimated annual gas savings. EUL depends on equipment lifetime and measure persistence (see Glossary definition). Typically, the median number of years that the measure will remain in service.                           |
| <b>Ex ante</b>                              | Program claimed or reported inputs, assumptions, savings, etc.  |
| <b>Ex post</b>                              | Program inputs, assumptions, savings, etc. which are verified after the claimed savings are finalized. Does not include assessment of program influence.  |
| <b>Free rider</b>                           | A customer who would install or perform the same energy-saving measure (see definition in Glossary) without utility influence.  |
| <b>Free ridership</b>                       | The portion of a program's verified energy savings that would naturally occur without the utility program.  |
| <b>Free ridership-based attribution</b>     | The portion of a program's verified energy savings that the utility influenced if one only considers free ridership and not spillover. Free ridership-based attribution is the complement of free ridership (i.e., free ridership-based attribution = 100% - free ridership).   |
| <b>Gross savings</b>                        | Gross savings are changes in energy consumption and/or demand directly caused by program-related actions by participants, regardless of reasons for participation (savings relative to baseline, defined above).  |
| <b>In situ</b>                              | Existing measure, conditions, and settings.   |
| <b>In-depth interviews (IDIs)</b>           | Structured technical interviews administered by evaluation engineers and market researchers either in person or more frequently, over the phone, IDIs offer more flexibility than computer-assisted telephone interviews and are best leveraged for complex projects and topics.                                      |
| <b>Incentive</b>                            | An incentive is often a payment from the utility to participants of a DSM program. Incentives can be paid to customers, vendors, or other parties.  |
| <b>Industry standard practice (ISP)</b>     | A common practice used within an industry but not formally defined by code or regulation.   |
| <b>Input assumptions</b>                    | Assumptions such as operating characteristics and associated units of resource savings for DSM technologies and measures.   |
| <b>Lifetime cumulative savings</b>          | Total natural gas savings (CCM) over the life of a DSM measure. It can be claimed, gross, or net. Sometimes referred to as just "cumulative" or "lifetime."   |
| <b>Maintenance (maint.)</b>                 | Repair, maintain, or restore to prior efficiency.   |
| <b>Measure</b>                              | Equipment, technology, practice, or behaviour that, once installed or working, results in energy use reduction. Measures are identified in the tracking data as unique line items for which savings within a custom project are quantified. Multiple measures may belong to the same project.                         |

| Term  | Description  |
|---|--|
| <b>Measure persistence</b>                          | How long a measure remains installed and performs as originally predicted in relation to its EUL. This considers events like business turnover, early retirement of installed equipment, and other reasons measures might be removed or discontinued.  |
| <b>Measurement and verification (M&amp;V)</b>       | Verification of savings using methods not including attribution/free ridership assessment.   |
| <b>Metric</b>                                       | This is a term used by the OEB to measure a utility's program achievement. Under the DSM framework, programs are grouped into categories, called scorecards. Each offering within a scorecard is assigned at least one metric that is used to measure utility performance. The metric for many offerings is annual savings, or a reduction in natural gas consumption, while other offerings have non-savings metrics such as the number of program participants. Within each scorecard, various metrics are combined to produce an overall scorecard achievement. |
| <b>MF</b>   | Multi-family (multi-residential)   |
| <b>Natural replacement</b>                          | A measure category where the equipment is replaced on failure or where a utility energy efficiency program has not influenced the customer decision to replace but once the decision has been made, the utility program influences a higher efficiency alternative. (see replace on burnout)   |
| <b>Net-to-gross (NTG)</b>                           | The ratio of net energy savings to gross savings. The NTG ratio is applied to gross program savings to convert them into net program savings.  |
| <b>New construction (NC)</b>                        | New buildings or spaces, or a category of efficiency measures in new construction or major renovations, whose baseline would be the relevant code or standard market practice.   |
| <b>Non-early replacement period (non-ER period)</b> | Time after the ER period up to the EUL.  |
| <b>Non-energy impacts (NEI)</b>                     | Sometimes called non-energy benefits, these are the wider socio-economic or environmental outcomes that arise from energy efficiency improvements, aside from energy savings. NEIs can include but are not limited to impacts such as improved safety, improved health, and job creation. For example, offering participants may benefit from increased property value, and improved health and comfort. The TRC-Plus test includes a 15% adder to the benefits calculation to account for NEIs.   |
| <b>Normal replacement (NR)</b>                      | Measure that replaces a piece of equipment that is past EUL and in good operating condition.   |
| <b>Offering</b>                                     | One or more DSM activities or measures which a utility may use to affect a specifically identified target market in their choices around the amount and timing of energy consumption.  |
| <b>Persistence</b>                                  | The extent to which a DSM measure remains installed and performing as originally predicted in relation to its EUL.   |
| <b>Portfolio</b>                                    | A group of DSM programs which have been selected and combined in order to achieve the objectives of a utility's DSM Plan.  |
| <b>Program</b>                                      | The programs outlined in Enbridge's Multi-Year Plan are comprised of one or more offerings and address the needs of a subset of Enbridge's customer base.  |
| <b>Program evaluation</b>                           | Activities related to the collection, analysis, and reporting of data for purposes of measuring program impacts from past, existing, or potential program impacts.   |
| <b>Program spending</b>                             | The amount spent running energy-savings programs, not including the costs of running (called overhead costs) the larger portfolio of programs. This value can be divided into spending for program measures and incentives, as well as program-specific costs.   |

| Term                               | Description  |
|------------------------------------|--|
| <b>Project</b>                     | Projects are identified in the tracking data based on the project code. A project may have multiple measures as indicated by sub-codes in the current data tracking system.  |
| <b>Rate class</b>                  | The OEB establishes distribution rate classes for Enbridge. Distribution rate classes group customers with similar energy profiles.  |
| <b>Realization rate</b>            | A combination of adjustment factors, which represents ratios between two savings values. For example, the final realization rate is the ratio between evaluated savings and program claimed savings.   |
| <b>Remaining useful life (RUL)</b> | The number of years that the existing equipment would have remained in service and in good operating condition had it not been replaced. This is the same as the ER period.  |
| <b>Replace on burnout (ROB)</b>    | Measure that replaces a failed or failing piece of equipment. (see natural replacement)  |
| <b>Retrofit</b>                    | A measure category that includes the addition of an efficiency measure to an existing facility such as insulation or air sealing to control air leakage.   |
| <b>Retrofit add-on (REA)</b>       | Measure that reduces energy use by modifying an existing piece of equipment.   |
| <b>Scorecard</b>                   | A scorecard allows for multiple different kinds of metrics such as natural gas savings and/or participants enrolled to be used simultaneously to measure annual utility performance. A scorecard identified for each program year can be found in the Ontario Energy Board Decision and Order EB-2021-0002.  |
| <b>Scorecard Achievement</b>       | The verified value for program-specific metric targets (annual savings, applications, etc.) of each scorecard identified by the Annual Scorecard. This is the value that is verified as the achieved value by the Annual Verification report and used for calculation of the shareholder incentive.  |
| <b>Shareholder Incentive</b>       | As part of the current DSM Framework, an annual performance incentive is available to the gas utilities in the event program performance is at or above 75% of the OEB-approved targets up to a maximum of 125%.   |
| <b>Site</b>                        | Sites are identified based on unique site addresses provided by Enbridge through the contact information data request. A site may have multiple units of analysis, measures, and projects. Sites can be identified by the evaluation only for records for which we receive a site id.  |
| <b>Spillover effects</b>           | These are reductions in energy consumption and/or demand that occur as a result of the presence of a utility DSM program but are beyond program-related savings and are not part of the utility's verified savings. These effects could result from many factors including additional efficiency actions that program participants take outside the program as a result of having participated, changes in store availability of energy-using equipment, and changes in energy use by program non-participants as a result of utility program advertising. |
| <b>System optimization (OPT)</b>   | Improve system or system settings to exceed prior efficiency.  |
| <b>TRM</b>                         | Technical Resource Manual, which is a document that identifies standard methodologies and inputs for calculating energy savings.   |
| <b>TSER</b>                        | Telephone-supported engineering review.  |
| <b>Unit of analysis</b>            | The level at which the data are analysed, which in 2024 will likely be a "measure" or sub-project level for Enbridge.  |
| <b>Vendors</b>                     | Program trade allies, business partners, contractors, and suppliers who work with program participants to implement energy saving measures.  |



## 4 INTRODUCTION

Enbridge Gas Inc.<sup>8</sup> delivers demand side management (DSM) offerings under the Natural Gas Demand Side Management Framework<sup>9</sup> developed by the Ontario Energy Board (OEB). The 2024 Natural Gas DSM Annual Verification Report provides for the OEB the results of the annual verification of Enbridge's natural gas DSM programs delivered in 2024. The OEB's Evaluation Contractor (EC) team of DNV and Dunsky conducted these verifications.

The utility DSM plan groups offerings into categories, called program scorecards. Each offering within a scorecard is assigned at least one metric that is used to measure utility performance. The metric for many offerings is net annual gas (m<sup>3</sup>) savings, while other offerings have non-savings metrics such as the number of program participants. Within each scorecard, various metrics are combined to produce an overall scorecard achievement.

Each scorecard metric is assigned a target.<sup>10</sup> The EC uses sampling, engineering reviews, documentation verification, and other techniques to verify Enbridge's performance against the target for each year. The percentage of the target achieved for each metric is combined across the scorecard, and this combined score determines the amount of the utility's eligible demand side management shareholder incentive (DSMSI).<sup>11</sup> Scorecard results, which can be found in the main body of this report, are based on verification activities described in detail in the appendices.

In addition to the shareholder incentive, the OEB compensates Enbridge for the "lost revenue" from delivering these DSM programs. The EC also verifies this "lost revenue."

To ensure the approved DSM plan maintains sufficient longer-term benefits, Enbridge is also required to annually maintain a minimum weighted average measure life (WAML) of 14 years, excluding the Large Volume Program.

The OEB requires Enbridge to deliver DSM programs that are cost-effective, which means the verified benefits produced by the programs outweigh the cost of their implementation. Cost-effectiveness results can be found in Section 6.3 and APPENDIX Q.

The OEB formed an evaluation advisory committee (EAC) to provide input and advice to the OEB and the EC on the evaluation and audit of DSM results. The EAC consists of representatives from OEB staff, Enbridge, non-utility stakeholders, independent experts, and an observer from the Independent Electricity System Operator (IESO), the Ministry of Energy and Mines, and Natural Resources Canada. The EC received feedback and input from the EAC on the results of this annual verification. The content included in this report integrates our responses to their input. We thank them for their involvement.

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<sup>8</sup> For ease of reference, throughout this report, the EC has referred to Enbridge Gas Inc. as Enbridge.

<sup>9</sup> EB-2021-0002

<sup>10</sup> Target-setting is described in more detail in APPENDIX L.

<sup>11</sup> A minimum weighted scorecard achievement level of 75% is required to earn a portion of the available shareholder incentive for a scorecard.



## 5 SCORECARD RESULTS

### 5.1 Residential Program

Offerings within the Residential Program provide residential customers with financial incentives that reduce the cost of upgrading to more energy-efficient technologies and equipment for their homes. The program aims to reduce natural gas consumption, increase home comfort, and help customers manage their energy bills.

This section summarizes the results of the EC’s review of the Residential Program scorecard. The metric for the Residential Program scorecard is total net annual natural gas savings.

A detailed explanation of the verification activities for all Residential Program offerings can be found in APPENDIX E. Table 5-1 lists verified program achievements, and Table 5-2 lists DSM shareholder incentive results.

**Table 5-1. 2024 Residential verified achievements\***

| Offering                   | Metric                      | Verified Achievement |
|----------------------------|-----------------------------|----------------------|
| Residential Whole Home     | Net Annual Gas Savings (m3) | 52,647,340           |
| Residential Single Measure |                             | -                    |
| Residential Smart Home     |                             | 3,835,489            |
| <b>Total</b>               |                             | <b>56,482,829</b>    |

\*Not all values may compute exactly due to rounding.

**Table 5-2. 2024 Residential targets, achievements, weights, and incentive\*†**

| Metric  | Target     | Verified Achievement | Weight  | Metric Score** | Weighted Metric Score |
|---|------------|----------------------|---------|----------------|-----------------------|
| Net Annual Gas Savings (m3)                       | 27,089,960 | 56,482,829           | 100.00% | 200.00%        | 200.00%               |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |         |                | <b>200.00%</b>        |
| <b>Maximum Scorecard Incentive</b>                |            |                      |         |                | <b>\$4,910,664</b>    |
| <b>Verified Scorecard Incentive Achieved</b>      |            |                      |         |                | <b>\$4,910,664</b>    |

\*Not all values may compute exactly due to rounding.

\*\*The maximum achievement level for individual metrics is 200%.

†See APPENDIX E for a detailed description of the scorecard and incentive calculations.



## 5.2 Low-Income Program

Offerings within the Low-Income Program provide eligible customers opportunities to improve the energy efficiency of their homes (for residential customers) and buildings (for building owners and multifamily customers).

This section summarizes the results of the EC’s review of the Low-Income Program scorecard. The metrics for the Low-Income Program scorecard include:

- Total net annual natural gas savings for single-family homes
- Total net annual natural gas savings for multi-residential homes

A detailed explanation of the verification activities for all Low-Income Program offerings can be found in APPENDIX F. Table 5-3 lists verified program achievements, and Table 5-4 lists DSM shareholder incentive results.

**Table 5-3. 2024 Low-Income verified achievements**

| Offering                             | Metric                      | Verified Achievement |
|--------------------------------------|-----------------------------|----------------------|
| Home Winterproofing                  | Net Annual Gas Savings (m3) | 3,865,194            |
| Affordable Housing Multi-Residential | Net Annual Gas Savings (m3) | 4,023,376            |

**Table 5-4. 2024 Low-Income scorecard targets, achievements, weights, and incentive\*†**

| Metric  | Target    | Verified Achievement | Weight | Metric Score | Weighted Metric Score |
|---|-----------|----------------------|--------|--------------|-----------------------|
| Single Family Net Annual Gas Savings (m3)         | 2,713,300 | 3,865,194            | 50.00% | 142.45%      | 71.23%                |
| Multi-Residential Net Annual Gas Savings (m3)     | 4,266,207 | 4,023,376            | 50.00% | 94.31%       | 47.15%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |           |                      |        |              | <b>118.38%</b>        |
| <b>Maximum Scorecard Incentive</b>                |           |                      |        |              | <b>\$4,910,664</b>    |
| <b>Verified Scorecard Incentive Achieved</b>      |           |                      |        |              | <b>\$4,130,554</b>    |

\*Not all values may compute exactly due to rounding.

†See APPENDIX F for a detailed description of the scorecard and incentive calculations.



### 5.3 Commercial Program

Offerings within the Commercial Program provide commercial customers with financial incentives that reduce the cost of upgrading to more energy efficient technologies and equipment.

This section summarizes the results of the EC’s review of the Commercial Program scorecard. The metrics for the Commercial Program scorecard include:

- Total net annual large customer natural gas savings
- Total net annual small customer natural gas savings

A detailed explanation of the verification activities for all Commercial Program offerings can be found in APPENDIX G. Table 5-5 lists verified program achievements, and Table 5-7 lists with DSM shareholder incentive results.

**Table 5-5. 2024 Commercial verified achievements\***

| Offering                       | Metric   | Verified Achievement |
|--------------------------------|--|----------------------|
| <b>Commercial Custom</b>       |  | 17,779,102           |
| <b>Prescriptive Downstream</b> | Large Customer<br>Net Annual Gas<br>Savings (m3) | 1,414,116            |
| <b>Direct Install</b>          |  | 217,154              |
| <b>Prescriptive Midstream</b>  |  | 375,046              |
| <b>Total Large Customer</b>    |  | <b>19,785,418</b>    |
| <b>Commercial Custom</b>       |  | 1,860,619            |
| <b>Prescriptive Downstream</b> | Small Customer<br>Net Annual Gas<br>Savings (m3) | 850,970              |
| <b>Direct Install</b>          |  | 4,575,388            |
| <b>Prescriptive Midstream</b>  |  | 1,203,953            |
| <b>Total Small Customer</b>    |  | <b>8,490,930</b>     |

\*Not all values may compute exactly due to rounding.

Table 5-6 shows the net annual natural gas savings by offering, as verified by the EC. Unlike Table 5-5, this table shows overall offering totals, not broken out by large or small customer metrics.

**Table 5-6. 2024 Commercial savings**

| Offering                        | Net Annual Savings (m3) |
|---------------------------------|-------------------------|
| Commercial Custom               | 19,639,721              |
| Prescriptive Downstream         | 2,265,086               |
| Direct Install                  | 4,792,542               |
| Prescriptive Midstream          | 1,578,999               |
| <b>Commercial Program Total</b> | <b>28,276,348</b>       |

\*Not all values may compute exactly due to rounding.



**Table 5-7. 2024 Commercial targets, achievements, weights, and incentive\*†**

| Metric  | Target     | Verified Achievement | Weight | Metric Score | Weighted Metric Score |
|---|------------|----------------------|--------|--------------|-----------------------|
| <b>Large Customer Net Annual Gas Savings (m3)</b> | 23,988,840 | 19,785,418           | 50.00% | 82.48%       | 41.24%                |
| <b>Small Customer Net Annual Gas Savings (m3)</b> | 8,731,177  | 8,490,930            | 50.00% | 97.25%       | 48.62%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |        |              | 89.86%                |
| <b>Maximum Scorecard Incentive</b>                |            |                      |        |              | \$4,910,664           |
| <b>Verified Scorecard Incentive Achieved</b>      |            |                      |        |              | <b>\$1,167,795</b>    |

\*Not all values may compute exactly due to rounding.

†See APPENDIX G for a detailed description of the scorecard and incentive calculations.



## 5.4 Industrial Program

Offerings within the Industrial Program provide participants with technical support as well as financial incentives to overcome key barriers associated with the identification, quantification, justification, and implementation of energy efficiency measures.

This section summarizes the results of the EC's review of the Industrial Program scorecard. The metric for the Industrial Program scorecard is net annual natural gas savings.

A detailed explanation of the verification activities for all Industrial Program offerings can be found in APPENDIX H. Table 5-8 lists verified program achievements, and Table 5-9 lists DSM shareholder incentive results.

**Table 5-8. 2024 Industrial verified achievements**

| Offering          | Metric                      | Verified Achievement |
|-------------------|-----------------------------|----------------------|
| Industrial Custom | Net Annual Gas Savings (m3) | 56,794,944           |

**Table 5-9. 2024 Industrial targets, achievements, weights, and incentive\*†**

| Metric  | Target     | Verified Achievement | Weight  | Metric Score | Weighted Metric Score |
|---|------------|----------------------|---------|--------------|-----------------------|
| Net Annual Gas Savings (m3)                       | 65,054,756 | 56,794,944           | 100.00% | 87.30%       | 87.30%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |         |              | <b>87.30%</b>         |
| <b>Maximum Scorecard Incentive</b>                |            |                      |         |              | <b>\$4,910,664</b>    |
| <b>Verified Scorecard Incentive Achieved</b>      |            |                      |         |              | <b>\$966,677</b>      |

\*Not all values may compute exactly due to rounding.

†See APPENDIX H for a detailed description of the scorecard and incentive calculations.



## 5.5 Large Volume Program

The Direct Access offering comprises the entire Large Volume Program. This program provides Large Volume customers<sup>12</sup> with training presentations, energy efficiency calculation tools, energy use analysis, and other technical assistance. It uses a self-directed funding model in which eligible customers can access and utilize funds included in their natural gas rates. Funds from customers electing not to participate are dispersed to fund energy efficiency projects for participating Large Volume customers.

This section summarizes the results of the EC’s review of the Large Volume Program scorecard. For 2024, the metric for the Large Volume Program scorecard is total net annual natural gas savings.

A detailed explanation of the verification activities for the Large Volume Program can be found in APPENDIX I. Table 5-10 lists verified program achievements, and Table 5-11 lists DSM shareholder incentive results.

**Table 5-10. 2024 Large Volume verified achievements**

| Offering      | Metric                      | Verified Achievement |
|---------------|-----------------------------|----------------------|
| Direct Access | Net Annual Gas Savings (m3) | 11,200,723           |

**Table 5-11. 2024 Large Volume targets, achievements, weights, and incentive\*†**

| Metric  | Target     | Verified Achievement | Weight  | Metric Score | Weighted Metric Score |
|---|------------|----------------------|---------|--------------|-----------------------|
| Net Annual Gas Savings (m3)                       | 23,711,228 | 11,200,723           | 100.00% | 47.24%       | 47.24%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |         |              | 47.24%                |
| <b>Maximum Scorecard Incentive</b>                |            |                      |         |              | \$669,636             |
| <b>Verified Scorecard Incentive Achieved**</b>    |            |                      |         |              | <b>\$0</b>            |

\*Not all values may compute exactly due to rounding.

\*\*Scorecards must achieve a minimum of 75% of weighted metric score to achieve shareholder incentive.

†See APPENDIX I for a detailed description of the scorecard and incentive calculations.

<sup>12</sup> Large volume customers are those with very high natural gas consumption, typically large industrial and commercial facilities, within Rate T2 or Rate 100 in the Union rate zones.



## 5.6 Energy Performance Program

Offerings within the Energy Performance Program help participating organizations save energy by implementing capital, operational, and behavioural energy efficiency measures.

This section summarizes the results of the EC’s review of the Energy Performance Program scorecard. The metrics for the Energy Performance Program scorecard include:

- Number of participants in the Whole Building Pay for Performance offering
- Total net annual natural gas savings in the Whole Building Pay for Performance offering

A detailed explanation of the verification activities for the Energy Performance Program can be found in APPENDIX J. Table 5-12 lists verified program achievements, and Table 5-13 lists DSM shareholder incentive results.

**Table 5-12. 2024 Energy Performance verified achievements**

| Offering                           | Metric                      | Verified Achievement |
|------------------------------------|-----------------------------|----------------------|
| Whole Building Pay for Performance | Number of Participants      | 27                   |
|                                    | Net Annual Gas Savings (m3) | 276,138              |

**Table 5-13. 2024 Energy Performance scorecard targets, achievements, weights, and incentive\*†**

| Metric  | Target  | Verified Achievement | Weight | Metric Score** | Weighted Metric Score |
|---|---------|----------------------|--------|----------------|-----------------------|
| Number of Participants                            | 25      | 27                   | 50.00% | 108.00%        | 54.00%                |
| Net Annual Gas Savings (m3)                       | 125,000 | 276,138              | 50.00% | 200.00%        | 100.00%               |
| <b>Verified Total Weighted Scorecard Achieved</b> |         |                      |        |                | 154.00%               |
| <b>Maximum Scorecard Incentive</b>                |         |                      |        |                | \$223,212             |
| <b>Verified Scorecard Incentive Achieved</b>      |         |                      |        |                | <b>\$223,212</b>      |

\*Not all values may compute exactly due to rounding.

\*\*The maximum achievement level for individual metrics is 200%.

†See APPENDIX J for a detailed description of the scorecard and incentive calculations.



## 5.7 Building Beyond Code Program

Offerings within the Building Beyond Code Program focus on changing the behaviour and attitudes of builders toward energy efficiency, seeking permanent change in the new construction marketplace over time. Although energy savings may result from these offerings, savings are typically not the primary goal of the offerings.

This section summarizes the results of the EC’s review of the Building Beyond Code Program scorecard. The metrics for the Building Beyond Code program scorecard include the number of:

- Energy Star homes in the Residential Savings by Design offering
- Net zero ready homes in the Residential Savings by Design offering
- Participants in the Commercial Savings by Design offering
- Participants in the Affordable Housing Savings by Design offering
- Participants in the Commercial Air Tightness Testing offering
- Qualified agents in the Commercial Air Tightness Testing offering

A detailed explanation of the verification activities for all Building Beyond Code offerings can be found in APPENDIX K.

Table 5-14 lists verified program achievements, and Table 5-15 lists DSM shareholder incentive results.

**Table 5-14. 2024 Building Beyond Code verified achievements**

| Offering                             | Metric               | Verified Achievement |
|--------------------------------------|----------------------|----------------------|
| Residential Savings by Design        | Energy Star Homes    | 747                  |
|                                      | Net Zero Ready Homes | 18                   |
| Commercial Savings by Design         | Participants         | 26                   |
| Affordable Housing Savings by Design | Participants         | 28                   |
| Commercial Air Tightness Testing     | Participants         | 8                    |
|                                      | Qualified Agents     | 24                   |

**Table 5-15. 2024 Building Beyond Code targets, achievements, weights, and incentive\*†**

| Offering  | Metric               | Target | Verified Achievement | Weight | Metric Score** | Weighted Metric Score |
|---|----------------------|--------|----------------------|--------|----------------|-----------------------|
| Residential Savings by Design                     | Energy Star Homes    | 2,000  | 747                  | 15.00% | 37.35%         | 5.60%                 |
|   | Net Zero Ready Homes | 10     | 18                   | 15.00% | 180.00%        | 27.00%                |
| Commercial Savings by Design                      | Participants         | 31     | 26                   | 30.00% | 83.87%         | 25.16%                |
| Affordable Housing Savings by Design              | Participants         | 21     | 28                   | 30.00% | 133.33%        | 40.00%                |
| Commercial Air Tightness Testing                  | Participants         | 6      | 8                    | 5.00%  | 133.33%        | 6.67%                 |
|   | Qualified Agents     | 10     | 24                   | 5.00%  | 200.00%        | 10.00%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |                      |        |                      |        |                | <b>114.43%</b>        |
| <b>Maximum Scorecard Incentive</b>                |                      |        |                      |        |                | <b>\$1,785,696</b>    |
| <b>Verified Scorecard Incentive Achieved</b>      |                      |        |                      |        |                | <b>\$1,332,720</b>    |

\*Not all values may compute exactly due to rounding.

\*\*The maximum achievement level for individual metrics is 200%.

†See APPENDIX K for a detailed description of the scorecard and incentive calculations.

## 6 UTILITY SUMMARY OF SHAREHOLDER INCENTIVES, PROGRAM SPENDING, COST-EFFECTIVENESS, AND LOST REVENUE

This section provides the results of the financial performance of the 2024 DSM programs.

### 6.1 Scorecard weights and shareholder incentives

Table 6-1 shows scorecard weights by metric and shareholder incentives by target for all programs, including the metrics reviewed for the annual verification. Enbridge achieved a shareholder incentive of \$12,731,622 or 57% of the maximum DSMSI incentive.

**Table 6-1. Summary of 2024 achievement weights and shareholder incentives\***

| Program  | Offering                             | Metrics   | Weight | Utility Incentive   |
|--|--------------------------------------|---|--------|---------------------|
| <b>Residential</b>   | Residential Whole Home               |   |        |                     |
|  | Residential Single Measure           | Net Annual Gas Savings (m <sup>3</sup> )                              | 100%   | \$4,910,664         |
|  | Residential Smart Home               |   |        |                     |
| <b>Low-Income</b>  | Home Winterproofing                  | Net Annual Gas Savings (m <sup>3</sup> )                              | 50%    | \$4,130,554         |
|  | Affordable Housing Multi-Residential | Net Annual Gas Savings (m <sup>3</sup> )                              | 50%    |                     |
| <b>Commercial</b>  | Commercial Custom                    | Large Customer Net Annual Gas Savings (m <sup>3</sup> ) <sup>13</sup> | 50%    | \$1,167,795         |
|  | Prescriptive Downstream              |   |        |                     |
|  | Direct Install                       | Small Customer Net Annual Gas Savings (m <sup>3</sup> ) <sup>14</sup> | 50%    |                     |
| <b>Industrial</b>  | Industrial Custom                    | Net Annual Gas Savings (m <sup>3</sup> )                              | 100%   | \$966,677           |
| <b>Large Volume</b>  | Direct Access                        | Net Annual Gas Savings (m <sup>3</sup> )                              | 100%   | \$0                 |
| <b>Energy Performance</b>                                      | Whole Building Pay for Performance   | Participants  | 50%    | \$223,212           |
|  |                                      | Net Annual Gas Savings (m <sup>3</sup> )                              | 50%    |                     |
| <b>Building Beyond Code</b>                                    | Residential Savings by Design        | Energy Star Homes   | 15%    | \$1,332,720         |
|  |                                      | Net Zero Ready Homes  | 15%    |                     |
|  | Commercial Savings by Design         | Participants  | 30%    |                     |
|  | Affordable Housing Savings by Design | Participants  | 30%    |                     |
|  | Commercial Air Tightness Testing     | Participants  | 5%     |                     |
|  |                                      | Qualified Agents  | 5%     |                     |
| <b>Total Verified Utility Incentive</b>                        |                                      |   |        | <b>\$12,731,622</b> |
| <b>Incentive if 100% of target achieve</b>                     |                                      |   |        | <b>\$8,928,480</b>  |
| <b>Maximum possible incentive (if 125% of target achieved)</b> |                                      |   |        | <b>\$22,321,200</b> |

\*Not all values may compute exactly due to rounding.

<sup>13</sup> Large commercial customers have a 3-year average annual consumption greater than or equal to 100,000 m<sup>3</sup>/yr. Small commercial customers are below 100,000 m<sup>3</sup>/yr.

<sup>14</sup> Ibid.

## 6.2 Program spending summary

The Enbridge tracking database included program spending information. The EC is reporting here the information provided by Enbridge but has not verified spending figures or conducted a financial audit. Table 6-2 summarizes the spending across the portfolio. Additional spending detail is in APPENDIX P.

**Table 6-2. Program cost summary\***

| Spending Area                          | OEB-Approved Budget  | Utility Spending <sup>15</sup> | Difference (\$)      | Difference (%) |
|--|----------------------|--------------------------------|----------------------|----------------|
| <b>Program Sub-total (no overhead)</b> | \$150,927,522        | \$275,298,729                  | \$124,371,207        | 82%            |
| <b>Program Administration</b>          | \$12,545,925         | \$12,223,048                   | -\$322,877           | -3%            |
| <b>Portfolio Administration</b>        | \$12,017,693         | \$8,780,841                    | -\$3,236,852         | -27%           |
| <b>Other**</b>                         | \$7,590,787          | \$5,807,194                    | -\$1,783,592         | -23%           |
| <b>Total DSM Budget</b>                | <b>\$183,081,927</b> | <b>\$302,109,812</b>           | <b>\$119,027,885</b> | <b>65%</b>     |

\*Not all values may compute exactly due to rounding.

\*\*Other includes "Evaluation and Regulatory" and "Research and Development."

## 6.3 Cost-effectiveness summary<sup>16</sup>

Table 6-3 and Table 6-4 show summary results for the TRC-Plus and PAC tests, respectively, including the benefit cost ratio and the net present value. The EC confirmed that the method to determine the cost-effectiveness results followed the framework and past practice consistently and correctly. However, some key assumptions in 2024 do not match the reality of the current market. Specifically, three things individually biased the portfolio result downward enough to drive it below 1.0. First, an outlier inflation value of 4.26%<sup>17</sup> artificially devalued savings and benefits above more reasonable inflation forecasts while having no effect on costs, which are incurred in the first year. Second, an unusual measure mix within Enbridge's joint HER+ offering with Natural Resources Canada included a high proportion of cost inefficient measures. Third, the approach to measure costs for some of the measures in the HER+ offering was conservatively high. The EC expects these three concerns to be short-term and not representative of the long-term performance of the portfolio. Additional detail, including key inputs used in each test, is provided in APPENDIX Q.

**Table 6-3. Summary of cost-effectiveness ratio results, TRC-Plus Test\***

| Scorecard                         | NPV Benefits           | NPV Costs              | NPV Net Benefits (Benefits – Cost) | TRC-Plus Benefit Cost Ratio |
|-----------------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| <b>Residential Program</b>        | \$560,796,410          | \$1,426,665,892        | -\$865,869,482                     | 0.39                        |
| <b>Low-Income Program</b>         | \$67,798,184           | \$35,225,991           | \$32,572,193                       | 1.92                        |
| <b>Commercial Program</b>         | \$170,396,091          | \$76,591,868           | \$93,804,223                       | 2.22                        |
| <b>Industrial Program</b>         | \$225,986,571          | \$53,379,047           | \$172,607,524                      | 4.23                        |
| <b>Large Volume Program</b>       | \$5,666,765            | \$2,202,755            | \$3,464,009                        | 2.57                        |
| <b>Energy Performance Program</b> | \$1,258,513            | \$752,765              | \$505,748                          | 1.67                        |
| <b>Total Portfolio**</b>          | <b>\$1,031,902,534</b> | <b>\$1,614,432,144</b> | <b>-\$582,529,609</b>              | <b>0.64</b>                 |

\*Not all values may compute exactly due to rounding.

\*\*Total includes portfolio-level overhead costs that are not included in any of the individual program rows. This explains why the NPV Costs column does not appear to sum.

<sup>15</sup> The Decision and Order approving Enbridge's DSM programs (EB-2021-0002, November 15, 2022) stipulates that Enbridge can, for the joint residential whole home offering with Natural Resources Canada, "access funding in excess of the DSM variance account overspend provision that allows for an incremental 15% of a program budget to be spent during the year should Enbridge Gas have met 100% of its performance scorecard metric on an unverified basis."

<sup>16</sup> Some key assumptions in 2024 which do not match the reality of the current market biased the result lower than previous years. This value is not representative of the long-term performance of the portfolio. Please see the discussion in Appendix Q of this report for more detail.

<sup>17</sup> Inflation was calculated in accordance with the OEB's 2022 DSM Framework (Section 11.1 – Inflation Rate, p. 33) as the four-quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index for Final Domestic Demand, based on the most recently available information. While the resulting 4.26% inflation rate is anomalous and not representative of Bank of Canada or other forecasts of future inflation (which are closer to 2% per year), the 4.26% rate gets applied to the entire life of energy efficiency measures.



**Table 6-4. Summary of cost-effectiveness ratio results, PAC Test\***

| Scorecard                  | NPV Benefits         | NPV Costs            | NPV Net Benefits (Benefits – Cost) | PAC Benefit Cost Ratio |
|----------------------------|----------------------|----------------------|------------------------------------|------------------------|
| Residential Program        | \$509,743,281        | \$206,008,085        | \$303,735,196                      | 2.47                   |
| Low-Income Program         | \$60,665,086         | \$32,651,783         | \$28,013,303                       | 1.86                   |
| Commercial Program         | \$145,526,439        | \$25,352,080         | \$120,174,358                      | 5.74                   |
| Industrial Program         | \$204,819,268        | \$15,484,831         | \$189,334,437                      | 13.23                  |
| Large Volume Program       | \$4,907,108          | \$2,475,139          | \$2,431,968                        | 1.98                   |
| Energy Performance Program | \$1,172,172          | \$1,081,465          | \$90,707                           | 1.08                   |
| <b>Total Portfolio**</b>   | <b>\$926,833,353</b> | <b>\$305,108,732</b> | <b>\$621,724,621</b>               | <b>3.04</b>            |

\*Not all values may compute exactly due to rounding.

\*\*Total includes portfolio-level overhead costs that are not included in any of the individual program rows. This explains why the NPV Costs column does not appear to sum.

## 6.4 Lost revenue by rate class

The EC summed the verified net annual natural gas savings (prorated by installation month) by rate class and estimated lost revenues. Table 6-5 shows the results for each rate class.

**Table 6-5. Lost revenue results\***

| Rate Zone    | Rate Class | Verified Lost Revenue |
|--------------|------------|-----------------------|
| EGD          | Rate 100   | \$6,084               |
|              | Rate 110   | \$71,735              |
|              | Rate 115   | \$0                   |
|              | Rate 135   | \$40,472              |
|              | Rate 145   | \$5,049               |
|              | Rate 170   | \$3,450               |
| Union South  | Rate M4    | \$79,293              |
|              | Rate M5    | \$15,227              |
|              | Rate M7    | \$25,595              |
|              | Rate T1    | \$1,495               |
| Union North  | Rate T2    | \$1,881               |
|              | Rate 20    | \$21,181              |
|              | Rate 100   | \$2,054               |
| <b>Total</b> |            | <b>\$273,517</b>      |

\*Not all values may compute exactly due to rounding.



## 6.5 Weighted average measure life

The EC calculated weighted average measure life (WAML) for all Enbridge programs, excluding the Large Volume Program. Table 6-6 shows the verified value. Please see Appendix M for more information on the calculation methodology.

**Table 6-6. Weighted average measure life results\***

| <b>Metric</b>   | <b>Value</b>  |
|---|---------------|
| <b>Verified Net Cumulative Natural Gas Savings (m3)**</b> | 2,678,825,049 |
| <b>Verified Net Annual Natural Gas Savings (m3)**</b>     | 149,718,829   |
| <b>Weighted Average Measure Life</b>                      | 17.89         |

\*Not all values may compute exactly due to rounding.

\*\*Excludes the Large Volume Program

## 7 FINDINGS AND RECOMMENDATIONS

This section contains the findings and recommendations from the 2024 Annual Verification efforts and all other evaluations conducted on the 2024 programs or completed since the 2023 report. This includes the Free Ridership Evaluation for Ontario’s Natural Gas Custom C&I DSM Programs.

### 7.1 2024 Annual Verification recommendations

Table 7-1 shows the findings and recommendations applying to annual verification. In the tables, primary outcomes of each finding and recommendation are classified into three categories: reduce costs (evaluation or program or both), improve savings accuracy, and decrease risk (“risk” here includes risk of adjusted savings, risk to budgets or project schedules, and other risks). Further details follow the table.

**Table 7-1. Annual verification - summary of recommendations**

| # | Status      | Finding   | Recommendation   | Previously Recommended | Applies to 2024 |     | Primary Outcome |                  |               |
|---|-------------|---|--|------------------------|-----------------|-----|-----------------|------------------|---------------|
|   |             |   |  |                        | Enbridge        | OEB | Reduce Costs    | Improve Accuracy | Decrease Risk |
| 1 | In Progress | The energy savings from the home retrofit programs rely exclusively on the simulations provided by the delivery agents.   | Should the program continue to use current modelling software, consider funding a study to verify the models produced by the utility agents.   | ✓                      |                 | ✓   |                 | ✓                |               |
| 2 | In Progress | Spillover values for C&I segments rely on the 2015 spillover study, which was conducted on legacy Union and Enbridge service territories, which may not be tracked going forward. | <p>A: If tracking legacy service territories, spillover values should be applied based on the legacy territory in which the participant facility is located.</p> <p>B: If <u>not</u> tracking legacy service territories, a single savings-weighted value that represents a reasonable approximation should be calculated and applied.</p> | ✓                      | ✓               |     |                 | ✓                | ✓             |

| # | Status      | Finding  | Recommendation  | Previously Recommended | Applies to 2024 |     | Primary Outcome |                  |               |  |
|---|-------------|--|---|------------------------|-----------------|-----|-----------------|------------------|---------------|--|
|   |             |  |   |                        | Enbridge        | OEB | Reduce Costs    | Improve Accuracy | Decrease Risk |  |
| 3 | In Progress | Applied high inflation and discount rate undervalue future DSM benefits.   | <p>A: OEB should consider establishing criteria for inflation that would require sensitivity analysis using a range of different inflation scenarios to assess how inflation impacts the overall cost-effectiveness and net present value.</p> <p>B: OEB should consider defining an inflation rate that anticipates future economic conditions (such as a reputable long-term inflation forecast) rather than reflecting recent history.</p> | ✓                      |                 | ✓   |                 | ✓                |               |  |
| 4 | In Progress | <p>The HER+ offering included a high number of electrification measures, resulting in large increases in electricity consumption, which has not been part of past programs.</p> <p>The cost-effectiveness of these measures relies heavily on the assumption of electricity avoided cost, which has not been widely discussed because of its previously negligible impact.</p> | <p>The OEB should continue to work with Enbridge and the EAC to identify and implement changes to the cost-effectiveness test assumptions that accurately reflect the impact of electrification measures. At a minimum, this discussion should include methods for determining electricity avoided costs.</p>   | ✓                      |                 | ✓   |                 | ✓                |               |  |

| # | Status      | Finding   | Recommendation  | Previously Recommended | Applies to 2024 |     | Primary Outcome |                  |               |
|---|-------------|---|---|------------------------|-----------------|-----|-----------------|------------------|---------------|
|   |             |   |   |                        | Enbridge        | OEB | Reduce Costs    | Improve Accuracy | Decrease Risk |
| 5 | In Progress | Enbridge is required to annually exceed a WAML of 14 years, excluding the Large Volume Program. The 14-year metric was calculated using a first-year NTG assumption to represent both first-year and lifetime NTG. The EC used individual values for first-year NTG and lifetime NTG, which is a more accurate reflection of net savings. | Enbridge should consider modifying its WAML metric calculation to be consistent with the more accurate calculation methodology used by the EC.                              | ✓                      | ✓               |     | ✓               |                  |               |
| 6 | New         | Enbridge proactively identified that two homes initially claimed for the RSBD Energy Star Homes metric were claimed in a previous Annual Verification.  | Enbridge should continue providing these continual updates throughout the Annual Verification process, for the RSBD offering and any other offerings with similar criteria. | ✓                      | ✓               |     | ✓               | ✓                |               |
| 7 | New         | For the 2024 Annual Verification, Enbridge developed and used an average installation rate for smart thermostats found from a jurisdictional scan instead of the previously-used (but potentially underestimating) ping report.   | Conduct a stand-alone study, (e.g., a billing analysis) to develop an installation rate factor for thermostats in the Residential Smart Home offering.                      |                        |                 | ✓   | ✓               | ✓                |               |
| 8 | New         | Enbridge assumptions include that Residential Whole Home participants experienced full measure costs and savings. However, these assumptions do not necessarily reflect reality, particularly for early replacement measures.   | Enbridge should develop and incorporate estimates of incremental costs and savings for common early replacement measures.   |                        | ✓               |     | ✓               | ✓                |               |

- 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 modelling practices that may or may not follow industry standards. Although these assumptions and practices may follow NRCan protocols, those protocols were not specifically designed for the delivery of a DSM program and may not be appropriate in this situation. Verifying that the Energy Advisors using the modelling software are doing so consistently and with industry best practice for natural gas efficiency programs is important. Such a detailed study is outside the scope of the annual verification. However, the 2023-2025 EM&V plan recommends a study to verify the savings estimates resulting from NRCan's modelling software. OEB is currently considering the value and timing of such a study. As a result, this recommendation from the previous report is in-progress.

**Recommendation A:** Consider funding a study to verify the models produced by the utility agents to ensure they conform to standard industry practice. The EC acknowledges that the process evaluation for the Home Winterproofing offering may study the simulations in more depth and provide further assurance of their efficacy.

**Previously Recommended:** Yes – since the 2015 AV report.

**Outcome:** Greater certainty around savings estimates.

**Status:** In progress

**Utility response:** As noted in Table 7-1, this recommendation is directed to the OEB. For clarity, HOT2000 is the modelling software used in whole home modelling offerings. The residential whole home offerings are delivered by registered Energy Advisors affiliated with NRCan-licensed Service Organizations, with the expectation that NRCan HOT2000 protocols/standards are being followed. Failure to follow these protocols/standards could result in suspension or loss of licence by NRCan, which would in turn render Energy Advisors ineligible to participate in Enbridge's program.

**OEB response:** The OEB will consider this recommendation as it considers what future evaluation studies to undertake.

- Finding:** The most recent spillover study was conducted in 2024 on the Agricultural segment of the Industrial Program. The remaining Commercial and Industrial segments must rely on the 2015 study, which was conducted on legacy Union and legacy Enbridge service territories, resulting in a different spillover value for each utility. While Enbridge does track participants by legacy service territory in 2024, that may not be the case going forward. This will continue to be a problem until the 2015 study is fully replaced by new spillover values studied over the entire merged Enbridge territory.

**Recommendation A:** Assuming Enbridge continues to track legacy service territories, spillover values should be applied based on the legacy territory in which the participant facility is located. This provides the most accurate representation of spillover based on the past studies.

**Previously Recommended:** Yes – since the 2023 AV report.

**Recommendation B:** Assuming Enbridge *does not* continue to track legacy service territories, a single value should be calculated that represents a reasonable approximation of Recommendation A. If, within each segment, the proportion of energy savings from each territory is relatively unchanging from one program year to the next, a savings-weighted average should be calculated and applied. Enbridge calculated such a value from the 2024 program year. If the savings proportion is found to be relatively unchanging, then the same values can be used going forward.

**Previously Recommended:** Yes – since the 2023 AV report.

**Outcome:** Greater certainty around savings estimates.

**Status:** In progress

**Utility response:** Enbridge agrees that 2015 spillover values will be applied on a legacy basis as long as that information continues to be tracked. Enbridge also notes that this finding supports the need to conduct updated commercial and industrial spillover studies measured on the amalgamated utility.

3. **Finding:** The 2023-2025 Framework clearly specifies the use of a four-quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index for Final Domestic Demand, based on the most recently available information at the time avoided costs are updated. The inflation rate impacts both the nominal discount rate and the present value of future costs and benefits. Due to the high referenced inflation rate (4.26%), the nominal discount rate applied was also very high (8.43%), and this appears to undervalue the future benefits of DSM.

**Recommendation A:** OEB should consider establishing criteria for inflation that would require sensitivity analysis using a range of different inflation scenarios (e.g., low, moderate and high inflation) to assess how inflation impacts the overall cost-effectiveness and net present value of DSM programs.

**Recommendation B:** OEB should consider defining an inflation rate that anticipates future economic conditions (such as a reputable long-term inflation forecast) rather than reflecting recent history.

**Previously Recommended:** Yes – since the 2023 AV report.

**Outcome:** A more nuanced understanding of the range of potential outcomes and program and portfolio cost-effectiveness.

**Status:** In progress

**Utility response:** As noted in Table 7-1, this recommendation is directed to the OEB. For clarity, the net present value of avoided costs is insulated from the impact of inflation if the discount rate applied includes the same rate of inflation.

**OEB response:** The OEB has an active application from Enbridge Gas for approval of a new multi-year DSM plan and related policy updates where this recommendation can be considered.

4. **Finding:** Enbridge's 2024 Residential Whole Home offering included a high number of electrification (fuel switching) measures, resulting in large increases in electricity consumption, which had not been part of past programs prior to 2023. The cost-effectiveness of these measures relies heavily on the assumption of electricity avoided cost, which has not been widely discussed because of its previously negligible impact. The assumptions for electricity avoided cost do not differentiate between energy consumption and demand, which is inappropriate for measures such as heat pumps, which impact energy and demand differently.

**Recommendation A:** The OEB should continue to work with Enbridge and the EAC to identify and implement changes to the cost-effectiveness test assumptions that accurately reflect the impact of electrification measures. At minimum, this discussion should include the method for determining electricity avoided costs.

**Previously Recommended:** Yes – since the 2023 AV report.

**Outcome:** Improved accuracy of verified cost-effectiveness results.

**Status:** In progress

**Utility response:** EGI will continue to work with the OEB and EAC on this.

**OEB response:** The OEB is working collaboratively with the IESO on the evaluation of the joint IESO-Enbridge Home Renovation Savings Program. Updates to the cost effectiveness test to accurately assess electrification measures will be considered as part of the joint HRS evaluation, with input sought from the EAC. This is also an area that is expected to be identified as an issue for consideration in Enbridge’s multi-year DSM plan proceeding.

5. **Finding:** To ensure the approved DSM plan maintains sufficient long-term benefits, Enbridge is required to annually exceed a WAML of 14 years, excluding the Large Volume Program. The WAML is defined as the sum of the program year’s net cumulative natural gas savings divided by the sum of that program year’s net annual natural gas savings. The 14-year metric was calculated using a lifetime NTG assumption to represent both first-year and lifetime NTG. In its draft report, Enbridge also uses lifetime NTG on both sides of the equation. This would result in a WAML of 19.18 years. However, some custom measures have different values for first-year and lifetime NTG. Because it is a more accurate representation of the net savings, the EC used these savings-specific values for first-year NTG and lifetime NTG in its WAML calculation. This results in a WAML of 17.89 years. This approach was discussed with the EAC, including considering example scenarios and receiving feedback from Enbridge on implementation impacts in the event the WAML threshold was in jeopardy. In response, the EAC reached consensus and endorsed DNV continuing its approach to calculate WAML.

**Recommendation A:** With consultation from the EAC, Enbridge should consider modifying its WAML metric calculation to be consistent with the more accurate calculation methodology used by the EC.

**Previously Recommended:** Yes – since the 2023 AV report.

**Outcome:** Improved accuracy of portfolio achievement.

**Status:** In progress

**Utility response:** Enbridge will revise their WAML metric calculation to align with the EC’s approach.

**OEB response:** The OEB appreciates the EC’s work in identifying this issue and providing a detailed assessment and example scenarios for the EAC’s consideration. In response to the EAC’s consensus recommendation that WAML continue to be calculated consistent with the manner employed by DNV, OEB staff views this recommendation as complete. Any further consideration may take place as part of Enbridge’s multi-year DSM plan proceeding.

6. **Finding:** While reviewing the Residential Savings by Design list of Energy Star homes built, Enbridge identified two homes that were claimed in a previous Annual Verification and should not be claimed as part of the 2024 Annual Verification. The EC then removed these two homes from Enbridge’s claimed metric.

**Recommendation A:** The EC appreciates Enbridge’s ongoing, proactive checks on program participants. Enbridge should continue providing these continual updates throughout the Annual Verification process—for the Residential Savings by Design offering and any other offerings with similar criteria. This open communication allows for clear and accurate verification of program metrics and builds trust and confidence in the annual verification process.

**Previously Recommended:** Yes – since the 2023 AV report.

**Outcome:** Improved accuracy of verified program achievements.

**Status:** New

**Utility response:** Enbridge will continue to gauge participation against a program’s eligibility requirements and to be proactive in identifying to the EC the removal of ineligible program participant claims as they are identified after submission of draft results.

7. **Finding:** Since the Annual Verification of 2019 programs, Enbridge has used a “ping report” provided by one of five smart thermostat equipment manufacturers as a proxy for an installation rate factor for the Smart Home (formerly Adaptive Thermostats) offering. While this represents a cost-effective method to adjust for non-installation in the absence of an evidence-based installation rate factor, ping reports are not widely used as installation rates for similar point-of-sale rebate programs in other jurisdictions. Further, in 2024, an Enbridge-conducted process evaluation found evidence that the ping reports underestimated the number of installed devices. For the 2024 Annual Verification, with support from the EAC, Enbridge developed and used an average installation rate found through a jurisdictional scan instead of the ping report.

**Recommendation A:** A stand-alone study should be conducted to develop an installation rate factor for thermostats in the Residential Smart Home offering. A billing analysis could effectively measure installation rate in addition to measuring gross energy savings resulting from smart thermostats. Participants installing devices from all five of the manufacturers included in the Residential Smart Home offering should be incorporated.

**Previously Recommended:** No – this is a new recommendation.

**Outcome:** Greater certainty around savings estimates.

**Status:** New

**Utility response:** As noted in Table 7-1, this recommendation is directed to the OEB. Enbridge would support a future study on this matter.

**OEB response:** The OEB appreciates the EC’s feedback and will consider undertaking the recommended evaluation activities as part of future impact evaluations of Enbridge’s Residential Program.

8. **Finding:** Following precedent established in previous years, Enbridge assumed for the Residential Whole Home offering that participants experienced full measure costs and savings. However, these assumptions do not necessarily reflect reality, particularly for early replacement measures, which for this offering are weighted heavily towards windows and electrification measures like heat pumps. These measures likely present a variety of baselines, all of which would entail lower incremental costs. For example, if a customer installs a new heat pump and displaces existing central air conditioners that, in the absence of the heat pump, would have themselves been replaced in the near future, the customer cost savings of that heat pump should net out of its “total cost.”

**Recommendation A:** Enbridge should develop and incorporate estimates of incremental costs and savings for common early replacement measures. The EC acknowledges that Enbridge is working towards developing these assumptions for both heat pumps (through a TRM subdocument that is close to finalization) and windows (through separate research), both of which could be incorporated into the 2025 Annual Verification results.

**Previously Recommended:** No – this is a new recommendation.

**Outcome:** Greater certainty around cost-effectiveness estimates.

**Status:** New

**Utility response:** Enbridge acknowledges the EC’s feedback and as noted in the EC’s recommendation, Enbridge is working towards developing these assumptions for both heat pumps and windows.

## 7.2 Other study recommendations

### 7.2.1 NTG recommendations

The following NTG recommendations are summarized from the 2024 Free Ridership Evaluation for Ontario’s Natural Gas Custom C&I DSM Programs study finalized in 2025. This study researched attribution rates, which are estimates of the influence the utility had on the energy efficiency projects that were installed and measured as a percentage of the savings “attributable” to the utility. The results of this study are combined with the results of other studies to produce verified net cumulative gas savings for the utilities’ 2024 Custom programs. The entire report is included in APPENDIX S.

**Table 7-2. NTG summary of recommendations: free-ridership**

|   | Energy savings and program performance  |  | Applies to |            | Primary beneficial outcome |                  |                       |               |
|---|---|--|------------|------------|----------------------------|------------------|-----------------------|---------------|
|   | Finding   | Recommendation   | Enbridge   | Evaluation | Reduce costs               | Increase savings | Customer satisfaction | Decrease risk |
| 1 | FR-based attribution in the programs can vary by more than 10 percent across studies for the same program           | Evaluate free-ridership for the programs annually and couple the free-ridership evaluation with process evaluation   |            | ✓          |                            | ✓                |                       |               |
| 2 | FR-based attribution for the programs came primarily through acceleration   | Consider strategies to have greater impact on increasing efficiency and amount (where applicable) of measures  | ✓          |            |                            | ✓                |                       |               |
| 3 | Many customers with high FR report involving Enbridge late in the process   | Consider strategies to reduce customers taking advantage of the rebate for projects that are already fully decided upon.   | ✓          |            |                            | ✓                |                       | ✓             |
| 4 | Return on Investment is mentioned consistently by customers and vendors as a key metric                             | Continue emphasis on ROI effect of incentives with customers. Consider helping to quantify kWh, water and other non-energy benefits of projects to sell projects that do not pass ROI on gas savings alone | ✓          |            |                            | ✓                |                       |               |
| 5 | Reducing carbon is a driver for some customers  | Continue to leverage carbon effects as part of the package to motivate customers to participate  | ✓          |            |                            | ✓                |                       |               |
| 6 | The Large Volume program has high free ridership  | 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.                            |            |            |                            |                  |                       |               |
| 7 | Vendor attribution increased program attribution significantly for the Enbridge Commercial and Multifamily Segments | Conduct a process evaluation to improve Large Volume influence on customer projects  | ✓          |            |                            | ✓                | ✓                     | ✓             |
|   |   | Consider limiting the measure types or payback periods that are eligible for Large Volume incentives   | ✓          |            |                            | ✓                | ✓                     | ✓             |
|   |   | Consider expanding approaches to market for other programs that leverage third-party vendors.  | ✓          |            | ✓                          | ✓                |                       |               |

|   | Energy savings and program performance   |   | Applies to |            | Primary beneficial outcome |                  |                       |               |
|---|--|---|------------|------------|----------------------------|------------------|-----------------------|---------------|
|   | Finding  | Recommendation  | Enbridge   | Evaluation | Reduce costs               | Increase savings | Customer satisfaction | Decrease risk |
| 8 | Vendor attribution data collection resulted in fewer completed interviews than desired (due to small sample size).   | Consider interviewing participating vendors independent of the participating customer sample and recruitment.   |            | ✓          |                            | ✓                |                       | ✓             |
| 9 | In the attribution scoring methodology, timing assumptions, specifically the number of years assumed for “never would have implemented” have a significant effect on FR-based attribution. | Consider studying the typical planning horizons for each of the customer segments. The assumed planning horizon for companies is used in the scoring to determine at what point the program receives full influence credit for accelerating a measure’s implementation. |            | ✓          |                            |                  |                       | ✓             |

**NTG Finding 1:** FR-based attribution for the programs can vary by more than 10 percent across studies for the same program.

**Recommendation 1:** Consistent 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 1:** Effective free-ridership management will allow the programs to continue to increase their net savings in future years.

**Utility response:** As noted in Table 7-2, this recommendation is not directed at Enbridge.

**OEB response:** The OEB will consider these recommendations as it considers future evaluation work.

**NTG Finding 2:** FR-based attribution for the programs (with the exception of Large Volume) came primarily through acceleration rather than changes in efficiency or quantity. Acceleration periods tend to be considerably shorter than the estimated useful life (EUL) of a measure which has a significant effect on net cumulative gross savings even if it is less detrimental to the current framework’s first year gas savings goals. Acceleration of measures is less valuable to societal and provincial goals than changes in efficiency and quantity due to its short-term effect.

**Recommendation 2:** Program goals in the current framework are first-year gas savings rather than cumulative savings, so this recommendation will not have significant effect on stated program goals on which shareholder incentives are based, but will have significant effect on the overall value of the program impacts. To ensure the programs continue to deliver significant cumulative net savings and to mitigate risk of a low weighted average measure life (WAML), the utilities should continue to:

- Identify unique solutions that save energy at customer plants
- Expand promotion of energy efficiency measures with low market penetration

- 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.
- Promote long life measures and consider discontinuing the promotion of short-lived measures
- Proactively upsell equipment purchases from standard to efficient products
- Target hard -to-reach customers who have not participated in the past
- Adopt lessons learned from the Enbridge Commercial and Multifamily approach to market, working proactively with vendors
- Focus on promoting novel energy energy-saving solutions to industrial and agriculture customer problems. Several customers indicated that the project would not have happened without the utility because a utility representative identified a solution that they had not considered
- Eliminating incentives for standard efficiency products in non-replace on burnout situations.

**Outcome 2:** Additional effect on efficiency and quantity of measures will increase net savings and hedge against regulatory risk if future frameworks revert to cumulative savings metrics.

**Utility response:** Enbridge confirms that it will continue to pursue the listed items. In particular, current Enbridge design and delivery is aligned with the auditor's recommendations: "Identify unique solutions that save energy at customer plants", "Motivate customers to increase the scope of their projects", and "Proactively upsell equipment purchases from standard to efficient products" and Enbridge will continue to pursue these goals.

Regarding the recommendation to eliminate incentives for standard efficiency measures, please note that Enbridge does not provide incentives for projects we consider standard. Further, seemingly standard measures at an industry level may not be standard for a specific customer site for a variety of reasons and it would be helpful to have some examples of what DNV considers a "standard measure".

Enbridge Gas disagrees with the recommendation to "Promote long life measures and consider discontinuing the promotion of short-lived measures" as this would result in lost opportunities to help customers save energy according to their needs and budget availability. Enbridge Gas agrees that it is important to promote long-life measures but will not be discontinuing the promotion of short-lived measures.

**NTG Finding 3:** Some customers with high FR report involving Enbridge late in the process.

**Recommendation 3:** Consider strategies to reduce customers taking advantage of the rebate for projects that are already fully decided upon. The program has established proactive marketing and engagement strategies in place to be involved early in the process with many of the largest customers, which helps mitigate this risk. Increasing efforts and resources in order to expand these efforts to the broader mid-size customers could be an option.

**Outcome 3:** Continuing to enhance and expand proactive engagement approaches will reduce the percentage of free riders in the program and increase gross savings.

**Utility response:** Enbridge has strong on-going relationships with many of its largest customers. These relationships provide deeper insight into project timing and the customer decision-making process. Broadly applying this one-on-one approach to mid-sized customers is more challenging due to the size of the population and the resources required to do so. If Enbridge ESAs become aware of an energy savings project after the project has commenced, the project is not eligible for a DSM incentive. Enbridge makes best efforts to not incent projects that are fully decided upon but must rely upon the customer to determine whether program incentives and support would be influential.



The free rider rate for Enbridge's custom commercial offering is comparable to similar DSM programs in North America. Enbridge remains committed to refining its approach, improving program effectiveness, and continuing to explore ways of engaging customers early in their project cycles.

**NTG Finding 4:** Return on Investment is mentioned consistently by customers and vendors as a key metric.

**Recommendation 4:** Continue emphasis on ROI effect of incentives with customers. Consider increasing efforts to quantify kWh, water, and other non-energy benefits of projects to sell projects that do not pass ROI on gas savings alone.

**Outcome 4:** Adding additional quantifiable impacts to sales pitches can help increase net savings, both through increased volume of gross savings and through more visible and memorable Enbridge support for making business case for DSM projects.

**Utility response:** Enbridge's primary focus is quantifying gas savings but also works with its customers to quantify electricity, water, and non-energy benefits. As electricity impacts become more integral to DSM in Ontario, efforts to focus on electricity savings are expected to increase.

**NTG Finding 5:** Reducing carbon is a driver for some customers, due to federal, provincial or customer policies.

**Recommendation 5:** Continue to leverage carbon effects as part of the package to motivate customers to participate. Carbon mitigation policies will persist at many companies agnostic of government policies.

**Outcome 5:** Leveraging carbon and other benefits beyond gas and direct gas bill savings can help to increase and speed sales.

**Utility response:** See response to NTG Study Finding 4 while also considering that Federal Carbon Charge has been set to zero as of April 2025.

**NTG Finding 6:** The Large Volume program has high free-ridership.

**Recommendation 6a:** 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.

**Outcome 6a:** The Large Volume program delivers significant net savings.

**Recommendation 6b:** Conduct a process evaluation to improve Large Volume influence on customer projects.

**Outcome 6b:** A process evaluation may uncover ways for Enbridge to drive net savings at Large Volume sites with less free-ridership.

**Recommendation 6c:** Consider limiting the measure types or payback periods that are eligible for Large Volume incentives. Continuous maintenance projects and projects where payback is single digit months are projects that will generally get priority without program funds. Eliminating high potential free-ridership projects will enable additional funds to be targeted toward projects that require funding to get done. From a customer service standpoint, it is difficult for utilities to deny incentives to customers unless they have pre-established rules to point to. Clear rules can allow Enbridge to reject potentially poor projects without a large effect on customer satisfaction.

**Outcome 6c:** Reducing free-rider projects will increase net savings.

**Utility response:** Enbridge agrees that the Large Volume program can still deliver meaningful, cost-effective net savings.

The 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 Enbridge 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.

**NTG Finding 7:** Vendor attribution increased program attribution significantly for the Enbridge Commercial and Multifamily Segments. Participants of all programs indicated vendor involvement at key decision-making junctures, suggesting that if Enbridge is able to influence vendor recommendations, there may be an opportunity to increase indirect influence on participants in all segments.

**Recommendation 7:** The utilities should consider what lessons can be learned from the Enbridge multifamily approach to market that is applicable to other segments. Other 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 7:** Effective leveraging of vendors could both increase FR-based attribution and program uptake.

**Utility response:** Enbridge will consider including vendor surveys as part of an upcoming commercial process evaluation.

**NTG Finding 8:** Vendor attribution recruitment resulted in fewer completed interviews than desired.

**Recommendation 8:** Consider interviewing participating vendors independent of the participating customer sample and recruitment. The current evaluation practice is to interview vendors that are identified as influential on customers through the participant interview, which ties the vendor and customer responses together, but also creates a challenge in project delivery since the vendor interviews cannot be started until late in participant data collection. An alternative approach would be to have an independent sample of projects to ask vendors about that could be completed in parallel with participant data collection.

**Outcome 8:** Larger completed samples of vendors allowing for more robust estimates of Enbridge effect on vendor actions.

**Utility response:** As noted in Table 7-2, this recommendation is not directed at Enbridge. However, Enbridge is supportive of expanding efforts to allow for a more robust estimate of Enbridge effect on vendor actions. This could include considering an incentive for their participation.

**OEB response:** The OEB will consider this recommendation when determining the scope of future evaluation projects.

**NTG Finding 9:** In the attribution scoring methodology, timing assumptions, specifically the number of years assumed for “never would have implemented” have a significant effect on FR-based attribution.

**Recommendation 9:** Consider studying the typical planning horizons for Ontario businesses in each segment. Currently, the two-year and four-year assumptions offered are based more on anecdotal evidence than on data. The assumed planning horizon for companies is used in the scoring to determine at what point the program receives full influence credit for accelerating a measure’s implementation.

**Outcome 9:** More accuracy and confidence in free-ridership-based attribution results.

**Utility Response:** As noted in Table 7-2, this recommendation is not directed at Enbridge.

**OEB response:** The OEB will consider this recommendation when determining the scope of future evaluation projects.



## 8 APPENDICES

### APPENDIX A. Evaluation background

The OEB hired the EC team to develop an overall evaluation, measurement, and verification (EM&V) plan and lead an annual verification of the reported utility DSM savings and scorecard achievements. This report is a result of that annual verification.

This report applies the results of several previously completed studies:

- A study of spillover resulting from the implementation of custom projects during the 2013-2014 program years, completed in May 2018.<sup>18</sup>
- A study verifying savings from prescriptive projects implemented in the 2017 program year, completed in June 2019.<sup>19</sup>
- A study verifying custom boiler project savings that used Enbridge's eTools energy modelling software, completed in January 2023.<sup>20</sup>
- A study verifying the custom project savings (CPSV) during the 2023 program year, completed in November 2024.<sup>21</sup>
- A study measuring the free ridership-based attribution and agricultural segment spillover within the custom projects<sup>22</sup> implemented in the 2023 program year, completed in November 2024.<sup>23</sup>
- A study measuring the free ridership-based attribution within the custom projects<sup>24</sup> implemented in the 2024 program year, completed in September 2025.<sup>25</sup>

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<sup>18</sup> CPSV Participant Spillover Results, DNV for the Ontario Energy Board, May 23, 2018

<sup>19</sup> 2017 C&I Prescriptive Verification: Final Report – Measurement of NTG Factors and Gross Savings Verification, Itron for the Ontario Energy Board, June 7, 2019

<sup>20</sup> eTools Boiler Tool Validation Study, DNV for the Ontario Energy Board, January 31, 2023

<sup>21</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification, DNV for the Ontario Energy Board, November 25, 2024

<sup>22</sup> Low-income custom projects were not included in the NTG study.

<sup>23</sup> 2023 Natural Gas Demand Side Management NTG Evaluation, DNV for the Ontario Energy Board, November 8, 2024

<sup>24</sup> Low-income and hybrid RTU custom projects were not included in the free ridership study.

<sup>25</sup> 2024 Natural Gas Demand Side Management Free Ridership Evaluation, DNV for the Ontario Energy Board, September 29, 2025



## APPENDIX B. Metric verification activities

To verify the metric achievements, the EC conducted the activities outlined in Table B-1. The utilization of each activity depends on the type of measure being reviewed. DNV defined four different types of measures, listed below. A single program or offering metric may have more than one type of measure.

- **Prescriptive (P):** Prescriptive gas savings measures are those where all savings inputs can be identified in the technical resource manual (TRM). This includes not only the prescribed savings but also additional prescribed inputs such as expected useful life (EUL).
- **Custom (C):** Custom gas savings measures are those gas measures of equipment or actions (tune up, process) which are not prescribed by the TRM. Examples include measures verified as part of the CPSV process as well as non-prescribed offerings like Whole Building Pay for Performance.
- **Whole Home (W):** Whole home savings are savings calculated using home modelling software (HOT2000).
- **Other (O):** In addition to direct gas savings measures, the scorecards recognize additional metrics, such as the number of enrolled participants, the number of homes built, or the qualified agents trained.

Activities to verify the measures fall into four general categories. As previously stated, the utilization of each method is determined by the measure type.

- **Confirm Tracking:** Confirmation that the entries and calculations within the submitted tracking data accurately contribute to scorecard metrics.
  - *Prescriptive measures:* The EC confirmed that measure-level inputs were correctly applied from the TRM where appropriate (such as savings per unit), then recalculated gross and net savings based on those inputs to verify the tracked net savings for a census of measures.
  - *Custom measures:* The EC used the results of the custom project savings verification, free ridership, and spillover studies conducted through separate processes.
  - *Whole Home and Other measures:* The EC confirmed that tracking records matched utility-reported achievement. Additional verification took place in other activities.
- **Apply Factors:** Application of relevant factors that are not otherwise applied in the TRM, such as gross savings adjustments, eTools adjustments, free ridership adjustments, and spillover ratios.
  - *Prescriptive measures:* The EC used the results of the C&I Prescriptive Verification and installation rate studies conducted through separate processes.
  - *Custom measures:* The EC used the results of the CPSV, eTools, free ridership, and spillover studies conducted through separate processes.
- **Desk Review:** File review of utility-provided documentation to verify whether the achievements in the tracking data were actually realized. Unless specifically mentioned otherwise, desk review methods were similar to those used in the prior verification.
  - *Whole Home:* Desk review included tasks such as review of energy software (HOT2000) modelling records and the air source heat pump savings adjustment factor for whole home offerings.
  - *Other:* For scorecards with Other metrics, offering achievements such as customer participation, eligibility for participation, and homes constructed were evaluated using program records specific to each scorecard, program, and metric.



- **Participant survey:** Direct outreach to participants to confirm participation eligibility and additional details.
  - *Other:* For scorecards with Other metrics, program achievements such as customer participation, eligibility for participation, and specific details about participation will be evaluated through surveying a representative sample of participants, where practicable.

Table B-1 identifies the measure types within each offering as well as the method used to evaluate that offering, corresponding with the measure type.

**Table B-1. 2024 Annual verification activities by offering**

| Program                         | Offering                             | Measure Types             | Confirm Tracking | Apply Factors | Desk Review | Part. Survey |
|---------------------------------|--------------------------------------|---------------------------|------------------|---------------|-------------|--------------|
| Residential                     | Residential Whole Home               | W                         | ✓                | ✓             | ✓           |              |
|                                 | Residential Single Measure           | No 2024 activity reported |                  |               |             |              |
| Low-Income                      | Residential Smart Home               | P                         | ✓                | ✓             | ✓           |              |
|                                 | Home Winterproofing                  | P W                       | ✓                | ✓             | ✓           |              |
| Commercial                      | Affordable Housing Multi-Residential | P C                       | ✓                | ✓             |             |              |
|                                 | Commercial Custom                    | C                         | ✓                | ✓             |             |              |
|                                 | Prescriptive Downstream              | P                         | ✓                | ✓             |             |              |
| Industrial                      | Direct Install                       | P                         | ✓                | ✓             |             |              |
|                                 | Prescriptive Midstream               | P                         | ✓                | ✓             |             |              |
| Large Volume Energy Performance | Industrial Custom                    | C                         | ✓                | ✓             |             |              |
| Building Beyond Code            | Direct Access                        | C                         | ✓                | ✓             |             |              |
|                                 | Whole Building Pay for Performance   | C O                       | ✓                | ✓             | ✓           |              |
| Building Beyond Code            | Residential Savings by Design        | O                         | ✓                |               | ✓           |              |
|                                 | Commercial Savings by Design         | O                         | ✓                |               | ✓           |              |
|                                 | Affordable Housing Savings by Design | O                         | ✓                |               | ✓           |              |
|                                 | Commercial Air Tightness Testing     | O                         | ✓                |               | ✓           | ✓            |



Desk reviews of Whole Home and Other measures require additional information beyond what is provided in the tracking data. For example, the EC requested HOT2000 files and other documentation to confirm participation and eligibility for a sample of relevant participants in the Residential Whole Home and Home Winterproofing offerings. Table B-2 shows the number of projects for which the EC requested additional documentation.

**Table B-2. Desk Review Sample**

| <b>Program</b>              | <b>Offering</b>                                      | <b>Sample Requested</b>                    |
|-----------------------------|--|--|
| <b>Residential</b>          | Residential Whole Home - Home Efficiency Rebate Plus | 75 Randomly Selected Homes                 |
|                             | Residential Smart Home                               | Smart Thermostat ISR Memo                  |
| <b>Low-Income</b>           | Home Winterproofing                                  | 30 Randomly Selected Homes                 |
| <b>Energy Performance</b>   | Whole Building Pay for Performance                   | Census of Participants                     |
|                             |  | 10 Randomly Selected Cohort 1 Participants |
| <b>Building Beyond Code</b> | Residential Savings by Design                        | 10 Randomly Selected Energy Star homes     |
|                             |  | 10 Randomly Selected Net Zero Ready homes  |
|                             | Commercial Savings by Design                         | 10 Randomly Selected Sites                 |
|                             | Affordable Housing Savings by Design                 | 10 Randomly Selected Sites                 |
|                             | Commercial Air Tightness Testing                     | Census of Participants and Agents          |



## APPENDIX C. Changes from 2023 annual verification

There are several changes between the 2023 and 2024 program year evaluations. These include:

- **New metrics:** In 2024, two new metrics appeared on the scorecard: Net Annual Gas Savings (m3) under the Whole Building Pay for Performance offering and Number of Net Zero Ready Homes under the Residential Savings by Design offering. Metric weighting has been modified accordingly for those two scorecards.
- **Metric targets:** In 2023, as the first year of the framework, all metric targets were prescribed. In 2024, metric targets under the Residential, Low-Income, Commercial, Industrial, and Large Volume programs are calculated based on a Target Adjustment Mechanism (TAM) methodology, described in APPENDIX L.
- **Maximum DSMSI:** In 2024, the maximum DSMSI amount increased by a 6.8% inflation factor.<sup>26</sup>

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<sup>26</sup> The 6.8% inflation rate is derived from the Canada Consumer Price Index Annual Review from 2022, consistent with the inflation rate used for 2024 program budget increases.



## APPENDIX D. Summary of verification adjustments

Table D-1 provides a combined summary of metrics for Enbridge offerings. This table show where the EC made adjustments of greater than 1% from the values identified in *tracking data*.

**Table D-1. Metrics with verified value greater than 1% different from tracked**

| Scorecard                   | Program                              | Metrics                     | >1% Difference? |
|-----------------------------|--------------------------------------|-----------------------------|-----------------|
| <b>Residential</b>          | Residential Whole Home               | Net Annual Gas Savings (m3) |                 |
|                             | Residential Single Measure           | Net Annual Gas Savings (m3) |                 |
|                             | Residential Smart Home               | Net Annual Gas Savings (m3) | ✓               |
| <b>Low-Income</b>           | Home Winterproofing                  | Net Annual Gas Savings (m3) |                 |
|                             | Affordable Housing Multi-Residential | Net Annual Gas Savings (m3) |                 |
| <b>Commercial</b>           | Commercial Custom                    | Net Annual Gas Savings (m3) | ✓               |
|                             | Prescriptive Downstream              | Net Annual Gas Savings (m3) |                 |
|                             | Direct Install                       | Net Annual Gas Savings (m3) |                 |
|                             | Prescriptive Midstream               | Net Annual Gas Savings (m3) |                 |
| <b>Industrial</b>           | Industrial Custom                    | Net Annual Gas Savings (m3) |                 |
| <b>Large Volume</b>         | Direct Access                        | Net Annual Gas Savings (m3) | ✓               |
| <b>Energy Performance</b>   | Whole Building Pay for Performance   | Participants                |                 |
|                             |                                      | Net Annual Gas Savings (m3) |                 |
| <b>Building Beyond Code</b> | Residential Savings by Design        | Energy Star Homes           |                 |
|                             |                                      | Net Zero Ready Homes        |                 |
|                             | Commercial Savings by Design         | Participants                |                 |
|                             | Affordable Housing Savings by Design | Participants                |                 |
|                             | Commercial Air Tightness Testing     | Participants                |                 |
|                             |                                      | Qualified Agents            |                 |



## APPENDIX E. Residential Program scorecard

This appendix describes the detailed processes used to verify the metrics for the Residential Program scorecard (Table E-1). The offerings addressed in this appendix are:

- Residential Whole Home Offering
- Residential Single Measure Offering
- Residential Smart Home Offering

**Table E-1. 2024 Residential Program scorecard<sup>\*27</sup>**

| Offering                          | Metric                      | Verified Achievement |              | Metric Target |            |            | Weight  |
|-----------------------------------|-----------------------------|----------------------|--------------|---------------|------------|------------|---------|
|                                   |                             | Offering-Level       | Metric-Level | Lower Band    | Target     | Upper Band |         |
| <b>Residential Whole Home</b>     |                             | 52,647,340           |              |               |            |            |         |
| <b>Residential Single Measure</b> | Net Annual Gas Savings (m3) | -                    | 56,482,829   | 20,317,470    | 27,089,960 | 33,862,449 | 100.00% |
| <b>Residential Smart Home</b>     |                             | 3,835,489            |              |               |            |            |         |

\*Not all values may compute exactly due to rounding.

<sup>27</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C



## Residential Whole Home offering

### Overview

Table E-2 shows the tracked and verified scorecard achievements for the 2024 Residential Whole Home offering with the metric of net annual gas savings. As a result of this review, the EC verifies 52,647,340 m3 (100.00% of tracked). Table E-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table E-2. Residential achievement: Residential Whole Home Offering metrics\***

| Metric                      | Achievement |            | Ratio   |
|-----------------------------|-------------|------------|---------|
|                             | Tracked     | Verified   |         |
| Net Annual Gas Savings (m3) | 52,647,340  | 52,647,340 | 100.00% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table E-3 to verify the savings metric for the Residential Whole Home offering.

**Table E-3. Documentation used to verify the Whole Home offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 DSM programs  |
| Project Files                          | Various documents for each requested participant, supporting program metrics  |
| ASHP Savings Adjustment Information    | PDF and Excel files detailing algorithm, derivation, and application of the air source heat pump savings adjustment factor applied to specific participants |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022                                 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |

The Residential Whole Home offering consisted of one sub-offering in 2024: Home Efficiency Rebate Plus (HER+).

### Participant Selection

Enbridge provided the Tracking File listing 93,815 individual participants in the HER+ offering that received funding from Enbridge. To certify the scorecard metric, the EC randomly selected 75 participants for review, requested additional documentation, confirmed receipt of the correct files, and reviewed documents to verify participation and eligibility.

### Received Files

The typical file folder had the following information:

- HOT2000 Model simulation or "Simulation" Files (.h2k)
- HOT2000 Model Output records aggregated in one spreadsheet



## Participant Eligibility

Enbridge's DSM plan<sup>28</sup> stated that participation in the Whole Home offering will consist of three separate activities:

- An initial home energy audit, called the pre-assessment, conducted by a Registered Energy Advisor through a Service Organization licensed by NRCan.
- Installation of at least two eligible measures.
- A final home energy audit, called the post-assessment, conducted by a Registered Energy Advisor through a Service Organization licensed by NRCan.

The EC found that all projects satisfied these requirements.

After the approval of Enbridge's DSM plan, the agreement between EGI and NRCan removed the two-measure requirement, but did specify that participants must install at least one qualifying measure or two if upgrading their thermostat or adding one of the resiliency measures (batteries connected to photovoltaic systems, roofing membrane, foundation waterproofing, or moisture proofing crawlspace floor, walls, and headers).<sup>29</sup> The EC confirmed that all participating homes met these criteria. The EC also identified one project that had resiliency measures installed but no other measures, which correctly had no savings claimed in the tracking data. As a result of this review, the EC verifies that all 93,815 Enbridge-funded homes satisfy the requirements for participation.

For informational purposes, Table E-4 shows the measure types installed by the offering, broken out by the number of total measure types installed per customer. The most common measure type was an air source heat pump, with 71,123 homes.

**Table E-4. Count of qualified measure types among verified projects and types per home\***

| Measure Type                 | Number of Measure Types by Customer |               |               |              |              |            |            |           | Total          | % of Total Homes |
|------------------------------|-------------------------------------|---------------|---------------|--------------|--------------|------------|------------|-----------|----------------|------------------|
|                              | One                                 | Two           | Three         | Four         | Five         | Six        | Seven      | Eight     |                |                  |
| Air Source Heat Pump         | 55,941                              | 10,838        | 3,186         | 935          | 191          | 30         | 2          | -         | 71,123         | 76%              |
| Doors                        | 6,662                               | 7,838         | 3,874         | 1,496        | 483          | 134        | 25         | 4         | 20,516         | 22%              |
| Attic Insulation             | 3,331                               | 9,215         | 3,849         | 1,385        | 478          | 118        | 25         | 4         | 18,405         | 20%              |
| Air Sealing                  | 125                                 | 5,416         | 4,125         | 1,486        | 528          | 129        | 26         | 4         | 11,839         | 13%              |
| Foundation Insulation        | 173                                 | 757           | 1,138         | 854          | 476          | 136        | 25         | 4         | 3,563          | 4%               |
| Windows                      | 36                                  | 888           | 983           | 643          | 255          | 85         | 20         | 4         | 2,914          | 3%               |
| Exterior Wall Insulation     | 158                                 | 609           | 698           | 511          | 274          | 83         | 20         | 4         | 2,357          | 3%               |
| Header Insulation            | 2                                   | 93            | 339           | 399          | 336          | 106        | 24         | 3         | 1,302          | 1%               |
| Domestic Hot Water Heat Pump | 70                                  | 550           | 272           | 105          | 37           | 10         | -          | 1         | 1,045          | 1%               |
| Thermostat                   | 4                                   | 139           | 95            | 80           | 50           | 24         | 9          | 3         | 404            | <1%              |
| Exposed Floor Insulation     | 8                                   | 59            | 96            | 49           | 21           | 10         | 3          | -         | 246            | <1%              |
| Basement Slab                | 3                                   | 30            | 48            | 68           | 46           | 29         | 3          | 1         | 228            | <1%              |
| Ground Source Heat Pump      | 30                                  | 6             | 5             | 1            | -            | -          | -          | -         | 42             | <1%              |
| <b>Total Homes</b>           | <b>66,543</b>                       | <b>18,219</b> | <b>6,236</b>  | <b>2,003</b> | <b>635</b>   | <b>149</b> | <b>26</b>  | <b>4</b>  | <b>93,815</b>  | <b>N/A</b>       |
| <b>Total Measures</b>        | <b>66,543</b>                       | <b>36,438</b> | <b>18,708</b> | <b>8,012</b> | <b>3,175</b> | <b>894</b> | <b>182</b> | <b>32</b> | <b>133,984</b> | <b>N/A</b>       |

\*Not all values may compute exactly due to rounding.

<sup>28</sup> Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 1 Schedule 2, Page 11 of 22

<sup>29</sup> Enbridge Gas and NRCan Agreement Nov 24, 2022, Attachment 3, Page 11 of 21



## Verify Tracked Savings

In calculating net annual gas savings, the EC first utilized tracking data to identify the savings for each of the tracked projects, confirming that the measure life and free ridership multipliers were correctly applied.

During the 2023 program year, Enbridge discovered that the HOT2000 modelling software made assumptions not aligned with real-world settings and heat pump performance, resulting in overestimates of calculated heating load and the resulting modelled gas savings for participants replacing natural gas furnaces. Using a residential heat pump savings algorithm from New York TRM v11.0 as a basis, Enbridge created a weighted average adjustment factor of 40% to reduce the savings estimation for these specific participants. The EC reviewed and verified the New York TRM algorithm, including its assumptions and references, as well as Enbridge's calculation workbook which derived the 40% adjustment factor. Among the 71,123 HER+ participants installing an air source heat pump, the adjustment was applied to 69,254 participants. Through additional documentation provided by Enbridge, the EC verified that this adjustment factor was correctly applied.

The EC then reviewed documentation for the sample of 75 program participants to identify whether the gross energy savings in the project files matched the gross energy savings in the tracking data. If any of the 75 projects did not match, an average savings-weighted realization rate was calculated and applied to the tracking savings to produce verified savings.

## Calculate Realization Rate

For the 2024 HER+ verification, the EC used a multi-step process to verify tracked energy savings for the sampled homes, shown in Figure E-1. The process was necessary because the simulation mode (EnerGuide or Expert<sup>30</sup>) used by program delivery agents is not available to non-certified professionals. While the EC can attempt to run the Expert simulations in General mode, the runs may produce error warnings or result in a savings differential between the Expert result and General result. Therefore, this multi-step process was developed to verify savings:

- EC requested simulation (HSE) and output records from the program
- Where possible, the simulation file was re-run and the results used to verify the tracking savings. If different simulation versions or modes were used, the savings could be slightly different; therefore, simulation savings were considered "verified" if they were within 2% of the tracking savings; in this case, the tracked savings value was accepted as the verified savings.
- If a simulation file was not provided, the file inputs were incompatible with General mode and would not run, the file ran but produced an error due to version or mode differences, or the file produced a difference in savings greater than 2%, the output file was used to verify the tracking savings. As with the simulation file, the EC accepted tracking savings values within 2% of the output file value as the verified savings.
- If the EC was unable to verify the tracking savings against the output record, the EC requested additional documentation from the program (utility) to explain the discrepancy. This documentation explained the adjustments used to calculate approved furnace baselines for accurate reported savings values.
- If no additional documentation or explanation was available, the EC compared the simulation values to the project documentation to determine whether they were consistent.

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<sup>30</sup> "Expert" is the mode listed in the output files. This mode is also labelled as "EnerGuide" in simulation files. The EC uses both terms.

**Figure E-1. Overview of gross savings verification for 2024 HER+ verification**

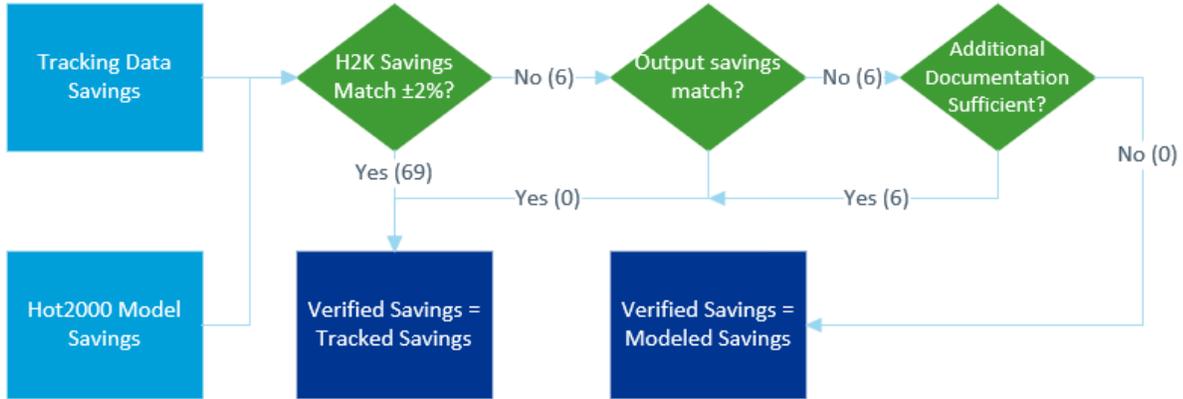


Table E-5 shows how many customers were verified in each evaluation step.

**Table E-5. Overview of gross savings verification**

| Evaluation Step   | # Verified |
|---|------------|
| Simulation re-run (H2K) and compared to tracking, verified if $\pm 2\%$ | 69         |
| Output files for (XLS) compared to tracking, verified if $\pm 2\%$      | 0          |
| Additional Explanation request  | 6          |
| Comparison to output file values  | 0          |
| <b>Total Verified</b>   | <b>75</b>  |

The EC produced verified savings for all 75 homes in the sample. The gross savings realization rate (RR) is 100.00%, shown in Table E-6.

**Table E-6. HER+ realization rate\***

| Numbers of Houses | Realization Rate | 90% Confidence Interval |             |             |                    |
|-------------------|------------------|-------------------------|-------------|-------------|--------------------|
|                   |                  | Absolute Precision      | Lower Bound | Upper Bound | Relative Precision |
| 75                | 100.00%          | -                       | -           | -           | -                  |

\*Not all values may compute exactly due to rounding.

## Verification Result

As a result of this review, the EC confirms the total savings of 52,647,340 m<sup>3</sup> for the Whole Home offering (100.00% of tracked).



## **Residential Single Measure offering**

Enbridge reported no activity for this offering in 2024.



## Residential Smart Home offering

### Overview

Table E-7 shows the tracked and verified scorecard achievements for the 2024 Residential Smart Home offering, with the metric of net annual natural gas savings. As a result of this review, the EC verifies 3,835,489 m3 (104.35% of tracked).

Table E-7 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table E-7. Residential Program achievement: Residential Smart Home offering m3 metric\***

| Metric                      | Achievement |           | Ratio   |
|-----------------------------|-------------|-----------|---------|
|                             | Tracked     | Verified  |         |
| Net Annual Gas Savings (m3) | 3,675,745   | 3,835,489 | 104.35% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used documentation shown in Table E-8 to verify the metrics for the Residential Smart Home offering.

**Table E-8. Documentation used to verify the Residential Smart Home offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| Thermostat ISR Memo                    | Jurisdictional review of in-service (or installation) rate for similar smart thermostat programs                            |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| TRM 8.0                                | Natural Gas Demand Side Management Technical Resource Manual, Version 8.0   |

### Verify Annual Natural Gas Savings

The EC reviewed natural gas savings for prescriptive measures from the Tracking File, using the procedures identified in APPENDIX O. In calculating gas savings, the EC used:

- Tracking File data, which reported 24,414 units
- TRM 8.0
- Thermostat ISR Memo, which reported 88.40% installation rate<sup>31</sup>

The EC certified the tracked savings, for a savings ratio of 104.35%.<sup>32</sup>

### Verification Result

As a result of this review, the EC confirms the savings of 3,835,489 m3 (104.35% of tracked) for the Residential Smart Home offering.

<sup>31</sup> The Residential Smart Home offering provides participants with a point-of-sale instant discount for purchasing a smart thermostat. Enbridge conducted a jurisdictional review of the installation rate for similar smart thermostat programs after an Enbridge sponsored process evaluation of the Residential Smart Home offering revealed challenges associated with the previous installation rate approach. Enbridge used this jurisdictional scan to develop an average installation rate to apply for 2024.

<sup>32</sup> Savings ratio is more than 100% because the program used a lower installation rate than the EC, so the EC verifies more than 100% of savings reported by the program.



## APPENDIX F. Low-Income Program scorecard

This appendix describes the detailed process used to verify the metrics for the Low-Income Program scorecard (Table F-1). The offerings addressed in this appendix are:

- Home Winterproofing
- Affordable Housing Multi-Residential

**Table F-1. 2024 Low-Income Program scorecard<sup>33</sup>**

| Offering                                    | Metric  | Verified Achievement |              | Metric Target |           |            | Weight |
|---|---|----------------------|--------------|---------------|-----------|------------|--------|
|   |   | Offering-Level       | Metric-Level | Lower Band    | Target    | Upper Band |        |
| <b>Home Winterproofing</b>                  | Single Family Net Annual Gas Savings (m3)     | 3,865,194            | 3,865,194    | 2,034,975     | 2,713,300 | 3,391,625  | 50.00% |
| <b>Affordable Housing Multi-Residential</b> | Multi-Residential Net Annual Gas Savings (m3) | 4,023,376            | 4,023,376    | 3,199,656     | 4,266,207 | 5,332,759  | 50.00% |

<sup>33</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C



## Home Winterproofing offering

### Overview

Table F-2 shows the tracked and verified scorecard achievements for the 2024 Home Winterproofing offering, with the metric of net annual gas savings. As a result of this review, the EC verifies 3,865,194 m3 (99.69% of tracked). Table F-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table F-2. Low-Income Program achievements: Home Winterproofing\***

| Metric   | Achievement      |                  | Ratio         |
|--|------------------|------------------|---------------|
|  | Tracked          | Verified         |               |
| Prescriptive Single Family Net Annual Gas Savings (m3) | 1,022,570        | 1,022,577        | 100.00%       |
| Whole Home Single Family Net Annual Gas Savings (m3)   | 2,854,789        | 2,842,617        | 99.57%        |
| <b>Total</b>   | <b>3,877,359</b> | <b>3,865,194</b> | <b>99.69%</b> |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table F-3 to verify the metrics for the Home Winterproofing offering.

**Table F-3. Documentation used to verify the Home Winterproofing offering**

| Report Language                           | Description or Citation   |
|---|---|
| <b>Enbridge-Provided Documentation</b>    |   |
| <b>Tracking File</b>                      | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Project Files</b>                      | Various documents for each requested participant, supporting program metrics  |
| <b>Documents Used by EC</b>               |   |
| <b>OEB Decision</b>                       | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022               |
| <b>Enbridge Plan</b>                      | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| <b>TRM 8.0</b>                            | Natural Gas Demand Side Management Technical Resource Manual, Version 8.0   |
| <b>TAPS Report</b>                        | TAPS Verification Program 2012 Year End Research Report, Quadra Research. April 2013 <sup>34</sup>  |
| <b>Prescriptive Showerheads</b>           | Showerhead Verification Among Rental Buildings, Ipsos Research, March 2012  |
| <b>Low-Income Kits Verification Study</b> | Final Report Following an Audit of the Union Gas ESK – Helping Homes Conserve – HHC – Program, Beslin Communication Group, March 15, 2013 |

### Simulation-based Savings

#### Participant Selection

Enbridge provided the tracking file listing 5,292 individual participant homes in the Winterproofing program. To certify the scorecard metric, the EC randomly selected 30 participants for review, requested additional documentation, confirmed receipt of the correct files, and reviewed documents to verify participation and eligibility.

<sup>34</sup> TAPS Verification Program 2012 Year End Research Report, Study CR-604, Quadra Research, April 3, 2013

### Received Files

The typical file folder had the following information:

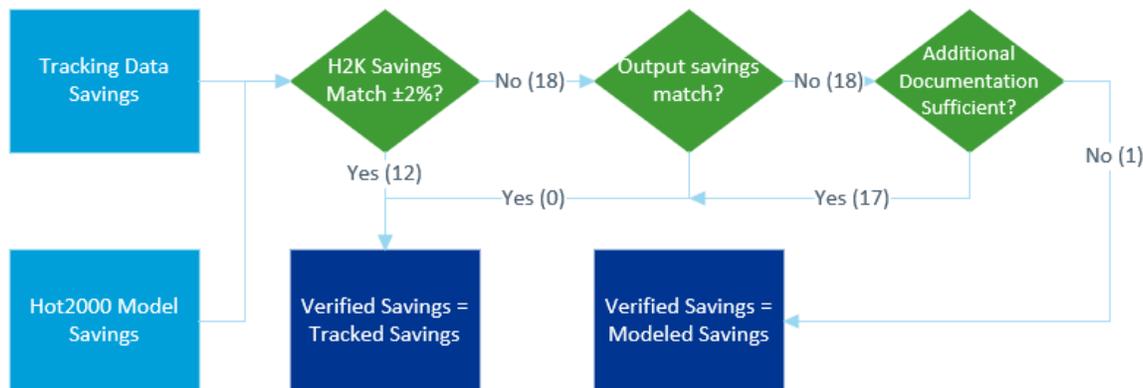
- Photographs of pre- and post-installation conditions
- HOT2000 Model simulation Files (.h2k)
- HOT2000 Model Output records

### Calculate Realization Rate

The EC used a multi-step process to verify tracked energy savings for the 30 sampled homes, shown in Figure F-1 for the 2024 Winterproofing verification. The process was necessary because the simulation mode (EnerGuide or Expert<sup>35</sup>) used by program delivery agents is not available to non-certified professionals. While the EC can attempt to run the Expert simulations in General mode, the runs may produce error warnings or result in a savings differential between the Expert result and General result. Therefore, this multi-step process was developed to verify savings:

- EC requested simulation (H2K) and output records from the offering
- Where possible, the simulation file was re-run and the results used to verify the tracking savings. If different simulation versions or modes were used, the savings could be slightly different; therefore, simulation savings were considered “verified” if they were within 2% of the tracking savings; in this case, the tracked savings value was accepted as the verified savings.
- If a simulation file was not provided, the file inputs were incompatible with General mode and would not run, the file ran but produced an error due to version or mode differences, or the file produced a difference in savings greater than 2%, the output record was used to verify the tracking savings. As with the simulation file, the EC accepted tracking savings values within 2% of the output record value as the verified savings.
- If the EC was unable to verify the tracking savings against the output record, the EC requested additional documentation from the program (utility) to explain the discrepancy.
- If no additional documentation or explanation was available, the EC compared the output record values to the project documentation summary to determine whether they were consistent. If they were not consistent, the simulation output value was used as the verified value.

**Figure F-1. Overview of gross simulation savings verification for 2024 Home Winterproofing**



<sup>35</sup> “Expert” is the mode listed in the output files. This mode is also labelled as “EnerGuide” in simulation files. The EC uses both terms.

Table F-4 shows how many homes were verified in each evaluation step.

**Table F-4. Overview of gross simulation savings verification**

| Evaluation Step   | # Verified |
|---|------------|
| Simulation re-run (H2K) and compared to tracking, verified if $\pm 2\%$ | 12         |
| Output files for (XLS) compared to tracking, verified if $\pm 2\%$      | 0          |
| Additional Explanation request  | 17         |
| Comparison to output file values  | 1          |
| <b>Total Verified</b>   | <b>30</b>  |

The gross savings realization rate is 100.02%, shown in Table F-5.

**Table F-5. Home Winterproofing realization rate**

| Numbers of Houses | Realization Rate | 90% Confidence Interval |             |             | Relative Precision |
|-------------------|------------------|-------------------------|-------------|-------------|--------------------|
|                   |                  | Absolute Precision      | Lower Bound | Upper Bound |                    |
| 30                | 100.02%          | 0.02%                   | 100.00%     | 100.05%     | 0.04%              |

## Prescriptive Savings

In calculating net annual gas savings, the EC reviewed natural gas savings for prescriptive measures from the Tracking File, using the procedures identified in APPENDIX O. The EC certified the tracked savings which resulted in a savings ratio of 100.00%, as shown in Table F-6.

**Table F-6. Home Winterproofing achievement by measure group: prescriptive savings\***

| Measure Group         | Measures     | Achievement (m3) |                  | Savings Ratio  |
|-----------------------|--------------|------------------|------------------|----------------|
|                       |              | Tracked          | Verified         |                |
| Bathroom Aerator      | 556          | 2,388            | 2,388            | 100.00%        |
| Kitchen Aerator       | 710          | 5,766            | 5,766            | 100.00%        |
| Heat Reflector Panels | 14           | 2,005            | 2,005            | 100.00%        |
| Pipe Insulation       | 1,970        | 22,565           | 22,572           | 100.03%        |
| Showerhead            | 811          | 19,463           | 19,463           | 100.00%        |
| Thermostat            | 5,131        | 970,383          | 970,383          | 100.00%        |
| <b>Total</b>          | <b>9,192</b> | <b>1,022,570</b> | <b>1,022,577</b> | <b>100.00%</b> |

\*Not all values may compute exactly due to rounding.

## Verification Result

As a result of this review, the EC confirms the savings of 3,865,194 m3 (99.69% of tracked) for the Home Winterproofing offering.

## Affordable Housing Multi-Residential offering

### Overview

Table F-7 shows the tracked and verified scorecard achievements for the 2024 Enbridge Affordable Housing Multi-Residential offering, with the metric of net annual gas savings. As a result of this review, the EC verifies 4,023,376 m3 for all program measures (99.99% of tracked). Table F-7 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table F-7. Low-Income Program achievements: Affordable Housing Multi-Residential\***

| Metric   | Achievement      |                  | Ratio         |
|--|------------------|------------------|---------------|
|  | Tracked          | Verified         |               |
| Prescriptive Multi-Residential Net Annual Gas Savings (m3) | 73,872           | 73,926           | 100.07%       |
| Custom Multi-Residential Net Annual Gas Savings (m3)       | 3,949,805        | 3,949,449        | 99.99%        |
| <b>Total</b>   | <b>4,023,676</b> | <b>4,023,376</b> | <b>99.99%</b> |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table F-8 to verify the metrics for the Affordable Housing Multi-Residential offering.

**Table F-8. Documentation used to verify the Affordable Housing Multi-Residential offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| TRM 8.0                                | Natural Gas Demand Side Management Technical Resource Manual, Version 8.0   |
| 2023 CPSV Report                       | 2023 Natural Gas Demand Side Management Custom Savings Verification <sup>36</sup>   |
| eTools Study                           | eTools Boiler Tool Validation Study <sup>37</sup>   |

### Verify Prescriptive Savings

In calculating net annual gas savings, the EC reviewed natural gas savings for prescriptive measures from the Tracking File, using the procedures identified in APPENDIX O. The EC certified the tracked savings which resulted in a savings ratio of 100.07%, as shown in Table F-9.

<sup>36</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification, DNV for the Ontario Energy Board, November 25, 2024

<sup>37</sup> eTools Boiler Tool Validation Study, DNV for the Ontario Energy Board, January 31, 2023



**Table F-9. Affordable Housing Multi-Residential achievement by measure group: prescriptive savings\***

| Measure Group               | Measures  | Achievement (m3) |               | Savings Ratio  |
|-----------------------------|-----------|------------------|---------------|----------------|
|                             |           | Tracked          | Verified      |                |
| Energy Recovery Ventilation | 1         | 12,028           | 12,083        | 100.45%        |
| Make-Up Air Unit            | 4         | 57,818           | 57,818        | 100.00%        |
| Water Heater                | 8         | 4,026            | 4,026         | 100.00%        |
| <b>Total</b>                | <b>13</b> | <b>73,872</b>    | <b>73,926</b> | <b>100.07%</b> |

\*Not all values may compute exactly due to rounding.

### Verify Custom Savings

The EC identified the custom savings totals from the Tracking File shown in Table F-10. The EC applied a gross realization rate from the 2023 CPSV Report for Low-Income and Multi-Residential Multi-Family of 97.61%. The EC also applied a realization rate of 84.00% from the eTools Study to boilers with savings estimated by eTools, which resulted in a combined realization rate of 81.99% for these measures.

**Table F-10. Affordable Housing Multi-Residential achievement: custom savings\***

| Segment                                       | eTools Boilers | Unverified Gross Savings (m3)** | CPSV RR | eTools RR | Att     | Spillover | Adj           | Verified Net Savings (m3) |
|---|----------------|---------------------------------|---------|-----------|---------|-----------|---------------|---------------------------|
| Low-Income and Multi-Residential Multi-Family | ✓              | 2,579,279                       | 97.61%  | 84.00%    | 100.00% | 0.00%     | 81.99%        | 2,114,813                 |
|   |                | 1,879,558                       | 97.61%  | 100.00%   | 100.00% | 0.00%     | 97.61%        | 1,834,637                 |
| <b>Total</b>                                  |                | <b>4,458,837</b>                |         |           |         |           | <b>88.58%</b> | <b>3,949,449</b>          |

\*Not all values may compute exactly due to rounding.

\*\*This value represents savings in the tracking data before any adjustments were made. This differs from tracked net savings, which do account for adjustments.

### Verification Result

As a result of this review, the EC confirms the savings of 4,023,376 m3 (99.99% of tracked) for the Affordable Housing Multi-Residential offering.

**Table F-11. Verified savings by market rate and social/assisted housing owners**

| Building Type       | Measures   | Verified Net Savings (m3) |
|---------------------|------------|---------------------------|
| Market Rate         | 207        | 2,827,849                 |
| Social and Assisted | 92         | 1,155,106                 |
| Other               | 9          | 40,421                    |
| <b>Total</b>        | <b>308</b> | <b>4,023,376</b>          |



## APPENDIX G. Commercial Program scorecard

This appendix describes the detailed process used to verify the metrics for the Commercial Program scorecard (Table G-1). The offerings addressed in this appendix are:

- Commercial Custom
- Prescriptive Downstream
- Direct Install
- Prescriptive Midstream

**Table G-1. 2024 Commercial Program scorecard<sup>\*38</sup>**

| Offering                       | Metric                                     | Verified Achievement |              | Lower Band | Metric Target |            | Weight |
|--------------------------------|--|----------------------|--------------|------------|---------------|------------|--------|
|                                |  | Offering-Level       | Metric-Level |            | Target        | Upper Band |        |
| <b>Commercial Custom</b>       |  | 17,779,102           |              |            |               |            |        |
| <b>Prescriptive Downstream</b> | Large Customer Net Annual Gas Savings (m3) | 1,414,116            | 19,785,418   | 17,991,630 | 23,988,840    | 29,986,050 | 50.00% |
| <b>Direct Install</b>          |  | 217,154              |              |            |               |            |        |
| <b>Prescriptive Midstream</b>  |  | 375,046              |              |            |               |            |        |
| <b>Commercial Custom</b>       |  | 1,860,619            |              |            |               |            |        |
| <b>Prescriptive Downstream</b> | Small Customer Net Annual Gas Savings (m3) | 850,970              | 8,490,930    | 6,548,383  | 8,731,177     | 10,913,972 | 50.00% |
| <b>Direct Install</b>          |  | 4,575,388            |              |            |               |            |        |
| <b>Prescriptive Midstream</b>  |  | 1,203,953            |              |            |               |            |        |

\*Not all values may compute exactly due to rounding.

<sup>38</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C

## Commercial Custom offering

### Overview

Table G-2 shows the tracked and verified scorecard achievements for the 2024 Commercial Custom offering, with the metric of net annual gas savings. As a result of this review, the EC verifies savings of 19,639,721 m<sup>3</sup> (108.16% of tracked). Table G-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table G-2. Commercial Program achievement: Commercial Custom \***

| Metric  | Achievement       |                   | Ratio          |
|---|-------------------|-------------------|----------------|
|   | Tracked           | Verified          |                |
| Large Customer Net Annual Gas Savings (m <sup>3</sup> ) | 16,358,472        | 17,779,102        | 108.68%        |
| Small Customer Net Annual Gas Savings (m <sup>3</sup> ) | 1,799,613         | 1,860,619         | 103.39%        |
| <b>Total</b>  | <b>18,158,086</b> | <b>19,639,721</b> | <b>108.16%</b> |

\*Not all values may compute exactly due to rounding.

Table G-3 includes these variables:

- Unverified Gross Savings: Gross first-year tracking savings for all customers in the Commercial Custom offering. This is the amount of savings before any adjustments (including free ridership and spillover) are applied.
- CPSV RR: Gross realization rate from the 2023 CSPV report.
- eTools RR: Gross realization rate adjustments from the eTools Boiler Tool Validation Study.
- Att: Attribution ratio (the complement of free ridership) from the 2023 and 2024 NTG Reports.
- Spillover: Spillover ratio from the 2013-2014 Spillover Study.
- Adj: Adjustment Ratio, the product of the CPSV RR, eTools RR, and the sum of the Att ratio and Spillover ratio

#### Equation 1: Adjustment Ratio

$$\text{Adjustment Ratio} = \text{CPSV RR} * \text{eTools RR} * (\text{Att} + \text{Spillover})$$

- Verified Net Savings: First-year unverified gross savings multiplied by the Adjustment Ratio

#### Equation 2: Verified Net Savings

$$\text{Verified Net Savings} = \text{Unverified Gross Savings} * \text{Adjustment Ratio}$$

**Table G-3. Adjustment factors applied to Commercial Custom offering first-year gross savings\***

| Segment           | eTools Boilers | Unverified Gross Savings (m <sup>3</sup> ) | CPSV RR | eTools RR | Att    | Spillover | Adj           | Verified Net Savings (m <sup>3</sup> ) |
|-------------------|----------------|--|---------|-----------|--------|-----------|---------------|--|
| Commercial        | ✓              | 3,486,248                                  | 91.13%  | 84.00%    | 72.09% | 0.79%     | 55.79%        | 1,944,945                              |
|                   |                | 4,485,984                                  | 91.13%  | 100.00%   | 72.09% | 0.79%     | 66.42%        | 2,979,391                              |
| Institutional     | ✓              | 135,324                                    | 91.13%  | 84.00%    | 84.80% | 0.81%     | 65.53%        | 88,683                                 |
|                   |                | 10,557,448                                 | 91.13%  | 100.00%   | 84.80% | 0.81%     | 78.02%        | 8,236,540                              |
| Hybrid RTU        |                | 329,889                                    | 91.13%  | 100.00%   | 97.50% | 0.00%     | 88.85%        | 293,112                                |
| Multi-Residential | ✓              | 6,184,389                                  | 97.61%  | 84.00%    | 64.83% | 7.18%     | 59.04%        | 3,651,432                              |
|                   |                | 3,479,378                                  | 97.61%  | 100.00%   | 64.83% | 7.18%     | 70.29%        | 2,445,619                              |
| <b>Total</b>      |                | <b>28,658,660</b>                          |         |           |        |           | <b>68.53%</b> | <b>19,639,721</b>                      |

\*Not all values may compute exactly due to rounding.

## Documentation

The EC used the documentation shown in Table G-4 to verify the metrics for the Commercial Custom.

**Table G-4. Documentation used to verify the Commercial Custom offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| <b>Tracking File</b>                   | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| <b>OEB Decision</b>                    | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| <b>Enbridge Plan</b>                   | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| <b>2023 CPSV Report</b>                | 2023 Natural Gas Demand Side Management Custom Savings Verification <sup>39</sup>   |
| <b>2023 NTG Report</b>                 | 2023 Natural Gas Demand Side Management Net-to-Gross Evaluation <sup>40</sup>   |
| <b>2024 NTG Report</b>                 | 2024 Natural Gas Demand Side Management Free Ridership Evaluation <sup>41</sup>   |
| <b>2013-2014 Spillover Study</b>       | CPSV Participant Spillover Results <sup>42</sup>  |
| <b>eTools Study</b>                    | eTools Boiler Tool Validation Study <sup>43</sup>   |

## Verify Savings

### Adjustment Values – Realization Rates

The 2023 CPSV Report conveyed gross realization rates by segment, as shown in Table G-5. The EC used the same segments to apply the relevant rates at the measure-level.

**Table G-5. Verified gross realization rates for the Commercial Custom offering**

| Segment  | Gross Realization Rate |
|--|------------------------|
| <b>Commercial</b>                                    | 91.13%                 |
| <b>Low-Income and Multi-Residential Multi-Family</b> | 97.61%                 |

The eTools Study conveyed gross realization rates for eTools boiler savings. The realization rate for 2024 was 84.00%.

### Adjustment Values – Attribution Ratios

The 2023 and 2024 NTG Reports conveyed free ridership-based attribution ratios by segment. The EC used the same segments to apply the combined 2023-2024 ratios at the measure-level, as shown in Table G-6, apart from hybrid RTUs. The free ridership rate for hybrid RTUs is deemed.

**Table G-6. Attribution ratios for the Commercial Custom offering**

| Segment                              | Free ridership-based attribution |
|--------------------------------------|----------------------------------|
| <b>Commercial</b>                    | 72.09%                           |
| <b>Institutional</b>                 | 84.80%                           |
| <b>Market Rate Multi-Residential</b> | 64.83%                           |
| <b>Hybrid RTUs</b>                   | 97.50%                           |

<sup>39</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification, DNV for the Ontario Energy Board, November 25, 2024

<sup>40</sup> 2023 Natural Gas Demand Side Management NTG Evaluation, DNV for the Ontario Energy Board, November 8, 2024

<sup>41</sup> 2024 Natural Gas Demand Side Management Free Ridership Evaluation, DNV for the Ontario Energy Board, September 29, 2025

<sup>42</sup> CPSV Participant Spillover Results, DNV for the Ontario Energy Board, May 23, 2018

<sup>43</sup> eTools Boiler Tool Validation Study, DNV for the Ontario Energy Board, January 31, 2023

### Adjustment Values – Spillover Ratios

The 2013-2014 Spillover Study conveyed spillover ratios by segment for each rate zone, as shown in Table G-7.

**Table G-7. 2013-2014 spillover ratios for the Commercial Custom offering**

| Rate Zone | 2013-2014 Spillover Domain Segment | 2013-2014 Spillover |
|-----------|------------------------------------|---------------------|
| LEG       | Commercial                         | 1.36%               |
|           | Multi-Residential                  | 8.24%               |
| LUG       | Commercial and Multi-Family        | 0.00%               |

The EC used verified gross cumulative natural gas savings to calculate a weighted average of the 2013-2014 spillover ratios for each 2023-2024 NTG segment composed of multiple 2013-2014 rate zone segments, as shown in Table G-8.

**Table G-8. Weighted spillover ratios for the Commercial Custom offering**

| Segment           | 2013-2014 Spillover Domain      | Verified Gross Lifetime Savings (m3) | 2013-2014 Spillover | Weighted Spillover |
|-------------------|---------------------------------|--------------------------------------|---------------------|--------------------|
| Commercial        | LEG Commercial                  | 67,850,568                           | 1.36%               | 0.79%              |
|                   | LUG Commercial and Multi-Family | 48,805,227                           | 0.00%               |                    |
| Institutional     | LEG Commercial                  | 81,284,351                           | 1.36%               | 0.81%              |
|                   | LUG Commercial and Multi-Family | 55,670,644                           | 0.00%               |                    |
| Multi-Residential | LEG Multi-Residential           | 139,845,903                          | 8.24%               | 7.18%              |
|                   | LUG Commercial and Multi-Family | 20,685,479                           | 0.00%               |                    |

The EC used the same segments as conveyed in the 2023 and 2024 NTG Reports to apply the weighted spillover ratios at the measure-level, as shown in Table G-9, with the exception of hybrid RTUs.

**Table G-9. Applied spillover ratios for the Commercial Custom offering**

| Segment           | Weighted Spillover |
|-------------------|--------------------|
| Commercial        | 0.79%              |
| Institutional     | 0.81%              |
| Multi-Residential | 7.18%              |
| Hybrid RTUs       | 0.00%              |

### Verify Net Annual Natural Gas Savings

The offering-level adjustment factors shown in Table G-3 were built up from a measure-level application of the CPSV RR, eTools RR, Attribution, and Spillover ratios. Each measure was assigned a CPSV RR, Attribution, and Spillover ratio based on its segment. The eTools RR was only applicable to boilers with savings estimated by eTools. The EC calculated the measure-level net savings using Equation 1 and Equation 2, then summed the measure-level savings to produce offering-level savings. The EC calculated the offering-level adjustment ratio by dividing the offering-level net savings by the offering-level gross savings.

### Verification Result

As a result of this review, the EC confirms the savings of 19,639,721 m3 (108.16% of tracked) for the Commercial Custom offering.

## Prescriptive Downstream offering

### Overview

Table G-10 shows the tracked and verified scorecard achievements for the 2024 Prescriptive Downstream offering, with the metric of net annual gas savings. As a result of this review, the EC verifies total savings of 2,265,086 m3 for large and small volume customers (99.66% of tracked). Table G-10 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documents section.
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values.

**Table G-10. Commercial Program achievement: Prescriptive Downstream\***

| Metric                                     | Achievement      |                  | Ratio         |
|--|------------------|------------------|---------------|
|  | Tracked          | Verified         |               |
| Large Customer Net Annual Gas Savings (m3) | 1,421,781        | 1,414,116        | 99.46%        |
| Small Customer Net Annual Gas Savings (m3) | 850,970          | 850,970          | 100.00%       |
| <b>Total</b>                               | <b>2,272,751</b> | <b>2,265,086</b> | <b>99.66%</b> |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table G-11 to verify the metrics for the Prescriptive Downstream offering.

**Table G-11. Documentation used to verify the Prescriptive Downstream offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| TRM 8.0                                | Natural Gas Demand Side Management Technical Resource Manual, Version 8.0   |
| C&I Prescriptive Verification Study    | 2017 C&I Prescriptive Study – Measure of NTG Factors and Gross Savings Verification, Itron, June 2019                       |

### Verify Net Annual Natural Gas Savings

In calculating net annual gas savings, the EC reviewed natural gas savings for prescriptive measures from the Tracking File, using the procedures identified in APPENDIX O. Table G-12 and Table G-13 show the results of the analysis.

**Table G-12. Prescriptive Downstream achievement by measure group: large customers\***

| Measure Group                      | Measures   | Achievement (m3) |                  | Savings Ratio |
|------------------------------------|------------|------------------|------------------|---------------|
|                                    |            | Tracked          | Verified         |               |
| Air Curtain                        | 14         | 40,786           | 40,786           | 100.00%       |
| Demand Control Kitchen Ventilation | 26         | 113,402          | 113,402          | 100.00%       |
| Demand Control Ventilation         | 8          | 13,867           | 13,867           | 100.00%       |
| Destratification Fan               | 67         | 152,889          | 152,889          | 100.00%       |
| Dock Door Seals                    | 332        | 349,591          | 349,591          | 100.00%       |
| Energy Recovery Ventilation        | 58         | 409,560          | 401,895          | 98.13%        |
| Heat Recovery Ventilation          | 1          | 3,049            | 3,049            | 100.00%       |
| Make-Up Air Unit                   | 3          | 61,796           | 61,796           | 100.00%       |
| Ozone Laundry Washer Extractor     | 17         | 276,841          | 276,841          | 100.00%       |
| <b>Total</b>                       | <b>526</b> | <b>1,421,781</b> | <b>1,414,116</b> | <b>99.46%</b> |

\*Not all values may compute exactly due to rounding.

**Table G-13. Prescriptive Downstream achievement by measure group: small customers\***

| Measure Group                      | Measures   | Achievement (m3) |                | Savings Ratio  |
|------------------------------------|------------|------------------|----------------|----------------|
|                                    |            | Tracked          | Verified       |                |
| Air Curtain                        | 9          | 21,328           | 21,328         | 100.00%        |
| Demand Control Kitchen Ventilation | 27         | 116,145          | 116,145        | 100.00%        |
| Demand Control Ventilation         | 53         | 22,949           | 22,949         | 100.00%        |
| Destratification Fan               | 56         | 119,943          | 119,943        | 100.00%        |
| Dock Door Seals                    | 188        | 199,866          | 199,866        | 100.00%        |
| Energy Recovery Ventilation        | 610        | 189,901          | 189,901        | 100.00%        |
| Heat Recovery Ventilation          | 15         | 70,588           | 70,588         | 100.00%        |
| Make-Up Air Unit                   | 3          | 41,501           | 41,501         | 100.00%        |
| Ozone Laundry Washer Extractor     | 5          | 68,749           | 68,749         | 100.00%        |
| <b>Total</b>                       | <b>966</b> | <b>850,970</b>   | <b>850,970</b> | <b>100.00%</b> |

\*Not all values may compute exactly due to rounding.

## Verification Result

As a result of this review, the EC confirms the savings of 850,970 m3 for small volume customers (100.00% of tracked) and 1,414,116 m3 for large volume customers (99.46% of tracked) for the Prescriptive Downstream offering.

## Direct Install offering

### Overview

Table G-14 shows the tracked and verified scorecard achievements for the 2024 Enbridge Direct Install offering, with the metric of net annual gas savings. As a result of this review, the EC verifies total savings of 4,792,542 m3 for large and small volume customers (99.79% of tracked). Table G-14 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table G-14. Commercial Program achievement: Direct Install m3 metric\***

| Metric                                     | Achievement      |                  | Ratio         |
|--|------------------|------------------|---------------|
|  | Tracked          | Verified         |               |
| Large Customer Net Annual Gas Savings (m3) | 217,154          | 217,154          | 100.00%       |
| Small Customer Net Annual Gas Savings (m3) | 4,585,281        | 4,575,388        | 99.78%        |
| <b>Total</b>                               | <b>4,802,435</b> | <b>4,792,542</b> | <b>99.79%</b> |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table G-15 to verify the metrics for the Direct Install offering.

**Table G-15. Documentation used to verify the Direct Install offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| <b>Tracking File</b>                   | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| <b>OEB Decision</b>                    | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| <b>Enbridge Plan</b>                   | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| <b>TRM 8.0</b>                         | Natural Gas Demand Side Management Technical Resource Manual, Version 8.0   |

### Verify Net Annual Natural Gas Savings

In calculating net annual gas savings, the EC reviewed natural gas savings for prescriptive measures from the Tracking File, using the procedures identified in APPENDIX O. Table G-16 and Table G-17 show the results of the analysis.

**Table G-16. Direct Install achievement by measure group: large customers\***

| Measure Group   | Measures  | Achievement (m3) |                | Savings Ratio  |
|-----------------|-----------|------------------|----------------|----------------|
|                 |           | Tracked          | Verified       |                |
| Air Curtain     | 10        | 59,841           | 59,841         | 100.00%        |
| Dock Door Seals | 78        | 157,312          | 157,312        | 100.00%        |
| <b>Total</b>    | <b>88</b> | <b>217,154</b>   | <b>217,154</b> | <b>100.00%</b> |

\*Not all values may compute exactly due to rounding.



**Table G-17. Direct Install achievement by measure group: small customers\***

| Measure Group                      | Measures     | Achievement (m3) |                  | Savings Ratio |
|------------------------------------|--------------|------------------|------------------|---------------|
|                                    |              | Tracked          | Verified         |               |
| Air Curtain                        | 235          | 1,252,754        | 1,252,754        | 100.00%       |
| Demand Control Kitchen Ventilation | 30           | 290,183          | 280,291          | 96.59%        |
| Dock Door Seals                    | 1,195        | 3,042,344        | 3,042,344        | 100.00%       |
| <b>Total</b>                       | <b>1,460</b> | <b>4,585,281</b> | <b>4,575,388</b> | <b>99.78%</b> |

\*Not all values may compute exactly due to rounding.

### Verification Result

As a result of this review, the EC confirms the savings of 217,154 m3 for large volume customers (100.00% of tracked) and 4,575,388 m3 for small volume customers (99.78% of tracked) for Enbridge's Direct Install Offering.

## Prescriptive Midstream offering

### Overview

Table G-18 shows the tracked and verified scorecard achievements for the 2024 Enbridge Prescriptive Midstream offering, with the metric of net annual gas savings. As a result of this review, the EC verifies total savings of 1,578,999 m3 for large and small volume customers (99.91% of tracked). Table G-18 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table G-18. Commercial Program achievement: Prescriptive Midstream m3 metric\***

| Metric                                     | Achievement      |                  | Ratio         |
|--|------------------|------------------|---------------|
|  | Tracked          | Verified         |               |
| Large Customer Net Annual Gas Savings (m3) | 374,720          | 375,046          | 100.09%       |
| Small Customer Net Annual Gas Savings (m3) | 1,205,761        | 1,203,953        | 99.85%        |
| <b>Total</b>                               | <b>1,580,481</b> | <b>1,578,999</b> | <b>99.91%</b> |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table G-19 to verify the metrics for the Prescriptive Midstream offering.

**Table G-19 Documentation used to verify the Prescriptive Midstream offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| TRM 8.0                                | Natural Gas Demand Side Management Technical Resource Manual, Version 8.0   |

### Verify Cumulative Natural Gas Savings

In calculating net annual gas savings, the EC reviewed natural gas savings for prescriptive measures from the Tracking File, using the procedures identified in APPENDIX O. Table G-20 and Table G-21 show the results of the analysis.

**Table G-20. Prescriptive Midstream achievement by measure group: large customers\***

| Measure Group | Measures   | Achievement (m3) |                | Savings Ratio  |
|---------------|------------|------------------|----------------|----------------|
|               |            | Tracked          | Verified       |                |
| Broiler       | 2          | 5,624            | 5,624          | 100.00%        |
| Dishwasher    | 111        | 128,539          | 128,539        | 100.00%        |
| Fryer         | 65         | 83,814           | 83,814         | 100.00%        |
| Oven          | 102        | 91,400           | 91,400         | 100.00%        |
| Steam Cooker  | 4          | 27,075           | 27,075         | 100.00%        |
| Water Heater  | 56         | 38,268           | 38,594         | 100.85%        |
| <b>Total</b>  | <b>340</b> | <b>374,720</b>   | <b>375,046</b> | <b>100.09%</b> |

\*Not all values may compute exactly due to rounding.



**Table G-21. Prescriptive Midstream achievement by measure group: small customers\***

| Measure Group | Measures     | Achievement (m3) |                  | Savings Ratio |
|---------------|--------------|------------------|------------------|---------------|
|               |              | Tracked          | Verified         |               |
| Dishwasher    | 261          | 340,805          | 340,805          | 100.00%       |
| Fryer         | 303          | 378,103          | 378,103          | 100.00%       |
| Griddles      | 3            | 4,738            | 4,738            | 100.00%       |
| Oven          | 238          | 203,604          | 203,604          | 100.00%       |
| Steam Cooker  | 1            | 6,769            | 6,769            | 100.00%       |
| Water Heater  | 398          | 271,742          | 269,934          | 99.33%        |
| <b>Total</b>  | <b>1,204</b> | <b>1,205,761</b> | <b>1,203,953</b> | <b>99.85%</b> |

\*Not all values may compute exactly due to rounding.

### Verification Result

As a result of this review, the EC confirms the savings of 375,046 m3 for large volume customers (100.09% of tracked) and 1,203,953 m3 for small volume customers (99.85% of tracked) for the Prescriptive Midstream offering.



## APPENDIX H. Industrial Program Scorecard

This appendix describes the detailed process used to verify the metrics for the Industrial Program scorecard (Table H-1). This appendix addresses the Industrial Custom offering.

**Table H-1. 2024 Industrial Program scorecard<sup>44</sup>**

| Offering          | Metric                      | Verified Achievement |              | Lower Band | Metric Target |            | Weight  |
|-------------------|-----------------------------|----------------------|--------------|------------|---------------|------------|---------|
|                   |                             | Offering-Level       | Metric-Level |            | Target        | Upper Band |         |
| Industrial Custom | Net Annual Gas Savings (m3) | 56,794,944           | 56,794,944   | 48,791,067 | 65,054,756    | 81,318,445 | 100.00% |

<sup>44</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C



## Industrial Custom offering

### Overview

Table H-2 shows the tracked and verified scorecard achievements for the 2024 Industrial Custom offering, with the metric of net annual gas savings. As a result of this review, the EC verifies total savings of 56,794,944 m3 (100.68% of tracked). Table H-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table H-2. Industrial Program achievement: Industrial Custom**

| Metric                             | Achievement |            | Ratio   |
|------------------------------------|-------------|------------|---------|
|                                    | Tracked     | Verified   |         |
| <b>Net Annual Gas Savings (m3)</b> | 56,413,003  | 56,794,944 | 100.68% |

Table H-3 includes these variables:

- Unverified Gross Savings: Gross first-year tracking savings for all customers in the Industrial Custom offering. This is the amount of savings before any adjustments (including free ridership and spillover) are applied.
- CPSV RR: Gross realization rate from the 2023 CSPV report.
- Att: Attribution ratio (the complement of free ridership) from the 2023 and 2024 NTG Reports.
- Spillover: Spillover ratio from the 2013-2014 Spillover Study or 2023 NTG Report.
- Adj: Adjustment Ratio, the product of the CPSV RR and the sum of the Att ratio and Spillover ratio

**Equation 3: Adjustment Ratio**

$$\text{Adjustment Ratio} = \text{CPSV RR} * (\text{Att} + \text{Spillover})$$

- Verified Net Savings: First-year gross savings multiplied by the Adjustment Ratio

**Equation 4: Verified Net Savings**

$$\text{Verified Net Savings} = \text{Unverified Gross Savings} * \text{Adjustment Ratio}$$

**Table H-3. Adjustment factors applied to Industrial Custom offering first-year gross savings**

| Segment      | Unverified Gross Savings (m3) | CPSV RR | Attribution | Spillover | Adj           | Verified Net Savings (m3) |
|--------------|-------------------------------|---------|-------------|-----------|---------------|---------------------------|
| Agricultural | 36,831,702                    | 99.12%  | 57.83%      | 14.96%    | 72.15%        | 26,573,870                |
| Industrial   | 44,551,347                    | 96.52%  | 69.10%      | 1.18%     | 67.83%        | 30,221,075                |
| <b>Total</b> | <b>81,383,049</b>             |         |             |           | <b>69.79%</b> | <b>56,794,944</b>         |

### Documentation

The EC used the documentation shown in Table H-4 to verify the metrics for the Industrial Custom offering.

**Table H-4. Documentation used to verify the Industrial Custom offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| 2023 CPSV Report                       | 2023 Natural Gas Demand Side Management Custom Savings Verification <sup>45</sup>   |
| 2023 NTG Report                        | 2023 Natural Gas Demand Side Management Net-to-Gross Evaluation <sup>46</sup>   |
| 2024 NTG Report                        | 2024 Natural Gas Demand Side Management Net-to-Gross Evaluation <sup>47</sup>   |
| 2013-2014 Spillover Study              | CPSV Participant Spillover Results <sup>48</sup>  |

## Verify Savings

### Adjustment Values – Realization Rates

The 2023 CPSV Report conveyed gross realization rates by segment, as shown in Table H-5. The EC used the same segments to apply the relevant rates at the measure-level.

**Table H-5. Verified gross savings rates for the Industrial Custom offering**

| Segment      | Gross Realization Rate |
|--------------|------------------------|
| Agricultural | 99.12%                 |
| Industrial   | 96.52%                 |

### Adjustment Values – Attribution Ratios

The 2023 and 2024 NTG Reports conveyed free ridership-based attribution ratios by segment. The EC used the same segments to apply the combined 2023-2024 ratios at the measure-level, as shown in Table H-6.

**Table H-6. Attribution ratios for the Enbridge Industrial Custom offering**

| Segment      | Free ridership-based attribution |
|--------------|----------------------------------|
| Agricultural | 57.83%                           |
| Industrial   | 69.10%                           |

### Adjustment Values – Spillover Ratios

The EC used the same segments as conveyed in the 2023 and 2024 NTG Reports to apply spillover ratios at the measure-level, as shown in Table H-7. Since the 2023 NTG Report only conveyed spillover for the agricultural segment, the EC used spillover ratios conveyed by the 2013-2014 Spillover Study for the industrial segment.

**Table H-7. Applied spillover ratios for the Industrial Custom offering**

| Segment      | Spillover |
|--------------|-----------|
| Agricultural | 14.96%    |
| Industrial   | 1.18%     |

<sup>45</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification, DNV for the Ontario Energy Board, November 25, 2024

<sup>46</sup> 2023 Natural Gas Demand Side Management Net-to-Gross Evaluation, DNV for the Ontario Energy Board, November 8, 2024

<sup>47</sup> 2024 Natural Gas Demand Side Management Free Ridership Evaluation, DNV for the Ontario Energy Board, September 29, 2025

<sup>48</sup> CPSV Participant Spillover Results, DNV for the Ontario Energy Board, May 23, 2018



The 2013-2014 Spillover Study conveyed spillover ratios by sector for each rate zone, as shown in Table H-8.

**Table H-8. 2013-2014 spillover ratios for the Industrial Custom offering**

| Rate Zone | Sector     | Spillover |
|-----------|------------|-----------|
| LEG       | Industrial | 1.45%     |
| LUG       | Industrial | 0.89%     |

The EC used verified gross cumulative natural gas savings to calculate the weighted average of the 2013-2014 spillover ratios the industrial segment, as shown in Table H-9.

**Table H-9. Weighted spillover ratios for the Industrial Custom offering**

| Segment    | 2013-2014 Spillover Domain | Verified Gross Lifetime Savings (m3) | 2013-2014 Spillover | Weighted Spillover |
|------------|----------------------------|--------------------------------------|---------------------|--------------------|
| Industrial | LEG Industrial             | 401,626,484                          | 1.45%               | 1.18%              |
|            | LUG Industrial             | 374,338,355                          | 0.89%               |                    |

### Verify Net Annual Natural Gas Savings

The offering-level adjustment factor shown in Table H-3 was built up from a measure-level application of the CPSV RR, Attribution, and Spillover ratios. Each measure was assigned a ratio based on its segment. The EC calculated the measure-level net savings using Equation 3 and Equation 4, and then summed the measure-level savings to produce offering-level savings. The EC calculated the offering-level adjustment ratio by dividing the offering-level net savings by the offering-level gross savings.

### Verification Result

As a result of this review, the EC confirms the savings of 56,794,944 m3 (100.68% of tracked) for the Industrial Custom offering.

## APPENDIX I. Large Volume Program Scorecard

This appendix describes the detailed process used to verify the metrics for the Large Volume Program scorecard, shown in Table I-1. This appendix addresses the Direct Access offering.

**Table I-1. 2024 Large Volume (Rate T2/Rate 100) Program scorecard<sup>49</sup>**

| Offering      | Metric                      | Verified Achievement |              | Metric Target |            |            | Weight  |
|---------------|-----------------------------|----------------------|--------------|---------------|------------|------------|---------|
|               |                             | Offering-Level       | Metric-Level | Lower Band    | Target     | Upper Band |         |
| Direct Access | Net Annual Gas Savings (m3) | 11,200,723           | 11,200,723   | 17,783,421    | 23,711,228 | 29,639,035 | 100.00% |

### Overview

Table I-2 shows the tracked and verified scorecard achievements for the 2024 Direct Access offering, with the metric of net annual gas savings. As a result of this review, the EC verifies total savings of 11,200,723 m3 (82.55% of tracked). Table I-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table I-2. Large Volume achievement: Direct Access m3 metric\***

| Metric                      | Achievement |            | Ratio  |
|-----------------------------|-------------|------------|--------|
|                             | Tracked     | Verified   |        |
| Net Annual Gas Savings (m3) | 13,568,203  | 11,200,723 | 82.55% |

\*Not all values may compute exactly due to rounding.

Table I-3 includes these variables:

- Unverified Gross Savings: Gross first-year tracking savings for all customers in the Large Volume offering. This is the amount of savings before any adjustments (including free ridership and spillover) are applied.
- CPSV RR: Gross realization rate from the 2023 CSPV report.
- Att: Attribution ratio (the complement of free ridership) from the 2023 and 2024 NTG Reports.
- Spillover: Spillover ratio from the 2013-2014 Spillover Study.
- Adj: Adjustment Ratio, the product of the CPSV RR and the sum of the Att ratio and Spillover ratio

#### Equation 5: Adjustment Ratio

$$\text{Adjustment Ratio} = \text{CPSV RR} * (\text{Att} + \text{Spillover})$$

- Verified Net Savings: First-year gross savings multiplied by the Adjustment Ratio

#### Equation 6: Verified Net Savings

$$\text{Verified Net Savings} = \text{Unverified Gross Savings} * \text{Adjustment Ratio}$$

**Table I-3. Adjustment factors applied to Direct Access offering first-year gross savings\***

| Segment      | Unverified Gross Savings (m3) | CPSV RR | Attribution | Spillover | Adj    | Verified Net Savings (m3) |
|--------------|-------------------------------|---------|-------------|-----------|--------|---------------------------|
| Large Volume | 48,089,060                    | 98.07%  | 22.93%      | 0.82%     | 23.29% | 11,200,723                |

\*Not all values may compute exactly due to rounding.

\*\*This value represents savings in the tracking data before any adjustments were made. This differs from tracked net savings, which do account for adjustments.

<sup>49</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C



## Documentation

The EC used the documentation shown in Table I-4 to verify the metrics for the Large Volume offering.

**Table I-4. Documentation used to verify the Direct Access offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| <b>Tracking File</b>                   | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| <b>Documents Used by EC</b>            |   |
| <b>OEB Decision</b>                    | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| <b>Enbridge Plan</b>                   | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |
| <b>2023 CPSV Report</b>                | 2023 Natural Gas Demand Side Management Custom Savings Verification <sup>50</sup>   |
| <b>2023 NTG Report</b>                 | 2023 Natural Gas Demand Side Management Net-to-Gross Evaluation <sup>51</sup>   |
| <b>2024 NTG Report</b>                 | 2024 Natural Gas Demand Side Management Free Ridership Evaluation <sup>52</sup>   |
| <b>2013-2014 Spillover Study</b>       | CPSV Participant Spillover Results <sup>53</sup>  |

## Verify Savings

### Adjustment Values – RR

The 2023 CPSV Report conveyed a gross realization rate of 98.07% for the offering.

### Adjustment Values – Att Ratios

The 2023 and 2024 NTG Reports conveyed free ridership-based attribution for the offering. The 2023-2024 combined free ridership-based attribution for the offering was 22.93%.

### Adjustment Values – Spillover Ratios

The 2013-2014 Spillover Study conveyed spillover of 0.82% for the offering.

### Verify Annual Natural Gas Savings

The EC calculated the measure-level net savings using the CPSV RR, Attribution, and Spillover ratios using Equation 5 and Equation 6, then summed the measure-level savings to produce offering-level savings. The EC calculated the offering-level adjustment ratio by dividing the offering-level net savings by the offering-level gross savings.

## Verification Result

As a result of this review, the EC confirms total savings of 11,200,723 m<sup>3</sup> (82.55% of net tracked) for the Large Volume (Rate T2/Rate 100) offering.

<sup>50</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification, DNV for the Ontario Energy Board, November 25, 2024

<sup>51</sup> 2023 Natural Gas Demand Side Management Net-to-Gross Evaluation, DNV for the Ontario Energy Board, November 8, 2024

<sup>52</sup> 2024 Natural Gas Demand Side Management Free Ridership Evaluation, DNV for the Ontario Energy Board, September 29, 2025

<sup>53</sup> CPSV Participant Spillover Results, DNV for the Ontario Energy Board, May 23, 2018



## APPENDIX J. Energy Performance Program Scorecard

This appendix describes the detailed process used to verify the metrics for the Energy Performance Program Scorecard (Table J-1). The offering addressed in this appendix is Whole Building Pay for Performance (P4P).

**Table J-1. 2024 Energy Performance Program scorecard<sup>54</sup>**

| Offering                           | Metric                      | Verified Achievement |              | Metric Target |         |            | Weight |
|------------------------------------|-----------------------------|----------------------|--------------|---------------|---------|------------|--------|
|                                    |                             | Offering-Level       | Metric-Level | Lower Band    | Target  | Upper Band |        |
| Whole Building Pay for Performance | Number of Participants      | 27                   | 27           | 19            | 25      | 31         | 50.00% |
|                                    | Net Annual Gas Savings (m3) | 276,138              | 276,138      | 93,750        | 125,000 | 156,250    | 50.00% |

<sup>54</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C



## Whole Building Pay for Performance Offering

### Overview

Table J-2 shows the tracked and verified scorecard achievements for the 2024 Whole Building Pay for Performance offering, with the metric of Participants and savings. As a result of this review, the EC verifies 27 participants (100.00% of tracked) and 276,138 m3 (100.00% of tracked). Table J-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table J-2. Energy Performance achievement: Whole Building Pay for Performance\***

| Metric                      | Achievement |          | Ratio   |
|-----------------------------|-------------|----------|---------|
|                             | Tracked     | Verified |         |
| Number of Participants      | 27          | 27       | 100.00% |
| Net Annual Gas Savings (m3) | 276,138     | 276,138  | 100.00% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table J-3 to verify the metrics for the Whole Building Pay for Performance offering.

**Table J-3. Documentation used to verify the Whole Building Pay for Performance offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| Project Files                          | Various documents for each requested participant, supporting program metrics  |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |

## Participants Metric

### Participant Selection

Enbridge first provided the Tracking File listing Project/Application Names, Account Legal Name and Project Numbers. The EC requested full documentation for a census of participants.

### Received Files

The EC received PDF application form documents, identified by Project number, as well as baseline reports and signed implementation workshop reports. The EC first confirmed the documents received matched the IDs requested, and that documents for all participants had been received.



## Verify Participant Eligibility

To begin, Enbridge's plan<sup>55</sup> offers the following as the offering objective:

*The Whole Building P4P offering applies a holistic, multi-year approach to energy management designed to engage and support customers in driving deeper savings year-over-year. The offering leverages metered and building data to establish building baselines, set performance targets to achieve 20% above the baseline, and assess all capital, operational and/or behavioural opportunities within a building over a defined period.*

The EC confirmed documentation supports this objective for all participants.

Enbridge's plan outlines the following criteria to be eligible for the offering:

- *Must be an Enbridge Gas Commercial customer.*
- *The participating building must have existing Enbridge Gas meter that is compatible with pulse interval metering equipment or already has an Automatic Meter Reader (AMR) that allows Enbridge Gas and its approved third-party delivery agent the required access to the building's interval data.*
- *The building must have been operational without having undergone any capital retrofit upgrades between the start of the baseline period up to the start of the P4P Period.*
- *Participant sites cannot participate in other commercial offers simultaneously during the duration of the offer (inclusive of Start-Up Period & three P4P Periods).*

The EC used the Project Files to confirm the eligibility of the participants. The files confirmed that participants were Enbridge commercial customers, had appropriate metering equipment, and had no capital upgrades during the baseline period up to the start of the P4P period. The EC also cross-referenced all other offerings in the 2024 tracking data to look for participating sites, and did not find any P4P participants participating in any other offerings simultaneously. As a result of these activities, all participants were deemed eligible.

Enbridge's plan stated that an eligible participant is claimed upon completion of the following:

- *Baseline model completed & summarized in report approved by Enbridge Gas*
- *Interval meter data active & being collected (daily granularity)*
- *Workshop completed with report summarizing site opportunities*
- *Signed Application Form from customer*

Project files confirmed that all participants completed a baseline model, collected interval meter data, participated in a workshop, and signed the application forms.

## Verification Result

As a result of this review:

- The EC confirms proper documentation for the requested projects
- Project files for the submitted projects meet further criteria for eligibility

The EC confirms the scorecard metric of 27 participants (100.00% of tracked) for the Enbridge Whole Building Pay for Performance offering.

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<sup>55</sup> Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 2, Schedule 1, Page 2 of 10



## Savings Metric

### Participant Selection

Enbridge first provided the Tracking File listing 27 Project/Application Names, Account Legal Name and Project Numbers. These participants were all in the first cohort of 2023 P4P confirmed participants. The EC sampled 10 participants and requested full documentation to review savings claims. For each site, project documentation included an annual report, baseline information, summary and hourly consumption data, and a savings model.

### Verify Savings

Enbridge's plan stated that savings are calculated and claimed via the following:

*Annual natural gas savings are calculated based on comparing the Adjusted Baseline Model to Adjusted P4P Period consumption, evaluated at the end of each P4P Period (on an annual basis). Annual Gas Savings (m3) Calculation:*

*Year 1 P4P Annual Gas Savings (m3) = (BM - P4P1) at or above zero*

*Where:*

*BM is the Adjusted Baseline Model Consumption*

*P4P1 is the Adjusted P4P Year 1 Period Consumption*

Evaluation engineers reviewed the supporting documentation provided in the Project Files (.xlsm) for the sample of sites to identify the answers to the following questions:

- Is the building type correctly identified?
- How many months were used in the baseline and performance periods?
- What type of model was used?
- What independent variables were used?
- What R-squared values were used for the baseline and performance models?
- What is the estimated savings during the performance period?
- What percentage of consumption do the savings represent?
- What is driving the positive or negative savings claimed?
- Should a new baseline model be created?

The EC senior engineer used these questions (above) to review the calculations completed, the consumption pattern at the facility, and the baseline model. They then asked three primary questions to assess the risk of savings accuracy as Low, Normal, or High. Three key questions were:

- Based on experience, is the baseline model specification reasonable?
- Based on experience, is the baseline time period definition reasonable?
- What is the assessed level of risk for achieving savings?

The baseline model specifications and time period definitions were reasonable for all projects examined. Overall, the savings claimed are reasonable. The EC assigned six sites as low-risk, two normal-risk, and two high-risk. Based on our experience, this distribution is similar to comparable programs. Across the participants, all savings claims were supported by actions taken at the facilities. Clear changes in consumption patterns occurred. The EC's review supports the savings claim for all sites.

### Verification Result

As a result of this review, the EC confirms the savings of 276,138 m3 (100.00% of tracked) for the Enbridge Whole Building Pay for Performance offering.



## APPENDIX K. Building Beyond Code Program Scorecard

This appendix describes the detailed process used to verify the metrics for the Building Beyond Code Scorecard programs for Enbridge (Table K-1). The offerings addressed in this appendix are:

- Residential Savings By Design
- Commercial Savings By Design
- Affordable Housing Savings By Design
- Commercial Air Tightness Testing

**Table K-1. 2024 Building Beyond Code Program scorecard<sup>56</sup>**

| Offering                             | Metric               | Verified Achievement |              | Metric Target |        |            | Weight |
|--------------------------------------|----------------------|----------------------|--------------|---------------|--------|------------|--------|
|                                      |                      | Offering-Level       | Metric-Level | Lower Band    | Target | Upper Band |        |
| Residential Savings By Design        | Energy Star Homes    | 747                  | 747          | 1,500         | 2,000  | 2,500      | 15.00% |
|                                      | Net Zero Ready Homes | 18                   | 18           | 8             | 10     | 13         | 15.00% |
| Commercial Savings By Design         | Participants         | 26                   | 26           | 23            | 31     | 39         | 30.00% |
| Affordable Housing Savings By Design | Participants         | 28                   | 28           | 16            | 21     | 26         | 30.00% |
| Commercial Air Tightness Testing     | Participants         | 8                    | 8            | 5             | 6      | 8          | 5.00%  |
|                                      | Qualified Agents     | 24                   | 24           | 8             | 10     | 13         | 5.00%  |

<sup>56</sup> Ontario Energy Board Decision and Order, EB-2021-0002, December 16, 2022, Schedule C



## Residential Savings by Design Offering

### Overview

Table K-2 shows the tracked and verified scorecard achievements for the 2024 Residential Savings by Design offering, with the metrics of Energy Star Homes and Net Zero Ready Homes built. As a result of this review, the EC verifies 747 Energy Star Homes (100.00% of tracked) and 18 Net Zero Ready Homes (100.00% of tracked). Table K-2 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table K-2. Building Beyond Code achievement: Residential Savings by Design metrics\***

| Metric                         | Achievement |          | Ratio   |
|--------------------------------|-------------|----------|---------|
|                                | Tracked     | Verified |         |
| Number of Energy Star Homes    | 747         | 747      | 100.00% |
| Number of Net Zero Ready Homes | 18          | 18       | 100.00% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table K-3 to verify the metrics for the Residential Savings by Design offering.

**Table K-3. Documentation used to verify the Residential Savings by Design offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| Project Files                          | Files documenting participation and eligibility for selected homes as well as municipality eligibility                      |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |

## Energy Star Homes Metric

### Participant Selection

Enbridge first provided the Tracking File listing Project Number (unique ID), Enrolment Year, Signed Commitment (date), and Inspection date. The spreadsheet identified 41 builders and 747 Energy Star homes. The EC randomly selected 10 from the list of Energy Star homes for document review. The EC requested all supporting information, including documentation that supports eligibility and participation criteria.

### Received Files

Enbridge provided three types of files to support participation:

- Project Application
- Air Test or Building Leakage Report
- Model Output Files



In addition, the EC received a list of eligible municipalities, including if an eligible municipality has established a Green Development Standard (GDS), to confirm that each home claimed was located in an eligible municipality.

### Verify Participation

For offering details, the EC looked to Enbridge's Plan which identified:<sup>57</sup>

- *The ESNH or equivalent path will focus on limiting lost opportunities by motivating builders building in eligible municipalities to construct new homes to at least ESNH Version 17 or modelled equivalent performance (at least 20% better than OBC SB12 2017).*
- *Builders can participate in workshops that provide technical guidance on building to the ESNH standard and an overview of the participation requirements...Builders (inclusive of all subsidiaries) will only be able to participate once per year and receive incentives of up to a maximum of 50 homes built in eligible municipalities.*

The Enbridge-provided documentation, including building leakage reports and model output files, for all 10 randomly selected homes demonstrated modelled as-built energy consumption 20% or greater above 2017 OBC. Additionally, the EC confirmed that no builders had more than 50 homes count towards the metric.

### Verify Eligibility

To determine eligibility, the EC looked first to the OEB Decision, which approved the Enbridge Plan<sup>58</sup> stating: *"Residential Savings by Design that focuses on limiting lost opportunities in new construction building and supports the building community in striving to design and build to a net zero energy ready standard."*

For further eligibility details, the EC looked to Enbridge's Plan which identified:<sup>59</sup>

- *Homes must be built in eligible municipalities, defined as municipalities within the Enbridge Gas franchise area that have historic 3-year penetration levels of ESNH builds not more than 15%, updated as described below.*
  - *A list of eligible municipalities will be developed in the first year of the offering, leveraging internal business intelligence data in conjunction with industry new construction data to establish an ESNH built and verified report ("ESNH Report"). Once a municipality has been deemed to be eligible to participate in the offering, it will remain eligible for at least the first three-year period of the offering. The reason for this is that once engaged, builders tend to plan on a multi-year basis, and if the offering is to attract significant interest it needs to operate in alignment with existing builder planning practices.*
  - *The only instance where a municipality that qualified to be included in the ESNH Report would be removed is if they were to adopt a GDS that mandates ESNH or similar equivalent performance standards for new residential builds in that municipality.*

The EC compared the municipalities of the 10 selected homes with Enbridge's ESNH report, finding that all 10 were constructed in eligible municipalities. Therefore, all projects met the eligibility criteria.

### Verification Result

As a result of this review, the EC confirms the scorecard metric of 747 Energy Star Homes (100.00% of tracked) for the Enbridge Residential Savings by Design offering.

<sup>57</sup> Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 12 of 33

<sup>58</sup> OEB Decision and Order, EB-2021-0002, November 15, 2022, Page 46

<sup>59</sup> Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 13-14 of 33



## Net Zero Ready Homes Metric

### Participant Selection

Enbridge first provided the Tracking File listing Project Number (unique ID), Enrolment Year, Signed Commitment (date), and Inspection date. The spreadsheet identified 18 Net Zero Ready homes. The EC randomly selected 10 for review. The EC requested all supporting information, including documentation that supports eligibility and participation criteria.

### Received Files

Enbridge provided three types of files to support participation:

- Project Application
- IDP workshop report
- Net Zero Ready certification

### Verify Participation

For offering details, the EC looked to Enbridge's Plan which identified:<sup>60</sup>

*The new offering will consider new technologies and approaches to energy efficient construction and will assist builders to design and build one discovery home to a NZER standard. Participants will be guided through a series of activities to support the design and construction of the NZER discovery home, including:*

- *Visioning session between the design team and IDP workshop facilitator*
- *IDP workshop followed by an IDP workshop report that summarizes key outcomes for the design team.*

The Enbridge-provided documentation for all 10 randomly selected homes showed they participated in both a visioning session and IDP workshop and were designed to the NZER standard.

### Verify Eligibility

To determine eligibility, the EC looked first to the OEB Decision, which approved the Enbridge Plan<sup>61</sup> stating: "*Residential Savings by Design that focuses on limiting lost opportunities in new construction building and supports the building community in striving to design and build to a net zero energy ready standard.*"

For further eligibility details, the EC looked to Enbridge's Plan which identified:<sup>62</sup>

- *Any builder building within the Enbridge Gas franchise territory that has not previously participated in the NZER discovery home path is eligible to participate.*
- *Project must be in the design phase or earlier in the development process to qualify.*
- *Affordable housing projects are excluded from participating in this offering based on their ability to participate in the Affordable Housing Savings By Design offering which aims to support affordable housing projects directly.*

The EC confirmed that no participating builder had participated previously. Applications and IDP reports confirmed that projects were in the design phase, and that none were affordable housing. Therefore, all projects met the eligibility criteria.

### Verification Result

As a result of this review, the EC confirms the scorecard metric of 18 Net Zero Ready Homes (100.00% of tracked) for the Enbridge Residential Savings by Design offering.

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<sup>60</sup> Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 13 of 33

<sup>61</sup> OEB Decision and Order, EB-2021-0002, November 15, 2022, Page 46

<sup>62</sup> Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 14 of 33



## Commercial Savings by Design Offering

### Overview

Table K-4 shows the tracked and verified scorecard achievements for the 2024 Enbridge Commercial Savings by Design offering, with the metric of Participants. As a result of this review, the EC verifies 26 participants (100.00% of tracked). Table K-4 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table K-4. Beyond Building Code achievement: Commercial Savings by Design participants metric\***

| Metric                 | Achievement |          | Ratio   |
|------------------------|-------------|----------|---------|
|                        | Tracked     | Verified |         |
| Number of Participants | 26          | 26       | 100.00% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table K-5 to verify the metrics for the Commercial Savings by Design offering.

**Table K-5. Documentation used to verify the Commercial Savings by Design offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| Project Files                          | PDF documents   |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |

### Participant Selection

Enbridge provided the Tracking File listing Project Number (unique ID), program year, install date, and commissioning date. As tracking data indicated that all 26 listed participants were equally qualified, the EC randomly selected 10 records from the full list for document review. The EC requested all supporting documentation, including documentation that supports eligibility and participation criteria.

### Received Files

The EC received two types of documents in response to this request:

- Application form, including terms and conditions
- IDP report

The EC first confirmed that the documentation received matched the IDs requested. The EC confirmed that the dates on the IDP report matched the install and commission dates in the tracking file.

## Verify Eligibility

To determine the definition of Participants, the EC looked first to the OEB Decision, which approved the Enbridge Plan<sup>63</sup> stating that the OEB approved the following proposed offering:

*Commercial Savings by Design that prepares the commercial building community for future code advancements through a combination of support initiatives to increase the number of buildings designed to achieve 25% above existing Ontario Building Code standards.*

Beyond these details, the plan stated the following eligibility criteria:

- *Commercial or multi-residential building to be built subject to OBC Part 3, Part 10 or Part 11 building types*
- *Affordable Housing projects are excluded from participating in this program offering based on their ability to participate in the Affordable Housing New Construction program offering which targets these projects*
- *Building must be in the design phase or earlier in the development process to qualify for consideration*
- *Minimum threshold of 25,000 square feet contemplated per building as per application form*

The EC used the Application Forms and IDP Reports to determine if the projects met these criteria.

**Table K-6. Enbridge Commercial Savings by Design eligibility criteria, project satisfaction, and explanation**

| Identified Criteria                                   | Satisfied? | Explanation                             |
|---|------------|---|
| Commercial, multi-residential or industrial buildings | Yes        | IDP Reports                             |
| 25,000 ft <sup>2</sup> minimum project size           | Yes        | Application Form                        |
| Design phase or earlier                               | Yes        | IDPs performed to prior to construction |

After reviewing the stated eligibility criteria and Project Files, the EC confirms the 10 sampled projects all meet the eligibility criteria.

## Verify Participation

Relevant offering details for participant are described in Enbridge’s Plan <sup>64</sup>:

*Participants will be guided through a series of activities to support the adoption of higher efficiency building designs, including:*

- *Visioning Session between the design team and IDP workshop facilitator;*
- *Energy Modelling to create a baseline energy model to use during the IDP workshop and help set the IDP Efficiency Target, details included below under IDP Efficiency Targets;*
- *IDP Workshop followed by an IDP workshop report that summarizes key outcomes for the design team*

The IDP Efficiency Targets mentioned in the second bullet point are as follows:

- *IDP efficiency performance targets will reflect the achievement of Thermal Energy Demand Intensity (“TEDI”) and Total Energy Use Intensity (“TEUI”) levels that result in the achievement of 25% above existing OBC, SB-10. Toronto’s Green Development Standards, known as Toronto Green Standards (“TGS”), for commercial and mid-to high rise residential buildings has established TEDI and TEUI levels consistent with the achievement of 25% above code and will be leveraged as a basis for setting TEDI and TEUI targets*
- *It is anticipated that the City of Toronto will advance their TGS sometime within the plan term. If and/or when this occurs, Enbridge Gas will adjust efficiency targets exclusively for the City of Toronto to achieve 10% above TGS*

<sup>63</sup> Ontario Energy Board Decision and Order, EB-2021-0002, November 15, 2022, Page 46

<sup>64</sup> Enbridge’s Proposed 2022-2027 DSM Plan, EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 18 of 33

minimum performance requirements. Efficiency targets for all other cities across Ontario will remain unchanged at 25% above code, unless the city has a Green Development Standard in place that requires the achievement equivalent to or above 25% above code, in which case, a target of 10% above the city’s required efficiency performance level would be applied.

- In the case a participant’s baseline design prior to the IDP workshop is above code and/or any mandatory efficiency level set by the municipality, a target to achieve the higher of 10% above the baseline or 25% above code will be set. For example, if the baseline building achieves a 20% above code efficiency level, the target efficiency level for the customer will be the achievement of at least 30% above code. Conversely, if the baseline building achieves a 10% above code efficiency level, the standard 25% above code Commercial Savings by Design IDP target will stand.

The EC used the Application Forms and IDP Reports to determine if the projects met these criteria. The EC noted that the IDPs submitted for the 10 developments cited an average savings of 55% improvement against the OBC code, with a range of 25.2% to 158.1%<sup>65</sup> savings. The average square footage was 96,879 ft<sup>2</sup> with a range of 29,730 ft<sup>2</sup> to 243,827 ft<sup>2</sup>.

**Table K-7. Enbridge Commercial Savings by Design participation criteria, project satisfaction, and explanation**

| Identified Criteria   | Satisfied? | Explanation   |
|---|------------|---|
| Undertaking Enbridge approved IDP process for each participant  | Yes        | IDP Reports included in documentation   |
| IDP includes energy model   | Yes        | IDP Reports identify EnergyPlus v9.3, 9.6 & 9.8, IES VE 2022, or eQuest v3.65 <sup>66</sup> |
| Sufficient energy savings achieved  | Yes        | See below   |
| -IDP demonstrates how to achieve 25% energy savings over building code or 10% more than baseline building at 25% requirements defined in IDP Efficiency Targets | Yes        | All IDP reports states savings 25% over OBC   |
| Project must be at least 25,000 ft <sup>2</sup>   | Yes        | Applications and IDP Reports included in documentation                                      |
| Project is a single building or multiples of same building which sum to at least 25,000 ft <sup>2</sup>   | Yes        | Projects of one or multiple buildings all greater than 25,000 ft <sup>2</sup>               |

As a result, the EC confirms that the submitted projects met the criteria for participation for the Enbridge Commercial Savings by Design program.

### Verification Result

As a result of this review:

- The EC confirms proper documentation for the requested projects
- Project files for the submitted projects meet criteria for eligibility
- Project files for the submitted projects meet all requirements for a participant

As a result of this review, the EC confirms the scorecard metric of 26 participants (100.00% of tracked) for the Enbridge Commercial Savings by Design offering.

<sup>65</sup> One project includes the installation of solar photovoltaic panels which are expected to generate more power than the buildings are modelled to consume, making it a net generator of energy and thus over 100%.

<sup>66</sup> ASHRAE 90.1-2013 section 11 as modified by Supplementary Standard SB10-2017 Division 3, Chapter 2, were followed in generating reference and baseline models



## Affordable Housing Savings by Design Offering

### Overview

Table K-8 shows the tracked and verified scorecard achievement for the 2024 Enbridge Affordable Housing Savings by Design offering, with the metric of Participants. As a result of this review, the EC verifies 28 New Developments (100.00% of tracked). Table K-8 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table K-8. Beyond Building Code achievement: Affordable Housing Savings by Design participants metric\***

| Metric                 | Achievement |          | Ratio   |
|------------------------|-------------|----------|---------|
|                        | Tracked     | Verified |         |
| Number of Participants | 28          | 28       | 100.00% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table K-9 to verify the metrics for the Affordable Housing Savings by Design offering.

**Table K-9. Documentation used to verify the Affordable Housing Savings by Design offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| Project Files                          | PDF documents   |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |

### Participant Selection

Enbridge provided the Tracking File listing Project Number (unique ID), program year, install date, and commissioning date. As tracking data indicated that all 28 listed participants were equally qualified, the EC randomly selected 10 records from the full list for document review. The EC requested all supporting documentation, including documentation that supports eligibility and participation criteria.

### Received Files

The EC received two types of documents in response to this request:

- Application form, including terms and conditions
- IDP report

The EC first confirmed that the documentation received matched the IDs requested. The EC confirmed that the signature dates on the application form matched the date in the tracking file, and that the date on the IDP report matched the date recorded in the tracking file as well.



## Verify Eligibility

To determine the definition of Participants, the EC looked first to the OEB Decision, which approved the Enbridge Plan<sup>67</sup> stating that the OEB approved the following proposed offering:

*Affordable Housing Savings by Design that enables and supports affordable housing projects with better energy performance than required by the Ontario Building Code.*

Beyond these details, the plan stated the following eligibility criteria:

- *New construction housing and multi-residential projects to be built subject to OBC Part 3, Part 9, Part 10, or Part 11*
- *Project construction intended to be completed within five years of signing the application form for multi-family projects, or within three years of signing the application form for single family projects*
- *Must be in the design phase or earlier in the development process*
- *Projects must qualify as Affordable Housing, by virtue of falling under one of the following classifications: Housing being built by Social Housing Providers as defined below:*  
*Social and Assisted Housing, for the purposes of DSM programming includes:*
  - *Non-profit providers of social or assisted housing under a federal, provincial or municipally funded program, and includes, without limitation, non-profit corporations governed by the Housing Services Act, 2011 (as amended or any successor legislation);*
  - *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;*
  - *Non-profit housing corporations that manage or own residential (including multi-residential) buildings developed under the “Affordable Housing program”; and*
  - *Non-profit organizations, or municipal or provincial governments that manage or own residential (including multi-residential) supportive housing, shelters and hostels.*

OR

*Privately-owned multi-residential housing where the applicant has declared that at least 30% of units are intended to be affordable.*

The EC used the Application Forms and IDP Reports to determine if the projects met these criteria. All but one of the select sites were Part 3 buildings, while one was Part 9.

**Table K-10. Affordable Housing Savings by Design eligibility criteria, project satisfaction, and explanation**

| Identified Criteria                                  | Satisfied? | Explanation  |
|--|------------|--|
| <b>Part 3, 9, 10, or 11 buildings</b>                | Yes        | Applications and IDP Reports included in documentation |
| <b>Affordable Housing</b>                            | Yes        | Declaration with Applications                          |
| <b>Built within 5 years of application form date</b> | Yes        | IDP Reports included in documentation                  |
| <b>Design phase or earlier</b>                       | Yes        | IDPs performed to prior to construction                |

After reviewing the stated eligibility criteria and Project Files, the EC confirms the 10 sampled projects all meet the eligibility criteria.

<sup>67</sup> Ontario Energy Board Decision and Order, EB-2021-0002, November 15, 2022, Page 46



## Verify Participation

Relevant offering details for participant are described in Enbridge’s Plan<sup>68</sup>:

*Participants will be guided through a series of activities to support the adoption of higher efficiency building designs, including:*

- *Visioning Session between the design team and IDP workshop facilitator*
- *Energy Modelling to create a baseline energy model to use during the IDP workshop and help set the energy performance target – details as outlined below under energy performance targets*
- *IDP Workshop followed by an IDP workshop report that summarizes key outcomes for the design team*

The *Energy Performance Targets* mentioned in the second bullet point are explained as follows:

- *The energy performance targets will reflect the achievement of at least 20% better energy efficiency than required by the 2017 OBC.*
- *In the case that a project will be constructed in a municipality that imposes a GDS requiring the achievement equal to or above 20% better than OBC, an incremental performance target of 5% above the respective GDS target would be applied.*
- *In the case a participant’s baseline design prior to the IDP workshop is above code and/or any mandatory efficiency level set by the municipality, a performance target equivalent to the higher of 5% above the baseline or 20% above code will be set. For example, if the baseline project already achieves a 20% above code efficiency level, the target efficiency level for the participant will be the achievement of at least 25% above code. Conversely, if the baseline project already achieves a 10% above code efficiency level, the standard 20% above code Savings by Design Affordable Housing IDP target will stand.*

The EC used the Application Forms and IDP Reports to determine if the projects met these criteria. The EC noted that the IDPs submitted for the 10 developments cited an average savings of 38% improvement against the OBC code.

**Table K-11. Affordable Housing Savings by Design participation criteria, project satisfaction, and explanation**

| Identified Criteria  | Satisfied? | Explanation   |
|--|------------|---|
| Undertaking Enbridge approved IDP process for each participant   | Yes        | IDP Reports included in documentation   |
| IDP includes energy model  | Yes        | IDP Reports identify EnergyPlus v9.6, IES VE 2022 & 2023, eQuest v3.65, or HOT2000 v11.11 |
| Sufficient energy savings achieved   | Yes        | See below   |
| - IDP demonstrates how to achieve 20% energy savings over building code either 5% or 10% more than baseline building requirements as defined in Energy Performance Targets | Yes        | All IDP reports states savings 20% over OBC or 5 or 10% increments over 20% requirement   |
| Project must qualify as affordable housing   | Yes        | Applications and IDP Reports included in documentation                                    |
| Project must be built within 5 years of application form date  | Yes        | Applications and IDP Reports included in documentation                                    |

As a result, the EC confirms that the submitted projects met the criteria as a participant for the Affordable Housing Savings by Design offering.

<sup>68</sup> Enbridge’s Proposed 2022-2027 DSM Plan, EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 18 of 33



## **Verification Result**

As a result of this review:

- The EC confirms proper documentation for the requested projects
- Project files for the submitted projects meet criteria for eligibility
- Project files for the submitted projects meet all requirements for a participant

The EC confirms the scorecard metric of 28 participants (100.00% of tracked) for the Enbridge Affordable Housing Savings by Design program.



## Commercial Air Tightness Testing Offering

### Overview

Table K-12 shows the tracked and verified scorecard achievements for the 2024 Enbridge Commercial Air Tightness Testing (CATT) offering, with the metrics of participants and qualified agents. As a result of this review, the EC verifies 8 participants and 24 qualified agents (both 100.00% of tracked). Table K-12 contains the following variables:

- Tracked: Metric value from original Tracking File sent by Enbridge upon first data request
- Verified: Metric value verified from review of Tracking File, Project Files, and other relevant documents identified in the Documentation section
- Ratio: Ratio of verified to tracked achievement. A value of 100.00% indicates that verified values match tracked values

**Table K-12. Building Beyond Code achievement: Commercial Air Tightness Testing metrics\***

| Metric                     | Achievement |          | Ratio   |
|----------------------------|-------------|----------|---------|
|                            | Tracked     | Verified |         |
| Number of Participants     | 8           | 8        | 100.00% |
| Number of Qualified Agents | 24          | 24       | 100.00% |

\*Not all values may compute exactly due to rounding.

### Documentation

The EC used the documentation shown in Table K-13 to verify the metrics for the Commercial Air Tightness Testing offering

**Table K-13. Documentation used to verify the Commercial Air Tightness Testing offering**

| Report Language                        | Description or Citation   |
|--|---|
| <b>Enbridge-Provided Documentation</b> |   |
| Tracking File                          | Excel spreadsheet tracking metrics for all 2024 Enbridge DSM programs   |
| Project Files                          | PDF documents, Contact files  |
| <b>Documents Used by EC</b>            |   |
| OEB Decision                           | OEB Decision and Order, EB-2021-0002, November 15, 2022 and OEB Revised Decision and Order, EB-2021-0002, December 16, 2022 |
| Enbridge Plan                          | Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002  |

## Participants Metric

### Participant Selection

Enbridge provided the Tracking File listing Project Number (unique ID), Customer Legal Name, and Address. As this is the first time that this offering is being verified, the EC requested additional information for a census of all 8 participants. The EC requested all supporting documentation, including documentation that supports eligibility and participation criteria.

### Received Files

The EC received four types of documents in response to this request:

- Application form, including terms and conditions
- Test report
- Invoice



The EC first confirmed that the documentation received matched the IDs requested. The EC confirmed that the information on the application matched the legal name and address in the tracking file, and that the legal name and address on the test report matched the legal name and address recorded in the tracking file.

### Verify Participant Eligibility

Enbridge’s Plan, approved by the OEB, further identifies eligibility criteria. As stated in Enbridge’s Plan:<sup>69</sup>

“Eligibility criteria include the following:

- Commercial or multi-residential projects to be built subject to OBC Part 3, Part 10 or Part 11 building types.
- Project enclosure must be in a state to perform air tightness testing by Q3 of 2023.
- Minimum threshold of 25,000 ft<sup>2</sup> contemplated per project as per application form.”

**Table K-14. Enbridge Commercial Air Tightness Participant eligibility criteria, project satisfaction, and explanation**

| Identified Criteria   | Criteria Satisfied? | Explanation                               |
|---|---------------------|---|
| Part 3, 10, or 11 commercial or multi-residential buildings | Yes                 | Application Form                          |
| Project able to completed by Q3 of 2024                     | Yes                 | Test Report and additional correspondence |
| 25,000 ft <sup>2</sup> minimum project size                 | Yes                 | Application Form and Test Report          |

One participant conducted their testing after Q3 of 2024, but Enbridge confirmed through correspondence documentation that the project was ready for testing before Q4 of 2024. After reviewing the stated eligibility criteria and Project Files, the EC confirms all 8 projects meet the eligibility criteria.

### Verification Result

As a result of this review:

- The EC confirms proper documentation for the requested projects
- Project files for the submitted projects meet further criteria for eligibility

The EC confirms the scorecard metric of 8 participants (100.00% of tracked) for the Enbridge Commercial Air Tightness Testing offering.

### Qualified Agents Metric

#### Qualified Agents Selection

Enbridge provided the Tracking File listing Project Number (unique ID) and Customer Legal Name. The EC requested additional information for a census of all 24 qualified agents. The EC requested all supporting documentation, including documentation that supports eligibility criteria and contact information.

#### Received Files

The EC received three types of documents in response to this request:

- Certification form
- Contact information
- Knowledge check test

<sup>69</sup> Enbridge’s Proposed Multi-Year Demand Side Management Plan (2022-2027), EB-2021-0002, Exhibit E, Tab 2, Schedule 2, Page 32 of 33



The EC first confirmed that the documentation received matched the IDs requested. The EC confirmed that the legal name on the certificate matched the legal name in the tracking file.

### **Verify Qualified Agents Eligibility**

Enbridge's Plan states that "Qualified agents targeted for the offering include engineering firms and building scientists." Enbridge's 2023 DSM Annual Report expanded upon this statement by defining eligibility criteria as:

*The offering is best suited for those with building envelope or building commissioning interest or experience, with an educational background in subjects including building enclosure, energy modelling, architecture, building sustainability, structural engineering, energy auditing, and general contracting.*

The EC reviewed all documentation to confirm certificates matched the legal name of each agent as listed in the tracking data. Contact information included each agent's company name and any current education or certificates that align with the eligibility criteria. The EC confirmed that all 24 qualified agents are eligible for offering participation.

### **Qualified Agents Survey**

Enbridge's Plan defines the metric as "the number of qualified air tightness testing practitioners recruited and trained through the offering." Enbridge's 2023 DSM Annual Report further states, "to be considered a Qualified Agent, participant must attend the workshop and complete the knowledge check testing."

For each participant, Enbridge provided a certification form attesting the agent's participation in an air tightness testing workshop with an accompanying list of the topics covered.

In addition to reviewing this documentation, the EC conducted a survey of agents via the online survey platform Qualtrics in August and September 2025. The EC attempted a census of agents, with 13 of 24 agents successfully completing the survey. All 13 agents confirmed their participation and topics covered during their in-person workshop. This confirmation of workshop attendance, coupled with the provided documentation, gave the EC confidence to verify the tracking data.

In addition to questions verifying workshop participation and details, respondents were asked several additional questions to gather information about these agents. First, agents were asked if, before the workshop, they performed air tightness testing in commercial buildings with any regularity. Only one of 14 respondents answered affirmatively. Additionally, three respondents reported conducting air tightness testing on at least one commercial building prior to the workshop. The EC also asked the respondents how knowledgeable they were on commercial air tightness testing before and after the workshop, using a five-point scale in which five meant "extremely knowledgeable." Just one agent said they were "very knowledge" (corresponding to a 5 on the scale) before attending the workshop. Comparatively, all agents said they felt either "moderately" or "very" knowledgeable after the workshop. These results suggest that this offering is forwarding its objective of advancing the adoption of commercial air tightness testing and facilitating market adoption by building capacity for qualified agents.

### **Verification Result**

As a result of this review:

- The EC confirms proper documentation for the requested agents
- Project files for the submitted agents meet criteria for eligibility
- All surveyed agents confirmed workshop participation

The EC confirms the scorecard metric of 24 qualified agents (100.00% of tracked) for the Enbridge Commercial Air Tightness Testing offering.



## APPENDIX L. Review of Metric Targets

Table L-1 details the following for 2024: programs, offerings, metrics, and (in the right-most column) metric targets. In line with the OEB Revised Decision and Order, some metric targets were prescribed, and some were based on a Target Adjustment Mechanism (TAM) formula, as follows:

$$\text{Metric Target} = \frac{\text{Previous Program Year Achievement}}{\text{Previous Program Year Spend}} \times \text{Calendar Year Budget} \times \frac{2\% \text{ productivity factor}}{6.8\% \text{ inflation adjustment}^{70}}$$

**Table L-1. Enbridge Metric Targets – 2024**

| Program                        | Offering                             | Metric(s)   | 2023 Achievement <sup>71</sup> | 2023 Spend   | 2024 Budget  | 2024 Target |
|--------------------------------|--------------------------------------|---|--------------------------------|--------------|--------------|-------------|
| <b>Residential</b>             | Residential Whole Home               |   |                                |              |              |             |
|                                | Residential Single Measure           | Net Annual Gas Savings (m <sup>3</sup> )                | 23,183,759                     | \$62,895,060 | \$76,950,620 | 27,089,960  |
|                                | Residential Smart Home               |   |                                |              |              |             |
| <b>Low-Income</b>              | Home Winterproofing                  | Net Annual Gas Savings (m <sup>3</sup> )                | 3,247,883                      | \$17,551,495 | \$15,352,623 | 2,713,300   |
|                                | Affordable Housing Multi-Residential | Net Annual Gas Savings (m <sup>3</sup> )                | 3,002,130                      | \$5,124,136  | \$7,624,376  | 4,266,207   |
| <b>Commercial<sup>72</sup></b> | Commercial Custom                    | Large Customer Net Annual Gas Savings (m <sup>3</sup> ) | 17,824,892                     | \$8,999,728  | \$12,681,856 | 23,988,840  |
|                                | Prescriptive Downstream              |   |                                |              |              |             |
|                                | Direct Install                       | Small Customer Net Annual Gas Savings (m <sup>3</sup> ) | 7,245,222                      | \$ 8,094,806 | \$10,214,065 | 8,731,177   |
|                                | Prescriptive Midstream               |   |                                |              |              |             |
| <b>Industrial</b>              | Industrial Custom                    | Net Annual Gas Savings (m <sup>3</sup> )                | 44,309,314                     | \$9,637,297  | \$14,815,296 | 65,054,756  |
| <b>Large Volume</b>            | Direct Access                        | Net Annual Gas Savings (m <sup>3</sup> )                | 22,726,895                     | \$2,493,024  | \$2,723,400  | 23,711,228  |
| <b>Energy Performance</b>      | Whole Building Pay for Performance   | Participants  | -                              | -            | -            | 25          |
|                                |                                      | Net Annual Gas Savings (m <sup>3</sup> )                | -                              | -            | -            | 125,000     |
| <b>Building Beyond Code</b>    | Residential Savings by Design        | Energy Star Homes                                       | -                              | -            | -            | 2,000       |
|                                |                                      | Net Zero Ready Homes                                    | -                              | -            | -            | 10          |
|                                | Commercial Savings by Design         | Participants  | -                              | -            | -            | 31          |
|                                | Affordable Housing Savings by Design | Participants  | -                              | -            | -            | 21          |
|                                | Commercial Air Tightness Testing     | Participants  | -                              | -            | -            | 6           |
|                                |                                      | Qualified Agents  | -                              | -            | -            | 10          |

<sup>70</sup> The 6.8% inflation rate is derived from the Canada Consumer Price Index Annual Review from 2022, consistent with the inflation rate used for 2024 program budget increases.

<sup>71</sup> For natural gas savings (m<sup>3</sup>) metrics, the formula utilizes the LRAM natural gas savings, not DSMSI natural gas savings.

<sup>72</sup> Large commercial customers have a 3-year average annual consumption greater than or equal to 100,000 m<sup>3</sup>/yr. Small commercial customers have a 3-year average annual consumption below 100,000 m<sup>3</sup>/yr.



## APPENDIX M. Review of DSM Shareholder Incentive, Lost Revenue, and Weighted Average Measure Life Calculations

This appendix describes the EC team’s review of the demand side management shareholder incentive, lost revenue, and weighted average measure life calculations.

### DSM shareholder incentive calculations

The DSM shareholder incentive calculations are based on:

- The verified program achievements compared to the target metrics for that scorecard
- The weight placed on each metric within each scorecard
- The maximum incentive achievable for that scorecard

Because all three of these factors vary by scorecard, a simple diagram is not possible.

DNV independently calculated DSM shareholder incentive values. The following sections describe the calculation methodology and inputs used.

#### DSM shareholder incentive: verification savings values

The verified net annual savings used for the DSM shareholder incentive calculation represent the savings values leveraged during the program planning process, while the verified net annual savings used in the lost revenue calculation represent the best available information at the time of the verification.

#### DSM shareholder incentive: metric score

DSM shareholder incentive calculations are based on the verified metric achievement identified within each scorecard compared to the target value.

If the achieved metric is less than or equal to the 2024 Lower Band, the Metric Score is calculated as:

$$\text{Metric Score} = \frac{0.75 * \text{achieved metric}}{\text{lower band}}$$

If the achieved metric is greater than the 2024 Lower Band and less than or equal to the 2024 Target, the Metric Score is calculated as:

$$\text{Metric Score} = 1 - \frac{0.25 * (\text{target metric} - \text{achieved metric})}{(\text{target metric} - \text{lower band})}$$

If the achieved metric is greater than the 2024 Target, the Metric Score is calculated as:

$$\text{Metric Score} = 1 + \frac{0.25 * (\text{achieved metric} - \text{target metric})}{(\text{upper band} - \text{target metric})}$$

#### DSM shareholder incentive: weighted metric score

The weighted metric score is determined by multiplying the metric score by its corresponding weight. Each metric is weighted. The sum of the weights within each scorecard equals 100.00%. Per the OEB Decision and Order, the OEB approved maximum and minimum achievement limits per metric of 200% and 0%, respectively.<sup>73</sup> As a result, all Metric

<sup>73</sup> OEB Decision and Order, EB-2021-0002, November 15, 2022, page 69

Scores are capped at 200%, thereby limiting the influence of any one metric within the weighted scorecard achievement calculation to twice its weight.

### DSM shareholder incentive: weighted scorecard achievement

The weighted metrics within each scorecard are summed to calculate the weighted scorecard achievement:

$$\text{Weighted Scorecard Achievement} = \sum_{\text{Scorecard}} (\text{Weight} * \text{Metric Score})$$

### DSM shareholder incentive: incentive calculation

The weighted scorecard achievement (WSA) is then used to calculate the Shareholder Incentive for that Scorecard. The appropriate calculation is dependent on the WSA value, as demonstrated in Table M-1.

**Table M-1. Calculation to determine shareholder incentive**

| WSA Value                  | Incentive   |
|----------------------------|---|
| < 0.75                     | 0   |
| $0.75 \leq \text{WSA} < 1$ | $(40\% \times \text{Max Incentive}) \frac{(\text{WSA} - 0.75)}{0.25}$                         |
| $1 \leq \text{WSA} < 1.25$ | $(40\% \text{ Max Incentive}) + (60\% \text{ Max Incentive}) * \frac{(\text{WSA} - 1)}{0.25}$ |
| $1.25 \leq \text{WSA}$     | Max Incentive   |

The shareholder incentives for each scorecard are summed to calculate the total incentive:

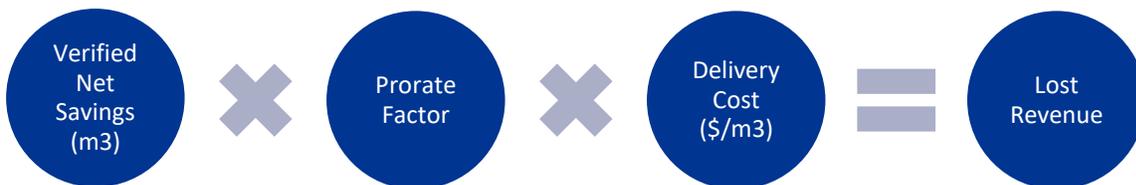
$$\text{Total Incentive} = \sum \text{Scorecard Incentive}$$

### Lost revenue calculations

The basic approach to the lost revenue calculation is illustrated in Figure M-1. The calculation is based on the following factors:

- The verified net first-year natural gas savings (in cubic meters) by applicable rate class using the best available information at the time of the verification
- The delivery cost of the natural gas by rate class
- The month in which the measure was installed, represented in the equation below as a prorate factor

**Figure M-1. Lost revenue calculation**



Lost revenues are summed across all measures in a rate class. Then the lost revenues for all applicable rate classes are summed to calculate total lost revenues for the utility.

The applicable rate classes for the EGD and Union rate zones are shown in Table M-2. Values specific to these rates for the evaluated year are included in APPENDIX N.



**Table M-2. Rate classes for lost revenue calculation**

| EGD Rate Zone | Union Rate Zone |
|---------------|-----------------|
| Rate 100      | M4 Industrial   |
| Rate 110      | M5 Industrial   |
| Rate 115      | M7 Industrial   |
| Rate 135      | T1 Industrial   |
| Rate 145      | T2 Industrial   |
| Rate 170      | 20 Industrial   |
|               | 100 Industrial  |

The methods to compute each of the components shown in Figure M are described in the following sections.

### Lost revenue: Verified Net Savings

The lost revenue calculation first utilizes verified net first-year savings, calculated using best available inputs and assumptions at the time of the verification. For prescriptive program savings, this is currently the March 2025 (TRM 9.0) and substantiation documents for measures with off-cycle TRM updates. This differs from the savings used for the DSM shareholder incentive calculation, which leverage the inputs and assumptions at the time of program planning.

### Lost revenue: Prorate Factor Calculation

The prorate factor is simply the proportion of the net first-year savings that will be included in the lost revenue calculation, based on the number of months the gas-saving measure was installed. Table M-3 shows the prorate factors for each installation month. Prorated savings are calculated by multiplying the measure’s net first-year savings by the ratio for the month it was installed.

**Table M-3. Lost revenue installation month savings ratio\***

| Month         | Ratio                          |
|---------------|--------------------------------|
|               | $(12 - \text{Month} + 1) / 12$ |
| January (1)   | 1.0000                         |
| February (2)  | 0.9167                         |
| March (3)     | 0.8333                         |
| April (4)     | 0.7500                         |
| May (5)       | 0.6667                         |
| June (6)      | 0.5833                         |
| July (7)      | 0.5000                         |
| August (8)    | 0.4167                         |
| September (9) | 0.3333                         |
| October (10)  | 0.2500                         |
| November (11) | 0.1667                         |
| December (12) | 0.0833                         |

For example, the calculation assigns 12 months of savings to measures installed in January and one month of savings to measures installed in December.

\*Not all values may compute exactly due to rounding.

### Lost revenue: Delivery Cost Calculation

Delivery rates are expressed as cost per 1,000 cubic meters. Prorated energy savings are divided by 1,000 to convert savings in cubic meters to savings in thousands of cubic meters, which are then multiplied by the delivery rate for the respective rate class to determine lost revenue by rate class. The delivery rate is not verified as part of this evaluation.



## Lost revenue: Summing Lost Revenue Savings

Lost revenue for each rate class is calculated by summing the lost revenue for all measures within the rate class. Total lost revenue is calculated by summing the lost revenue across all applicable rate classes:

$$Total\ Lost\ Revenue = \sum_{Rate\ Class} \sum_{Measure}^{Rate\ Zone\ Rate\ Class} Lost\ Revenue$$

## Weighted average measure life calculation

With the approval of Enbridge Gas's proposed change in the primary scorecard metric from net cumulative natural gas savings to net annual natural gas savings, the OEB directed that Enbridge Gas's WAML should not fall below 14 years across its portfolio of programs, excluding the Large Volume program, to ensure the approved DSM plan maintains sufficient longer-term benefits.<sup>74</sup>

The portfolio WAML is calculated as the sum of the program year's net cumulative natural gas savings divided by the sum of that program year's net annual natural gas savings, as shown in the formula below.

$$WAML = \frac{\sum Net\ Cumulative\ Natural\ Gas\ Savings}{\sum Net\ Annual\ Natural\ Gas\ Savings} = \frac{(Tracking\ Savings * Measure\ Life)(GRR * NTG)_{lifetime}}{(Tracking\ Savings)(GRR * NTG)_{first-year}}$$

The lifetime and first-year NTG adjustments for C&I measures are different for two reasons. One, the lifetime and first-year NTG adjustments are calculated using lifetime and first-year savings, respectively. This means that measures with longer measure lives have more weight than measures with shorter measure lives in the lifetime NTG adjustment, all other things being equal. Two, acceleration is treated differently for lifetime and first-year NTG adjustments. Acceleration happens when the utility program influences participants to install energy efficiency measures sooner than they would have in the absence of the program. In both cases, if the participant says, that in the absence of the program, the measure would have been completed 2 or more years later, the NTG is 100%. However, partial acceleration (i.e., less than 2 years) is scored differently. In the first-year NTG adjustment, partial acceleration is scored as a percentage of 2 years (e.g., 1 year acceleration equals 50% credit). Alternatively, in the lifetime NTG adjustment, acceleration is scored as a percentage of the measure life (e.g., for a measure with 1 year acceleration and 5-year measure life equals 20% credit). In both cases, acceleration is one of three ways the program may be credited with measure savings. The scoring for the other two ways is consistent for both the lifetime and first-year adjustments.

The WAML equals 17.89.

## Example calculations

### DSM shareholder incentive

The first step is to determine the correct formula based on whether the verified achievement for the scorecard metric was less than or equal to the lower band, greater than the lower band and less than or equal to the target, or greater than the annual target. In the example in Table M-4, the verified achievement for the first Scorecard A m<sup>3</sup> metric was greater than the 2024 lower band and less than the 2024 target, so the formula for achievement greater than the lower band and less than or equal to the target is used to determine the metric score. The verified achievement for the second Scorecard A m<sup>3</sup> metric was less than the 2024 lower band, so the formula for achievement less than or equal to the lower band is used to

<sup>74</sup> OEB Decision and Order, EB-2021-0002, November 15, 2022, page 67



determine the metric score. The verified achievement for participants was greater than the 2024 target, so the formula for achievement greater than the target is used. Each formula is illustrated below.

**Table M-4. Example metric score\***

| Scorecard   | Metric           | Verified Achievement | Lower Band | 2022 Target | Upper Band | Metric Score |
|-------------|------------------|----------------------|------------|-------------|------------|--------------|
| Scorecard A | m <sup>3</sup> 1 | 9,000,000            | 7,500,000  | 10,000,000  | 12,500,000 | 0.90         |
|             | m <sup>3</sup> 2 | 6,000,000            | 7,500,000  | 10,000,000  | 12,500,000 | 0.60         |
|             | Participants     | 300                  | 150        | 200         | 250        | 1.50         |

\*Not all values may compute exactly due to rounding.

$$m3\ 1\ Metric\ Score = 1 - \frac{0.25 * (10,000,000 - 9,000,000)}{(10,000,000 - 7,500,000)} = 1 - 0.1 = 0.9$$

$$m3\ 2\ Metric\ Score = \frac{0.75 * 6,000,000}{7,500,000} = 0.6$$

$$Participant\ Metric\ Score = 1 + \frac{0.25 * (300 - 200)}{(250 - 200)} = 1 + 0.5 = 1.5$$

The metric score for each metric is then multiplied by the applicable weight. In this example, both m3 savings metrics are weighted at 45% and the participant metric is weighted at 10%. The weighted metric scores are summed for the weighted scorecard achievement.

**Table M-5. Example scorecard weighted score (WSA)\***

| Scorecard   | Metric       | Metric Score | Weight | Weighted Metric Score | Weighted Scorecard Achievement |
|-------------|--------------|--------------|--------|-----------------------|--------------------------------|
| Scorecard A | m3 1         | 0.90         | 45%    | 0.4050                | 0.8250                         |
|             | m3 2         | 0.60         | 45%    | 0.2700                |                                |
|             | Participants | 1.50         | 10%    | 0.1500                |                                |

\*Not all values may compute exactly due to rounding.

For Scorecard A, if we assume a maximum incentive value of \$100,000, a weighted scorecard achievement of 0.8250 would result in an incentive of \$8,000, as demonstrated below.

$$(40\% \times \$100,000) \frac{(0.8250 - .75)}{0.25} = \$40,000 \times \frac{(0.0750)}{0.25} = \$40,000 \times 0.30 = \$12,000$$

### Lost revenue

As an example, a widget carries a net first-year lost revenue verified savings value of 500 m<sup>3</sup> (first-year, net savings). If that unit was installed in January, 500 m<sup>3</sup> (500 x 1.000) would be verified for lost revenue. If that same unit were installed in July, 250 m<sup>3</sup> (500 x 0.500) would be verified and if installed in November, 83.33 m<sup>3</sup> (500 x .1667). Table M-6 shows the prorated total savings for all widgets with one installed per month, in 1000 m<sup>3</sup>.



**Table M-6. Example lost revenue savings total for single rate class with monthly widget installation\***

| Month        | Ratio<br>(12-Month+1)/12 | Units<br>Installed | Lost Revenue<br>Net First-Year<br>Gas Savings<br>(m <sup>3</sup> ) | Prorated<br>Energy<br>Savings (m <sup>3</sup> ) | Lost Revenue<br>Energy Savings<br>(1000 m <sup>3</sup> ) |
|--------------|--------------------------|--------------------|--|---|--|
| January      | 1.00                     | 1                  | 500  | 500.00  | 0.50   |
| February     | 0.92                     | 1                  | 500  | 458.33  | 0.46   |
| March        | 0.83                     | 1                  | 500  | 416.67  | 0.42   |
| April        | 0.75                     | 1                  | 500  | 375.00  | 0.38   |
| May          | 0.67                     | 1                  | 500  | 333.33  | 0.33   |
| June         | 0.58                     | 1                  | 500  | 291.67  | 0.29   |
| July         | 0.50                     | 1                  | 500  | 250.00  | 0.25   |
| August       | 0.42                     | 1                  | 500  | 208.33  | 0.21   |
| September    | 0.33                     | 1                  | 500  | 166.67  | 0.17   |
| October      | 0.25                     | 1                  | 500  | 125.00  | 0.13   |
| November     | 0.17                     | 1                  | 500  | 83.33   | 0.08   |
| December     | 0.08                     | 1                  | 500  | 41.67   | 0.04   |
| <b>Total</b> |                          |                    |  |   | <b>3.25</b>  |

\*Not all values may compute exactly due to rounding.

In Table M-7, the above example savings total is represented by Rate Class II – one widget per month was the sum of all measures performed within customers in that rate class. The verified lost revenue energy savings for the class are multiplied by the rate for that class to determine the lost revenue for that rate class; lost revenue for Rate Class II totalling \$48.75 from energy savings of 3.25 at a rate of \$15.00 per 1,000 m<sup>3</sup>. All applicable rate class lost revenue are then summed for total lost revenue.

**Table M-7. Example total lost revenue\***

| Rate<br>Class             | Lost Revenue Energy<br>Savings (1000 m <sup>3</sup> ) | Rate<br>(\$/1000 m <sup>3</sup> ) | Lost<br>Revenue |
|---------------------------|---|-----------------------------------|-----------------|
| I                         | 25.00   | \$5.55                            | \$138.75        |
| II                        | 3.25  | \$15.00                           | \$48.75         |
| III                       | 150.00  | \$1.50                            | \$225.00        |
| IV                        | 100.00  | \$4.00                            | \$400.00        |
| V                         | 5.10  | \$25.50                           | \$130.05        |
| VI                        | 1.26  | \$10.00                           | \$12.60         |
| <b>Total Lost Revenue</b> |   |                                   | <b>\$955.15</b> |

\*Not all values may compute exactly due to rounding.



## APPENDIX N. DSM Shareholder Incentive, Lost Revenue, and Weighted Average Measure Life: Detailed Tables

### DSM shareholder incentive

Table N-1. 2024 Residential Program scorecard targets, achievements, and incentive\*

| Metric  | Target     | Verified Achievement | Weight  | Metric Score** | Weighted Metric Score |
|---|------------|----------------------|---------|----------------|-----------------------|
| Net Annual Gas Savings (m3)                       | 27,089,960 | 56,482,829           | 100.00% | 200.00%        | 200.00%               |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |         |                | 200.00%               |
| <b>Maximum Scorecard Incentive</b>                |            |                      |         |                | \$4,910,664           |
| <b>Verified Scorecard Incentive Achieved</b>      |            |                      |         |                | <b>\$4,910,664</b>    |

\*Not all values may compute exactly due to rounding

\*\*The maximum achievement level for individual metrics is 200%.

Table N-2. 2024 Low-Income Program scorecard targets, achievements, and incentive\*

| Metric  | Target    | Verified Achievement | Weight | Metric Score | Weighted Metric Score |
|---|-----------|----------------------|--------|--------------|-----------------------|
| Single Family Net Annual Gas Savings (m3)         | 2,713,300 | 3,865,194            | 50.00% | 142.45%      | 71.23%                |
| Multi-Residential Net Annual Gas Savings (m3)     | 4,266,207 | 4,023,376            | 50.00% | 94.31%       | 47.15%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |           |                      |        |              | 118.38%               |
| <b>Maximum Scorecard Incentive</b>                |           |                      |        |              | \$4,910,664           |
| <b>Verified Scorecard Incentive Achieved</b>      |           |                      |        |              | <b>\$4,130,554</b>    |

\*Not all values may compute exactly due to rounding.

Table N-3. 2024 Commercial Program scorecard targets, achievements, and incentive\*

| Metric  | Target     | Verified Achievement | Weight | Metric Score | Weighted Metric Score |
|---|------------|----------------------|--------|--------------|-----------------------|
| Large Customer Net Annual Gas Savings (m3)        | 23,988,840 | 19,785,418           | 50.00% | 82.48%       | 41.24%                |
| Small Customer Net Annual Gas Savings (m3)        | 8,731,177  | 8,490,930            | 50.00% | 97.25%       | 48.62%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |        |              | 89.86%                |
| <b>Maximum Scorecard Incentive</b>                |            |                      |        |              | \$4,910,664           |
| <b>Verified Scorecard Incentive Achieved</b>      |            |                      |        |              | <b>\$1,167,795</b>    |

\*Not all values may compute exactly due to rounding.



**Table N-4. 2024 Industrial Program scorecard targets, achievements, and incentive\***

| Metric  | Target     | Verified Achievement | Weight  | Metric Score | Weighted Metric Score |
|---|------------|----------------------|---------|--------------|-----------------------|
| Net Annual Gas Savings (m3)                       | 65,054,756 | 56,794,944           | 100.00% | 87.30%       | 87.30%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |         |              | 87.30%                |
| <b>Maximum Scorecard Incentive</b>                |            |                      |         |              | \$4,910,664           |
| <b>Verified Scorecard Incentive Achieved</b>      |            |                      |         |              | <b>\$966,677</b>      |

\*Not all values may compute exactly due to rounding.

**Table N-5. 2024 Large Volume Program scorecard targets, achievements, and incentive\***

| Metric  | Target     | Verified Achievement | Weight  | Metric Score | Weighted Metric Score |
|---|------------|----------------------|---------|--------------|-----------------------|
| Net Annual Gas Savings (m3)                       | 23,711,228 | 11,200,723           | 100.00% | 47.24%       | 47.24%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |            |                      |         |              | 47.24%                |
| <b>Maximum Scorecard Incentive</b>                |            |                      |         |              | \$669,636             |
| <b>Verified Scorecard Incentive Achieved**</b>    |            |                      |         |              | <b>\$0</b>            |

\*Not all values may compute exactly due to rounding.

\*\*Scorecards must achieve a minimum of 75% of weighted metric score to achieve shareholder incentive.

**Table N-6. 2024 Energy Performance Program scorecard targets, achievements, and incentive\***

| Metric  | Target  | Verified Achievement | Weight | Metric Score** | Weighted Metric Score |
|---|---------|----------------------|--------|----------------|-----------------------|
| Number of Participants                            | 25      | 27                   | 50.00% | 108.00%        | 54.00%                |
| Net Annual Gas Savings (m3)                       | 125,000 | 276,138              | 50.00% | 200.00%        | 100.00%               |
| <b>Verified Total Weighted Scorecard Achieved</b> |         |                      |        |                | 154.00%               |
| <b>Maximum Scorecard Incentive</b>                |         |                      |        |                | \$223,212             |
| <b>Verified Scorecard Incentive Achieved</b>      |         |                      |        |                | <b>\$223,212</b>      |

\*Not all values may compute exactly due to rounding.

\*\*The maximum achievement level for individual metrics is 200%.



Table N-7. 2024 Building Beyond Code Program scorecard targets, achievements, and incentive\*

| Offering  | Metric                         | Target | Verified Achievement | Weight | Metric Score** | Weighted Metric Score |
|---|--------------------------------|--------|----------------------|--------|----------------|-----------------------|
| <b>Residential Savings By Design</b>              | Number of Energy Star Homes    | 2,000  | 747                  | 15.00% | 37.35%         | 5.60%                 |
|   | Number of Net Zero Ready Homes | 10     | 18                   | 15.00% | 180.00%        | 27.00%                |
| <b>Commercial Savings By Design</b>               | Number of Participants         | 31     | 26                   | 30.00% | 83.87%         | 25.16%                |
| <b>Affordable Housing Savings By Design</b>       | Number of Participants         | 21     | 28                   | 30.00% | 133.33%        | 40.00%                |
| <b>Commercial Air Tightness Testing</b>           | Number of Participants         | 6      | 8                    | 5.00%  | 133.33%        | 6.67%                 |
|   | Number of Qualified Agents     | 10     | 24                   | 5.00%  | 200.00%        | 10.00%                |
| <b>Verified Total Weighted Scorecard Achieved</b> |                                |        |                      |        |                | 114.43%               |
| <b>Maximum Scorecard Incentive</b>                |                                |        |                      |        |                | \$1,785,696           |
| <b>Verified Scorecard Incentive Achieved</b>      |                                |        |                      |        |                | <b>\$1,332,720</b>    |

\*Not all values may compute exactly due to rounding.

\*\*The maximum achievement level for individual metrics is 200%.



## Lost revenue

Table N-8. Lost revenue volumes (10<sup>3</sup> m<sup>3</sup>) by rate class, prorated by month\*

| Rate Zone    | Rate Class | Savings Volume (1,000 m <sup>3</sup> ) |            |              |              |              |              |              |            |              |              |            |           |               |
|--------------|------------|--|------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|------------|-----------|---------------|
|              |            | Jan                                    | Feb        | Mar          | Apr          | May          | Jun          | Jul          | Aug        | Sep          | Oct          | Nov        | Dec       | Total         |
| EGD          | Rate 100   | -                                      | 201        | -            | -            | -            | -            | -            | 93         | -            | 1            | 18         | -         | <b>312</b>    |
|              | Rate 110   | 373                                    | 58         | 1,892        | 455          | 106          | 601          | 484          | 83         | 37           | 1,245        | 21         | 13        | <b>5,368</b>  |
|              | Rate 115   | -                                      | -          | -            | -            | -            | -            | -            | -          | -            | -            | -          | -         | -             |
|              | Rate 135   | 85                                     | -          | 25           | 591          | 50           | -            | -            | -          | 30           | 192          | 10         | 14        | <b>997</b>    |
|              | Rate 145   | 82                                     | -          | -            | -            | -            | 11           | -            | 73         | -            | 8            | -          | -         | <b>174</b>    |
|              | Rate 170   | 247                                    | -          | -            | 3            | 178          | -            | -            | -          | 253          | 98           | -          | 1         | <b>780</b>    |
| Union South  | Rate M4    | 2,124                                  | 123        | 125          | 311          | 906          | 462          | 26           | 45         | 15           | 155          | 22         | -         | <b>4,313</b>  |
|              | Rate M5    | 82                                     | -          | -            | 270          | 75           | -            | -            | -          | 34           | -            | -          | -         | <b>462</b>    |
|              | Rate M7    | 3,906                                  | 409        | 589          | 315          | 950          | 3,912        | 18           | 560        | 667          | 947          | 694        | -         | <b>12,966</b> |
|              | Rate T1    | 391                                    | 4          | 44           | -            | -            | 13           | -            | -          | -            | 530          | -          | -         | <b>981</b>    |
| Union North  | Rate T2    | 3,222                                  | 46         | 475          | 263          | 405          | 435          | 495          | 62         | 294          | 513          | 39         | 42        | <b>6,291</b>  |
|              | Rate 20    | 1,954                                  | 95         | 1,213        | -            | 267          | -            | -            | -          | 65           | 60           | 1          | 2         | <b>3,656</b>  |
|              | Rate 100   | 217                                    | -          | 490          | -            | -            | -            | 18           | -          | -            | -            | -          | -         | <b>725</b>    |
| <b>Total</b> |            | <b>12,683</b>                          | <b>936</b> | <b>4,854</b> | <b>2,208</b> | <b>2,935</b> | <b>5,435</b> | <b>1,041</b> | <b>916</b> | <b>1,396</b> | <b>3,747</b> | <b>804</b> | <b>72</b> | <b>37,027</b> |

\*Not all values may compute exactly due to rounding.



**Table N-9. Lost revenue volumes (10<sup>3</sup> m<sup>3</sup>), delivery rates, and revenue impact by rate class\***

| Rate Zone    | Rate Class | Savings Volume (1,000 m <sup>3</sup> ) | Delivery Rate (\$/1,000 m <sup>3</sup> ) | Revenue Impact (\$) |
|--------------|------------|--|--|---------------------|
| EGD          | Rate 100   | 312                                    | \$19.48                                  | \$6,084             |
|              | Rate 110   | 5,368                                  | \$13.36                                  | \$71,735            |
|              | Rate 115   | 0                                      | \$6.46                                   | \$0                 |
|              | Rate 135   | 997                                    | \$40.58                                  | \$40,472            |
|              | Rate 145   | 174                                    | \$29.00                                  | \$5,049             |
|              | Rate 170   | 780                                    | \$4.42                                   | \$3,450             |
| Union South  | Rate M4    | 4,313                                  | \$18.39                                  | \$79,293            |
|              | Rate M5    | 462                                    | \$32.99                                  | \$15,227            |
|              | Rate M7    | 12,966                                 | \$1.97                                   | \$25,595            |
|              | Rate T1    | 981                                    | \$1.52                                   | \$1,495             |
|              | Rate T2    | 6,291                                  | \$0.30                                   | \$1,881             |
| Union North  | Rate 20    | 3,656                                  | \$5.79                                   | \$21,181            |
|              | Rate 100   | 725                                    | \$2.83                                   | \$2,054             |
| <b>Total</b> |            | <b>37,027</b>                          |  | <b>\$273,517</b>    |

\*Not all values may compute exactly due to rounding.

## Weighted average measure life

**Table N-10. Weighted Average Measure Life Results\***

| Metric   | Value         |
|--|---------------|
| Verified Net Cumulative Natural Gas Savings (m3)** | 2,678,825,049 |
| Verified Net Annual Natural Gas Savings (m3)**     | 149,718,829   |
| <b>Weighted Average Measure Life</b>               | <b>17.89</b>  |

\*Not all values may compute exactly due to rounding.

\*\*Excludes the Large Volume Program



## APPENDIX O. Prescriptive Savings Verification

This appendix describes the detailed process used to verify the reported (tracked) prescriptive and quasi-prescriptive savings for Enbridge program offerings.

### Data sources

Verification of prescriptive measures relies on several data sources provided by Enbridge.

### Tracking file

The EC received the tracking data from Enbridge in a single Excel file. The tracking data includes prescriptive measures and non-prescriptive measures.

### TRM

The EC used the April 2024 TRM (TRM 8.0)<sup>75</sup> as the primary source for identifying prescribed values, such as energy savings and measure life, for prescriptive measures. In addition to that primary TRM, the EC also used TRM 9.0 and substantiation documents for measures with off-cycle TRM updates.

### Other supporting documentation

The TRM did not contain all of the necessary detail to verify the savings for all measures. For example, gross realization rates and net-to-gross factors are not included in TRM 7.0. All prescriptive measures and corresponding verification sources are listed in the tables at the end of this appendix.

In addition to the TRMs, the EC also used the following for verification of savings for prescriptive measures, as cited in the tables at the end of this appendix.

- Prescriptive Showerheads, Enbridge, “Showerhead Verification Among Rental Buildings”, Ipsos Research, March 2012
- C&I Prescriptive Verification Study, “2017 C&I Prescriptive Study – Measure of NTG Factors and Gross Savings Verification”, Itron, June 7, 2019
- “Low-Income Kits Verification Study”: Final Report Following an Audit of the Union Gas ESK – Helping Homes Conserve – HHC – Program, Beslin Communication Group, March 15, 2013
- “TAPS Report”, TAPS Verification Program 2012 Year End Research Report, Study CR-604, Quadra Research, April 3, 2013
- “Thermostat ISR Memo”, Jurisdictional Review: Smart Thermostat In-Service Rate (ISR),

Ultimately, the EC utilized the eTRM+, an electronic version of the TRM that also incorporates information not found in the TRM; namely, installation, gross realization, and free ridership rates, in conjunction with the tracking data to verify gross and net annual and lifetime savings. If inconsistencies arise between the TRM, source documents, and the eTRM+, the TRM and source documents take precedence. In these instances, the eTRM+ is updated to reflect the TRM and source documents and changes are tracked in a change log within the eTRM+.

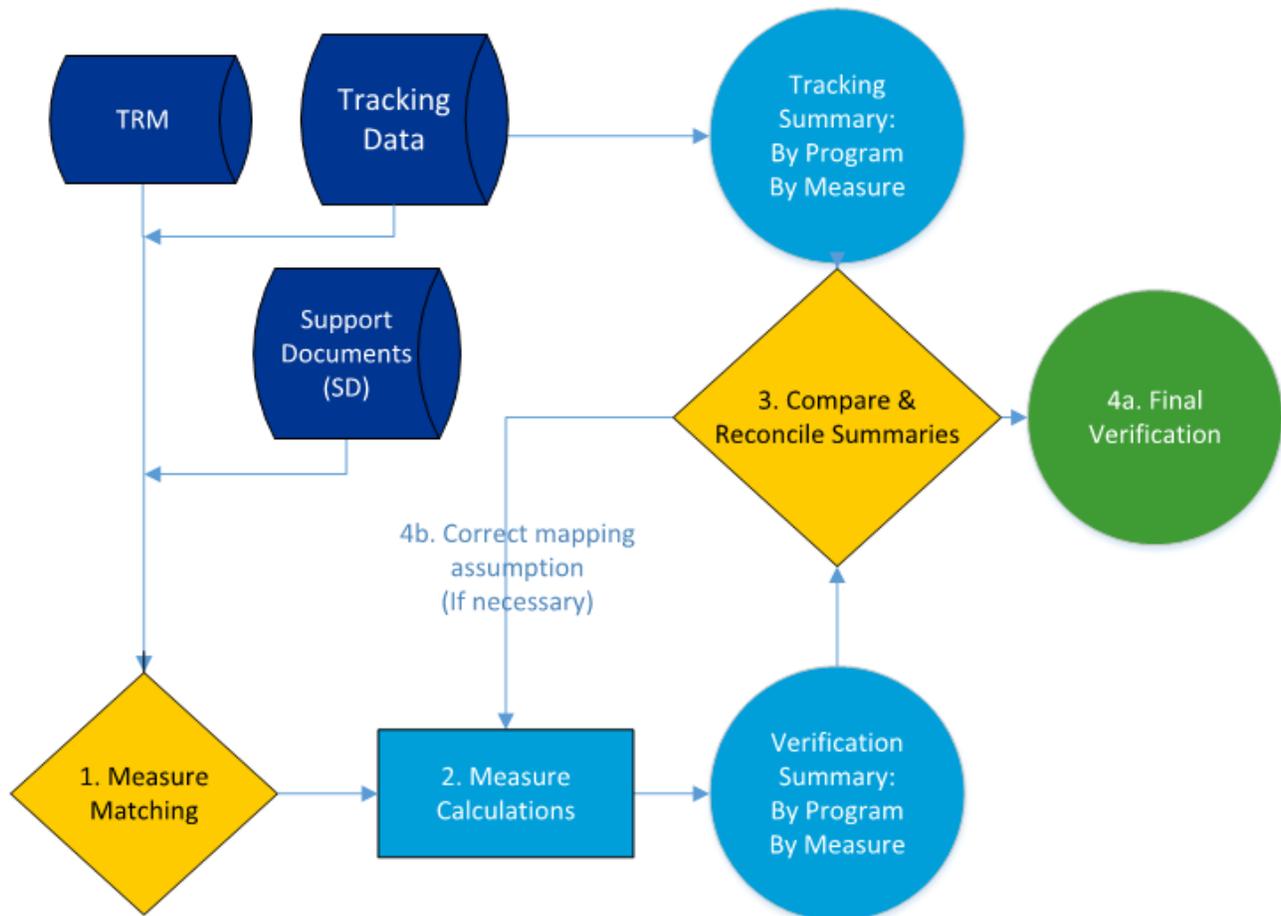
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<sup>75</sup> Natural Gas Demand Side Management Technical Resource Manual Version 8.0

## Overall methodology

The EC used a straightforward process to consistently verify prescriptive savings for Enbridge, summarized in Figure O-1.

**Figure O-1. Savings verification process**



The process includes the following high-level steps. Additional detail is presented below.

1. Manually match individual project measure savings against the TRM and Support Documents (SD) values, as contained in the eTRM+, based first on measure name and then on other attributes, to calculate savings.
2. Calculate gross and net annual and lifetime savings for all measures.
3. Compare the summarized calculated savings and the tracked savings to identify discrepancies or disagreements.
4. When the EC determined that a discrepancy was due to an error in assigning the correct savings value, the EC assigned a new savings value to the measure and re-compared totals (4b). Once the EC resolved the correct savings value (through continued investigation of measure or clarification with utility) the record was verified (4a).

Table O-1 shows the variables used from the utility tracking data to verify, summarize, and reconcile savings values. While variables such as measure life or free ridership were present in the tracking data, these were not used by the EC to calculate verified savings, but to identify discrepancies between verification and tracking summaries when comparing and reconciling savings totals. The EC used the eTRM+, TRM, and SD values for the verified savings calculations.



Table O-1. Tracking variables used for prescriptive savings verification

| Tracking Variable                                | Used In                  |                     |                                  |
|--|--------------------------|---------------------|----------------------------------|
|  | Verification/<br>Summary | Tracking<br>Summary | Compare & Reconcile<br>Summaries |
| Scorecard  | X                        |                     | X                                |
| Program  | X                        |                     | X                                |
| Offering   | X                        |                     | X                                |
| Measure Name                                     | X                        |                     | X                                |
| Decision Type (New Construction, Retrofit, etc.) | X                        |                     | X                                |
| Building Type                                    | X                        |                     | X                                |
| Equipment Type                                   | X                        |                     | X                                |
| Install Type                                     | X                        |                     | X                                |
| Number of Units                                  | X                        |                     | X                                |
| Capacity   | X                        |                     | X                                |
| Measure Life                                     |                          |                     | X                                |
| Free Rider                                       |                          |                     | X                                |
| Adjustment Factor                                |                          |                     | X                                |
| Gross Annual Natural Gas Savings                 |                          | X                   | X                                |
| Net Annual Natural Gas Savings                   |                          | X                   | X                                |
| Gross Cumulative Natural Gas Savings             |                          | X                   | X                                |
| Net Cumulative Natural Gas Savings               |                          | X                   | X                                |

## 1. Measure matching

The EC manually mapped measures into groups. Measures were filtered by name to assign them to a group, then matched against the eTRM+, TRM, and SD measures to identify the correct savings values. For each measure, the EC confirmed that the savings value listed for the measure matched the value listed for that measure type in the TRM and SD. The tables at the end of this appendix list all tracked measure groups and their corresponding savings values and TRM and SD sources for Enbridge.

## 2. Measure calculations

There are two types of prescriptive measure calculations: Pure-Prescriptive and Quasi-Prescriptive. Quasi-Prescriptive measure savings require more than the per unit savings and the number of units to determine annual gross savings. For example, some boiler measures require the capacity of the boiler. Table O-2 summarizes the differences between the two types.

Table O-2. Explanation of calculation inputs for two types of prescriptive measures

| Savings Type   | Purely Prescriptive                              | Quasi-Prescriptive                                 |
|----------------|--|--|
| Annual Gross   | Per Unit Savings * # of Units                    | Unit Capacity Savings * Unit Capacity * # of Units |
| Annual Net     | Annual Gross * (1 – Free Ridership) * Adjustment |  |
| Lifetime Gross | Annual Gross * Measure Life                      |  |
| Lifetime Net   | Annual Net * Measure Life                        |  |

The EC used Excel macros to identify savings inputs and apply savings calculations. The use of macros ensured consistent application of savings calculations and allowed for quick and accurate savings updates. The tables at the end of this appendix list all calculated measure totals, as verified by the EC.



### 3. Compare & reconcile summaries

The EC summed savings values from utility tracking and from EC verification calculations by program, offering, and measure type, and tabulated by Annual Gross, Annual Net, Lifetime Gross, Lifetime Net, and project measure counts. The EC did this with the Pivot Table function in Excel, creating Tracking (utility tracking data) and Verification (EC calculated) Summaries, which provided two benefits. First, the EC was able to identify discrepancies between listed measure names, because any differences would result in a different number of summary rows between the two tables. Second, the pivot tables allowed for quick and accurate updates when the EC performed adjustments to our original matches.

By reviewing differences between the two summaries, the EC identified errors in the EC matches and differences between the EC matches and the original utility tracking data, allowing us to investigate the discrepancies. The tables at the end of this appendix lists all verification discrepancies where:

- **The tracking data did not contain sufficient information to identify savings:** In general, these measures were resolved with additional documentation and resulted in no change to savings. They are listed in this appendix to document the evaluation process and communication between the evaluator and the utility.
- **The tracking data was incorrect:** This may have been because different savings factors were identified through the verification process. The tables include the details for each measure.

### 4. Final verification

Once all tracked measures were matched to TRM values, the savings calculated, and all discrepancies reconciled or explained, verified savings summaries were finalized. Final savings totals for each program are available within the appropriate appendix in this report.



## Savings calculation values

Savings tables in this section utilize measure names and units from the TRM wherever possible.

**Table O-3. Enbridge measure savings calculation values\***

| Offering       | Measure   | Source          | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|----------------|---|-----------------|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| Direct Install | Air Curtain - Dock-In - 10 x 10                         | TRM Version 8.0 | 5,517.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Dock-In - 8 x 10                          | TRM Version 8.0 | 4,941.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Dock-In - 8 x 8                           | TRM Version 8.0 | 4,713.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Dock-In - 8 x 9                           | TRM Version 8.0 | 4,845.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Drive-In - 10 x 10                        | TRM Version 8.0 | 4,844.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Drive-In - 12 x 12                        | TRM Version 8.0 | 5,753.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Drive-In - 14 x 14                        | TRM Version 8.0 | 6,504.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Drive-In - 16 x 16                        | TRM Version 8.0 | 7,081.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Air Curtain - Drive-In - 18 x 18                        | TRM Version 8.0 | 7,459.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - 10,001 to 15,000 cfm DI            | TRM Version 8.0 | 17,947.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - 10,001 to 15,000 cfm DI            | TRM Version 8.0 | 17,947.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI             | TRM Version 8.0 | 10,768.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI             | TRM Version 8.0 | 10,768.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI Tier 2      | TRM Version 8.0 | 10,768.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI Tier 2      | TRM Version 8.0 | 10,768.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - Up to 5,000 cfm DI - Late 2024 LTO | TRM Version 8.0 | 4,307.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- Retrofit/TNR - Up to 5,000 cfm DI 2024 LTO        | TRM Version 8.0 | 4,307.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | DCKV- RF - 5,001 to 10,000 cfm LTO                      | TRM Version 8.0 | 10,768.00   | unit          | -   |           | 15  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Dock Door Seals - Compression (8x8 - 8x10) DI           | TRM Version 8.0 | 2,041.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Dock Door Seals - Compression (8x8 - 8x10) DI           | TRM Version 8.0 | 4,853.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Dock Door Seals - Compression (8x8 - 8x10) DI           | TRM Version 8.0 | 1,977.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install | Dock Door Seals - Compression (8x8 - 8x10) DI           | TRM Version 8.0 | 1,736.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |



| Offering                | Measure                                       | Source  | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|-------------------------|---|---|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| Direct Install          | Dock Door Seals - Compression (8x8 - 8x10) DI | TRM Version 8.0   | 5,087.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Compression (8x8 - 8x10) DI | TRM Version 8.0   | 4,501.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Compression (8x8 - 8x10) DI | TRM Version 8.0   | 1,897.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Compression (8x8 - 8x10) DI | TRM Version 8.0   | 4,988.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Shelter (10x10) DI          | TRM Version 8.0   | 4,501.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Shelter (10x10) DI          | TRM Version 8.0   | 1,736.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Shelter (10x10) DI          | TRM Version 8.0   | 2,041.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Shelter (10x10) DI          | TRM Version 8.0   | 5,087.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Direct Install          | Dock Door Seals - Shelter (10x10) DI          | TRM Version 8.0   | 4,853.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Air Curtain - 7 x 3 Door                      | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 845.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Air Curtain - Dock-In - 8 x 10                | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,941.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Air Curtain - Dock-In - 8 x 8                 | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,713.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Air Curtain - Drive-In - 10 x 10              | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,844.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Air Curtain - Drive-In - 12 x 12              | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 5,753.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Air Curtain - Drive-In - 14 x 14              | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 6,504.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | DCKV- NC - 10,001 to 15,000 cfm               | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 17,947.00   | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |
| Prescriptive Downstream | DCKV- NC - 5,001 to 10,000 cfm                | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 10,768.00   | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |



| Offering                | Measure                                    | Source  | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|-------------------------|--|---|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| Prescriptive Downstream | DCKV- NC - Up to 5,000 cfm                 | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,307.00  | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |
| Prescriptive Downstream | DCKV- NC - Up to 5,000 cfm                 | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,307.00  | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |
| Prescriptive Downstream | DCKV- Retrofit/TNR - 10,001 to 15,000 cfm  | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 17,947.00   | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |
| Prescriptive Downstream | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm   | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 10,768.00   | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |
| Prescriptive Downstream | DCKV- Retrofit/TNR - Up to 5,000 cfm       | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,307.00  | unit          | -   |           | 15  | 102.74%                | 100.00%             | 38.00%         |
| Prescriptive Downstream | DCV  | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 0.1120  | sq ft     | 15  | 104.14%                | 100.00%             | 92.00%         |
| Prescriptive Downstream | DCV  | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 1.4840  | sq ft     | 15  | 104.14%                | 100.00%             | 92.00%         |
| Prescriptive Downstream | DCV  | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 0.3920  | sq ft     | 15  | 104.14%                | 100.00%             | 92.00%         |
| Prescriptive Downstream | DCV  | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 1.4840  | sq ft     | 15  | 104.14%                | 100.00%             | 92.00%         |
| Prescriptive Downstream | DCV  | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 0.3920  | sq ft     | 15  | 104.14%                | 100.00%             | 92.00%         |
| Prescriptive Downstream | Destratification Fan - 20ft                | TRM Version 8.0   | 2,029.00  | fan           | -   |           | 15  | 100.00%                | 100.00%             | 10.00%         |
| Prescriptive Downstream | Destratification Fan - 20ft - LTO          | TRM Version 8.0   | 2,029.00  | fan           | -   |           | 15  | 100.00%                | 100.00%             | 10.00%         |
| Prescriptive Downstream | Destratification Fan - 24ft                | TRM Version 8.0   | 2,922.00  | fan           | -   |           | 15  | 100.00%                | 100.00%             | 10.00%         |
| Prescriptive Downstream | Destratification Fan - 24ft - LTO          | TRM Version 8.0   | 2,922.00  | fan           | -   |           | 15  | 100.00%                | 100.00%             | 10.00%         |
| Prescriptive Downstream | Dock Door Seals - Compression (8x8 - 8x10) | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 2,041.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |



| Offering                | Measure   | Source  | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|-------------------------|---|---|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| Prescriptive Downstream | Dock Door Seals - Compression (8x8 - 8x10)                      | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 1,977.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Dock Door Seals - Compression (8x8 - 8x10)                      | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 5,087.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Dock Door Seals - Compression (8x8 - 8x10)                      | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 1,897.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Dock Door Seals - Compression (8x8 - 8x10)                      | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,988.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Dock Door Seals - Shelter (10x10)                               | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 1,736.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Dock Door Seals - Shelter (10x10)                               | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | 4,501.00  | unit          | -   |           | 10  | 100.00%                | 100.00%             | 50.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 1.6000  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 4.5200  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 4.5200  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 1.6000  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% SHR - In-Suite         | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 4.5200  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 1.9100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 5.3700  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 1.9100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |



| Offering                | Measure   | Source  | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|-------------------------|---|---|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 5.3700  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% SHR - In-Suite                     | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 5.3700  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% SHR - In-Suite                     | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 5.3700  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 75% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 6.2200  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 75% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 2.2100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 75% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 2.2100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 75% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 6.2200  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 85% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 2.5100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 85% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 2.5100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 85% Sensible Heat Recovery             | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 7.0700  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-Incremental-GTE 65% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 0.3000  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-Incremental-GTE 75% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 0.6100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-Incremental-GTE 85% Sensible Heat Recovery | TRM Version 8.0, 2017 C&I Prescriptive Verification Study | -   |               | 0.9100  | CFM       | 14  | 99.55%                 | 100.00%             | 70.00%         |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 55% Sensible Heat Recovery               | TRM Version 8.0   | -   |               | 1.3600  | CFM       | 14  | 100.00%                | 100.00%             | 5.00%          |



| Offering                | Measure   | Source          | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|-------------------------|---|-----------------|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 55% Sensible Heat Recovery | TRM Version 8.0 | -   |               | 3.8400  | CFM       | 14  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 65% Sensible Heat Recovery | TRM Version 8.0 | -   |               | 1.6100  | CFM       | 14  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 65% Sensible Heat Recovery | TRM Version 8.0 | -   |               | 1.6100  | CFM       | 14  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 65% Sensible Heat Recovery | TRM Version 8.0 | -   |               | 4.5400  | CFM       | 14  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 75% Sensible Heat Recovery | TRM Version 8.0 | -   |               | 1.8600  | CFM       | 14  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Make-Up Air Unit (MUA) - Constant Speed                       | TRM Version 8.0 | -   |               | 0.4070  | CFM       | 20  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Make-Up Air Unit (MUA) - VFD                                  | TRM Version 8.0 | -   |               | 3.0000  | CFM       | 20  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Downstream | Ozone Laundry - Washer Extractor                              | TRM Version 8.0 | -   |               | 0.0376  | lbs/yr    | 15  | 100.00%                | 100.00%             | 8.00%          |
| Prescriptive Downstream | Ozone Laundry - Washer Extractor 75% Costs LTO                | TRM Version 8.0 | -   |               | 0.0376  | lbs/yr    | 15  | 100.00%                | 100.00%             | 8.00%          |
| Prescriptive Downstream | Ozone Laundry - Washer Extractor 75% Costs LTO                | TRM Version 8.0 | -   |               | 0.0376  | lbs/yr    | 15  | 100.00%                | 100.00%             | 8.00%          |
| Prescriptive Midstream  | Commercial Energy Star Combi Oven                             | TRM Version 8.0 | 1,186.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Convection Oven                        | TRM Version 8.0 | 954.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Conveyor Oven greater or equal 1520in  | TRM Version 8.0 | 1,519.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Conveyor Oven less than 1520in         | TRM Version 8.0 | 562.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Double Rack Oven                       | TRM Version 8.0 | 1,187.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Fryer - Large Vat - LTO                | TRM Version 8.0 | 1,709.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Fryer LTO                              | TRM Version 8.0 | 1,466.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream  | Commercial Energy Star Griddle                                | TRM Version 8.0 | 1,974.00  | unit          | -   |           | 12  | 100.00%                | 100.00%             | 20.00%         |



| Offering               | Measure  | Source          | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit              | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|------------------------|--|-----------------|---|---------------|---|------------------------|-----|------------------------|---------------------|----------------|
| Prescriptive Midstream | Commercial Energy Star Single Rack Oven                    | TRM Version 8.0 | 915.00  | unit          | -   |                        | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream | Commercial Energy Star Steam Cooker                        | TRM Version 8.0 | 8,461.00  | unit          | -   |                        | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream | Commercial Under-Fired Broiler                             | TRM Version 8.0 | 3,515.00  | unit          | -   |                        | 12  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 160 & LTE 250 kBTU/hr | TRM Version 8.0 | -   |               | 3.2210  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 160 & LTE 250 kBTU/hr | TRM Version 8.0 | -   |               | 1.4220  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 160 & LTE 250 kBTU/hr | TRM Version 8.0 | -   |               | 3.6510  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 160 & LTE 250 kBTU/hr | TRM Version 8.0 | -   |               | 1.6110  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 250 kBTU/hr           | TRM Version 8.0 | -   |               | 3.2210  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 250 kBTU/hr           | TRM Version 8.0 | -   |               | 1.4220  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/hr  | TRM Version 8.0 | -   |               | 3.2210  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/hr  | TRM Version 8.0 | -   |               | 2.8680  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/hr  | TRM Version 8.0 | -   |               | 1.4220  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/hr  | TRM Version 8.0 | -   |               | 1.1370  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/hr  | TRM Version 8.0 | -   |               | 0.4210  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |
| Prescriptive Midstream | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/hr  | TRM Version 8.0 | -   |               | 0.9540  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 5.00%          |



| Offering                             | Measure  | Source          | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit              | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|--------------------------------------|--|-----------------|---|---------------|---|------------------------|-----|------------------------|---------------------|----------------|
| Prescriptive Midstream               | Condensing Tankless Water Heater - GT 75 & LT 200 kBTU/hr          | TRM Version 8.0 | 212.00  | unit          | 5.2110  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 212.00  | unit          | 2.2990  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 212.00  | unit          | 5.2110  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 212.00  | unit          | 3.7480  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 212.00  | unit          | 4.3490  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 178.00  | unit          | 2.0900  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 178.00  | unit          | 1.5030  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 178.00  | unit          | 0.9220  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 212.00  | unit          | 3.1280  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | TRM Version 8.0 | 212.00  | unit          | 1.9180  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Condensing Tankless WH- GTE 200 kBTU/hr 2022 LTO                   | TRM Version 8.0 | 212.00  | unit          | 3.7480  | kBtu/hr input capacity | 20  | 100.00%                | 100.00%             | 2.00%          |
| Prescriptive Midstream               | Dishwasher-Stationary Single Tank Door-High Temperature            | TRM Version 8.0 | 1,262.00  | unit          | -   |                        | 15  | 100.00%                | 100.00%             | 20.00%         |
| Prescriptive Midstream               | Dishwasher-Stationary Single Tank Door-Low Temperature             | TRM Version 8.0 | 2,846.00  | unit          | -   |                        | 15  | 100.00%                | 100.00%             | 20.00%         |
| Affordable Housing Multi-Residential | Condensing Storage Water Heater - GT 75 & LTE 250 kBTU/Hr          | TRM Version 8.0 | -   |               | 3.2210  | kBtu/hr input capacity | 15  | 100.00%                | 100.00%             | 0.00%          |
| Affordable Housing Multi-Residential | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery-LI | TRM Version 8.0 | -   |               | 5.3700  | CFM                    | 14  | 100.00%                | 100.00%             | 0.00%          |



| Offering                                    | Measure                               | Source  | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|---|---------------------------------------|---|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| <b>Affordable Housing Multi-Residential</b> | Make-Up Air Unit (MUA) - 2 Speed      | TRM Version 8.0   | -   |               | 2.4500  | CFM       | 20  | 100.00%                | 100.00%             | 0.00%          |
| <b>Affordable Housing Multi-Residential</b> | Make-Up Air Unit (MUA) - VFD          | TRM Version 8.0   | -   |               | 3.0000  | CFM       | 20  | 100.00%                | 100.00%             | 0.00%          |
| <b>Home Winterproofing</b>                  | Bathroom Aerator                      | TRM Version 8.0, Low Income Kits Verification Study, TAPS Report  | 6.65  | unit          | -   |           | 10  | 100.00%                | 64.58%              | 0.00%          |
| <b>Home Winterproofing</b>                  | Kitchen Aerator                       | TRM Version 8.0, Low Income Kits Verification Study, TAPS Report  | 12.00   | unit          | -   |           | 10  | 100.00%                | 67.68%              | 0.00%          |
| <b>Home Winterproofing</b>                  | Pipe Insulation                       | TRM Version 8.0, Low Income Kits Verification Study   | 3.72  | ft            | -   |           | 15  | 100.00%                | 93.90%              | 0.00%          |
| <b>Home Winterproofing</b>                  | Residential Heat Reflector Panels     | TRM Version 8.0   | 143.20  | unit          | -   |           | 25  | 100.00%                | 100.00%             | 0.00%          |
| <b>Home Winterproofing</b>                  | Showerhead Replacement 1.25 GPM       | TRM Version 8.0, Low Income Kits Verification Study, Showerhead Verification Study Among Rental Buildings | 28.20   | unit          | -   |           | 10  | 100.00%                | 85.10%              | 0.00%          |
| <b>Home Winterproofing</b>                  | Smart Thermostats                     | TRM Version 8.0   | 173.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 0.00%          |
| <b>Home Winterproofing</b>                  | Smart Thermostats                     | TRM Version 8.0   | 217.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 0.00%          |
| <b>Home Winterproofing</b>                  | Smart Thermostats                     | TRM Version 8.0   | 173.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 0.00%          |
| <b>Home Winterproofing</b>                  | Smart Thermostats                     | TRM Version 8.0   | 217.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 0.00%          |
| <b>Residential Smart Home</b>               | Smart Thermostats - \$100 LTO         | TRM Version 8.0, Thermostat ISR Memo  | 185.00  | unit          | -   |           | 15  | 100.00%                | 88.40%              | 4.00%          |
| <b>Residential Smart Home</b>               | Smart Thermostats - \$75              | TRM Version 8.0, Thermostat ISR Memo  | 185.00  | unit          | -   |           | 15  | 100.00%                | 88.40%              | 4.00%          |
| <b>Residential Smart Home</b>               | Smart Thermostats - Contractors- \$75 | TRM Version 8.0   | 185.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 4.00%          |



| Offering                      | Measure                                   | Source                               | Annual Natural Gas Savings per Quantity Unit (m3) | Quantity Unit | Annual Natural Gas Savings per Size Unit (m3) | Size Unit | EUL | Gross Realization Rate | Installation Factor | Free Ridership |
|-------------------------------|---|--------------------------------------|---|---------------|---|-----------|-----|------------------------|---------------------|----------------|
| <b>Residential Smart Home</b> | Smart Thermostats - Contractors- \$75     | TRM Version 8.0                      | 173.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 4.00%          |
| <b>Residential Smart Home</b> | Smart Thermostats - Contractors- \$75     | TRM Version 8.0                      | 173.00  | unit          | -   |           | 15  | 100.00%                | 100.00%             | 4.00%          |
| <b>Residential Smart Home</b> | Smart Thermostats - Moderate Income \$125 | TRM Version 8.0, Thermostat ISR Memo | 185.00  | unit          | -   |           | 15  | 100.00%                | 88.40%              | 4.00%          |

\*Not all values may compute exactly due to rounding.



## Savings calculation measure totals

Table O-4. Enbridge measure savings, tracked and verified, by annual and cumulative, gross and net\*

| Offering                | Measure   | Tracked   |           |            |            | Verified  |           |            |            |
|-------------------------|---|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
|                         |   | Annual    |           | Cumulative |            | Annual    |           | Cumulative |            |
|                         |   | Gross     | Net       | Gross      | Net        | Gross     | Net       | Gross      | Net        |
| Direct Install          | Air Curtain - Dock-In - 10 x 10                         | 33,102    | 31,447    | 496,530    | 471,704    | 33,102    | 31,447    | 496,530    | 471,704    |
| Direct Install          | Air Curtain - Dock-In - 8 x 10                          | 138,348   | 131,431   | 2,075,220  | 1,971,459  | 138,348   | 131,431   | 2,075,220  | 1,971,459  |
| Direct Install          | Air Curtain - Dock-In - 8 x 8                           | 56,556    | 53,728    | 848,340    | 805,923    | 56,556    | 53,728    | 848,340    | 805,923    |
| Direct Install          | Air Curtain - Dock-In - 8 x 9                           | 9,690     | 9,206     | 145,350    | 138,083    | 9,690     | 9,206     | 145,350    | 138,083    |
| Direct Install          | Air Curtain - Drive-In - 10 x 10                        | 159,852   | 151,859   | 2,397,780  | 2,277,891  | 159,852   | 151,859   | 2,397,780  | 2,277,891  |
| Direct Install          | Air Curtain - Drive-In - 12 x 12                        | 661,595   | 628,515   | 9,923,925  | 9,427,729  | 661,595   | 628,515   | 9,923,925  | 9,427,729  |
| Direct Install          | Air Curtain - Drive-In - 14 x 14                        | 279,672   | 265,688   | 4,195,080  | 3,985,326  | 279,672   | 265,688   | 4,195,080  | 3,985,326  |
| Direct Install          | Air Curtain - Drive-In - 16 x 16                        | 35,405    | 33,635    | 531,075    | 504,521    | 35,405    | 33,635    | 531,075    | 504,521    |
| Direct Install          | Air Curtain - Drive-In - 18 x 18                        | 7,459     | 7,086     | 111,885    | 106,291    | 7,459     | 7,086     | 111,885    | 106,291    |
| Direct Install          | DCKV- Retrofit/TNR - 10,001 to 15,000 cfm DI            | 110,632   | 105,101   | 1,659,487  | 1,576,513  | 107,682   | 102,298   | 1,615,230  | 1,534,469  |
| Direct Install          | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI             | 22,126    | 21,020    | 331,891    | 315,297    | 21,536    | 20,459    | 323,040    | 306,888    |
| Direct Install          | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI Tier 2      | 44,252    | 44,252    | 663,783    | 663,783    | 43,072    | 40,918    | 646,080    | 613,776    |
| Direct Install          | DCKV- Retrofit/TNR - Up to 5,000 cfm DI - Late 2024 LTO | 44,250    | 42,038    | 663,752    | 630,564    | 43,070    | 40,917    | 646,050    | 613,748    |
| Direct Install          | DCKV- Retrofit/TNR - Up to 5,000 cfm DI 2024 LTO        | 4,425     | 4,204     | 66,375     | 63,056     | 4,307     | 4,092     | 64,605     | 61,375     |
| Direct Install          | DCKV- RF - 5,001 to 10,000 cfm LTO                      | 77,441    | 73,569    | 1,161,620  | 1,103,539  | 75,376    | 71,607    | 1,130,640  | 1,074,108  |
| Direct Install          | Dock Door Seals - Compression (8x8 - 8x10) DI           | 2,532,745 | 2,406,108 | 25,327,450 | 24,061,078 | 2,532,745 | 2,406,108 | 25,327,450 | 24,061,078 |
| Direct Install          | Dock Door Seals - Shelter (10x10) DI                    | 835,314   | 793,548   | 8,353,140  | 7,935,483  | 835,314   | 793,548   | 8,353,140  | 7,935,483  |
| Prescriptive Downstream | Air Curtain - 7 x 3 Door                                | 845       | 423       | 12,675     | 6,338      | 845       | 423       | 12,675     | 6,338      |
| Prescriptive Downstream | Air Curtain - Dock-In - 8 x 10                          | 14,823    | 7,412     | 222,345    | 111,173    | 14,823    | 7,412     | 222,345    | 111,173    |
| Prescriptive Downstream | Air Curtain - Dock-In - 8 x 8                           | 14,139    | 7,070     | 212,085    | 106,043    | 14,139    | 7,070     | 212,085    | 106,043    |
| Prescriptive Downstream | Air Curtain - Drive-In - 10 x 10                        | 19,376    | 9,688     | 290,640    | 145,320    | 19,376    | 9,688     | 290,640    | 145,320    |
| Prescriptive Downstream | Air Curtain - Drive-In - 12 x 12                        | 23,012    | 11,506    | 345,180    | 172,590    | 23,012    | 11,506    | 345,180    | 172,590    |
| Prescriptive Downstream | Air Curtain - Drive-In - 14 x 14                        | 52,032    | 26,016    | 780,480    | 390,240    | 52,032    | 26,016    | 780,480    | 390,240    |
| Prescriptive Downstream | DCKV- NC - 10,001 to 15,000 cfm                         | 18,439    | 11,432    | 276,581    | 171,480    | 18,439    | 11,432    | 276,581    | 171,480    |
| Prescriptive Downstream | DCKV- NC - 5,001 to 10,000 cfm                          | 55,315    | 34,295    | 829,728    | 514,432    | 55,315    | 34,295    | 829,728    | 514,432    |
| Prescriptive Downstream | DCKV- NC - Up to 5,000 cfm                              | 57,525    | 35,666    | 862,877    | 534,984    | 57,525    | 35,666    | 862,877    | 534,984    |
| Prescriptive Downstream | DCKV- Retrofit/TNR - 10,001 to 15,000 cfm               | 55,316    | 34,296    | 829,744    | 514,441    | 55,316    | 34,296    | 829,744    | 514,441    |



| Offering                | Measure   | Tracked |         |            |           | Verified |         |            |           |
|-------------------------|---|---------|---------|------------|-----------|----------|---------|------------|-----------|
|                         |   | Annual  |         | Cumulative |           | Annual   |         | Cumulative |           |
|                         |   | Gross   | Net     | Gross      | Net       | Gross    | Net     | Gross      | Net       |
| Prescriptive Downstream | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm                                    | 77,441  | 48,014  | 1,161,620  | 720,204   | 77,441   | 48,014  | 1,161,620  | 720,204   |
| Prescriptive Downstream | DCKV- Retrofit/TNR - Up to 5,000 cfm  | 106,200 | 65,844  | 1,593,004  | 987,663   | 106,200  | 65,844  | 1,593,004  | 987,663   |
| Prescriptive Downstream | DCV   | 460,211 | 36,817  | 6,903,159  | 552,253   | 460,211  | 36,817  | 6,903,158  | 552,253   |
| Prescriptive Downstream | Destratification Fan - 20ft   | 4,058   | 3,652   | 60,870     | 54,783    | 4,058    | 3,652   | 60,870     | 54,783    |
| Prescriptive Downstream | Destratification Fan - 20ft - LTO   | 123,769 | 111,392 | 1,856,535  | 1,670,882 | 123,769  | 111,392 | 1,856,535  | 1,670,882 |
| Prescriptive Downstream | Destratification Fan - 24ft   | 11,688  | 10,519  | 175,320    | 157,788   | 11,688   | 10,519  | 175,320    | 157,788   |
| Prescriptive Downstream | Destratification Fan - 24ft - LTO   | 163,632 | 147,269 | 2,454,480  | 2,209,032 | 163,632  | 147,269 | 2,454,480  | 2,209,032 |
| Prescriptive Downstream | Dock Door Seals - Compression (8x8 - 8x10)                                  | 847,122 | 423,561 | 8,471,220  | 4,235,610 | 847,122  | 423,561 | 8,471,220  | 4,235,610 |
| Prescriptive Downstream | Dock Door Seals - Shelter (10x10)   | 251,790 | 125,895 | 2,517,900  | 1,258,950 | 251,790  | 125,895 | 2,517,900  | 1,258,950 |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% Sensible Heat Recovery             | 182,171 | 54,651  | 2,550,393  | 765,118   | 182,171  | 54,651  | 2,550,393  | 765,118   |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 55% SHR - In-Suite                     | 1,768   | 531     | 24,757     | 7,427     | 1,768    | 531     | 24,757     | 7,427     |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery             | 722,863 | 216,859 | 10,120,083 | 3,036,025 | 722,863  | 216,859 | 10,120,083 | 3,036,025 |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 65% SHR - In-Suite                     | 234,094 | 70,228  | 3,277,318  | 983,195   | 234,094  | 70,228  | 3,277,318  | 983,195   |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 75% Sensible Heat Recovery             | 711,768 | 213,531 | 9,964,758  | 2,989,427 | 686,220  | 205,866 | 9,607,079  | 2,882,124 |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 85% Sensible Heat Recovery             | 94,324  | 28,297  | 1,320,537  | 396,161   | 94,324   | 28,297  | 1,320,537  | 396,161   |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-Incremental-GTE 65% Sensible Heat Recovery | 6,970   | 2,091   | 97,579     | 29,274    | 6,970    | 2,091   | 97,579     | 29,274    |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-Incremental-GTE 75% Sensible Heat Recovery | 13,967  | 4,190   | 195,536    | 58,661    | 13,967   | 4,190   | 195,536    | 58,661    |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-Incremental-GTE 85% Sensible Heat Recovery | 6,423   | 1,927   | 89,920     | 26,976    | 6,423    | 1,927   | 89,920     | 26,976    |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 55% Sensible Heat Recovery               | 7,923   | 7,527   | 110,918    | 105,372   | 7,923    | 7,527   | 110,918    | 105,372   |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 65% Sensible Heat Recovery               | 69,591  | 66,111  | 974,267    | 925,554   | 69,591   | 66,111  | 974,267    | 925,554   |



| Offering                | Measure   | Tracked |         |            |           | Verified |         |            |           |
|-------------------------|---|---------|---------|------------|-----------|----------|---------|------------|-----------|
|                         |   | Annual  |         | Cumulative |           | Annual   |         | Cumulative |           |
|                         |   | Gross   | Net     | Gross      | Net       | Gross    | Net     | Gross      | Net       |
| Prescriptive Downstream | Heat Recovery Ventilator (HRV)-GTE 75% Sensible Heat Recovery | 7,533   | 7,156   | 105,462    | 100,189   | 7,533    | 7,156   | 105,462    | 100,189   |
| Prescriptive Downstream | Make-Up Air Unit (MUA) - Constant Speed                       | 3,313   | 3,147   | 66,260     | 62,947    | 3,313    | 3,147   | 66,260     | 62,947    |
| Prescriptive Downstream | Make-Up Air Unit (MUA) - VFD                                  | 105,420 | 100,149 | 2,108,400  | 2,002,980 | 105,420  | 100,149 | 2,108,400  | 2,002,980 |
| Prescriptive Downstream | Ozone Laundry - Washer Extractor                              | 17,172  | 15,798  | 257,582    | 236,976   | 17,172   | 15,798  | 257,582    | 236,976   |
| Prescriptive Downstream | Ozone Laundry - Washer Extractor 75% Costs LTO                | 358,470 | 329,792 | 5,377,043  | 4,946,879 | 358,470  | 329,792 | 5,377,043  | 4,946,879 |
| Prescriptive Midstream  | Commercial Energy Star Combi Oven                             | 221,782 | 177,426 | 2,661,384  | 2,129,107 | 221,782  | 177,426 | 2,661,384  | 2,129,107 |
| Prescriptive Midstream  | Commercial Energy Star Convection Oven                        | 101,124 | 80,899  | 1,213,488  | 970,790   | 101,124  | 80,899  | 1,213,488  | 970,790   |
| Prescriptive Midstream  | Commercial Energy Star Conveyor Oven greater or equal 1520in  | 1,519   | 1,215   | 18,228     | 14,582    | 1,519    | 1,215   | 18,228     | 14,582    |
| Prescriptive Midstream  | Commercial Energy Star Conveyor Oven less than 1520in         | 8,992   | 7,194   | 107,904    | 86,323    | 8,992    | 7,194   | 107,904    | 86,323    |
| Prescriptive Midstream  | Commercial Energy Star Double Rack Oven                       | 34,423  | 27,538  | 413,076    | 330,461   | 34,423   | 27,538  | 413,076    | 330,461   |
| Prescriptive Midstream  | Commercial Energy Star Fryer - Large Vat - LTO                | 266,604 | 213,283 | 3,199,248  | 2,559,398 | 266,604  | 213,283 | 3,199,248  | 2,559,398 |
| Prescriptive Midstream  | Commercial Energy Star Fryer LTO                              | 310,792 | 248,634 | 3,729,504  | 2,983,603 | 310,792  | 248,634 | 3,729,504  | 2,983,603 |
| Prescriptive Midstream  | Commercial Energy Star Griddle                                | 5,922   | 4,738   | 71,064     | 56,851    | 5,922    | 4,738   | 71,064     | 56,851    |
| Prescriptive Midstream  | Commercial Energy Star Single Rack Oven                       | 915     | 732     | 10,980     | 8,784     | 915      | 732     | 10,980     | 8,784     |
| Prescriptive Midstream  | Commercial Energy Star Steam Cooker                           | 42,305  | 33,844  | 507,660    | 406,128   | 42,305   | 33,844  | 507,660    | 406,128   |
| Prescriptive Midstream  | Commercial Under-Fired Broiler                                | 7,030   | 5,624   | 84,360     | 67,488    | 7,030    | 5,624   | 84,360     | 67,488    |
| Prescriptive Midstream  | Condensing Storage Water Heater - GT 160 & LTE 250 kBTU/Hr    | 12,165  | 11,557  | 182,481    | 173,357   | 12,585   | 11,956  | 188,771    | 179,333   |
| Prescriptive Midstream  | Condensing Storage Water Heater - GT 250 kBTU/hr              | 13,689  | 13,004  | 205,330    | 195,063   | 12,706   | 12,071  | 190,588    | 181,059   |
| Prescriptive Midstream  | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/Hr     | 7,346   | 6,979   | 110,197    | 104,687   | 6,354    | 6,036   | 95,309     | 90,544    |
| Prescriptive Midstream  | Condensing Tankless Water Heater - GT 75 & LT 200 kBTU/hr     | 2,498   | 2,448   | 49,960     | 48,960    | 2,498    | 2,448   | 49,960     | 48,960    |
| Prescriptive Midstream  | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO       | 280,693 | 275,079 | 5,613,865  | 5,501,588 | 280,690  | 275,076 | 5,613,793  | 5,501,517 |



| Offering                                    | Measure  | Tracked   |           |            |            | Verified  |           |            |            |
|---|--|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
|   |  | Annual    |           | Cumulative |            | Annual    |           | Cumulative |            |
|   |  | Gross     | Net       | Gross      | Net        | Gross     | Net       | Gross      | Net        |
| <b>Prescriptive Midstream</b>               | Condensing Tankless WH- GTE 200 kBTU/hr 2022 LTO                   | 961       | 942       | 19,229     | 18,844     | 961       | 942       | 19,225     | 18,840     |
| <b>Prescriptive Midstream</b>               | Dishwasher-Stationary Single Tank Door-High Temperature            | 376,076   | 300,861   | 5,641,140  | 4,512,912  | 376,076   | 300,861   | 5,641,140  | 4,512,912  |
| <b>Prescriptive Midstream</b>               | Dishwasher-Stationary Single Tank Door-Low Temperature             | 210,604   | 168,483   | 3,159,060  | 2,527,248  | 210,604   | 168,483   | 3,159,060  | 2,527,248  |
| <b>Affordable Housing Multi-Residential</b> | Condensing Storage Water Heater - GT 75 & LTE 250 kBTU/Hr          | 4,026     | 4,026     | 60,394     | 60,394     | 4,026     | 4,026     | 60,394     | 60,394     |
| <b>Affordable Housing Multi-Residential</b> | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery-LI | 12,028    | 12,028    | 168,394    | 168,394    | 12,083    | 12,083    | 169,155    | 169,155    |
| <b>Affordable Housing Multi-Residential</b> | Make-Up Air Unit (MUA) - 2 Speed                                   | 7,718     | 7,718     | 154,350    | 154,350    | 7,718     | 7,718     | 154,350    | 154,350    |
| <b>Affordable Housing Multi-Residential</b> | Make-Up Air Unit (MUA) - VFD                                       | 50,100    | 50,100    | 1,002,000  | 1,002,000  | 50,100    | 50,100    | 1,002,000  | 1,002,000  |
| <b>Home Winterproofing</b>                  | Bathroom Aerator   | 2,388     | 2,388     | 23,878     | 23,878     | 2,388     | 2,388     | 23,878     | 23,878     |
| <b>Home Winterproofing</b>                  | Kitchen Aerator  | 5,766     | 5,766     | 57,663     | 57,663     | 5,766     | 5,766     | 57,663     | 57,663     |
| <b>Home Winterproofing</b>                  | Pipe Insulation  | 22,565    | 22,565    | 338,481    | 338,481    | 22,572    | 22,572    | 338,584    | 338,584    |
| <b>Home Winterproofing</b>                  | Residential Heat Reflector Panels                                  | 2,005     | 2,005     | 50,120     | 50,120     | 2,005     | 2,005     | 50,120     | 50,120     |
| <b>Home Winterproofing</b>                  | Showerhead Replacement 1.25 GPM                                    | 19,463    | 19,463    | 194,625    | 194,625    | 19,463    | 19,463    | 194,625    | 194,625    |
| <b>Home Winterproofing</b>                  | Smart Thermostats  | 970,383   | 970,383   | 14,555,745 | 14,555,745 | 970,383   | 970,383   | 14,555,745 | 14,555,745 |
| <b>Residential Smart Home</b>               | Smart Thermostats - \$100 LTO                                      | 4,074     | 3,911     | 61,111     | 58,667     | 4,252     | 4,082     | 63,781     | 61,229     |
| <b>Residential Smart Home</b>               | Smart Thermostats - \$75   | 3,795,890 | 3,644,054 | 56,938,347 | 54,660,813 | 3,961,920 | 3,803,443 | 59,428,801 | 57,051,649 |
| <b>Residential Smart Home</b>               | Smart Thermostats - Contractors- \$75                              | 24,550    | 23,568    | 368,250    | 353,520    | 24,550    | 23,568    | 368,250    | 353,520    |
| <b>Residential Smart Home</b>               | Smart Thermostats - Moderate Income \$125                          | 4,387     | 4,212     | 65,812     | 63,179     | 4,579     | 4,396     | 68,687     | 65,939     |

\*Not all values may compute exactly due to rounding.



## Savings verification notes

Table O-5. Enbridge measure verification notes

| Offering                | Measure   | Issue   | Resolution   | Tracked Annual |         | Verified Annual |         |
|-------------------------|---|---|--|----------------|---------|-----------------|---------|
|                         |   |   |  | Gross          | Net     | Gross           | Net     |
| Direct Install          | DCKV- Retrofit/TNR - 10,001 to 15,000 cfm DI                    | Tracked savings applies Prescriptive Downstream gross realization rate..  | Gross realization rate updated.  | 110,632        | 105,101 | 107,682         | 102,298 |
| Direct Install          | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI                     | Tracked savings applies Prescriptive Downstream gross realization rate..  | Gross realization rate updated.  | 22,126         | 21,020  | 21,536          | 20,459  |
| Direct Install          | DCKV- Retrofit/TNR - 5,001 to 10,000 cfm DI Tier 2              | Tracked savings applies Prescriptive Downstream gross realization rate and 0% free ridership.   | Gross realization rate and free ridership rate updated.  | 44,252         | 44,252  | 43,072          | 40,918  |
| Direct Install          | DCKV- Retrofit/TNR - Up to 5,000 cfm DI - Late 2024 LTO         | Tracked savings applies Prescriptive Downstream gross realization rate..  | Gross realization rate updated.  | 44,250         | 42,038  | 43,070          | 40,917  |
| Direct Install          | DCKV- Retrofit/TNR - Up to 5,000 cfm DI 2024 LTO                | Tracked savings applies Prescriptive Downstream gross realization rate..  | Gross realization rate updated.  | 4,425          | 4,204   | 4,307           | 4,092   |
| Direct Install          | DCKV- RF - 5,001 to 10,000 cfm LTO                              | Tracked savings applies Prescriptive Downstream gross realization rate..  | Gross realization rate updated.  | 77,441         | 73,569  | 75,376          | 71,607  |
| Prescriptive Downstream | Energy Recovery Ventilator (ERV)-GTE 75% Sensible Heat Recovery | Tracked building type did not clearly map to building types in TRM.<br><br>Tracked savings does not use prescribed annual savings per quantity for one measure.                                       | Confirmed building type through follow-up with EGI.<br><br>Annual savings per quantity updated to reflect TRM. | 711,768        | 213,531 | 686,220         | 205,866 |
| Prescriptive Midstream  | Condensing Storage Water Heater - GT 160 & LTE 250 kBTU/Hr      | Tracked savings does not use prescribed annual savings per quantity for three measures.   | Annual savings per quantity updated to reflect TRM.  | 12,165         | 11,557  | 12,585          | 11,956  |
| Prescriptive Midstream  | Condensing Storage Water Heater - GT 250 kBTU/hr                | Tracking data does not always correctly distinguish between thermal efficiency and uniform energy factor.<br><br>Tracked savings does not use prescribed annual savings per quantity for one measure. | Confirmed efficiency through follow-up with EGI.<br><br>Annual savings per quantity updated to reflect TRM.    | 13,689         | 13,004  | 12,706          | 12,071  |



| Offering                                    | Measure  | Issue  | Resolution  | Tracked Annual |           | Verified Annual |           |
|---|--|--|---|----------------|-----------|-----------------|-----------|
|   |  |  |   | Gross          | Net       | Gross           | Net       |
| <b>Prescriptive Midstream</b>               | Condensing Storage Water Heater - GT 75 & LTE 160 kBTU/Hr          | Tracking data does not always correctly distinguish between thermal efficiency and uniform energy factor.<br><br>Tracked savings does not use prescribed annual savings per quantity for three measures. | Confirmed efficiency through follow-up with EGI.<br><br>Annual savings per quantity updated to reflect TRM.   | 7,346          | 6,979     | 6,354           | 6,036     |
| <b>Prescriptive Midstream</b>               | Condensing Tankless WH- GT 75 & LT 200 kBTU/hr 2022 LTO            | Tracked measure name and capacity conflicted for one measure.  | Confirmed efficiency through follow-up with EGI.  | 280,693        | 275,079   | 280,690         | 275,076   |
| <b>Affordable Housing Multi-Residential</b> | Energy Recovery Ventilator (ERV)-GTE 65% Sensible Heat Recovery-LI | Tracked building type did not clearly map to building types in TRM.<br><br>Tracked savings applies Prescriptive Downstream gross realization rate.   | Confirmed building type through follow-up with EGI.<br><br>Gross realization rate updated.  | 12,028         | 12,028    | 12,083          | 12,083    |
| <b>Home Winterproofing</b>                  | Pipe Insulation  | Tracked savings does not use prescribed annual savings per unit for two measures.  | Annual savings per unit updated to reflect TRM.   | 22,565         | 22,565    | 22,572          | 22,572    |
| <b>Residential Smart Home</b>               | Smart Thermostats - \$100 LTO                                      | Tracked installation rate does not reflect the Thermostat ISR Memo.  | Installation rate updated to reflect the Thermostat ISR Memo.   | 4,074          | 3,911     | 4,252           | 4,082     |
| <b>Residential Smart Home</b>               | Smart Thermostats - \$75   | Tracking data does not always correctly identify delivery channel (i.e., instant rebate, direct install).<br><br>Tracked installation rate does not reflect the Thermostat ISR Memo.                     | Confirmed delivery channel through follow-up with EGI. Annual savings per unit updated to align with correct delivery channel.<br><br>Installation rate updated to reflect the Thermostat ISR Memo. | 3,795,890      | 3,644,054 | 3,961,920       | 3,803,443 |
| <b>Residential Smart Home</b>               | Smart Thermostats - Moderate Income \$125                          | Tracked installation rate does not reflect the Thermostat ISR Memo.  | Installation rate updated to reflect the Thermostat ISR Memo.   | 4,387          | 4,212     | 4,579           | 4,396     |

## APPENDIX P. Program Spending

Table P-1. Enbridge 2024 approved and spent budget\*

| Scorecard/Program                    | OEB-Approved Budget  | Utility Spending     | Difference           |             |
|--------------------------------------|----------------------|----------------------|----------------------|-------------|
|                                      |                      |                      | \$                   | %           |
| <b>Residential Program</b>           | <b>\$78,855,831</b>  | <b>\$203,014,220</b> | <b>\$124,158,389</b> | <b>157%</b> |
| Residential Whole Home               | \$67,771,524         | \$197,439,979        | \$129,668,455        | 191%        |
| Residential Single Measure           | \$4,931,408          | \$73,670             | -\$4,857,739         | -99%        |
| Residential Smart Home               | \$4,247,687          | \$3,525,791          | -\$721,896           | -17%        |
| Residential Administration           | \$1,905,211          | \$1,974,779          | \$69,568             | 4%          |
| <b>Commercial Program</b>            | <b>\$26,838,855</b>  | <b>\$25,352,080</b>  | <b>-\$1,486,775</b>  | <b>-6%</b>  |
| Commercial Administration            | \$3,942,935          | \$4,209,840          | \$266,906            | 7%          |
| <b>Large Commercial</b>              | <b>\$12,681,856</b>  | <b>\$10,881,060</b>  | <b>-\$1,800,796</b>  | <b>-14%</b> |
| Commercial Custom                    | \$10,094,557         | \$8,617,926          | -\$1,476,632         | -15%        |
| Commercial Prescriptive              | \$1,561,141          | \$1,421,423          | -\$139,718           | -9%         |
| Commercial Direct Install            | \$509,007            | \$317,729            | -\$191,278           | -38%        |
| Commercial Midstream                 | \$517,151            | \$523,983            | \$6,832              | 1%          |
| <b>Small Commercial</b>              | <b>\$10,214,065</b>  | <b>\$10,261,180</b>  | <b>\$47,115</b>      | <b>0%</b>   |
| Commercial Custom                    | \$2,523,639          | \$1,722,300          | -\$801,339           | -32%        |
| Commercial Prescriptive              | \$1,040,761          | \$1,075,226          | \$34,466             | 3%          |
| Commercial Direct Install            | \$4,581,062          | \$5,831,525          | \$1,250,462          | 27%         |
| Commercial Midstream                 | \$2,068,603          | \$1,632,129          | -\$436,474           | -21%        |
| <b>Industrial Program</b>            | <b>\$19,040,425</b>  | <b>\$15,484,831</b>  | <b>-\$3,555,594</b>  | <b>-19%</b> |
| Industrial Custom                    | \$14,815,296         | \$11,767,282         | -\$3,048,014         | -21%        |
| Industrial Administration            | \$4,225,129          | \$3,717,549          | -\$507,580           | -12%        |
| <b>Large Volume Program</b>          | <b>\$2,954,755</b>   | <b>\$2,475,139</b>   | <b>-\$479,616</b>    | <b>-16%</b> |
| Direct Access                        | \$2,723,400          | \$2,244,899          | -\$478,501           | -18%        |
| Large Volume Administration          | \$231,355            | \$230,241            | -\$1,114             | 0%          |
| <b>Low-Income Program</b>            | <b>\$24,550,848</b>  | <b>\$32,646,728</b>  | <b>\$8,095,880</b>   | <b>33%</b>  |
| Home Winterproofing                  | \$15,352,623         | \$21,866,467         | \$6,513,844          | 42%         |
| Affordable Housing Multi-Residential | \$7,624,376          | \$9,394,725          | \$1,770,349          | 23%         |
| Low-Income Administration            | \$1,573,850          | \$1,385,537          | -\$188,313           | -12%        |
| <b>Energy Performance Program</b>    | <b>\$1,281,378</b>   | <b>\$1,081,465</b>   | <b>-\$199,914</b>    | <b>-16%</b> |
| Whole Building Pay for Performance   | \$1,171,140          | \$1,033,739          | -\$137,401           | -12%        |
| Energy Performance Administration    | \$110,238            | \$47,726             | -\$62,513            | -57%        |
| <b>Building Beyond Code Program</b>  | <b>\$9,951,354</b>   | <b>\$7,467,314</b>   | <b>-\$2,484,040</b>  | <b>-25%</b> |
| Savings by Design Residential        | \$4,909,760          | \$2,602,898          | -\$2,306,862         | -47%        |
| Savings by Design Commercial         | \$1,406,328          | \$974,375            | -\$431,953           | -31%        |
| Affordable Housing Savings By Design | \$2,562,624          | \$2,883,904          | \$321,280            | 13%         |
| Air Tightness                        | \$515,436            | \$348,760            | -\$166,676           | -32%        |
| Building Beyond Code Administration  | \$557,206            | \$657,377            | \$100,171            | 18%         |
| <b>Portfolio Costs</b>               | <b>\$19,608,480</b>  | <b>\$14,588,035</b>  | <b>-\$5,020,445</b>  | <b>-26%</b> |
| Administration                       | \$12,017,693         | \$8,780,841          | -\$3,236,852         | -27%        |
| Evaluation and Regulatory            | \$4,139,568          | \$3,121,393          | -\$1,018,175         | -25%        |
| Research and Development             | \$3,451,219          | \$2,685,802          | -\$765,417           | -22%        |
| <b>Enbridge Total</b>                | <b>\$183,081,927</b> | <b>\$302,109,812</b> | <b>\$119,027,885</b> | <b>65%</b>  |

\*Not all values may compute exactly due to rounding.



## APPENDIX Q. Cost-Effectiveness Methodology and Results

### Cost-effectiveness overview

The OEB’s 2023 Natural Gas Demand Side Management Framework, effective January 1, 2023, guides 2023 – 2025 DSM annual verification activities and was applied to this year’s evaluation. The OEB requires utilities to deliver portfolios that are cost-effective at the “program” level, and cost-effectiveness testing is performed at both the program and overall portfolio levels. The 2024 evaluation marks the second year that cost-effectiveness results were calculated and reported for Enbridge Gas only. The two legacy utilities (Enbridge and Union) amalgamated following OEB approval in 2018<sup>76</sup> but continued to report separately as per the 2015 – 2020 DSM Framework through 2022.

Cost-effectiveness results are calculated at the portfolio, scorecard and offering level for all offerings that have natural gas savings metrics. The offerings included within each scorecard are shown in Table Q-1.

**Table Q-1: 2024 Scorecards and offerings in cost-effectiveness analysis**

| Scorecard                         | Offering                             |
|-----------------------------------|--------------------------------------|
| <b>Residential Program</b>        | Residential Whole Home               |
|                                   | Residential Single Measure           |
|                                   | Residential Smart Home               |
| <b>Low-Income Program</b>         | Home Winterproofing                  |
|                                   | Affordable Housing Multi-Residential |
| <b>Commercial Program</b>         | Commercial Custom                    |
|                                   | Prescriptive Downstream              |
|                                   | Direct Install                       |
|                                   | Prescriptive Midstream               |
| <b>Industrial Program</b>         | Industrial Custom                    |
| <b>Large Volume Program</b>       | Direct Access                        |
| <b>Energy Performance Program</b> | Whole Building Pay for Performance   |

The 2023 DSM Framework only requires cost-effectiveness screening using the Total Resource Cost-Plus (TRC-Plus) test. OEB staff requested that the Program Administrator Cost (PAC) test continue to be applied during the 2023 – 2025 term to allow comparison with past program years. Both are included here. Under the Framework, a program must achieve a TRC-Plus benefit/cost ratio of 1.0 or greater to be deemed cost-effective. The exception is Low-Income DSM programs, which continue to be screened using a lower threshold of 0.7 to recognize important benefits not captured by the TRC-Plus test. The 2023 DSM Framework does not include stated cost-effectiveness thresholds for the PAC test, so the same thresholds as for the TRC-Plus test have been used, consistent with the previous framework.

To calculate cost-effectiveness, the EC used an updated version of the cost-effectiveness model that has been applied in previous years, using Enbridge’s verified savings and reflecting the 2023 DSM Framework. The EC model adjusts gross savings using realization rates, free ridership and spillover from the annual savings verification activities.

The main goal of the cost-effectiveness analysis is the application of a comprehensive model that can be easily modified to assess the impact of changing assumptions and methodology to calculate the TRC-Plus (and PAC) tests under the current

<sup>76</sup> Decision And Order EB-2017-0306 And Eb-2017-0307 Union Gas Limited and Enbridge Gas Distribution Inc. Enbridge Gas Distribution Inc. and Union Gas Limited Application for Amalgamation and Rate-Setting Mechanism

DSM Framework. The EC cost-effectiveness model applied uses the new 2023 DSM Framework and as such differs in some ways from the methodologies of previous years. Key elements and differences are described below.

The key inputs used to calculate the TRC-Plus and PAC tests are shown in the table below.

**Table Q-2: Key inputs used in the TRC-Plus and PAC tests**

| Input                          | Description   | TRC-Plus | PAC |
|--------------------------------|---|----------|-----|
| Administration Costs           | Salaries and employee expenses for staff who work on DSM activities, including fixed/overhead costs (support staff) and variable costs (operations staff).  | ✓        | ✓   |
| Utility Incentives             | Utility-provided customer incentives to encourage adoption of efficiency measures.  |          | ✓   |
| Development and Start-up Costs | Costs incurred during early DSM program stages, such as for staff training.   | ✓        | ✓   |
| Promotion Costs                | Variable expenditures to promote and market programs, as well as provide customer education on DSM programs and energy conservation measures.   | ✓        | ✓   |
| Discount Rate                  | The discount rate is used to weight long-term versus short-term benefits provided by the utilities. A real discount rate of 4% is applied. All avoided cost streams are discounted at a nominal discount rate of 8.43%, except for avoided carbon costs, which are discounted at a nominal rate of 4.00%. <sup>77</sup> | ✓        | ✓   |
| Measure Incremental Cost       | The incremental cost of the measure, inclusive of incentive amounts. The participant cost is the portion of this total cost after subtracting incentives.   | ✓        |     |
| Net Savings                    | Savings net of free ridership and spillover effects.  | ✓        | ✓   |
| Avoided Costs                  | Utility-avoided costs related to the generation and distribution of energy from natural gas lines.  | ✓        | ✓   |
|                                | Utility-avoided costs related to the benefits of electricity and water resources saved through the DSM program.   | ✓        |     |
| Measure EUL                    | See glossary.   | ✓        | ✓   |
| Non-Energy Benefits            | A 15% non-energy benefit (NEB) adder is applied to gas, electricity and water avoided costs representing environmental, economic, and health-related externalities. It is not applied to carbon benefits.   | ✓        |     |
| Cost of Carbon                 | The avoided costs of carbon expressed as dollars per m <sup>3</sup> based on established annual carbon pricing increases of \$15/tonne from 2023 to 2030. Beyond 2030, the carbon price is held constant, resulting in a flat nominal cost stream from 2030 onward.   | ✓        | ✓   |

Two sets of natural gas avoided costs were previously applied in the model, representing the Enbridge Gas Distribution (former Enbridge territory) rate zone and the Union Gas (former Union territory) rate zone. These were developed and provided by Enbridge to account for differences in avoided costs between each rate zone. This year, the same set of natural gas avoided costs is applied to both rate zones.

In December 2020, a federal regulatory update<sup>78</sup> established annual carbon pricing increases of \$15/tonne from 2023 to 2030. The updated federal prices are \$65/tCO<sub>2e</sub> in 2023 and \$170/tCO<sub>2e</sub> in 2030. Beyond 2030, the carbon price is held constant. To accurately reflect the impact of carbon pricing in the TRC-Plus calculations, a weighting is used to produce an adjusted carbon price by rate class that applies to programs that include larger customers that are exempt. A subsequent

<sup>77</sup> Inflation was calculated in accordance with the OEB's 2022 DSM Framework (Section 11.1 – Inflation Rate, p. 33) as the four-quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index for Final Domestic Demand, based on the most recently available information. While the resulting 4.26% inflation rate is anomalous and not representative of Bank of Canada or other forecasts of future inflation (which are closer to 2% per year), the 4.26% rate gets applied to the entire life of energy efficiency measures. The cost-effectiveness analysis uses a real discount rate of 4% per the DSM Framework requirement (consistent with the 2015 DSM framework). Combined with the 4.26% inflation rate, this yields a nominal discount rate of 8.43% for all avoided cost streams, except avoided carbon costs, which are discounted at a nominal rate of 4.00%. Because carbon prices rise annually until 2030 and remain constant thereafter, and the 4.00% nominal discount rate is slightly below the 4.26% inflation rate, post-2030 avoided carbon costs remain approximately flat in real terms.

<sup>78</sup> Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030. Accessed at <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information/federal-benchmark-2023-2030.html#toc3>



regulatory update<sup>79</sup> effectively ended the federal fuel charge by reducing the consumer carbon price to zero as of April 1, 2025. However, this analysis continues to include the avoided costs of carbon because it was in effect, and thus influenced utility and consumer decisions, for the whole of 2024. For an analysis of portfolio TRC-plus values with no federal carbon charge, please see the end of APPENDIX Q.

The 15% non-energy benefit (NEB) adder is applied to gas, electricity, and water avoided costs; it is not applied to carbon costs, which are included as part of avoided costs. This is consistent with the 2023 evaluation and the new DSM Framework. The cost of carbon and NEB adder are applied in the TRC-Plus. The PAC test includes carbon and natural gas resources only (i.e., there are no electricity and water benefits) and it does not include the NEB adder. In tables later in this section, the EC has reported avoided costs provided by Enbridge but has not verified these figures.

Prior to the Annual Verification of 2023 programs, negative resource savings (i.e., increases to natural gas, electricity, water and/or carbon) were included as negative benefits under the TRC-Plus – and the NEB adder was applied. In the 2023 and 2024 evaluations, to be consistent with the TRC-Plus ratio calculation included in OEB’s Decision and Order EB-2021-0002<sup>80</sup>, such resource increases are counted as positive costs – and the NEB adder does not apply.

A variety of costs are incurred by Enbridge to deliver programs and how they are allocated at various levels (measure, program, scorecard, and portfolio) can impact their perceived economic benefits. As stated in the 2023 DSM Framework, DSM program costs relevant to the TRC-Plus include: Development and Start-up, Promotion, Delivery, EM&V and Monitoring, and Administration. Of these, Development, some Evaluation costs, Monitoring costs and Administration costs are considered at the portfolio level in cost-effectiveness testing, and not at the program and scorecard levels; all other costs apply at the program and/or scorecard levels. Per the 2023 DSM Framework, costs that are not assigned to an identified program are accounted for at the portfolio level. The National Standards Practice Manual<sup>81</sup> provides guidance on how to properly allocate overhead & administrative (O&A) costs (see text box below).

### Allocating Costs to Assess Cost-Effectiveness

The National Standards Practice Manual (NSPM) for Benefit-Cost Analysis of Distributed Energy Resources recommends that only truly variable costs (i.e., costs that can be avoided) be included at the appropriate levels (e.g., measure, program, portfolio) and costs that are largely fixed at a particular level be excluded. Including fixed costs at the wrong level may result in removal of programs that do not appear cost-effective, reducing the economic benefits of efficiency resource acquisition. Fixed costs at one level should not, however, be excluded altogether and should be included at higher levels where they are variable and thus avoidable. The NSPM provides examples of the costs to include at various levels when assessing cost-effectiveness. These are shown below:

- **Measure level:** Include only costs that increase or decrease in proportion to the number of measures installed. This includes the measure incremental cost and could include some variable program delivery costs such as rebate processing costs (e.g., vendor costs for every rebate processed).
- **Program level:** Costs of administering and evaluating the program should be included at the program level and, in some cases, where marketing is variable. Marketing is often treated as a fixed cost; it can play an important role in raising awareness and driving program participation, but costs do not typically change with participation.
- **Portfolio level:** Portfolio-level costs that are largely fixed and do not change in proportion to the number of programs or participation levels (e.g., portfolio-level marketing, management, and evaluation costs) should be included in portfolio-level analysis.

<sup>79</sup> Removing the consumer carbon price, effective April 1, 2025. Accessed at <https://www.canada.ca/en/department-finance/news/2025/03/removing-the-consumer-carbon-price-effective-april-1-2025.html>

<sup>80</sup> Decision and Order EB-2021-0002 Enbridge Gas Inc. Application for Multi-Year Natural Gas Demand Side Management Plan (2022 to 2027), November 15, 2022.

<sup>81</sup> The National Efficiency Screening Project. 2017. National Standards Practice Manual. Accessed at <https://www.nationalenergyscreeningproject.org/the-national-standard-practice-manual-for-energy-efficiency/>

## Summary of results

Table Q-3 shows summary results for the TRC-Plus (DSM Framework-required) and PAC (OEB-requested) tests. The end of this section contains tables with more detailed results. Enbridge's portfolio of DSM programs did not meet the cost-effectiveness threshold of 1.0 using the TRC-Plus test, achieving a ratio of 0.64. It exceeded the 1.0 threshold using the PAC test with a ratio of 3.04. All of Enbridge's scorecard programs met the TRC-Plus test cost-effectiveness thresholds of 0.7 (Low-Income) or 1.0 (all others) except for the Residential Program, which had a ratio of 0.39. The Residential Program was cost-effective under the PAC test with a ratio of 2.47.

**Table Q-3. Enbridge summary of cost-effectiveness ratio results\***

| Scorecard                  | Final Verified Ratio |             | Final Verified Net Present Value (M\$) |               |
|----------------------------|----------------------|-------------|--|---------------|
|                            | TRC-Plus             | PAC         | TRC-Plus                               | PAC           |
| Residential Program        | 0.39**               | 2.47        | -865.87**                              | 303.74        |
| Low-Income Program         | 1.92                 | 1.86        | 32.57                                  | 28.01         |
| Commercial Program         | 2.22                 | 5.74        | 93.80                                  | 120.17        |
| Industrial Program         | 4.23                 | 13.23       | 172.61                                 | 189.33        |
| Large Volume Program       | 2.57                 | 1.98        | 3.46                                   | 2.43          |
| Energy Performance Program | 1.67                 | 1.08        | 0.51                                   | 0.09          |
| <b>Total Portfolio</b>     | <b>0.64</b>          | <b>3.04</b> | <b>-582.53</b>                         | <b>621.72</b> |

\*Not all values may compute exactly due to rounding.

\*\*Please see discussion below for more information about the cost-effectiveness of this program.

The 2024 program year marks the second time that a program (as defined in the current framework) and the portfolio overall have not reached the threshold for the TRC-Plus cost-effectiveness test, following the same result for the 2023 program year. The EC confirmed that the method to determine the cost-effectiveness results followed the framework and past practice consistently and correctly; however, some key assumptions in 2024 do not match the reality of the current market. Specifically, three things individually biased the portfolio result downward enough to drive it below 1.0. First, an outlier inflation value of 4.26%<sup>82</sup> artificially devalues savings and benefits above more reasonable inflation forecasts while having no effect on costs, which are incurred in the first year. Second, an unusual measure mix within Enbridge's joint HER+ offering with Natural Resources Canada included a high proportion of cost-inefficient measures. Third, the approach to measure costs for some of the measures in the HER+ offering was conservatively high. The EC expects these three concerns to be short-term and not representative of the long-term performance of the portfolio. Each factor is explained in more detail below.

### Inflation

The TRC-Plus test uses one measure of inflation throughout the full analysis timeframe of 30 years. As stated in the footnote to table Q-2, the Annual Verification uses the four-quarter moving average inflation rate based on GDP Implicit Price Index for Final Domestic Demand, based on most recently available information at the time the avoided costs are updated. For 2024, this resulted in an inflation rate of 4.26%, an outlier when comparing to pre-2023 AV cost-effectiveness analyses (which ranged from 1.3%-2.9% since program year 2019) and a value that is not representative of long-term projections of inflation (2-3%)<sup>83</sup>. While the nominal discount rate used throughout that same timeframe uses the same rate of inflation, partially insulating the net present value of TRC benefits and costs from large impacts, the effect of the outlier value is still significant.

<sup>82</sup> Inflation was calculated in accordance with the OEB's 2022 DSM Framework (Section 11.1 – Inflation Rate, p. 33) as the four-quarter moving inflation rate based on the Gross Domestic Product Implicit Price Index for Final Domestic Demand, based on the most recently available information. While the resulting 4.26% inflation rate is anomalous and not representative of Bank of Canada or other forecasts of future inflation (which are closer to 2% per year), the 4.26% rate gets applied to the entire life of energy efficiency measures.

<sup>83</sup> Bank of Canada Projections



The impact of the inflation rate assumption is unlikely to extend beyond the 2023 - 2026 program years for two reasons. First, inflation rates have decreased, so a future analysis using the same methodology (consistent inflation rate for 30 years) will result in values more likely to be accurate and cost-effective. Second, Enbridge has proposed a change to the inflation rate selection starting in 2027 that would use a value of 2% when appropriate.

### **Measures in the Residential Whole Home Offering**

Enbridge's Residential Whole Home offering fell short of the 1.0 threshold in the TRC-Plus test, with a cost-effectiveness ratio of 0.39. This offering has outsized importance within the portfolio such that removing the offering from the analysis would result in a portfolio TRC-Plus ratio of about 2.8. As such, the EC further investigated the root causes of the low cost-effectiveness of this offering.

As outlined in Appendix E, in 2024 the Residential Whole Home offering was delivered as Home Energy Rebate Plus (HER+). HER+, which was in place throughout 2023 and the early part of 2024, was a program delivered by Enbridge in partnership with Natural Resources Canada (NRCan). OEB approved the final list of joint measures and incentive levels. Appendix E shows the 2024 HER+ measure mix, which was dominated by air source heat pumps (76% of homes) and, to a lesser extent, windows and sliding glass doors (nearly 25% of homes). No other measure type was present in more than 20% of homes in the participant population. The Annual Verification of 2023 programs showed that projects only installing these measures were collectively extremely cost ineffective (TRC-plus ratio around 0.25).

In contrast, the Home Energy Conservation (HEC) Program that ran before the HER+ Program was dominated by air sealing and attic insulation and did not offer heat pumps at all. The Annual Verification of 2023 programs showed that projects only installing these measures were collectively very cost-effective (TRC-plus ratio around 2.2).

Under the TRC-Plus test, measure incentives are treated as a pass-through, meaning they do not directly affect cost-effectiveness results. However, the rich customer incentives offered in 2024 likely had a secondary effect of dramatically increasing the uptake and prevalence of heat pumps and windows/doors in the offering mix, resulting in a greater portion of the program assigned to cost-ineffective measures.

The joint Enbridge-NRCan HER+ offering closed to new applicants in early 2024. Enbridge is now delivering a Home Energy Rebate (HER, no "plus") offering with reduced incentives. In particular, incentives for heat pumps have decreased by 55-85% depending on specifications, and incentives for Energy Star Certified windows and sliding glass doors have decreased by about 85% for the most efficient models and 70% for others. While some HER+ participants may persist into 2025, going forward, the Residential Whole Home offering is likely to return to a measure mix more like the previous HEC (described above) and more likely to result in a cost-effectiveness ratio greater than one.

### **Incremental Costs in the Residential Whole Home offering**

The Residential Whole Home offering measure mix's downward effect on the program's (and the portfolio's) TRC-Plus ratio was exacerbated by an overstatement of measure costs. Following precedent, the cost-effectiveness calculations for the offering used full measure costs and full savings for the entire life of the equipment. Importantly, this included the cost inefficient measures discussed above, namely heat pumps and windows/doors.

For most cases, a more accurate methodology would account for natural replacement of the equipment at some point during the life of the new equipment. For example, imagine a measure with a 20-year effective useful life that is replaced after 10 years. For the first 10-year period, the measure should have an existing equipment baseline, with associated full cost of installation and savings relative to the existing equipment. For the second 10-year period, however, the measure should have a new equipment baseline with incremental costs relative to the installation of a standard efficiency window/door and incremental savings relative to the same. The impact to costs and savings would be even more pronounced for participants



planning on making a replacement in the very near future, for which the incremental costs and savings would be relative to standard equipment for the entire life (or nearly) of the measure. In most cases, this is a more appropriate manner to calculate costs and savings.

Accounting for natural replacement in the manner described above would have a significant downward effect on the costs and a less significant downward effect on the savings, leading to an overall higher cost-effectiveness result. Keeping the 2024 measure mix of the Residential Whole Home offering and simply changing the cost basis of these measures may have been enough to push the overall portfolio TRC ratio above 1.0.



## Cost-effectiveness inputs

### Avoided costs

Table Q-4: Enbridge Gas and Union Gas Distribution Rate Zone Avoided Costs

| Year | Residential/Commercial        |       |  |       |
|------|-------------------------------|-------|--|-------|
|      | Baseload (\$/m <sup>3</sup> ) |       | Weather Sensitive (\$/m <sup>3</sup> ) |       |
|      | Rate                          | NPV   | Rate                                   | NPV   |
| 1    | 0.150                         | 0.150 | 0.179                                  | 0.179 |
| 2    | 0.187                         | 0.323 | 0.223                                  | 0.384 |
| 3    | 0.205                         | 0.497 | 0.245                                  | 0.593 |
| 4    | 0.254                         | 0.696 | 0.292                                  | 0.822 |
| 5    | 0.278                         | 0.898 | 0.318                                  | 1.052 |
| 6    | 0.295                         | 1.094 | 0.336                                  | 1.276 |
| 7    | 0.315                         | 1.288 | 0.358                                  | 1.496 |
| 8    | 0.323                         | 1.472 | 0.368                                  | 1.705 |
| 9    | 0.320                         | 1.639 | 0.366                                  | 1.897 |
| 10   | 0.340                         | 1.803 | 0.389                                  | 2.085 |
| 11   | 0.363                         | 1.964 | 0.413                                  | 2.269 |
| 12   | 0.382                         | 2.121 | 0.435                                  | 2.447 |
| 13   | 0.411                         | 2.276 | 0.466                                  | 2.624 |
| 14   | 0.443                         | 2.431 | 0.500                                  | 2.798 |
| 15   | 0.468                         | 2.582 | 0.528                                  | 2.968 |
| 16   | 0.506                         | 2.732 | 0.569                                  | 3.137 |
| 17   | 0.533                         | 2.878 | 0.598                                  | 3.301 |
| 18   | 0.557                         | 3.019 | 0.625                                  | 3.459 |
| 19   | 0.565                         | 3.150 | 0.636                                  | 3.608 |
| 20   | 0.585                         | 3.276 | 0.660                                  | 3.749 |
| 21   | 0.613                         | 3.398 | 0.691                                  | 3.886 |
| 22   | 0.644                         | 3.515 | 0.725                                  | 4.019 |
| 23   | 0.711                         | 3.635 | 0.795                                  | 4.153 |
| 24   | 0.750                         | 3.752 | 0.838                                  | 4.283 |
| 25   | 0.792                         | 3.865 | 0.883                                  | 4.409 |
| 26   | 0.835                         | 3.976 | 0.931                                  | 4.532 |
| 27   | 0.881                         | 4.083 | 0.981                                  | 4.652 |
| 28   | 0.930                         | 4.188 | 1.033                                  | 4.768 |
| 29   | 0.980                         | 4.289 | 1.088                                  | 4.881 |
| 30   | 1.034                         | 4.388 | 1.146                                  | 4.991 |



**Table Q-5: Enbridge Gas and Union Gas Distribution Rate Zone Water and Electricity Avoided Costs**

| Year | Res/Com/Ind            |        |                      |       |
|------|------------------------|--------|----------------------|-------|
|      | Water (\$/1000 litres) |        | Electricity (\$/kWh) |       |
|      | Rate                   | NPV    | Rate                 | NPV   |
| 1    | 1.021                  | 1.021  | 0.130                | 0.130 |
| 2    | 1.064                  | 2.002  | 0.136                | 0.256 |
| 3    | 1.109                  | 2.946  | 0.142                | 0.376 |
| 4    | 1.157                  | 3.853  | 0.148                | 0.492 |
| 5    | 1.206                  | 4.725  | 0.154                | 0.604 |
| 6    | 1.257                  | 5.564  | 0.161                | 0.711 |
| 7    | 1.311                  | 6.371  | 0.168                | 0.814 |
| 8    | 1.367                  | 7.147  | 0.175                | 0.913 |
| 9    | 1.425                  | 7.892  | 0.182                | 1.009 |
| 10   | 1.486                  | 8.609  | 0.190                | 1.100 |
| 11   | 1.549                  | 9.299  | 0.198                | 1.189 |
| 12   | 1.615                  | 9.962  | 0.206                | 1.273 |
| 13   | 1.684                  | 10.599 | 0.215                | 1.355 |
| 14   | 1.756                  | 11.212 | 0.224                | 1.433 |
| 15   | 1.830                  | 11.802 | 0.234                | 1.508 |
| 16   | 1.908                  | 12.369 | 0.244                | 1.581 |
| 17   | 1.990                  | 12.913 | 0.254                | 1.650 |
| 18   | 2.074                  | 13.437 | 0.265                | 1.717 |
| 19   | 2.163                  | 13.941 | 0.276                | 1.782 |
| 20   | 2.255                  | 14.426 | 0.288                | 1.844 |
| 21   | 2.351                  | 14.892 | 0.300                | 1.903 |
| 22   | 2.451                  | 15.339 | 0.313                | 1.961 |
| 23   | 2.555                  | 15.770 | 0.327                | 2.016 |
| 24   | 2.664                  | 16.184 | 0.341                | 2.069 |
| 25   | 2.778                  | 16.582 | 0.355                | 2.119 |
| 26   | 2.896                  | 16.965 | 0.370                | 2.168 |
| 27   | 3.019                  | 17.333 | 0.386                | 2.251 |
| 28   | 3.148                  | 17.687 | 0.402                | 2.261 |
| 29   | 3.282                  | 18.028 | 0.420                | 2.304 |
| 30   | 3.422                  | 18.355 | 0.437                | 2.346 |



**Table Q-6: Enbridge Gas and Union Gas Distribution Rate Zone Carbon Avoided Costs**

| Year | Res/Com/Ind<br>(\$/m <sup>3</sup> ) |       |
|------|-------------------------------------|-------|
|      | Rate                                | NPV   |
| 1    | 0.155                               | 0.155 |
| 2    | 0.184                               | 0.331 |
| 3    | 0.213                               | 0.528 |
| 4    | 0.242                               | 0.742 |
| 5    | 0.271                               | 0.974 |
| 6    | 0.300                               | 1.220 |
| 7    | 0.329                               | 1.479 |
| 8    | 0.329                               | 1.729 |
| 9    | 0.329                               | 1.969 |
| 10   | 0.329                               | 2.200 |
| 11   | 0.329                               | 2.422 |
| 12   | 0.329                               | 2.635 |
| 13   | 0.329                               | 2.840 |
| 14   | 0.329                               | 3.038 |
| 15   | 0.329                               | 3.227 |
| 16   | 0.329                               | 3.410 |
| 17   | 0.329                               | 3.585 |
| 18   | 0.329                               | 3.754 |
| 19   | 0.329                               | 3.916 |
| 20   | 0.329                               | 4.072 |
| 21   | 0.329                               | 4.222 |
| 22   | 0.329                               | 4.366 |
| 23   | 0.329                               | 4.505 |
| 24   | 0.329                               | 4.638 |
| 25   | 0.329                               | 4.766 |
| 26   | 0.329                               | 4.889 |
| 27   | 0.329                               | 5.008 |
| 28   | 0.329                               | 5.122 |
| 29   | 0.329                               | 5.231 |
| 30   | 0.329                               | 5.337 |



## Results tables<sup>84</sup>

**Table Q-7: Overall TRC-Plus results\*†**

| Scorecard                  | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC- Plus Measure Costs (\$) ** | TRC Plus Benefits (\$) | Program Costs (\$) | Overhead (\$) ‡   | TRC Plus Costs (\$)  | TRC Plus Value (\$) | TRC Plus Ratio |
|----------------------------|-------------------------|--------------------------------|---------------------------------|------------------------|--------------------|-------------------|----------------------|---------------------|----------------|
| Residential Program        | 56,483,000              | 799,913,000                    | 1,420,298,000                   | 560,796,000            | 4,393,000          | 1,975,000         | 1,426,666,000        | -865,869,000        | 0.39           |
| Low-Income Program         | 7,889,000               | 26,167,000                     | 26,984,000                      | 67,798,000             | 6,856,000          | 1,386,000         | 35,226,000           | 32,572,000          | 1.92           |
| Commercial Program         | 28,276,000              | 53,856,000                     | 69,162,000                      | 170,396,000            | 3,220,000          | 4,210,000         | 76,592,000           | 93,804,000          | 2.22           |
| Industrial Program         | 56,795,000              | 46,807,000                     | 49,331,000                      | 225,987,000            | 331,000            | 3,718,000         | 53,379,000           | 172,608,000         | 4.23           |
| Large Volume Program       | 11,201,000              | 1,424,000                      | 1,967,000                       | 5,667,000              | 5,000              | 230,000           | 2,203,000            | 3,464,000           | 2.57           |
| Energy Performance Program | 276,000                 | 0                              | 0                               | 1,259,000              | 705,000            | 48,000            | 753,000              | 506,000             | 1.67           |
| <b>Total Portfolio</b>     | <b>160,920,000</b>      | <b>928,166,000</b>             | <b>1,567,742,000</b>            | <b>1,031,903,000</b>   | <b>19,879,000</b>  | <b>26,811,000</b> | <b>1,614,432,000</b> | <b>-582,530,000</b> | <b>0.64***</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

\*\* TRC-Plus Measure Costs include measure incremental costs and any increases in utility system costs. When a measure leads to higher resource use, the resulting negative avoided cost is treated directly as a cost (rather than negative benefits) and is not multiplied by the non-energy benefit adder.

‡ Portfolio overhead costs for administration, development and evaluation & monitoring are not applied at the program or scorecard level – and as such are not factored into the cost-effectiveness results at these levels.

Per the 2023 Framework, these costs are applied at the portfolio level and reflected in the cost-effectiveness of the overall portfolio. Program costs relevant to individual programs and scorecards are applied at the program and scorecard levels, respectively. Where certain costs are not assigned to a program or scorecard, they are accounted for at the portfolio level. As such, the sum of the rows for Overhead, TRC Plus Costs and TRC Plus Value will not equal the total sum for the portfolio in the above table.

\*\*\*Some key assumptions in 2024 which do not match the reality of the current market biased the result lower than previous years. This value is not representative of the long-term performance of the portfolio. Please see the discussion in the Summary of Results section above for more detail.

**Table Q-8: Residential Program TRC-Plus results\*†**

| Offering                      | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC Plus Benefits (\$) | TRC Plus Costs (equipment) (\$) | TRC Plus Value (equipment) (\$) | TRC Plus Ratio (equipment) | Program Costs (\$) | Overhead (\$)    | TRC Plus Ratio w/ O&A costs |
|-------------------------------|-------------------------|--------------------------------|------------------------|---------------------------------|---------------------------------|----------------------------|--------------------|------------------|-----------------------------|
| Residential Whole Home        | 52,647,000              | 792,882,000                    | 528,998,000            | 1,413,267,000                   | -884,269,000                    | 0.37                       | 2,336,000          | 1,892,000        | 0.37                        |
| Residential Single Measure    | 0                       | 0                              | 0                      | 0                               | 0                               | -                          | 74,000             | 0                | 0.00                        |
| Residential Smart Home        | 3,835,000               | 7,031,000                      | 31,799,000             | 7,031,000                       | 24,768,000                      | 4.52                       | 1,984,000          | 83,000           | 3.50                        |
| <b>Verified Final Results</b> | <b>56,483,000</b>       | <b>799,913,000</b>             | <b>560,796,000</b>     | <b>1,420,298,000</b>            | <b>-859,502,000</b>             | <b>0.39</b>                | <b>4,393,000</b>   | <b>1,975,000</b> | <b>0.39</b>                 |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

<sup>84</sup> The cost-effectiveness results use federal carbon tax rates that increase by \$15 per year up to \$170 per tCO<sub>2</sub>e in 2030. Beyond 2030, the carbon price is held constant.



**Table Q-9: Low-Income Program TRC-Plus results\*†**

| Offering                             | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC Plus Benefits (\$) | TRC Plus Costs (equipment) (\$) | TRC Plus Value (equipment) (\$) | TRC Plus Ratio (equipment) | Program Costs (\$) | Overhead (\$)    | TRC Plus Ratio |
|--------------------------------------|-------------------------|--------------------------------|------------------------|---------------------------------|---------------------------------|----------------------------|--------------------|------------------|----------------|
| Home Winterproofing                  | 3,865,000               | 14,133,000                     | 36,771,000             | 14,432,000                      | 22,339,000                      | 2.55                       | 6,034,000          | 733,000          | 1.73           |
| Affordable Housing Multi-Residential | 4,023,000               | 12,034,000                     | 31,027,000             | 12,552,000                      | 18,475,000                      | 2.47                       | 823,000            | 652,000          | 2.21           |
| <b>Verified Final Results</b>        | <b>7,889,000</b>        | <b>26,167,000</b>              | <b>67,798,000</b>      | <b>26,984,000</b>               | <b>40,814,000</b>               | <b>2.51</b>                | <b>6,856,000</b>   | <b>1,386,000</b> | <b>1.92</b>    |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-10: Commercial Program TRC-Plus results\*†**

| Offering                      | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC Plus Benefits (\$) | TRC Plus Costs (equipment) (\$) | TRC Plus Value (equipment) (\$) | TRC Plus Ratio (equipment) | Program Costs (\$) | Overhead (\$)    | TRC Plus Ratio |
|-------------------------------|-------------------------|--------------------------------|------------------------|---------------------------------|---------------------------------|----------------------------|--------------------|------------------|----------------|
| Commercial Custom             | 19,640,000              | 41,274,000                     | 114,477,000            | 56,200,000                      | 58,277,000                      | 2.04                       | 776,000            | 3,033,000        | 1.91           |
| Prescriptive Downstream       | 2,265,000               | 4,318,000                      | 14,939,000             | 4,578,000                       | 10,362,000                      | 3.26                       | 262,000            | 334,000          | 2.89           |
| Direct Install                | 4,793,000               | 5,171,000                      | 27,379,000             | 5,292,000                       | 22,087,000                      | 5.17                       | 396,000            | 600,000          | 4.35           |
| Prescriptive Midstream        | 1,579,000               | 3,092,000                      | 13,600,000             | 3,092,000                       | 10,508,000                      | 4.40                       | 1,786,000          | 243,000          | 2.66           |
| <b>Verified Final Results</b> | <b>28,276,000</b>       | <b>53,856,000</b>              | <b>170,396,000</b>     | <b>69,162,000</b>               | <b>101,234,000</b>              | <b>2.46</b>                | <b>3,220,000</b>   | <b>4,210,000</b> | <b>2.22</b>    |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-11: Industrial Program TRC-Plus results\*†**

| Offering                      | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC Plus Benefits (\$) | TRC Plus Costs (equipment) (\$) | TRC Plus Value (equipment) (\$) | TRC Plus Ratio (equipment) | Program Costs (\$) | Overhead (\$)    | TRC Plus Ratio |
|-------------------------------|-------------------------|--------------------------------|------------------------|---------------------------------|---------------------------------|----------------------------|--------------------|------------------|----------------|
| Industrial Custom             | 56,795,000              | 46,807,000                     | 225,987,000            | 49,331,000                      | 176,656,000                     | 4.58                       | 331,000            | 3,718,000        | 4.23           |
| <b>Verified Final Results</b> | <b>56,795,000</b>       | <b>46,807,000</b>              | <b>225,987,000</b>     | <b>49,331,000</b>               | <b>176,656,000</b>              | <b>4.58</b>                | <b>331,000</b>     | <b>3,718,000</b> | <b>4.23</b>    |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.



**Table Q-12: Large Volume Program TRC-Plus results\*†**

| Offering                      | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC Plus Benefits (\$) | TRC Plus Costs (equipment) (\$) | TRC Plus Value (equipment) (\$) | TRC Plus Ratio (equipment) | Program Costs (\$) | Overhead (\$)  | TRC Plus Ratio |
|-------------------------------|-------------------------|--------------------------------|------------------------|---------------------------------|---------------------------------|----------------------------|--------------------|----------------|----------------|
| Direct Access                 | 11,201,000              | 1,424,000                      | 5,667,000              | 1,967,000                       | 3,700,000                       | 2.88                       | 5,000              | 230,000        | 2.57           |
| <b>Verified Final Results</b> | <b>11,201,000</b>       | <b>1,424,000</b>               | <b>5,667,000</b>       | <b>1,967,000</b>                | <b>3,700,000</b>                | <b>2.88</b>                | <b>5,000</b>       | <b>230,000</b> | <b>2.57</b>    |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-13: Energy Performance Program TRC-Plus results\*†**

| Offering                           | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC Plus Benefits (\$) | TRC Plus Costs (equipment) (\$) | TRC Plus Value (equipment) (\$) | TRC Plus Ratio (equipment) | Program Costs (\$) | Overhead (\$) | TRC Plus Ratio |
|------------------------------------|-------------------------|--------------------------------|------------------------|---------------------------------|---------------------------------|----------------------------|--------------------|---------------|----------------|
| Whole Building Pay for Performance | 276,000                 | 0                              | 1,259,000              | 0                               | 1,259,000                       | 0                          | 705,000            | 48,000        | 1.67           |
| <b>Verified Final Results</b>      | <b>276,000</b>          | <b>0</b>                       | <b>1,259,000</b>       | <b>0</b>                        | <b>1,259,000</b>                | <b>0</b>                   | <b>705,000</b>     | <b>48,000</b> | <b>1.67</b>    |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-14: Overall PAC results\*†**

| Scorecard                  | Annual net savings (m3) | Program-level Incentives (\$) | Program Costs (\$) | PAC Increased Resource Cost (\$) | Overhead (\$)     | PAC Benefits (\$)  | PAC Costs (\$)     | PAC Value (\$)     | PAC Ratio   |
|----------------------------|-------------------------|-------------------------------|--------------------|----------------------------------|-------------------|--------------------|--------------------|--------------------|-------------|
| Residential Program        | 56,483,000              | 196,646,000                   | 4,393,000          | 2,994,000                        | 1,975,000         | 509,743,000        | 206,008,000        | 303,735,000        | 2.47        |
| Low-Income Program         | 7,889,000               | 24,405,000                    | 6,856,000          | 5,000                            | 1,386,000         | 60,665,000         | 32,652,000         | 28,013,000         | 1.86        |
| Commercial Program         | 28,276,000              | 17,923,000                    | 3,220,000          | 0                                | 4,210,000         | 145,526,000        | 25,352,000         | 120,174,000        | 5.74        |
| Industrial Program         | 56,795,000              | 11,437,000                    | 331,000            | 0                                | 3,718,000         | 204,819,000        | 15,485,000         | 189,334,000        | 13.23       |
| Large Volume Program       | 11,201,000              | 2,240,000                     | 5,000              | 0                                | 230,000           | 4,907,000          | 2,475,000          | 2,432,000          | 1.98        |
| Energy Performance Program | 276,000                 | 329,000                       | 705,000            | 0                                | 48,000            | 1,172,000          | 1,081,000          | 91,000             | 1.08        |
| <b>Total Portfolio</b>     | <b>160,920,000</b>      | <b>255,420,000</b>            | <b>19,879,000</b>  | <b>2,999,000</b>                 | <b>26,811,000</b> | <b>926,833,000</b> | <b>305,109,000</b> | <b>621,725,000</b> | <b>3.04</b> |

\*Not all values may compute exactly due to rounding.

†All dollar values are rounded to the nearest thousand.



**Table Q-15: Residential Program PAC results\*†**

| Offering                          | Annual net savings (m3) | Program-level Incentives (\$) | Program costs (\$) | PAC Increased Resource Costs (\$) | Overhead (\$)    | PAC Benefits (\$)  | PAC Costs (\$)     | PAC Value (\$)     | PAC Ratio   |
|-----------------------------------|-------------------------|-------------------------------|--------------------|-----------------------------------|------------------|--------------------|--------------------|--------------------|-------------|
| <b>Residential Whole Home</b>     | 52,647,000              | 195,104,000                   | 2,336,000          | 2,994,000                         | 1,892,000        | 485,984,000        | 202,326,000        | 283,658,000        | 2.40        |
| <b>Residential Single Measure</b> | 0                       | 0                             | 74,000             | 0                                 | 0                | 0                  | 74,000             | -74,000            | 0.00        |
| <b>Residential Smart Home</b>     | 3,835,000               | 1,542,000                     | 1,984,000          | 0                                 | 83,000           | 23,759,000         | 3,608,000          | 20,151,000         | 6.58        |
| <b>Verified Final Results</b>     | <b>56,483,000</b>       | <b>196,646,000</b>            | <b>4,393,000</b>   | <b>2,994,000</b>                  | <b>1,975,000</b> | <b>509,743,000</b> | <b>206,008,000</b> | <b>303,735,000</b> | <b>2.47</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-16: Low-Income Program PAC results\*†**

| Offering                             | Annual net savings (m3) | Program-level Incentives (\$) | Program costs (\$) | PAC Increased Resource Costs (\$) | Overhead (\$)    | PAC Benefits (\$) | PAC Costs (\$)    | PAC Value (\$)    | PAC Ratio   |
|--------------------------------------|-------------------------|-------------------------------|--------------------|-----------------------------------|------------------|-------------------|-------------------|-------------------|-------------|
| Home Winterproofing                  | 3,865,000               | 15,833,000                    | 6,034,000          | 0                                 | 733,000          | 32,348,000        | 22,600,000        | 9,748,000         | 1.43        |
| Affordable Housing Multi-Residential | 4,023,000               | 8,572,000                     | 823,000            | 5,000                             | 652,000          | 28,317,000        | 10,052,000        | 18,265,000        | 2.82        |
| <b>Verified Final Results</b>        | <b>7,889,000</b>        | <b>24,405,000</b>             | <b>6,856,000</b>   | <b>5,000</b>                      | <b>1,386,000</b> | <b>60,665,000</b> | <b>32,652,000</b> | <b>28,013,000</b> | <b>1.86</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-17: Commercial Program PAC results\*†**

| Offering                      | Annual net savings (m3) | Program-level Incentives (\$) | Program costs (\$) | PAC Increased Resource Costs (\$) | Overhead (\$)    | PAC Benefits (\$)  | PAC Costs (\$)    | PAC Value (\$)     | PAC Ratio   |
|-------------------------------|-------------------------|-------------------------------|--------------------|-----------------------------------|------------------|--------------------|-------------------|--------------------|-------------|
| Commercial Custom             | 19,640,000              | 9,564,000                     | 776,000            | 0                                 | 3,033,000        | 101,213,000        | 13,373,000        | 87,840,000         | 7.57        |
| Prescriptive Downstream       | 2,265,000               | 2,234,000                     | 262,000            | 0                                 | 334,000          | 12,311,000         | 2,830,000         | 9,481,000          | 4.35        |
| Direct Install                | 4,793,000               | 5,754,000                     | 396,000            | 0                                 | 600,000          | 23,358,000         | 6,749,000         | 16,609,000         | 3.46        |
| Prescriptive Midstream        | 1,579,000               | 370,000                       | 1,786,000          | 0                                 | 243,000          | 8,644,000          | 2,400,000         | 6,244,000          | 3.60        |
| <b>Verified Final Results</b> | <b>28,276,000</b>       | <b>17,923,000</b>             | <b>3,220,000</b>   | <b>0</b>                          | <b>4,210,000</b> | <b>145,526,000</b> | <b>25,352,000</b> | <b>120,174,000</b> | <b>5.74</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.



**Table Q-18: Industrial Program PAC results\*†**

| Offering                      | Annual net savings (m3) | Program-level Incentives (\$) | Program costs (\$) | PAC Increased Resource Costs (\$) | Overhead (\$)    | PAC Benefits (\$)  | PAC Costs (\$)    | PAC Value (\$)     | PAC Ratio    |
|-------------------------------|-------------------------|-------------------------------|--------------------|-----------------------------------|------------------|--------------------|-------------------|--------------------|--------------|
| Industrial Custom             | 56,795,000              | 11,437,000                    | 331,000            | 0                                 | 3,718,000        | 204,819,000        | 15,485,000        | 189,334,000        | 13.23        |
| <b>Verified Final Results</b> | <b>56,795,000</b>       | <b>11,437,000</b>             | <b>331,000</b>     | <b>0</b>                          | <b>3,718,000</b> | <b>204,819,000</b> | <b>15,485,000</b> | <b>189,334,000</b> | <b>13.23</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-19: Large Volume Program PAC results\*†**

| Offering                      | Annual net savings (m3) | Program-level Incentives (\$) | Program costs (\$) | PAC Increased Resource Costs (\$) | Overhead (\$)  | PAC Benefits (\$) | PAC Costs (\$)   | PAC Value (\$)   | PAC Ratio   |
|-------------------------------|-------------------------|-------------------------------|--------------------|-----------------------------------|----------------|-------------------|------------------|------------------|-------------|
| Direct Access                 | 11,201,000              | 2,240,000                     | 5,000              | 0                                 | 230,000        | 4,907,000         | 2,475,000        | 2,432,000        | 1.98        |
| <b>Verified Final Results</b> | <b>11,201,000</b>       | <b>2,240,000</b>              | <b>5,000</b>       | <b>0</b>                          | <b>230,000</b> | <b>4,907,000</b>  | <b>2,475,000</b> | <b>2,423,000</b> | <b>1.98</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

**Table Q-20: Energy Performance Program PAC results\*†**

| Offering                           | Annual net savings (m3) | Program-level Incentives (\$) | Program costs (\$) | PAC Increased Resource Costs (\$) | Overhead (\$) | PAC Benefits (\$) | PAC Costs (\$)   | PAC Value (\$) | PAC Ratio   |
|------------------------------------|-------------------------|-------------------------------|--------------------|-----------------------------------|---------------|-------------------|------------------|----------------|-------------|
| Whole Building Pay for Performance | 276,000                 | 329,000                       | 705,000            | 0                                 | 48,000        | 1,172,000         | 1,081,000        | 91,000         | 1.08        |
| <b>Verified Final Results</b>      | <b>276,000</b>          | <b>329,000</b>                | <b>705,000</b>     | <b>0</b>                          | <b>48,000</b> | <b>1,172,000</b>  | <b>1,081,000</b> | <b>91,000</b>  | <b>1.08</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.



## Carbon sensitivity analysis

This carbon sensitivity analysis examines the effect of removing avoided carbon costs on the TRC-Plus ratio. Under this scenario, carbon costs are assumed to be zero across all years. The table below presents the summary TRC-Plus results. Without avoided carbon costs, Enbridge's portfolio of DSM programs does not meet the TRC-Plus cost-effectiveness threshold of 1.0, achieving a portfolio ratio of 0.37. The TRC-Plus ratio that includes the cost of carbon was 0.65 for the portfolio. Although TRC-Plus ratios decrease across all programs relative to the base case that includes carbon costs, only the Residential Program and Energy Performance Program – with TRC-Plus ratios of 0.21 (0.4 with carbon) and 0.88 (1.67 with carbon), respectively – fall below their applicable cost-effectiveness thresholds.

**Table Q-21: Overall TRC-Plus results without avoided carbon costs\*†**

| Scorecard                  | Annual net savings (m3) | Measure Incremental Costs (\$) | TRC- Plus Measure Costs (\$) ** | TRC Plus Benefits (\$) | Program Costs (\$) | Overhead (\$) ‡   | TRC Plus Costs (\$)  | TRC Plus Value (\$)   | TRC Plus Ratio |
|----------------------------|-------------------------|--------------------------------|---------------------------------|------------------------|--------------------|-------------------|----------------------|-----------------------|----------------|
| Residential Program        | 56,483,000              | 799,913,000                    | 1,418,743,000                   | 296,020,000            | 4,393,000          | 1,975,000         | 1,425,111,000        | -1,129,091,000        | 0.21           |
| Low-Income Program         | 7,889,000               | 26,167,000                     | 26,981,000                      | 36,705,000             | 6,856,000          | 1,386,000         | 35,223,000           | 1,482,000             | 1.04           |
| Commercial Program         | 28,276,000              | 53,856,000                     | 69,162,000                      | 99,356,000             | 3,220,000          | 4,210,000         | 76,592,000           | 22,765,000            | 1.30           |
| Industrial Program         | 56,795,000              | 46,807,000                     | 49,331,000                      | 149,378,000            | 331,000            | 3,718,000         | 53,379,000           | 95,999,000            | 2.80           |
| Large Volume Program       | 11,201,000              | 1,424,000                      | 1,967,000                       | 5,608,000              | 5,000              | 230,000           | 2,203,000            | 3,405,000             | 2.55           |
| Energy Performance Program | 276,000                 | 0                              | 0                               | 662,000                | 705,000            | 48,000            | 753,000              | -91,000               | 0.88           |
| <b>Total Portfolio</b>     | <b>160,920,000</b>      | <b>928,166,000</b>             | <b>1,566,184,000</b>            | <b>587,729,000</b>     | <b>19,879,000</b>  | <b>26,811,000</b> | <b>1,612,874,000</b> | <b>-1,025,145,000</b> | <b>0.36</b>    |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.

\*\*TRC-Plus Measure Costs include measure incremental costs and any increases in utility system costs. When a measure leads to higher resource use, the resulting negative avoided cost is treated directly as a cost (rather than negative benefits) and is not multiplied by the non-energy benefit adder.

‡ Portfolio overhead costs for administration, development and evaluation & monitoring are not applied at the program or scorecard level – and as such are not factored into the cost-effectiveness results at these levels.

Per the 2023 Framework, these costs are applied at the portfolio level and reflected in the cost-effectiveness of the overall portfolio. Program costs relevant to individual programs and scorecards are applied at the program and scorecard levels, respectively. Where certain costs are not assigned to a program or scorecard, they are accounted for at the portfolio level. As such, the sum of the rows for Overhead, TRC Plus Costs and TRC Plus Value will not equal the total sum for the portfolio in the above table.



**Table Q-22: Overall PAC results without avoided carbon costs\*†**

| Scorecard                  | Annual net savings (m3) | Program-level Incentives (\$) | Program Costs (\$) | PAC Increased Resource Cost (\$) | Overhead (\$)     | PAC Benefits (\$)  | PAC Costs (\$)     | PAC Value (\$)     | PAC Ratio   |
|----------------------------|-------------------------|-------------------------------|--------------------|----------------------------------|-------------------|--------------------|--------------------|--------------------|-------------|
| Residential Program        | 56,483,000              | 196,646,000                   | 4,393,000          | 1,439,000                        | 1,975,000         | 244,967,000        | 204,453,000        | 40,513,000         | 1.20        |
| Low-Income Program         | 7,889,000               | 24,405,000                    | 6,856,000          | 2,000                            | 1,386,000         | 29,572,000         | 32,649,000         | -3,077,000         | 0.91        |
| Commercial Program         | 28,276,000              | 17,923,000                    | 3,220,000          | 0                                | 4,210,000         | 74,487,000         | 25,352,000         | 49,135,000         | 2.94        |
| Industrial Program         | 56,795,000              | 11,437,000                    | 331,000            | 0                                | 3,718,000         | 128,211,000        | 15,485,000         | 112,726,000        | 8.28        |
| Large Volume Program       | 11,201,000              | 2,240,000                     | 5,000              | 0                                | 230,000           | 4,848,000          | 2,475,000          | 2,373,000          | 1.96        |
| Energy Performance Program | 276,000                 | 329,000                       | 705,000            | 0                                | 48,000            | 576,000            | 1,081,000          | -506,000           | 0.53        |
| <b>Total Portfolio</b>     | <b>160,920,000</b>      | <b>255,420,000</b>            | <b>19,879,000</b>  | <b>1,441,000</b>                 | <b>26,811,000</b> | <b>482,660,000</b> | <b>303,551,000</b> | <b>179,109,000</b> | <b>1.59</b> |

\*Not all values may compute exactly due to rounding.

†All dollar and savings values are rounded to the nearest thousand.



## APPENDIX R. Process Evaluation Summary

As confirmed within the most recent Decision and Order, process evaluations remain the responsibility of Enbridge Gas. The Annual Verification includes a summary and general description of all process evaluations completed by Enbridge Gas during the evaluation year. For 2024, this included the Residential Smart Home Evaluation. Below is an excerpt from the report, edited for concision and clarity.

### Residential Smart Home Evaluation

This report documents a process evaluation study of Enbridge Gas Inc.'s ("Enbridge's") Residential Adaptive Thermostat (Adaptive T-stat) Offer. Participants in the Adaptive T-Stat Offer can choose from five different manufacturer smart thermostats. ecobee is the only manufacturer that provides follow-on support in the form of tracking and reporting Wi-Fi connection "ping" rates, and the ecobee ping rates are used by Enbridge to inform proxy performance adjustment factors for all five of the manufactured smart thermostats included in the Adaptive T-Stat Offer. In program years 2021 and 2022, the adjustment factor used in year-end reporting by Enbridge ranged from 82.52% and 86.71%.

The objective of this study was to gain insights into program and participant attributes that affect the adjustment factors for program years 2021 and 2022. The methodology involved mapping out program offer components through a review of relevant documentation, conducting structured interviews with various representatives that participate in managing aspects associated with the offer, and deploying a telephone survey to past participants. The survey provided a mechanism to explore factors that influenced customers' motivation, rationale, barriers, and other influential factors such as familiarity with technology and perception of data privacy, associated with their decisions and experience with the offer.

Given the focus of the sample was on past program participants who purchased their device online from ecobee.com, and for whom no Wi-Fi connection ping (i.e., "no-ping participant") was registered, the survey was deployed to a random sample of 270 "no ping" participants from program years 2021 and 2022. In addition, 30 "successful ping" participants were randomly sampled as a control group. With 87.5% of no-ping respondents indicating the ecobee device is installed, and 95% of those indicating the device is connected to Wi-Fi, it appears the ecobee ping-rates may be understating the overall performance of the offering.

Overall, the Adaptive T-Stat Offer appears to be functioning well, and the survey results indicate the user experience is positive. As such, there are no substantial recommendations to alter the program design. The following recommendations are offered for Enbridge's consideration to explore as potential opportunities to improve the performance associated with the adjustment factors and overall participant experience with the Offer:

1. Consider conducting a study to compare the ecobee ping-rates with a traditional telephone verification survey of a sample of participants installing devices from all five of the manufacturers included in the Adaptive T-Stat Offer to determine the most accurate approach to validate program performance.
2. Consider providing additional pre-purchase installation information on the application portal to help customers understand what is required to replace their current t-stat to avoid customer frustration and reduce device return rates.
3. Consider including an overall compatibility function or list to help ensure customers are selecting an adaptive thermostat that will work with their home heating system.
4. Consider emphasizing the need for the "high-speed internet access" eligibility criterion up-front on the application portal, rather than in the Terms and Conditions, which may be overlooked.

This evaluation highlights both the successes and opportunities within Enbridge's Residential Adaptive T-Stat Offer. Studying verification options, supporting participants with tailored information, and enhancing program accessibility will help ensure greater equity and effectiveness. The recommendations provide considerations and enhancements to maximize impact and participant satisfaction.



## **APPENDIX S. Free Ridership Evaluation for Ontario's Natural Gas Custom C&I DSM Programs**

The final report for the Net-to-Gross Evaluation can be found in the following pages.



FINAL REPORT

# Free Ridership Evaluation for Ontario's Natural Gas Custom C&I DSM Programs

Ontario Energy Board

**Date:** September 29, 2025





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## EXECUTIVE SUMMARY

To verify the impacts of the Enbridge Gas Distribution, Inc. (Enbridge) demand side management (DSM) programs, the Ontario Energy Board (OEB) undertakes various annual evaluation studies. The Net-to-Gross Evaluation of the 2024 Natural Gas Demand Side Management is summarized in this document.

In 2024, Enbridge delivered ratepayer-funded DSM programs to customers, including custom programs delivered to large volume, commercial, and industrial customers that encouraged them to reduce their energy consumption by providing customer-specific energy efficiency and conservation solutions. The custom programs offered provide financial incentives, technical expertise, and guidance with respect to energy-related decision-making and business justification to help customers prioritize energy efficiency projects against their own internal competing factors. Multifamily buildings – other than low-income buildings, which are dealt with separately – are eligible to participate in Enbridge’s custom commercial programs.

The OEB evaluates the custom commercial and industrial program results annually as the programs have significant OEB-approved savings targets. Based on the results of the utilities’ programs, the utilities may be eligible for performance incentives. The portion of shareholder incentives that come from the custom commercial and industrial programs is based on the amount of verified net natural gas savings achieved by each utility relative to the OEB-approved targets.

- **Verified savings** are utility claimed program savings that are audited and confirmed by an independent third party. The process and results of the verification are described in a separate report. The result of the analysis is a ratio that represents the percentage of utility claimed energy savings that are verified by the auditor.
- **Net savings** are those that are caused, or influenced, by the utility, including attributable (non-free rider) program savings and spillover. The process and results of the net savings assessment are described in three separate reports: this report, the 2023 Natural Gas Demand Side Management Net-to-Gross Evaluation report (published 2024), and the CPSV Participant Spillover Results report (published 2018). The result of the analysis is a ratio that represents the percentage of verified savings that were caused by the utility.

The two ratios are applied to the utility draft savings to produce final verified net natural gas savings according to the equation in the following figure.



This report provides the free-ridership-based attribution ratio which once combined with spillover becomes the net savings ratio. The net savings ratio together with claimed savings and the verification ratio serves as an input used to calculate verified net savings. This process is completed as part of a broad Annual Verification process that spans all Enbridge DSM Programs. The customer program results are combined with the results from other utility programs in a “scorecard.” The utilities’ scorecard results determine overall performance and if the utility is eligible for a shareholder incentive.

The following tables show the free-ridership-based attribution.

## All Programs

| Custom program | Free-ridership-based attribution |
|----------------|----------------------------------|
| Commercial     | 77.57%                           |
| Industrial     | 64.45%                           |
| Large Volume   | 14.51%                           |

## Commercial program

| Segment                           | Free-ridership-based attribution | Sample customers | Sample measures | ± at 90% confidence (FPC on) | Population m <sup>3</sup> savings | Percent population m <sup>3</sup> savings |
|-----------------------------------|----------------------------------|------------------|-----------------|------------------------------|-----------------------------------|---|
| Commercial                        | 77.25%                           | 18               | 19              | 12%                          | 7,424,178                         | 28%                                       |
| Institutional                     | 96.46%                           | 9                | 12              | 5%                           | 10,671,120                        | 40%                                       |
| Market Rate Multi-Residential     | 63.78%                           | 12               | 12              | 15%                          | 8,664,520                         | 32%                                       |
| <b>Commercial Program Overall</b> | <b>77.57%</b>                    | <b>38</b>        | <b>43</b>       | <b>7%</b>                    | <b>26,759,818</b>                 | <b>100%</b>                               |

## Industrial program

| Segment                           | Free-ridership-based attribution | Sample customers | Sample measures | ± at 90% confidence (FPC on) | Population m <sup>3</sup> savings | Percent population m <sup>3</sup> savings |
|-----------------------------------|----------------------------------|------------------|-----------------|------------------------------|-----------------------------------|---|
| Agricultural                      | 53.92%                           | 14               | 20              | 22%                          | 36,831,702                        | 45%                                       |
| Industrial                        | 72.72%                           | 17               | 18              | 11%                          | 44,551,347                        | 55%                                       |
| <b>Industrial program overall</b> | <b>64.45%</b>                    | <b>31</b>        | <b>38</b>       | <b>13%</b>                   | <b>81,383,049</b>                 | <b>100%</b>                               |

## Large volume

| Segment                             | Free-ridership-based attribution | Sample customers | Sample measures | ± at 90% confidence (FPC on) | Population m <sup>3</sup> savings | Percent population m <sup>3</sup> savings |
|-------------------------------------|----------------------------------|------------------|-----------------|------------------------------|-----------------------------------|---|
| <b>Large Volume Program Overall</b> | <b>14.51%</b>                    | <b>6</b>         | <b>11</b>       | <b>6%</b>                    | <b>48,089,060</b>                 | <b>100%</b>                               |

## Findings and recommendations

The following table presents a summary of the key findings and recommendations from the study. It shows the party to whom the recommendation applies and its primary beneficial outcome. We classified outcomes into four categories: reduce costs, increase savings, increase (or maintain) customer satisfaction, and decrease risk (multiple types of risk are in this category including risk of adjusted savings, risk to budgets or project schedules, and others). All recommendations address energy savings and program performance.

**Table 1-1. Recommendations summary table**

| # | Energy savings and program performance  |  | Applies to |            | Primary beneficial outcome |                  |                       |               |
|---|---|--|------------|------------|----------------------------|------------------|-----------------------|---------------|
|   | Finding   | Recommendation   | Enbridge   | Evaluation | Reduce costs               | Increase savings | Customer satisfaction | Decrease risk |
| 1 | FR-based attribution in the programs can vary by more than 10 percent across studies for the same program           | Evaluate free-ridership for the programs annually and couple the free-ridership evaluation with process evaluation   |            | ✓          |                            | ✓                |                       |               |
| 2 | FR-based attribution for the programs came primarily through acceleration   | Consider strategies to have greater impact on increasing efficiency and amount (where applicable) of measures  | ✓          |            |                            | ✓                |                       |               |
| 3 | Many customers with high FR report involving Enbridge late in the process   | Consider strategies to reduce customers taking advantage of the rebate for projects that are already fully decided upon.   | ✓          |            |                            | ✓                |                       | ✓             |
| 4 | Return on Investment is mentioned consistently by customers and vendors as a key metric                             | Continue emphasis on ROI effect of incentives with customers. Consider helping to quantify kWh, water and other non-energy benefits of projects to sell projects that do not pass ROI on gas savings alone | ✓          |            |                            | ✓                |                       |               |
| 5 | Reducing Carbon is a driver for some customers  | Continue to leverage Carbon effects as part of the package to motivate customers to participate  | ✓          |            |                            | ✓                |                       |               |
| 6 | The Large Volume program has high free ridership  | 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.                            |            |            |                            |                  |                       |               |
|   |   | Conduct a process evaluation to improve Large Volume influence on customer projects  | ✓          |            |                            | ✓                | ✓                     | ✓             |
|   |   | Consider limiting the measure types or payback periods that are eligible for Large Volume incentives   | ✓          |            |                            | ✓                | ✓                     | ✓             |
| 7 | 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.  | ✓          |            | ✓                          | ✓                |                       |               |
| 8 | Vendor attribution data collection resulted in fewer completed interviews than desired (due to small sample size).  | Consider interviewing participating vendors independent of the participating customer sample and recruitment.  |            | ✓          |                            | ✓                |                       | ✓             |

| # | Energy savings and program performance   |   | Applies to |            | Primary beneficial outcome |                  |                       |               |
|---|--|---|------------|------------|----------------------------|------------------|-----------------------|---------------|
|   | Finding  | Recommendation  | Enbridge   | Evaluation | Reduce costs               | Increase savings | Customer satisfaction | Decrease risk |
| 9 | In the attribution scoring methodology, timing assumptions, specifically the number of years assumed for “never would have implemented” have a significant effect on FR-based attribution. | Consider studying the typical planning horizons for each of the customer segments. The assumed planning horizon for companies is used in the scoring to determine at what point the program receives full influence credit for accelerating a measure’s implementation. |            | ✓          |                            |                  |                       | ✓             |



# 1 INTRODUCTION

On behalf of the Ontario Energy Board (OEB), DNV carried out the Net-to-Gross Study of Enbridge Gas Inc.'s (Enbridge) natural gas demand-side management (DSM) programs delivered in 2024. The study produced free-ridership (FR) ratios for the set of Enbridge custom programs examined, shown in Table 1-1.

**Table 1-1. FR by program, 2024**

| Program                              | 2024 FR |
|--------------------------------------|---------|
| Large Volume                         | ✓       |
| Commercial*                          | ✓       |
| Industrial                           | ✓       |
| Affordable Housing Multi-Residential |         |

\*Custom Market-Rate Multi-Residential (Multifamily) projects are expected to be included as a part of this program.

## 1.1 Evaluation objectives and approach

The overall objectives of this study were to:

- Develop appropriate free-ridership rates for Enbridge custom projects (excluding low-income) carried out in 2024, with disaggregated rates within these groups.
- Establish and maintain transparency throughout the project
- Follow industry best practices

The methodology selected for the FR evaluation relied on end-user self-report surveys and interviews. The end-user self-reports were supplemented by project-specific interviews with vendors to capture the indirect effects of the programs on end-user decision-making. Surveys and interviews were collected from the most recent (2024) program year in order to create FR factors (later to be combined with spillover (SO) factors to create NTG factors ahead of 2024 verification activities) that will be most meaningful for future years.

## 1.2 Study background

To encourage Enbridge Gas Distribution, Inc. (Enbridge) to implement public benefits programs designed to reduce overall energy use, called conservation demand-side management (DSM) programs, the Ontario Energy Board (OEB) reimburses them for the cost of program implementation and provides an incentive, called the shareholder incentive, that reflects the utilities' performance against pre-determined targets. The OEB also compensates the utilities for the revenue lost as a result of the lower natural gas sales.

In the 2024 calendar year, programs delivered by Enbridge targeted all natural gas ratepayers, including residential, multifamily, low income, commercial, and industrial customers. This study is part of an overall conservation program cycle as shown in the following figure. This study is part of step 4.

**Figure 1-1. Conservation program cycle**



To verify the impacts of the Enbridge DSM programs, the OEB sponsors studies to verify the energy savings achieved. Specifically, this study researched attribution rates, which are estimates of the influence the utility had on the energy efficiency projects that were installed and measured as a percentage of the savings “attributable” to the utility. As part of the annual verification report, the results of this study are combined with the results of three other studies<sup>1,2,3</sup> to produce verified net cumulative gas savings for the utilities’ 2024 Custom programs. This study was completed with the intent that its results would be combined with free-ridership rates from the 2023 Custom programs in the Annual verification.

The remainder of this report references the following industry terms. Additional definitions are found in the glossary in APPENDIX A.

- **Free rider:** a customer who would install the same energy efficiency measure without intervention from the utility.
- **Free-ridership:** the portion of a program’s verified energy savings that would naturally occur without intervention from the utility.
- **Spillover:** energy savings that occur as a result of the utility’s intervention, but are not part of the utility’s verified savings. For example, if the utility identifies (and the customer implements) an energy efficiency measure that does not require payment to a vendor for equipment or servicing, the customer would not receive an incentive and the utility would not claim those energy savings. The energy savings are considered spillover.
- **Attribution:** the portion of a program’s verified energy savings that the utility influenced, including the effects of free-ridership and spillover. When multiplied by the utility’s claimed savings, the attribution ratio produces the volume of energy saved as a result of program implementation.
- **Free-ridership-based attribution:** The portion of a program’s verified energy savings that the utility influenced if one only considers free-ridership and not spillover. Free-ridership-based attribution is the complement of free-ridership (free-ridership-based attribution = 100% – free-ridership).

<sup>1</sup> CPSV Participant Spillover Results. Prepared for The Ontario Energy Board by DNV, May 23, 2018.

<sup>2</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification. Prepared for The Ontario Energy Board by DNV, November 25, 2024.

<sup>3</sup> 2023 Natural Gas Demand Side Management NTG Evaluation, DNV for the Ontario Energy Board, November 8, 2024.



## 2 COMMERCIAL CUSTOM PROGRAM

Enbridge's custom DSM program for commercial customers encourages customers to reduce their natural gas consumption by recommending and incentivizing energy saving projects and actions.

This custom program differs from the prescriptive programs by providing additional technical support for projects and financial incentives based on overall natural gas savings realized by the customer rather than a per-unit incentive.<sup>4</sup>

A subset of the projects in this program is part of the multi-residential segment. The free-ridership (FR)-based attribution study included custom projects from the Market-Rate Multifamily (MR MF) section of the program. Under the DSM framework,<sup>5</sup> low-income projects use a deemed (pre-determined) value for Low Income Multifamily (LI MF) free-ridership, so the LI MF segment was not included in the free-ridership-based attribution evaluation.

All non-LI MF projects implemented as part of these programs and claimed in 2024 as custom projects are included in the scope of the FR study.

### 2.1 Free-ridership-based attribution rate

The FR-based attribution ratio represents the ratio of the savings influenced by the utility (considering only free-ridership, not spillover) to the program savings, as shown in the following equation. The methods used to determine evaluation verified savings are presented in a separate report.<sup>6</sup> A 90% FR-based attribution ratio means the utility-influenced savings (considering only free-ridership) were 90% of the program savings.

$$\text{free – ridership – based attribution} = \frac{\text{Utility influenced savings considering only free – ridership, not spillover}}{\text{Program savings}}$$

Table 2-1 shows the FR-based attribution ratio by domain for the Enbridge Commercial Custom program. The table shows the FR-based attribution ratio, statistical precision at the 90% confidence interval, the program-claimed population first year meters cubed (m<sup>3</sup>) savings, and percent of program savings for each customer segment. The percent of program savings represents the relative contribution that each customer segment makes to the overall result.

The ratio result is based on an overall sample size of 38 customers and 43 measures. Additional details on stratification, sample size, and population size are provided in APPENDIX C. Additional statistical details for the results are provided in APPENDIX E.

The Commercial free-ridership-based attribution rate includes the effect of indirect utility influence on non-institutional projects through vendors. Vendor attribution was studied for non-institutional commercial projects due to the design of the program for these segments, which included significant vendor outreach and efforts to influence vendor business practices to increase sales of gas saving measures. APPENDIX F provides more detail on the vendor attribution. Influence on projects through vendors increased the Commercial measure type free-ridership-based attribution rates by 6 percentage points (from 71% to 77%), and increased Market Rate Multifamily free-ridership-based attribution by 8 percentage points (from 56% to 64%).

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<sup>4</sup> Enbridge's Annual Report provides a more detailed description of the program and can be found here: <https://www.oeb.ca/sites/default/files/OEB-Annual-Report-2022-2023-EN.pdf>

<sup>5</sup> EB-2021-0002, OEB Decision, November 15, 2022, Schedule E.

<sup>6</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification. Prepared for The Ontario Energy Board by DNV, November 25, 2024.



**Table 2-1. Free-ridership-based attribution ratio for Commercial custom program\***

| Segment                    | Free-ridership-based attribution | Sample customers | Sample measures | ± at 90% confidence (FPC on) | Population m <sup>3</sup> savings | Percent population m <sup>3</sup> savings |
|----------------------------|----------------------------------|------------------|-----------------|------------------------------|-----------------------------------|---|
| Commercial                 | 77.25%                           | 18               | 19              | 12%                          | 7,424,178                         | 28%                                       |
| Institutional              | 96.46%                           | 9                | 12              | 5%                           | 10,671,120                        | 40%                                       |
| Market Rate Multifamily    | 63.78%                           | 12               | 12              | 15%                          | 8,664,520                         | 32%                                       |
| Commercial Program Overall | 77.57%                           | 38               | 43              | 7%                           | 26,759,818                        | 100%                                      |

\* The table shows statistical precision (± at 90% confidence factor) that does include the effects of a finite population correction factor. See Appendix B for more information.

## 2.2 Components of free-ridership-based attribution

The FR-based attribution rate for each measure is calculated based on participant survey responses to questions regarding the utility's influence on the timing, quantity, and efficiency of the measure installed. This section reports the program's effect on each component and provides an indication of which aspects of the projects show the greatest utility influence.

- **Timing** questions help us understand the impact programs had on when project installations took place by asking participants if they would have implemented measures earlier, later, or at the same time without program assistance.
- **Efficiency** questions are geared towards understanding if the equipment had been installed without program incentives and influence, would this equipment have been more or less efficient compared to what ended up getting installed through the program.
- **Quantity** questions delve into the program's influence on how many measures were installed as part of the project (if applicable based on measure type) compared to how many would have been installed without the program's influence.

The total utility effect on the measure (free ridership based attribution) is calculated by combining the scores on the three components above by multiplying the free ridership on each component (the percent not influenced) and subtracting it from one (100%) as shown in the below equation.

$$\text{Free ridership based attribution} = 100\% - (FR_{\text{Timing}} \times FR_{\text{Efficiency}} \times FR_{\text{Quantity}})$$

Throughout this section, a "Null" value in the table reflects less than five customer responses. For confidentiality reasons, results for less than five responses are not displayed. Customers with more than one installed measure and different survey responses by measure will appear multiple times in the table, resulting in a customer total greater than the number of customers interviewed.

The free-ridership-based attribution ratios shown in Table 2-1 above include vendor influence for the commercial and multifamily segments. In the section below, the tables do not incorporate vendor influence in order to provide insight into participant responses in isolation.

Table 2-2 represents the possible combinations of timing, efficiency, and quantity attribution. A "yes" in the timing, efficiency, or quantity column indicates partial or full FR-based attribution for that source. A "no" indicates no FR-based attribution for that source. For example, the row that has "yes" for timing, efficiency, and quantity reports the portion of the sample that indicated that the program had at least partial influence on the timing, efficiency, and quantity for that measure. For some measures, efficiency or quantity may not be applicable questions; for the purposes of this table, the not applicable measures are included as "no" on the non-applicable dimension.

The table shows the number of customers, measures, and savings that fall into each timing, efficiency, and quantity combination. The percentage of sample-weighted m<sup>3</sup> savings shows the portion of population annual m<sup>3</sup> savings represented by that category.



The table shows that a majority (93%) of program savings were at least partially influenced by the utility (excluding those customers influence through a vendor). Timing is the most common reflection of program influence, with respondents reporting that approximately 90% of the program savings were accelerated by the program. Efficiency affects approximately 13% of the program savings, and the program influenced quantity for approximately 19% of program savings.

**Table 2-2. Overview of the sources of attribution for Commercial custom program, excluding vendor-based attribution\***

| Timing | Efficiency | Quantity | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------|------------|----------|--------------|-------------|------------------------|
| Yes    | Yes        | Yes      | Null         | Null        | 4%                     |
|        |            | No       | 6            | 6           | 7%                     |
|        | No         | Yes      | 6            | 7           | 13%                    |
|        |            | No       | 18           | 19          | 66%                    |
| No     | Yes        | No       | Null         | Null        | 2%                     |
|        | No         | Yes      | Null         | Null        | 2%                     |
|        |            | No       | 8            | 8           | 7%                     |

■ Partial or Full Attribution    ■ No Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

### 2.2.1 Timing component

Respondents answered a sequence of questions that addresses the timing of the equipment installation. (See APPENDIX H for the full survey instrument.) First, respondents answered the likelihood of installing the same type of equipment at the same time without the program (DAT1a). Respondents who answered "Later" specified the number of months later in the next question (DAT1b).<sup>7</sup> During the acceleration period, the energy savings for early replacement installations includes additional savings credit which reflects the utility-influenced replacement of older, less efficient equipment.

More than 10 customers, accounting for 11% of program savings, said they would have installed their measure(s) at the same time. Projects representing approximately 48% of savings received full attribution by answering that they either never would have installed the measure (20% of savings), would have delayed the project by 48 months or more (15% of savings), or would have delayed the project by between 24 months and 48 months (13%). The remaining 42% of savings received partial timing attribution (Table 2-3).

<sup>7</sup> See the Scope of Work attached in APPENDIX H for the detailed scoring algorithm.



**Table 2-3. Determining the acceleration period, Commercial custom program, excluding vendor-based attribution \*†**

DAT1a. Without the utility when would you have performed the measure?

DAT1b. Approximately how much later?

| DAT1a              | DAT1b              | Timing Attribution                        | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------------------|--------------------|---|--------------|-------------|------------------------|
| Same Time          | N/A                | 0%  | 10           | 10          | 11%                    |
| Later              | Months <24         | ER baseline credit for months accelerated | 11           | 11          | 31%                    |
|                    | 24≤ Months <48     | 100% ER baseline credit                   | Null         | Null        | 13%                    |
|                    | Months ≥48         | 100% ER baseline credit                   | 7            | 9           | 15%                    |
|                    | Don't Know/Refused | ER baseline credit for avg. of DAT1b      | Null         | Null        | 10%                    |
| Never              | N/A                | 100%                                      | Null         | Null        | 20%                    |
| Don't Know/Refused | N/A                | ER baseline credit for avg. of DAT1a      | Null         | Null        | 1%                     |

■ No Timing Attribution

■ Full or Partial Timing Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

†ER is an acronym for early replacement. N/A represents not applicable.

## 2.2.2 Efficiency component

Respondents answered a sequence of questions that address the utility's influence on the efficiency level of the installed equipment. (See APPENDIX H for the full survey instrument.) First, respondents were asked whether they would have installed the same level of efficiency without the utility (DAT2a). Respondents who answered that they would have installed a less efficient option answered two follow-up questions: first, "What would you have installed?" (DAT2c), followed by the scored follow-up question (DAT2b) to put their answer into a predetermined category. DAT2c was used to confirm the responses to DAT2b.

The utility had limited influence on efficiency (Table 2-4). Most of the survey respondents (59% of savings) said the utility had no influence on the efficiency level of the equipment installed. Respondents who indicated the utility improved the efficiency level of their measures accounted for approximately 12% of program savings. The remaining respondents, accounting for 29% of program savings, either did not know or did not respond to efficiency attribution.



**Table 2-4. Determining efficiency attribution, Commercial custom program, excluding vendor-based attribution\*†**

DAT2a. Without the utility, would you have installed the same efficiency, lesser or greater?

DAT2b. What efficiency would you have installed?

| DAT2a          | DAT2b                                     | Efficiency Attribution | Sample Custs | Sample Meas | Percent of Weighted M3 |
|----------------|---|------------------------|--------------|-------------|------------------------|
| Same           | N/A                                       | 0%                     | 20           | 21          | 59%                    |
| Lower          | Baseline Efficiency                       | 100%                   | Null         | Null        | 6%                     |
|                | Between Baseline and Installed Efficiency | 50%                    | Null         | Null        | 3%                     |
|                | Don't Know/Refused                        | Average of Dat2b       | Null         | Null        | 3%                     |
| Not Applicable | N/A                                       | Not Asked              | 11           | 14          | 29%                    |

■ No Efficiency Attribution

■ Full or Partial Efficiency Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

† N/A represents not applicable.

### 2.2.3 Quantity component

Respondents answered a sequence of questions that addressed the utility's effects on the quantity or size of the equipment installed. (See APPENDIX H for the full survey instrument.) First, respondents were asked whether they would have installed the same amount of equipment (or capacity for measures for which quantity is less relevant, such as boilers) without the utility (DAT3a). Respondents who answered that they would have installed less (or in some cases more/larger) equipment answered a follow-up question (DAT3b) to specify how the utility changed the amount/size that they installed.

The program had limited influence on the quantity of measures installed. Twenty customers, accounting for 49% of program savings, said they would have purchased the same quantity of equipment without the program (Table 2-5). Customers representing 4% of program savings received partial attribution. Another 33% of savings were from measures for which quantity is not applicable. Examples of not applicable measures include building automation systems, a roof, or a system optimization.



**Table 2-5. Determining quantity/size attribution, Commercial custom program, excluding vendor-based attribution\*†**

DAT3a. Without the utility would you have installed the same amount, more or less?

DAT3b. What amount would you have installed?

| DAT3a              | DAT3b              | Quantity Attribution | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------------------|--------------------|----------------------|--------------|-------------|------------------------|
| Same               | N/A                | 0%                   | 20           | 20          | 49%                    |
| Less/Fewer/Smaller | Don't Know/Refused | Average of dat3b     | Null         | Null        | 1%                     |
|                    | Partial change     | 0%<Value<100%        | Null         | Null        | 3%                     |
| None               | N/A                | 100%                 | Null         | Null        | 14%                    |
| Not Applicable     | N/A                | Not Asked            | 14           | 14          | 33%                    |

■ No Quantity Attribution

■ Full or Partial Quantity Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

† N/A represents not applicable.

## 2.3 Vendor attribution

Evaluation interviews with the Enbridge program teams indicated that the program design for the Commercial and Multi-Residential segments focuses on working with and influencing vendors who in turn influence customers in their DSM project decisions. Since the other programs and segments are focused on selling DSM directly to customers, not through influencing vendors, it was decided in consultation with the EAC to focus vendor survey resources on designing an approach specific to these Enbridge segments.

The FR participant interviews included a series of framing questions that served to help respondents think through the decision-making process for their projects. Through the responses to these questions, the interview was able to identify projects where a vendor played a role in the decision making. This data was collected for each program and was used to trigger vendor interviews.

Across all programs and segments, vendors play a role in the decision making for most projects. This indicates that there could be opportunity for programs to increase net savings through proactively working with vendors as is the case with these segments' program strategy.

The tables below show the results for the data collected from vendors associated with 2024 program participation. Due to low sample sizes these data were combined with data collected from vendors associated with 2023 program participation to impute vendor attribution for 2024 sampled measures that had vendor effect, but no vendor interview was completed with the vendor for that measure.

Table 2-6 shows that more than half the sampled participants in the Institutional segment indicated that a vendor was involved in their decision making on the project.



**Table 2-6. Vendor interviews for Custom Commercial – Institutional program**

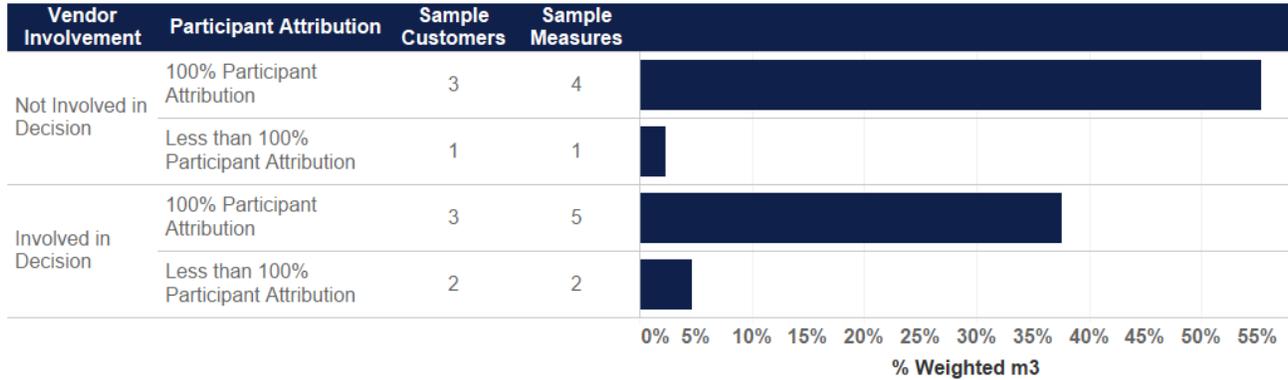
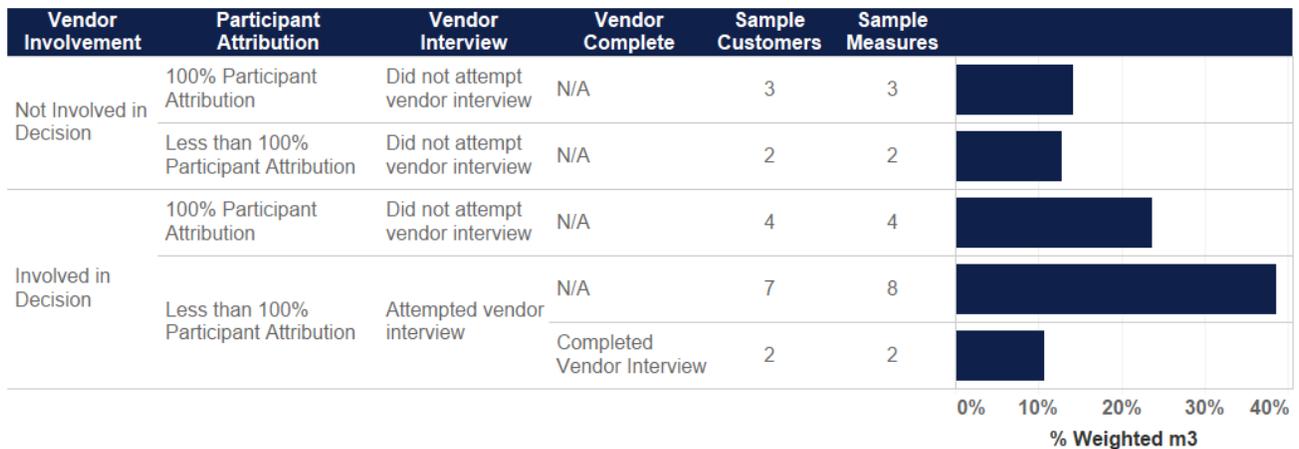


Table 2-7 and Table 2-8 show that more than half the sampled measures in the Commercial and Multi-Residential segments had vendor involvement in project decision making.

**Table 2-7. Vendor interviews for Custom Commercial – Commercial program**



**Table 2-8. Vendor interviews for Custom Commercial – Market Rate Multi-Residential program**



Table 2-9 shows that vendor attribution increased attribution by 6 percentage points for the Commercial segment and by 8 percentage points for the Multi-Residential segment. The results for these segments indicate that Enbridge is affecting



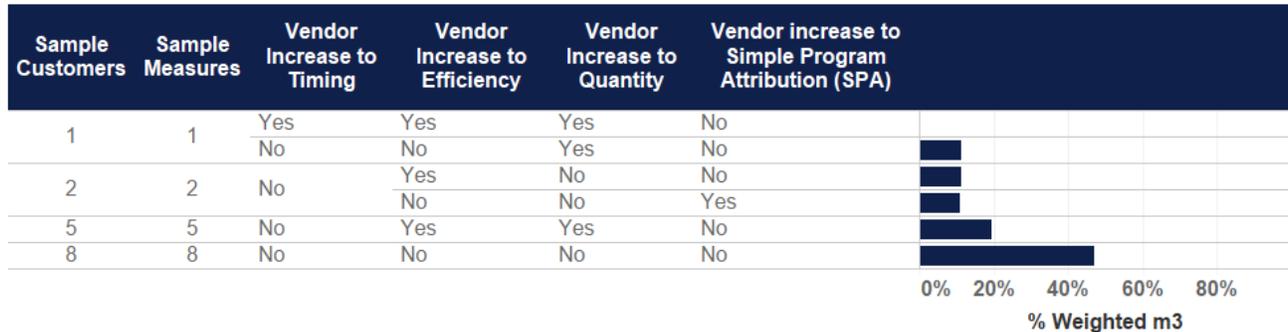
vendor recommendations and that customers, particularly in the multifamily segment, rely on vendor involvement in making equipment and maintenance decisions.

**Table 2-9. Free-ridership-based attribution with and without vendors for Commercial and Multi-Residential segments**

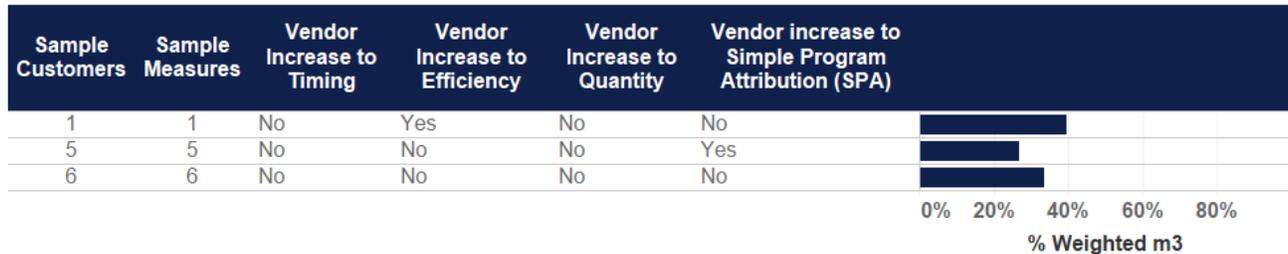
| Segment                       | Approach        | Free-ridership based-attribution | Lower bound at 90% confidence | Upper bound at 90% confidence |
|-------------------------------|-----------------|----------------------------------|-------------------------------|-------------------------------|
| Commercial                    | Vendor Included | 77%                              | 66%                           | 89%                           |
|                               | Without Vendor  | 71%                              | 58%                           | 85%                           |
| Market Rate Multi-Residential | Vendor Included | 64%                              | 49%                           | 79%                           |
|                               | Without Vendor  | 56%                              | 40%                           | 73%                           |

Table 2-10 and Table 2-11 shows the dimensions of attribution where Enbridge’s effect on vendors had the most impact. Efficiency was the most common dimension affected, which is the expected result: vendors cannot affect timing for replace on burnout measures and quantity/size is often pre-determined by site needs as well. Many measures received no increase (8 commercial and 6 multi residential) as the vendor effect was lower than the direct Enbridge attribution on the dimensions where Enbridge affected their vendor.

**Table 2-10. Overview of the sources of vendor attribution – Commercial program**



**Table 2-11. Overview of the sources of vendor attribution – Market Rate Multi-Residential program**





### 3 INDUSTRIAL CUSTOM PROGRAM

Enbridge’s custom DSM program for industrial customers encourages customers to reduce their natural gas consumption by recommending and incentivizing energy saving projects and actions.

This custom program differs from the prescriptive programs by providing additional technical support for projects and financial incentives based on overall natural gas savings realized by the customer rather than a per-unit incentive.<sup>8</sup>

#### 3.1 Free-ridership-based attribution rate

The FR-based attribution ratio represents the ratio of the savings influenced by the utility (considering only free-ridership, not spillover) to the program savings, as shown in the following equation. The methods used to determine evaluation-verified savings are presented in a separate report.<sup>9</sup> A 90% FR-based attribution ratio means the utility-influenced savings (considering only free-ridership) were 90% of the evaluation verified savings.

$$\text{free – ridership – based attribution} = \frac{\text{Utility influenced savings considering only free – ridership, not spillover}}{\text{Program savings}}$$

Table 3-1 shows the FR-based attribution ratio by domain for the Enbridge Custom Industrial programs. The table shows the FR-based attribution ratio, statistical precision at the 90% confidence interval, the program-claimed population first year m<sup>3</sup> savings, and percent of program savings for each customer segment. The percent of program savings represents the relative contribution that each customer segment makes to the overall result.

The ratio result is based on an overall sample size of 31 customers and 38 measures. Additional details on stratification, sample size, and population size are provided in APPENDIX C. Additional statistical details for the results are provided in APPENDIX E. The Enbridge free-ridership-based attribution rate is 54% for the Agricultural segment and 73% for the Industrial segment.

Vendor attribution was studied for Agricultural projects due to the design of the program for this segment, which included significant vendor outreach and efforts to influence vendor business practices to increase sales of gas saving measures. Vendor attribution was not studied for the industrial segment as the program design did not include similar vendor efforts. APPENDIX F provides more detail on the vendor attribution. For the Agricultural segment, we did not find any Enbridge effect on vendors. Despite attempting a census of the 4 triggered vendors, our completed sample only included one vendor and one measure, which is too small of a sample to draw any long-term conclusions as to the broader Enbridge effect on vendors for this segment.

**Table 3-1. Free-ridership-based attribution ratio for Industrial custom program\***

| Segment                           | Free-ridership-based attribution | Sample customers | Sample measures | ± at 90% confidence (FPC on) | Population m <sup>3</sup> savings | Percent population m <sup>3</sup> savings |
|-----------------------------------|----------------------------------|------------------|-----------------|------------------------------|-----------------------------------|---|
| <b>Agricultural</b>               | 53.92%                           | 14               | 20              | 22%                          | 36,831,702                        | 45%                                       |
| <b>Industrial</b>                 | 72.72%                           | 17               | 18              | 11%                          | 44,551,347                        | 55%                                       |
| <b>Industrial program overall</b> | 64.45%                           | 31               | 38              | 13%                          | 81,383,049                        | 100%                                      |

\* The table shows statistical precision (± at 90% confidence factor) that does include the effects of a finite population correction factor. See Appendix B for more information

<sup>8</sup> Enbridge’s Annual Report provides a more detailed description of the program and can be found here: <https://www.oeb.ca/sites/default/files/OEB-Annual-Report-2022-2023-EN.pdf>

<sup>9</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification. Prepared for The Ontario Energy Board by DNV, November 25, 2024.



### 3.2 Components of free-ridership-based attribution

The FR-based attribution rate for each measure is calculated based on participant survey responses to questions regarding the utility's influence on the timing, quantity, and efficiency of the measure installed. This section reports the program's effect on each component and provides an indication of which aspects of the projects show the greatest utility influence.

- **Timing** questions help us understand the impact programs had on when project installations took place by asking participants if they would have implemented measures earlier, later, or at the same time without program assistance.
- **Efficiency** questions are geared towards understanding if the equipment had been installed without program incentives and influence, would this equipment have been more or less efficient compared to what ended up getting installed through the program.
- **Quantity** questions delve into the program's influence on how many measures were installed as part of the project (if applicable based on measure type) compared to how many would have been installed without the program's influence.

The total utility effect on the measure (free ridership based attribution) is calculated by combining the scores on the three components above by multiplying the free ridership on each component (the percent not influenced) and subtracting it from one (100%) as shown in the below equation.

$$\text{Free ridership based attribution} = 100\% - (FR_{\text{Timing}} \times FR_{\text{Efficiency}} \times FR_{\text{Quantity}})$$

Throughout this section, a "Null" value in the table reflects less than five customer responses. For confidentiality reasons, results for less than five responses are not displayed. Customers with more than one installed measure and different survey responses by measure will appear multiple times in the table, resulting in a customer total greater than the number of customers interviewed.

The Free-ridership-based attribution ratios shown in Table 3-1 above include vendor influence for the Agricultural segment. In the section below, the tables do not incorporate vendor influence in order to provide insight into participant responses in isolation.

Table 3-2 represents the possible combinations of timing, efficiency, and quantity attribution. A "yes" in the timing, efficiency, or quantity column indicates partial or full FR-based attribution for that source. A "no" indicates no FR-based attribution for that source. For example, the row that has "yes" for timing, efficiency, and quantity reports the portion of the sample that indicated that the program had at least partial influence on the timing, efficiency, and quantity for that measure. For some measures, efficiency or quantity may not be applicable questions; for the purposes of this table, the not applicable measures are included as "no" on the non-applicable dimension.

The table shows the number of customers, measures, and savings that fall into each timing, efficiency, and quantity combination. The percentage of sample-weighted m<sup>3</sup> savings shows the portion of population annual m<sup>3</sup> savings represented by that category.

The table shows that approximately the majority (74%) of program savings were at least partially influenced by the utility. Timing is the most common reflection of program influence, with respondents reporting that approximately 58% of the program savings were accelerated by the program. Efficiency affects approximately 46% of the program savings, and the program influenced quantity for approximately 29% of program savings.

**Table 3-2. Overview of the sources of attribution for Industrial custom program\*†**

| Timing | Efficiency | Quantity | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------|------------|----------|--------------|-------------|------------------------|
| Yes    | Yes        | Yes      | Null         | Null        | 11%                    |
|        |            | No       | 6            | 8           | 21%                    |
|        | No         | Yes      | Null         | Null        | 6%                     |
|        |            | No       | 7            | 7           | 20%                    |
| No     | Yes        | Yes      | Null         | Null        | 10%                    |
|        |            | No       | Null         | Null        | 4%                     |
|        | No         | Yes      | Null         | Null        | 2%                     |
|        |            | No       | 8            | 10          | 26%                    |

■ Partial or Full Attribution     ■ No Attribution

\* Because of confidentiality reasons and “Null” table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

† The study team attempted to explore vendor influence for Ag, but the completed sample was too small to draw any conclusions from.

### 3.2.1 Timing component

Respondents answered a sequence of questions that addresses the timing of the equipment installation. (See APPENDIX H for the full survey instrument.) First, respondents answered the likelihood of installing the same type of equipment at the same time without the program (DAT1a). Respondents who answered “Later” specified the number of months later in the next question (DAT1b).<sup>10</sup> During the acceleration period, the energy savings for early replacement installations includes additional savings credit, which reflects the utility-influenced replacement of older, less efficient equipment.

The timing component was strongly influenced by the utility. Respondents representing 57% of savings indicated they would never have installed the measure or would have done so later. Twelve (12) customers, accounting for 42% of program savings, said they would have installed their measure(s) at the same time. Projects representing approximately 36% of savings received full attribution by answering that they either never would have installed the measure (22% of savings), would have delayed the project by 48 months or more (2% of savings), or would have delayed the project by between 24 months and 48 months (12%). The remaining 21% of savings received partial timing attribution (Table 3-3).

<sup>10</sup> See the Scope of Work attached in APPENDIX H for the detailed scoring algorithm.



**Table 3-3. Determining the acceleration period, Industrial custom programs\*†‡**

DAT1a. Without the utility when would you have performed the measure?

DAT1b. Approximately how much later?

| DAT1a     | DAT1b              | Timing Attribution                        | Sample Custs | Sample Meas | Percent of Weighted M3 |
|-----------|--------------------|---|--------------|-------------|------------------------|
| Same Time | N/A                | 0%  | 12           | 14          | 42%                    |
| Later     | Months <24         | ER baseline credit for months accelerated | Null         | Null        | 15%                    |
|           | 24≤ Months <48     | 100% ER baseline credit                   | Null         | Null        | 12%                    |
|           | Months ≥48         | 100% ER baseline credit                   | Null         | Null        | 2%                     |
|           | Don't Know/Refused | ER baseline credit for avg. of DAT1b      | Null         | Null        | 6%                     |
| Never     | N/A                | 100%                                      | 10           | 13          | 22%                    |

■ No Timing Attribution

■ Full or Partial Timing Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

†ER is an acronym for early replacement. N/A represents not applicable.

‡ The study team attempted to explore vendor influence for Ag, but the completed sample was too small to draw any conclusions from.

### 3.2.2 Efficiency component

Respondents answered a sequence of questions that address the utility’s influence on the efficiency level of the installed equipment. (See APPENDIX H for the full survey instrument.) First, respondents were asked whether they would have installed the same level of efficiency without the utility (DAT2a). Respondents who answered that they would have installed a less efficient option answered two follow-up questions: first “what would you have installed,” (DAT2c) followed by the scored follow-up question (DAT2b) to put their answer into a predetermined category. DAT2c was used to confirm the responses to DAT2b.

The utility’s influence on efficiency is shown in Table 3-4. Respondents representing 36% of savings said the utility had no influence on the efficiency level of the equipment installed. Respondents who indicated the utility improved the efficiency level of their measures accounted for approximately 43% of program savings.



**Table 3-4. Determining efficiency attribution, Industrial custom program\*†‡**

DAT2a. Without the utility, would you have installed the same efficiency, lesser or greater?  
 DAT2b. What efficiency would you have installed?

| DAT2a              | DAT2b                                     | Efficiency Attribution | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------------------|---|------------------------|--------------|-------------|------------------------|
| Same               | N/A                                       | 0%                     | 10           | 11          | 36%                    |
| Lower              | Baseline Efficiency                       | 100%                   | Null         | Null        | 13%                    |
|                    | Between Baseline and Installed Efficiency | 50%                    | 7            | 8           | 30%                    |
| Don't Know/Refused | N/A                                       | Average of dat2a       | Null         | Null        | 4%                     |
| Not Applicable     | N/A                                       | Not Asked              | 11           | 11          | 17%                    |

■ No Efficiency Attribution      ■ Full or Partial Efficiency Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

† N/A represents not applicable.

‡ The study team attempted to explore vendor influence for Ag, but the completed sample was too small to draw any conclusions from.

### 3.2.3 Quantity component

Respondents answered a sequence of questions that addressed the utility's effects on the quantity or size of the equipment installed. (See APPENDIX H for the full survey instrument.) First, respondents were asked whether they would have installed the same amount of equipment (or capacity for measures for which quantity is less relevant, such as boilers) without the utility (DAT3a). Respondents who answered that they would have installed less (or in some cases more/larger) equipment answered a follow-up question (DAT3b) to specify how the utility changed the amount/size that they installed.

The program had some influence on the quantity of measures installed. Customers representing 29% of program savings received either partial attribution (6% of savings) or full attribution (23%). Eight customers, accounting for 17% of program savings, said they would have purchased the same quantity of equipment without the program (Table 3-5). Another 55% of savings were from measures for which quantity is not applicable. Examples of not applicable measures include building automation systems, a roof, or a system optimization.



**Table 3-5. Determining quantity/size attribution, Industrial custom program\*†‡**

DAT3a. Without the utility would you have installed the same amount, more or less?

DAT3b. What amount would you have installed?

| DAT3a              | DAT3b              | Quantity Attribution | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------------------|--------------------|----------------------|--------------|-------------|------------------------|
| Same               | N/A                | 0%                   | 8            | 8           | 17%                    |
| Less/Fewer/Smaller | Don't Know/Refused | Average of dat3b     | Null         | Null        | 2%                     |
|                    | Partial change     | 0%<Value<100%        | Null         | Null        | 4%                     |
| None               | N/A                | 100%                 | 6            | 8           | 23%                    |
| Not Applicable     | N/A                | Not Asked            | 16           | 19          | 55%                    |

■ No Quantity Attribution

■ Full or Partial Quantity Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

† N/A represents not applicable.

‡ The study team attempted to explore vendor influence for Ag, but the completed sample was too small to draw any conclusions from.

### 3.3 Vendor attribution

Evaluation interviews with the Enbridge program teams indicated that the program design for the Agricultural segment focuses on working with and influencing vendors who in turn influence customers in their DSM project decisions. Since the Industrial segment is focused on selling DSM directly to customers, not through influencing vendors, it was decided in consultation with the EAC to focus vendor survey resources on designing an approach specific to the Agricultural segment.

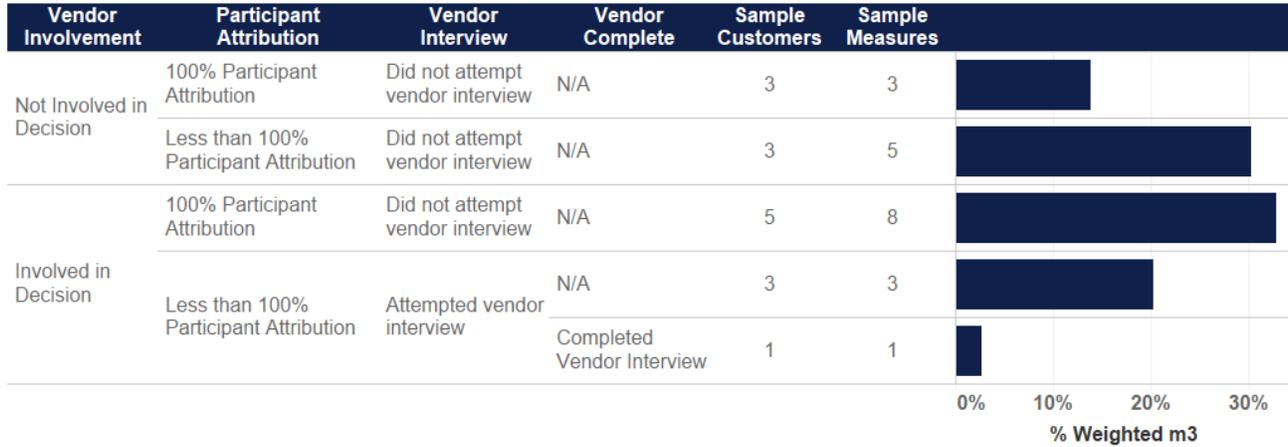
The FR participant interviews included a series of framing questions that served to help respondents think through the decision-making process for their projects. Through the responses to these questions, the interview was able to identify projects where a vendor played a role in the decision making. This data was collected for each program and was used to trigger vendor interviews in the Agricultural segment.

Across all programs and segments, vendors play a role in the decision making for most projects. This indicates that there could be opportunity for programs to increase net savings through proactively working with vendors as is the case with these segments' program strategy.

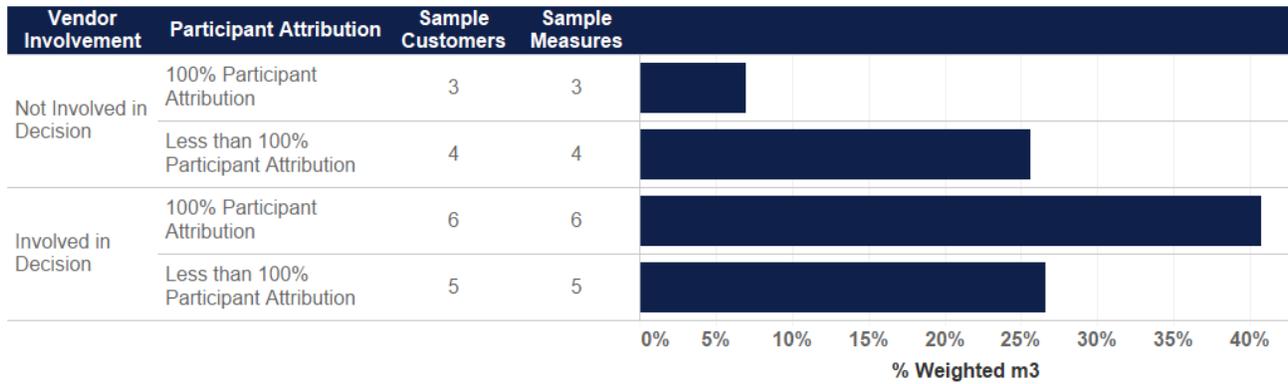
Table 3-6 and Table 3-7 show the vendor interview triggers for Industrial program segments.



**Table 3-6. Vendor interview trigger for Custom Industrial – Agricultural programs**



**Table 3-7. Vendor interview trigger for Custom Industrial – Industrial program**



Due to low sample sizes, the data collected from vendors associated with 2024 program participation were combined with data collected from vendors associated with 2023 program participation. However, neither study found any Enbridge effect on vendors for the Agricultural segment. Despite attempting a census of the triggered vendors in the 2024 sample, our completed sample only included one vendor and one measure. This vendor and the vendors interviewed in 2023 all reported no Enbridge effect.

Five vendors is too small of a sample to draw any long-term conclusions as to the broader Enbridge effect on vendors for this segment. The results of these surveys did not affect the FR rate for the Agricultural segment.

## 4 LARGE VOLUME

Enbridge encourages the adoption of energy efficient equipment, technologies, and actions via its Large Volume program. The Large Volume program in 2024 was applicable to customers in Rate T2/Rate 100 in the Union rate zones.

The program uses a direct access budget mechanism for the customer incentive budget process. This mechanism collected funds from each customer through rates. Customers must use these funds to identify and implement energy efficiency projects, or the funds can be used by other customers in the same rate class. This “use it or lose it” approach ensures each customer has first access to the amount of incentive budget funded by their rates. The Large Volume program is the only “direct access” program offered in Ontario.<sup>11</sup>

Custom projects implemented as part of this program and claimed in 2024 were included in this study.

### 4.1 Free-ridership-based attribution rate

The FR-based attribution ratio represents the ratio of the savings influenced by the utility (considering only free-ridership, not spillover) to the program savings, as shown in the following equation. The methods used to determine evaluation verified savings are presented in a separate report.<sup>12</sup> A 90% FR-based attribution ratio means the utility influenced savings (considering only free-ridership) were 90% of the evaluation verified savings.

$$\text{free – ridership – based attribution} = \frac{\text{Utility influenced savings considering only free – ridership, not spillover}}{\text{Program savings}}$$

Table 4-1 shows the FR-based attribution ratio for the Large Volume program. The table shows the FR-based attribution ratio, statistical precision at the 90% confidence interval, the program-claimed population first year m<sup>3</sup> savings, and percent of program savings.

The ratio result is based on an overall sample size of 6 customers and 11 measures. Additional details on stratification, sample size, and population size are provided in APPENDIX C. Additional statistical details for the results are provided in APPENDIX E.

The Large Volume program had the lowest FR-based attribution among the three programs. This program faces unique challenges to increasing attribution, including the direct access budget mechanism, low gas rates for participating customers, and measures that typically address maintenance concerns. The result is often projects with very low or very high simple payback periods, which often have low FR-based attribution.

**Table 4-1. Free-ridership-based attribution ratio for Large Volume \***

| Segment                             | Sample customers | Sample measures | Free-ridership-based attribution | ± at 90% confidence (FPC on) | Population m <sup>3</sup> savings | Percent population m <sup>3</sup> savings |
|-------------------------------------|------------------|-----------------|----------------------------------|------------------------------|-----------------------------------|---|
| <b>Large Volume Program Overall</b> | 14.51%           | 6               | 11                               | 6%                           | 48,089,060                        | 100%                                      |

\* The table shows statistical precision (± at 90% confidence factor) that does not include the effects of a finite population correction factor. See APPENDIX B for more information.

<sup>11</sup> Enbridge’s Annual Report provides a more detailed description of the program and can be found here: <https://www.oeb.ca/sites/default/files/OEB-Annual-Report-2022-2023-EN.pdf>

<sup>12</sup> 2023 Natural Gas Demand Side Management Custom Savings Verification. Prepared for The Ontario Energy Board by DNV, November 25, 2024.

## 4.2 Components of free-ridership-based attribution

The FR-based attribution rate for each measure is calculated based on participant survey responses to questions regarding the utility’s influence on the timing, quantity, and efficiency of the measure installed. This section reports the program’s effect on each component and provides an indication of which aspects of the projects show the greatest utility influence.

- **Timing** questions help us understand the impact programs had on when project installations took place by asking participants if they would have implemented measures earlier, later, or at the same time without program assistance.
- **Efficiency** questions are geared towards understanding if the equipment had been installed without program incentives and influence, would this equipment have been more or less efficient compared to what ended up getting installed through the program.
- **Quantity** questions delve into the program’s influence on how many measures were installed as part of the project (if applicable based on measure type) compared to how many would have been installed without the program’s influence.

The total utility effect on the measure (free ridership based attribution) is calculated by combining the scores on the three components above by multiplying the free ridership on each component (the percent not influenced) and subtracting it from one (100%) as shown in the below equation.

$$\text{Free ridership based attribution} = 100\% - (FR_{\text{Timing}} \times FR_{\text{Efficiency}} \times FR_{\text{Quantity}})$$

Throughout this section, a “Null” value in the table reflects less than five customer responses. For confidentiality reasons, results for less than five responses are not displayed. Customers with more than one installed measure and different survey responses by measure will appear multiple times in the table, resulting in a customer total greater than the number of customers interviewed.

Table 4-2 represents the possible combinations of timing, efficiency, and quantity attribution. A “yes” in the timing, efficiency, or quantity column indicates partial or full FR-based attribution for that source. A “no” indicates no FR-based attribution for that source. For example, the row that has “yes” for timing, efficiency, and quantity reports the portion of the sample that indicated that the program had at least partial influence on the timing, efficiency, and quantity for that measure. For some measures, efficiency or quantity may not be applicable questions; for the purposes of this table, the not applicable measures are included as “no” on the non-applicable dimension.

The table shows the number of customers, measures, and savings that fall into each timing, efficiency, and quantity combination. The percentage of sample-weighted m<sup>3</sup> savings shows the portion of population annual m<sup>3</sup> savings represented by that category.

The table shows that about one-third of program participation (~30% of savings) was at least partially influenced by the utility. Timing is the most common reflection of program influence, with respondents reporting that approximately 10% of the program savings were accelerated by the program. The utility influenced the quantity/size of approximately 20% of the savings but had no influence on the efficiency levels.



**Table 4-2. Overview of the sources of attribution for Large Volume\***

| Timing | Efficiency | Quantity | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------|------------|----------|--------------|-------------|------------------------|
| Yes    | No         | No       | Null         | Null        | 10%                    |
| No     | No         | Yes      | Null         | Null        | 20%                    |
|        |            | No       | Null         | Null        | 70%                    |

■ Partial or Full Attribution      ■ No Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

### 4.2.1 Timing component

Respondents answered a sequence of questions that address the timing of the equipment installation. (See APPENDIX H for the full survey instrument.) First, respondents answered the likelihood of installing the same type of equipment at the same time without the utility (DAT1a). Respondents who answered "Later" specified the number of months later in the next question (DAT1b).<sup>13</sup> During the acceleration period, the energy savings for early replacement installations includes additional savings credit which reflects the utility-influenced replacement of older, less efficient equipment.

The vast majority surveyed customers, accounting for 90% of program savings, said they would have installed their measure(s) at the same time. Customers representing approximately 10% of savings indicated some amount of utility acceleration on at least one measure but didn't know how much (Table 4-3).<sup>14</sup>

**Table 4-3. Determining the acceleration period, Large Volume\*†**

DAT1a. Without the utility when would you have performed the measure?  
 DAT1b. Approximately how much later?

| DAT1a     | DAT1b              | Timing Attribution                   | Sample Custs | Sample Meas | Percent of Weighted M3 |
|-----------|--------------------|--------------------------------------|--------------|-------------|------------------------|
| Same Time | N/A                | 0%                                   | Null         | Null        | 90%                    |
| Later     | Don't Know/Refused | ER baseline credit for avg. of DAT1b | Null         | Null        | 10%                    |

■ No Timing Attribution      ■ Full or Partial Timing Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

†ER is an acronym for early replacement. N/A represents not applicable.

### 4.2.2 Efficiency component

Respondents answered a sequence of questions that address the utility's influence on the efficiency level of the installed equipment. (See APPENDIX H for the full survey instrument.) First, respondents were asked whether they would have installed the same level of efficiency without the utility (DAT2a). Respondents who answered that they would have installed

<sup>13</sup> See the Scope of Work attached in APPENDIX H for the detailed scoring algorithm.

<sup>14</sup> None of the sites with acceleration knew how much later the measure would have been performed. In these cases, DNV imputed the average from the 2023 NTG study.



a less efficient option answered two follow-up questions: first “what would you have installed,” (DAT2c) followed by the scored follow-up question (DAT2b) to put their answer into a predetermined category. DAT2c was used to confirm the responses to DAT2b.

The utility had no influence on efficiency, affecting none of the program savings (Table 4-4).

**Table 4-4. Determining efficiency attribution, Large Volume\*†**

DAT2a. Without the utility, would you have installed the same efficiency, lesser or greater?  
 DAT2b. What efficiency would you have installed?

| DAT2a          | DAT2b | Efficiency Attribution | Sample Custs | Sample Meas | Percent of Weighted M3 |
|----------------|-------|------------------------|--------------|-------------|------------------------|
| Same           | N/A   | 0%                     | Null         | Null        | 68%                    |
| Not Applicable | N/A   | Not Asked              | Null         | Null        | 32%                    |

■ No Efficiency Attribution

\* Because of confidentiality reasons and “Null” table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.  
 † N/A represents not applicable.

### 4.2.3 Quantity component

Respondents answered a sequence of questions that addressed the utility’s effects on the quantity or size of the equipment installed. (See APPENDIX H for the full survey instrument.) First, respondents were asked whether they would have installed the same amount of equipment (or capacity for measures for which quantity is less relevant, such as boilers) without the utility (DAT3a). Respondents who answered that they would have installed less (or in some cases more/larger) equipment answered a follow-up question (DAT3b) to specify how the utility changed the amount/size that they installed.

The utility had little influence on the quantity of measures installed, only partially affecting 20% of the program savings (Table 4-5). Projects representing 80% of program savings received no quantity attribution by answering that they would have installed the same quantity (49% of savings) or were from measures for which quantity is not applicable (31% of savings). Examples of not applicable measures include building automation systems, a roof, or a system optimization.



**Table 4-5. Determining quantity/size attribution, Large Volume\*†**

DAT3a. Without the utility would you have installed the same amount, more or less?

DAT3b. What amount would you have installed?

| DAT3a              | DAT3b              | Quantity Attribution | Sample Custs | Sample Meas | Percent of Weighted M3 |
|--------------------|--------------------|----------------------|--------------|-------------|------------------------|
| Same               | N/A                | 0%                   | Null         | Null        | 49%                    |
| Less/Fewer/Smaller | Don't Know/Refused | Average of dat3b     | Null         | Null        | 19%                    |
|                    | Partial change     | 0%<Value<100%        | Null         | Null        | 0%                     |
| Not Applicable     | N/A                | Not Asked            | Null         | Null        | 31%                    |

■ No Quantity Attribution

■ Full or Partial Quantity Attribution

\* Because of confidentiality reasons and "Null" table entries, the sum of sample customers and sample measures in this table may not match the sum of sample customers and sample measures in other tables.

† N/A represents not applicable.

### 4.3 Vendor attribution

Evaluation interviews with the Enbridge program teams indicated that the program design for the Large Volume segment does not focus on working with and influencing vendors who in turn influence customers in their DSM project decisions. Vendor surveys were not completed for this Large Volume customers.

Across all programs and segments, vendors play a role in the decision making for most projects. This indicates that there could be opportunity for programs to increase net savings through proactively working with vendors as is the case with these segments' program strategy.

Table 4-6 shows that most projects in the Large Volume program indicated that a vendor was involved in their decision making on the project.

**Table 4-6. Vendor interview trigger for Large Volume**

| Vendor Involvement       | Participant Attribution                | Sample Customers | Sample Measures |               |     |     |     |     |     |     |     |     |     |
|--------------------------|--|------------------|-----------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Not Involved in Decision | Less than 100% Participant Attribution | 1                | 2               |               |     |     |     |     |     |     |     |     |     |
| Involved in Decision     | Less than 100% Participant Attribution | 5                | 9               |               |     |     |     |     |     |     |     |     |     |
|                          |  |                  |                 | 0%            | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% |
|                          |  |                  |                 | % Weighted m3 |     |     |     |     |     |     |     |     |     |

## 5 FINDINGS AND RECOMMENDATIONS

Table 5-1 presents the key findings and recommendations from the study. The table shows the party to whom the recommendation applies and the primary beneficial outcome of the recommendation. We classified outcomes into four categories: reduce costs, increase savings, increase (or maintain) customer satisfaction, and decrease risk (multiple types of risk are in this category including risk of adjusted savings, risk to budgets or project schedules, and others). Details of the findings, recommendations, and outcomes follow the table. All recommendations address energy savings and program performance.

**Table 5-1. Recommendations summary table**

| # | Energy savings and program performance  |  | Applies to |            | Primary beneficial outcome |                  |                       |               |
|---|---|--|------------|------------|----------------------------|------------------|-----------------------|---------------|
|   | Finding   | Recommendation   | Enbridge   | Evaluation | Reduce costs               | Increase savings | Customer satisfaction | Decrease risk |
| 1 | FR-based attribution in the programs can vary by more than 10 percent across studies for the same program | Evaluate free-ridership for the programs annually and couple the free-ridership evaluation with process evaluation   |            | ✓          |                            | ✓                |                       |               |
| 2 | FR-based attribution for the programs came primarily through acceleration                                 | Consider strategies to have greater impact on increasing efficiency and amount (where applicable) of measures  | ✓          |            |                            | ✓                |                       |               |
| 3 | Many customers with high FR report involving Enbridge late in the process                                 | Consider strategies to reduce customers taking advantage of the rebate for projects that are already fully decided upon.   | ✓          |            |                            | ✓                |                       | ✓             |
| 4 | Return on Investment is mentioned consistently by customers and vendors as a key metric                   | Continue emphasis on ROI effect of incentives with customers. Consider helping to quantify kWh, water and other non-energy benefits of projects to sell projects that do not pass ROI on gas savings alone | ✓          |            |                            | ✓                |                       |               |
| 5 | Reducing Carbon is a driver for some customers  | Continue to leverage Carbon effects as part of the package to motivate customers to participate  | ✓          |            |                            | ✓                |                       |               |
| 6 | The Large Volume program has high free ridership  | 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.                            |            |            |                            |                  |                       |               |
|   |   | Conduct a process evaluation to improve Large Volume influence on customer projects  | ✓          |            |                            | ✓                | ✓                     | ✓             |
|   |   | Consider limiting the measure types or payback periods that are eligible for Large Volume incentives   | ✓          |            |                            | ✓                | ✓                     | ✓             |

| # | Energy savings and program performance   |   | Applies to |            | Primary beneficial outcome |                  |                       |               |
|---|--|---|------------|------------|----------------------------|------------------|-----------------------|---------------|
|   | Finding  | Recommendation  | Enbridge   | Evaluation | Reduce costs               | Increase savings | Customer satisfaction | Decrease risk |
| 7 | 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.   | ✓          |            | ✓                          | ✓                |                       |               |
| 8 | Vendor attribution data collection resulted in fewer completed interviews than desired (due to small sample size).   | Consider interviewing participating vendors independent of the participating customer sample and recruitment.   |            | ✓          |                            | ✓                |                       | ✓             |
| 9 | In the attribution scoring methodology, timing assumptions, specifically the number of years assumed for “never would have implemented” have a significant effect on FR-based attribution. | Consider studying the typical planning horizons for each of the customer segments. The assumed planning horizon for companies is used in the scoring to determine at what point the program receives full influence credit for accelerating a measure’s implementation. |            | ✓          |                            |                  |                       | ✓             |

**Finding 1:** FR-based attribution for the programs can vary by more than 10 percent across studies for the same program .

- **Recommendation 1:** Consistent 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 1:** Effective free-ridership management will allow the programs to continue to increase their net savings in future years.

**Finding 2:** FR-based attribution for the programs (with the exception of Large Volume) came primarily through acceleration rather than changes in efficiency or quantity. Acceleration periods tend to be considerably shorter than the estimated useful life (EUL) of a measure which has a significant effect on net cumulative gross savings even if it is less detrimental to the current framework’s first year gas savings goals. Acceleration of measures is less valuable to societal and provincial goals than changes in efficiency and quantity due to its short-term effect.

- **Recommendation 2:** Program goals in the current framework are first-year gas savings rather than cumulative savings, so this recommendation will not have significant effect on stated program goals on which shareholder incentives are based, but will have significant effect on the overall value of the program impacts. To ensure the programs continue to deliver significant cumulative net savings and to mitigate risk of a low weighted average measure life (WAML), the utilities should continue to:
  - Identify unique solutions that save energy at customer plants
  - Expand promotion of energy efficiency measures with low market penetration

- 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.
  - Promote long life measures and consider discontinuing the promotion of short-lived measures
  - Proactively upsell equipment purchases from standard to efficient products
  - Target hard -to-reach customers who have not participated in the past
  - Adopt lessons learned from the Enbridge Commercial and Multifamily approach to market, working proactively with vendors
  - Focus on promoting novel energy energy-saving solutions to industrial and agriculture customer problems. Several customers indicated that the project would not have happened without the utility because a utility representative identified a solution that they had not considered
  - Eliminating incentives for standard efficiency products in non-replace on burnout situations.
- **Outcome 2:** Additional effect on efficiency and quantity of measures will increase net savings and hedge against regulatory risk if future frameworks revert to cumulative savings metrics.

**Finding 3:** Some customers with high FR report involving Enbridge late in the process.

- **Recommendation 3:** Consider strategies to reduce customers taking advantage of the rebate for projects that are already fully decided upon. The program has established proactive marketing and engagement strategies in place to be involved early in the process with many of the largest customers, which helps mitigate this risk. Increasing efforts and resources in order to expand these efforts to the broader mid-size customers could be an option.
- **Outcome 3:** Continuing to enhance and expand proactive engagement approaches will reduce the percentage of free riders in the program and increase gross savings.

**Finding 4:** Return on Investment is mentioned consistently by customers and vendors as a key metric.

- **Recommendation 4:** Continue emphasis on ROI effect of incentives with customers. Consider increasing efforts to quantify kWh, water, and other non-energy benefits of projects to sell projects that do not pass ROI on gas savings alone.
- **Outcome 4:** Adding additional quantifiable impacts to sales pitches can help increase net savings, both through increased volume of gross savings and through more visible and memorable Enbridge support for making business case for DSM projects.

**Finding 5:** Reducing Carbon is a driver for some customers, due to federal, provincial or customer policies.

- **Recommendation 5:** Continue to leverage Carbon effects as part of the package to motivate customers to participate. Carbon mitigation policies will persist at many companies agnostic of government policies.
- **Outcome 5:** Leveraging Carbon and other benefits beyond gas and direct gas bill savings can help to increase and speed sales.

**Finding 6:** The Large Volume program has high free-ridership.

- **Recommendation 6a:** 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.
- **Outcome 6a:** The Large Volume program delivers significant net savings
- **Recommendation 6b:** Conduct a process evaluation to improve Large Volume influence on customer projects
- **Outcome 6b:** A process evaluation may uncover ways for Enbridge to drive net savings at Large Volume sites with less free-ridership.

- **Recommendation 6c:** Consider limiting the measure types or payback periods that are eligible for Large Volume incentives. Continuous maintenance projects and projects where payback is single digit months are projects that will generally get priority without program funds. Eliminating high potential free-ridership projects will enable additional funds to be targeted toward projects that require funding to get done. From a customer service standpoint, it is difficult for utilities to deny incentives to customers unless they have pre-established rules to point to. Clear rules can allow Enbridge to reject potentially poor projects without a large effect on customer satisfaction.
- **Outcome 6c:** Reducing free-rider projects will increase net savings.

**Finding 7:** Vendor attribution increased program attribution significantly for the Enbridge Commercial and Multifamily Segments. Participants of all programs indicated vendor involvement at key decision-making junctures, suggesting that if Enbridge is able to influence vendor recommendations, there may be an opportunity to increase indirect influence on participants in all segments.

- **Recommendation 7:** The utilities should consider what lessons can be learned from the Enbridge multifamily approach to market that is applicable to other segments. Other 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 7:** Effective leveraging of vendors could both increase FR-based attribution and program uptake.

**Finding 8:** Vendor attribution recruitment resulted in fewer completed interviews than desired.

- **Recommendation 8:** Consider interviewing participating vendors independent of the participating customer sample and recruitment. The current evaluation practice is to interview vendors that are identified as influential on customers through the participant interview, which ties the vendor and customer responses together, but also creates a challenge in project delivery since the vendor interviews cannot be started until late in participant data collection. An alternative approach would be to have an independent sample of projects to ask vendors about that could be completed in parallel with participant data collection.
- **Outcome 8:** Larger completed samples of vendors allowing for more robust estimates of Enbridge effect on vendor actions.

**Finding 9:** In the attribution scoring methodology, timing assumptions, specifically the number of years assumed for “never would have implemented” have a significant effect on FR-based attribution.

- **Recommendation 9:** Consider studying the typical planning horizons for Ontario businesses in each segment. Currently, the two-year and four-year assumptions offered are based more on anecdotal evidence than on data. The assumed planning horizon for companies is used in the scoring to determine at what point the program receives full influence credit for accelerating a measure’s implementation.
- **Outcome 9:** More accuracy and confidence in free-ridership-based attribution results.

## APPENDIX A. GLOSSARY OF TERMS AND KEY CONCEPTS

| Term  | Description  |
|---|--|
| <b>Action</b>                                     | A DSM measure that generates savings through optimization, maintenance, or repair of existing systems. Actions (vs. equipment) were categorized for the populations of measures based on tracking database information provided by Enbridge for sample design.   |
| <b>Adjustment factor</b>                          | The adjustment factors are ratios of savings that allow evaluation findings from a sample of projects to be applied to and “adjust” the population of program savings. Realization rates and ratios are other common terms.  |
| <b>Attribution</b>                                | The energy savings or other benefits that are the result of a utility energy program’s influence, including free-ridership and spillover effects (see definitions in this Glossary).   |
| <b>Baseline, base case</b>                        | Energy used / equipment in place if the program measure had not been done.   |
| <b>Building envelope</b>                          | Exterior surfaces (e.g., walls, windows, roof, and floor) of a building that separate the conditioned space from the outdoors.   |
| <b>C&amp;I</b>                                    | Commercial and Industrial  |
| <b>Capacity Expansion</b>                         | Measure that allows customer to increase production/productivity   |
| <b>CCM</b>  | Cumulative cubic meters (cumulative m <sup>3</sup> ). In this report, represents the volume of natural gas savings verified over the life of the measure.  |
| <b>Code</b>                                       | An action or standard required by local or federal laws for safety, environmental, or other reasons. For example, a building code that requires a minimum fuel efficiency for furnaces.  |
| <b>Cost effectiveness</b>                         | Refers to the analysis that determines whether or not the benefits of a project/measure (see Glossary) are greater than the costs. It is based on the net present value of savings over the equipment life of the measure.   |
| <b>Cost effectiveness test - PAC</b>              | A test that compares the utility’s avoided cost benefits with energy efficiency program expenditures (incentives plus administrative costs).   |
| <b>Cost effectiveness test – TRC-Plus</b>         | A test that compares benefits to society as a whole (avoided cost benefits plus non-energy benefits) with the participant’s cost of installing the measure plus the cost of incentives and program administration.   |
| <b>Custom project savings verification (CPSV)</b> | Activities related to the collection, analysis, and reporting of data for purposes of measuring gross custom program impacts.  |
| <b>Customer</b>                                   | Unique customers can be identified based on the account number and the contact information provided by Enbridge. A customer may have multiple site addresses, decision makers, and account numbers. Customers can only be identified for records for which we received contact information. (i.e., records associated with account numbers that have measures in the sample or backup sample). |
| <b>Demand side management (DSM)</b>               | Modification of perceived customer demand for a product through various methods such as financial incentives, education, and other programs.   |
| <b>Domain</b>                                     | Grouping of like projects. A domain may be defined as projects within a specific sector or a category of measure types, end uses, or other.  |

| Term  | Description   |
|---|---|
| <b>Dual baseline</b>                        | Savings calculation approach which addresses or combines the savings associated with early replacement and the savings after the early replacement period. This concept is relevant to the measurement of lifetime gas savings (CCM) but not first-year annual savings.   |
| <b>Early replacement (ER)</b>               | Measure that replaces a piece of equipment that is not past its estimated useful life (EUL) and in good operating condition. A measure category where a utility energy efficiency program has caused a customer to replace operable equipment with a higher efficiency alternative (also referred to as advancement). |
| <b>Early replacement period (ER Period)</b> | Time that the existing equipment would have continued to be in use. This is the same as remaining useful life (RUL). This concept is relevant to the measurement of lifetime gas savings (CCM) but not first-year annual savings.   |
| <b>Energy solutions advisor (ESA)</b>       | Energy Solutions Advisors work with customers on a one-to-one basis to address the unique processes and opportunities within each customer facility, identify energy savings opportunities, and promote Enbridge's DSM offerings.   |
| <b>Estimated useful life (EUL)</b>          | The length of time that a measure (see definition in Glossary) is expected to provide its estimated annual gas savings. EUL depends on equipment lifetime and measure persistence (see Glossary definition). Typically, the median number of years that the measure will remain in service.                           |
| <b>Ex ante</b>                              | Program claimed or reported inputs, assumptions, savings, etc.  |
| <b>Ex post</b>                              | Program inputs, assumptions, savings, etc. which are verified after the claimed savings are finalized. Does not include assessment of program influence.  |
| <b>Free rider</b>                           | A customer who would install or perform the same energy-saving measure (see definition in Glossary) without utility influence.  |
| <b>Free-ridership</b>                       | The portion of a program's verified energy savings that would naturally occur without the utility program.  |
| <b>Free-ridership-based attribution</b>     | The portion of a program's verified energy savings that the utility influenced if one only considers free-ridership and not spillover. Free-ridership-based attribution is the complement of free-ridership.<br>(Free-ridership-based attribution = 100% - Free-ridership).   |
| <b>Gross savings</b>                        | Gross savings are changes in energy consumption and/or demand directly caused by program-related actions by participants, regardless of reasons for participation (savings relative to baseline, defined above).  |
| <b>In situ</b>                              | Existing measure, conditions, and settings.   |
| <b>In-depth interviews (IDIs)</b>           | Structured technical interviews administered by evaluation engineers and market researchers either in person or more frequently, over the phone, IDIs offer more flexibility than CATIs and are best leveraged for complex projects and topics.   |
| <b>Incentive</b>                            | An incentive is often a payment from the utility to participants of a DSM program. Incentives can be paid to customers, vendors, or other parties.  |
| <b>Industry standard practice (ISP)</b>     | A common practice used within an industry but not formally defined by code or regulation.   |
| <b>Input assumptions</b>                    | Assumptions such as operating characteristics and associated units of resource savings for DSM technologies and measures.   |
| <b>Lifetime cumulative savings</b>          | Total natural gas savings (CCM) over the life of a DSM measure. It can be claimed, gross, or net. Sometimes referred to as just "cumulative" or "lifetime."   |

| Term  | Description   |
|---|---|
| <b>Maintenance (Maint.)</b>                         | Repair, maintain, or restore to prior efficiency.   |
| <b>Measure</b>                                      | Equipment, technology, practice, or behaviour that, once installed or working, results in a reduction in energy use. Measures are identified in the tracking data as unique line items for which savings within a custom project are quantified. Multiple measures may belong to the same project.  |
| <b>Measure persistence</b>                          | How long a measure remains installed and performs as originally predicted in relation to its EUL. This considers events like business turnover, early retirement of installed equipment, and other reasons measures might be removed or discontinued.   |
| <b>Measurement and Verification (M&amp;V)</b>       | Verification of savings using methods not including attribution/Free-Ridership assessment.  |
| <b>Metric</b>                                       | This is a term used by the OEB to measure a utility's program achievement. Under the DSM framework, programs are grouped into categories, called scorecards. Each program within a scorecard is assigned at least one metric that is used to measure utility performance. The metric for many programs is annual savings, or a reduction in natural gas consumption, while other programs have non-savings metrics such as the number of program participants. Within each scorecard, various metrics are combined to produce an overall scorecard achievement. |
| <b>MF</b>   | Multifamily (multi-residential)   |
| <b>Natural Replacement</b>                          | A measure category where the equipment is replaced on failure or where a utility energy efficiency program has not influenced the customer decision to replace but once the decision has been made, the utility program influences a higher efficiency alternative. (see replace on burnout)  |
| <b>Net-to-gross</b>                                 | The ratio of net energy savings to gross savings. The NTG ratio is applied to gross program savings to convert them into net program savings.   |
| <b>New construction (NC)</b>                        | New buildings or spaces, or a category of efficiency measures in new construction or major renovations, whose baseline would be the relevant code or standard market practice.  |
| <b>Non-early replacement period (non-ER period)</b> | Time after the ER period up to the EUL.   |
| <b>Non-energy impacts</b>                           | Sometimes called non-energy benefits, these are the wider socio-economic or environmental outcomes that arise from energy efficiency improvements, aside from energy savings. NEIs can include but are not limited to impacts such as improved safety, improved health, and job creation. For example, offering participants may benefit from increased property value, and improved health and comfort. The TRC-Plus test includes a 15% adder to the benefits calculation to account for NEIs.  |
| <b>Normal replacement (NR)</b>                      | Measure that replaces a piece of equipment that is past EUL and in good operating condition.  |
| <b>Offering</b>                                     | One or more DSM activities or measures which a utility may use to affect a specifically identified target market in their choices around the amount and timing of energy consumption.   |
| <b>Persistence</b>                                  | The extent to which a DSM measure remains installed and performing as originally predicted in relation to its EUL.  |
| <b>Portfolio</b>                                    | A group of DSM programs which have been selected and combined in order to achieve the objectives of a utility's DSM Plan.   |

| Term                               | Description   |
|------------------------------------|---|
| <b>Program</b>                     | The programs outlined in Enbridge's Multi-Year Plan are comprised of one or more offerings and address the needs of a subset of Enbridge's customer base.   |
| <b>Program evaluation</b>          | Activities related to the collection, analysis, and reporting of data for purposes of measuring program impacts from past, existing, or potential program impacts.  |
| <b>Program spending</b>            | The amount spent running energy-savings programs, not including the costs of running (called overhead costs) the larger portfolio of programs. This value can be divided into spending for program measures and incentives, as well as program-specific costs.  |
| <b>Project</b>                     | Projects are identified in the tracking data based on the project code. A project may have multiple measures as indicated by sub-codes in the current data tracking system.   |
| <b>Rate class</b>                  | The OEB establishes distribution rate classes for Enbridge. Distribution rate classes group customers with similar energy profiles.   |
| <b>Realization rate</b>            | A combination of adjustment factors, which represents ratios between two savings values. For example, the final realization rate is the ratio between evaluated savings and program claimed savings.  |
| <b>Remaining useful life (RUL)</b> | The number of years that the existing equipment would have remained in service and in good operating condition had it not been replaced. This is the same as the ER period.   |
| <b>Replace on burnout (ROB)</b>    | Measure that replaces a failed or failing piece of equipment. (see natural replacement)   |
| <b>Retrofit</b>                    | A measure category that includes the addition of an efficiency measure to an existing facility such as insulation or air sealing to control air leakage.  |
| <b>Retrofit add-on (REA)</b>       | Measure that reduces energy use by modifying an existing piece of equipment.  |
| <b>Scorecard</b>                   | A scorecard allows for multiple different kinds of metrics such as natural gas savings and/or participants enrolled to be used simultaneously to measure annual utility performance. Each utility has a scorecard identified for each program year, which can be found in the Ontario Energy Board Decision and Order EB-2021-0002.   |
| <b>Scorecard Achievement</b>       | The verified value for program-specific metric targets (annual savings, applications, etc.) of each scorecard identified by the Annual Scorecard. This is the value that is verified as the achieved value by the Annual Verification report and used for calculation of the shareholder incentive.   |
| <b>Shareholder Incentive</b>       | As part of the current DSM Framework, an annual performance incentive is available to the gas utilities in the event program performance is at or above 75% of the OEB-approved targets up to a maximum of 125%.  |
| <b>Site</b>                        | Sites are identified based on unique site addresses provided by Enbridge through the contact information data request. A site may have multiple units of analysis, measures, and projects. Sites can be identified by the evaluation only for records for which we receive a site id.   |
| <b>Spillover effects</b>           | These are reductions in energy consumption and/or demand that occur as a result of the presence of a utility DSM program, but are beyond program-related savings and are not part of the utility's verified savings. These effects could result from many factors including additional efficiency actions that program participants take outside the program as a result of having participated, changes in store availability of energy-using equipment, and changes in energy use by program non-participants as a result of utility program advertising. |
| <b>System optimization (OPT)</b>   | Improve system or system settings to exceed prior efficiency.   |



| Term                    | Description   |
|-------------------------|---|
| <b>TRM</b>              | Technical Resource Manual, which is a document that identifies standard methodologies and inputs for calculating energy savings.            |
| <b>TSER</b>             | Telephone-supported engineering review.   |
| <b>Unit of analysis</b> | The level at which the data are analyzed, which in 2024 FR study was a “measure” or sub-project level for Enbridge.                         |
| <b>Vendors</b>          | Program trade allies, business partners, contractors, and suppliers who work with program participants to implement energy saving measures. |



## APPENDIX B. TECHNICAL INTRODUCTION

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This study provides free-ridership-based attribution ratios from Enbridge's natural gas DSM programs delivered in 2024. The programs included are shown in Table B-1. In free-ridership-based attribution studies, Custom Market-Rate Multi-Residential (Multifamily) projects are included, but custom low-income multifamily (LI MF) projects are not. LI MF uses a deemed value for free-ridership.

**Table B-1. FR by program, 2024**

| Program      | 2024<br>FR |
|--------------|------------|
| Large Volume | ✓          |
| Commercial*  | ✓          |
| Industrial   | ✓          |

### Affordable Housing Multi-Residential

\*Custom Market-Rate Multi-Residential (Multifamily) projects are expected to be included as a part of this program.

## Evaluation background

Enbridge delivers energy efficiency programs under the Demand Side Management Framework<sup>15</sup> developed by the OEB. The OEB hired an Evaluation Contractor (EC) team led by DNV to develop an overall evaluation, measurement, and verification (EM&V) plan. The objectives of the plan were to:

- Assess portfolio impacts to determine annual savings results, shareholder incentive and lost revenue amounts, and future year targets.
- Assess the effectiveness of energy efficiency programs on their participants and/or market, including results on various scorecard items.
- Identify ways in which programs can be changed or refined to improve their performance.

Under the plan, the DNV team determined free-ridership-based attribution for custom projects implemented as part of the 2024 program year. This report is a result of that study.

The EAC consists of representatives from Enbridge as well as representatives from non-utility stakeholders, independent experts, staff from the Independent Electricity System Operator (IESO), and observers from the Environmental Commissioner of Ontario and the Ministry of Energy. The DNV team worked closely with the EAC throughout this study and received comment, advice, and input on methodology and results. We thank them for their involvement.

## Methodology summary

The results presented in this report are based on data collection from the following four primary sources:

- Enbridge tracking databases
- Enbridge project documentation
- In-depth telephone interviews with a sample of participating customers
- In-depth telephone interviews with a sample of participating vendors

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<sup>15</sup> EB-2021-0002, OEB Decision, November 15, 2022, Schedule E.



The data collection with samples of participating customers and vendors included telephone interviews focused on assessing free-ridership. Table B-2 shows the targeted and completed data collection activities.

**Table B-2. Data collection activities\***

| Target Group                   | Activity           | Targeted Measures                                     | Completed Measures |
|--------------------------------|--------------------|---|--------------------|
| <b>Enbridge</b>                |                    |   |                    |
| <b>Participating Customers</b> | In-Depth Interview | 99  | 92                 |
| <b>Participating Vendors</b>   | In-Depth Interview | Census of Triggered Comm & Multi-Res. And Ag Segments | 7                  |

\*This table reports the number of measures targeted and completed as measures were used to design the sample before customers and sites had been identified.

At a high level, the FR study employed the following methodology:

- **Receive program data and documentation.** The evaluation started with a review of the program tracking data, which formed the basis of the sample.
- **Design and select the sample.** The tracking data was used to design and select a sample. Once the sample was selected, additional documentation was provided by the program to describe the energy efficiency measures to customers.
- **Collect data.** Data was collected to estimate FR-based attribution ratios.
- **Analyze the results.** The collected data was used to estimate FR-based attribution ratios at each site and expand the results to the population.
- **Report the results.** The final step was to report the results.

Key features of the methodology include:

- The **sample design** employed a stratified random sample that targeted 17% relative precision with 90% confidence at the program level. Details of the sampling methods are presented in the sample design memo in APPENDIX H. Final sample achievements are provided in APPENDIX C.
- **Ratio estimation** was used to expand sample results to the population. The evaluation collected data on all sampled or backup projects that a customer contact could speak to rather than only the first selected. In our calculation of sampling error ( $\pm$ , confidence intervals, relative precision and error ratios), we used two-tailed 90% confidence limits and clusters defined by customers to appropriately estimate error when multiple units are collected from a single source.<sup>16</sup> The approach used is described in the scope of work in APPENDIX H.
- The **FR methodology** included data collection from participating customers and vendors. The data collection instruments and free-ridership scoring methods are provided with the scope of work in APPENDIX H. The results of this study are intended to be combined with the FR-based attribution portion of the net to gross (NTG) study performed on the 2023 programs and with future FR evaluations of custom projects.<sup>17</sup>

## Key methodological changes from the 2023 NTG study

The evaluation followed the same framework as the 2023 NTG study, with only one methodological change. The only change was to average vendor scores from both the 2023 and 2024 studies to use in scoring for customers who were influenced by vendors, had less than 100% attribution and where DNV could not complete an interview with their vendor. We

<sup>16</sup> Where a single site had two contacts, the site was used as a cluster to ensure conservative (higher) error estimates.

<sup>17</sup> 2023 Natural Gas Demand Side Management NTG Evaluation, DNV for the Ontario Energy Board, November 8, 2024.



included the 2023 scores in the average because none of the three segments where vendor interviews are conducted had more than four completes in 2024.

## Understanding statistical error

Statistical error is reported for all ratio results in this report. The studies were designed with sample designs targeting 10% relative precision with 90% confidence (90/10) over three studies based on the best available assumptions at the start of the evaluation. Table B-3 describes each of the statistics provided in this report.

**Table B-3. Relevant statistics**

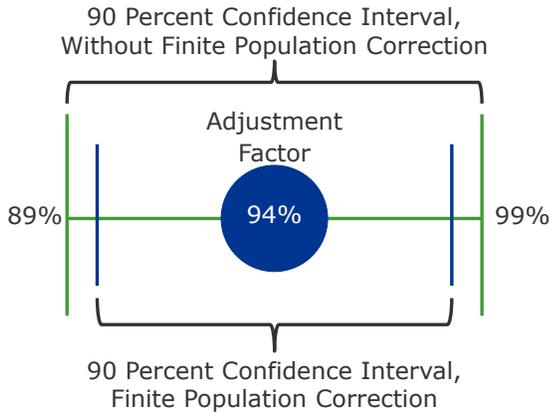
| Term                               | Definition  |
|------------------------------------|---|
| Ratio/Adjustment factor            | A point estimate of the evaluation findings expressed as a percent.   |
| ± or Absolute Precision            | If the evaluation were repeated several times, selecting samples from the same population, 90% <sup>18</sup> of the time the ratio would be within this range of the ratio  |
| Confidence interval                | The upper bound is defined by the ratio plus the absolute precision. The lower bound is defined by the ratio minus the absolute precision.  |
| Relative Precision                 | The relative precision is calculated as the absolute precision divided by the ratio itself. By convention, relative precisions are the statistic that are targeted in sampling (i.e., 90/10 is a relative precision metric)   |
| Error Ratio                        | The error ratio is an approximation of the coefficient of variation (CV) that is used in sample design. It is calculated as a function of relative precision.   |
| Finite population correction (FPC) | FPC is a factor that reduces the measured error of samples drawn from small populations (less than 300). FPC applies when the ratio is applied to the same population from which the sample was drawn. Statistics reported in the body of this report do not apply the FPC factor because this study is intended to support application of results to more than just the 2024 program year. |

Figure B-1 shows an example of:

- The adjustment factor (ratio) as a blue point
- The 90% confidence interval *with finite population correction* (blue)
- The 90% confidence interval *without finite population correction* (green)

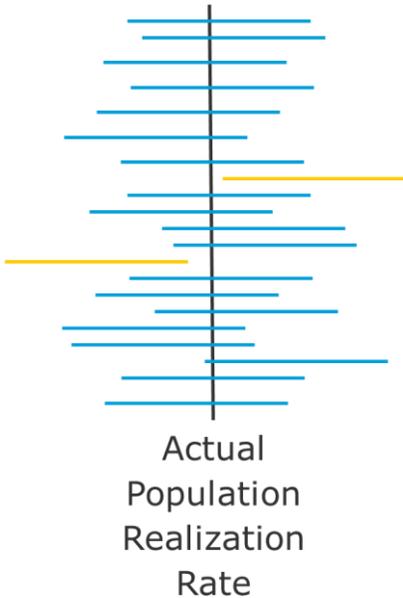
<sup>18</sup> 90% is the confidence limit that we are using.

**Figure B-1. Ratio diagram example**



The plus/minus ( $\pm$ ) error (%) indicated at the 90% confidence interval is the absolute difference between the estimated percentage and the upper or lower confidence bound. For example, in Figure B-1, the ratio is 94% and the non-FPC 90% confidence interval is  $\pm 5$  percentage points (i.e.,  $94\% \pm 5\%$ ).<sup>19</sup> Another way of saying this is that there is a 90% probability that the actual ratio for the next year’s program lies between 89% and 99%. Figure B-2 demonstrates this concept by showing twenty hypothetical confidence intervals calculated from twenty different samples of the same population. Eighteen out of twenty (90%) include the true population ratio (overlap the black line representing the true ratio).

**Figure B-2. 90% confidence interval**



Note: Each horizontal line represents a confidence interval, while the black vertical line is the actual population realization rate. Yellow confidence intervals do not include the actual ratio.

The relative precision of the ratio is calculated as  $5\%/94\% = 5.3\%$ .

<sup>19</sup> The critical value for calculating the confidence interval  $\pm$  for each adjustment factor is determined using Student's t-distribution and  $n-1$  for the degrees of freedom, where  $n$  is the sample size. For two-tailed estimates (ratios that could be above or below 100%) the appropriate t-stat used to calculate precision from the standard error is close to 1.645.



For low ratios, relative precisions may be quite high, even when the confidence interval around the ratio is quite narrow. Consider a ratio of 5% with the same 5% absolute precision as in the above example. While the absolute precisions are the same, the latter ratio (5%) has a relative precision of  $5\%/5\% = 100\%$ . In absolute terms, we still are 90% confident the ratio is below 10%, despite the very high (100%) relative precision.

We reported the relative precision in all cases at the 90% confidence level. That is, whether the relative precision is large or small, we have the same 90% confidence that the range defined by the point estimate  $\pm$  the absolute error captures the true unknown value. The "midpoint" estimate (the ratio) is the best (statistically most likely) estimate, while the confidence interval is calculated as an interval around that point. Thus, in all cases, we reported the best point estimate, with a symmetric 90% confidence interval (using the t-score for a two-tailed 90% confidence interval).



## APPENDIX C. FREE-RIDERSHIP FINAL SAMPLE ACHIEVEMENT

The tables in this appendix show the achieved sample for each stratum in the sample designs. The tables are specific to a program group and show the categorical stratification (grouping) and size strata (larger numbers are bigger projects). Sampling was done at the measure level. The target column shows the number of units we attempted to complete. The complete column shows the number of measures randomly selected and completed. First year natural gas savings (m<sup>3</sup>) are also included under the header m<sup>3</sup>. Note that in some cases measures beyond the target were completed. These completed measures were at sites with multiple measures in the sample.

### Custom Commercial: Summary of participant data collected

Table C-1 summarizes the FR-based attribution data collection efforts for the Enbridge Custom Commercial program. The table shows the portion of the program that:

- Completed an in-depth interview
- Did not respond to an evaluation attempt at contact
- Was not contacted by the evaluation team<sup>20</sup>

The data collected in Table C-1 is shown as the number of customers and measures and the first year m<sup>3</sup> ex ante natural gas savings. The full sample design and achievement by strata can be found in Table C-2.

The evaluation collected FR-based attribution data for 16% of savings in the programs with a customer response rate of 51%.

**Table C-1. Summary of FR data collection for Custom Commercial program**

| Data collection category         | Targeted   | Completed    |            |                           |
|----------------------------------|------------|--------------|------------|---------------------------|
|                                  | # measures | # customers* | # measures | Population m <sup>3</sup> |
| Completed in-depth interview     | 47         | 38           | 43         | 4,320,719                 |
| Attempted contact, not completed |            | 37           | 41         | 6,133,974                 |
| Not attempted                    |            | 510          | 704        | 16,305,125                |
| <b>Total</b>                     |            | <b>545</b>   | <b>788</b> | <b>26,759,818</b>         |

\* Customers with multiple installed measures and differing survey responses will appear more than once, resulting in a total count exceeding the number of customers interviewed.

<sup>20</sup> Sites, projects, or units of analysis where contact was not attempted were either not selected for contact in sampling or in the backup sample and were not contacted due to strata quotas being met.

**Table C-2. FR sample achievement for Custom Commercial program**

| Segment                  | Measure Group       | Stratum | Max M3    | Target | Completed Measures | Completed M3     | Population Measures | Total M3          |
|--------------------------|---------------------|---------|-----------|--------|--------------------|------------------|---------------------|-------------------|
| Commercial               | Boilers             | 1       | 21,997    | 4      | 2                  | 21,050           | 130                 | 1,207,416         |
|                          |                     | 2       | 159,424   | 3      | 4                  | 104,097          | 35                  | 1,545,672         |
|                          |                     | 3       | 175,360   | 1      | 0                  | 0                | 1                   | 175,360           |
|                          | Other Commercial    | 1       | 38,995    | 5      | 3                  | 43,301           | 105                 | 1,538,358         |
|                          |                     | 2       | 275,308   | 5      | 6                  | 604,207          | 21                  | 2,326,088         |
|                          |                     | 3       | 476,506   | 1      | 1                  | 476,506          | 1                   | 476,506           |
| Steam Traps              | 1                   | 45,337  | 1         | 2      | 72,655             | 4                | 87,282              |                   |
|                          | 2                   | 67,496  | 1         | 1      | 67,496             | 1                | 67,496              |                   |
| Institutional            | Other Institutional | 1       | 243,788   | 4      | 6                  | 655,552          | 40                  | 2,693,104         |
|                          |                     | 2       | 4,453,979 | 2      | 1                  | 1,078,247        | 2                   | 5,532,226         |
|                          | Steam Traps         | 1       | 341,774   | 3      | 4                  | 172,407          | 21                  | 1,816,105         |
|                          |                     | 2       | 629,685   | 1      | 1                  | 629,685          | 1                   | 629,685           |
| Market Rate Multi-Family | Boilers             | 1       | 154,456   | 6      | 6                  | 198,877          | 241                 | 5,005,858         |
|                          |                     | 2       | 189,029   | 1      | 0                  | 0                | 1                   | 189,029           |
|                          | Other Multi-Family  | 1       | 26,917    | 4      | 4                  | 16,725           | 145                 | 1,479,203         |
|                          |                     | 2       | 110,725   | 4      | 1                  | 61,245           | 38                  | 1,871,762         |
|                          |                     | 3       | 118,668   | 1      | 1                  | 118,668          | 1                   | 118,668           |
| <b>Grand Total</b>       |                     |         |           |        | <b>43</b>          | <b>4,320,719</b> | <b>788</b>          | <b>26,759,818</b> |

## Custom Industrial: Summary of participant data collected

Table C-3 summarizes the FR-based attribution data collection efforts for the Enbridge Custom Industrial program. The table shows the portion of the program that:

- Completed an in-depth interview
- Did not respond to an evaluation attempt at contact
- Was not contacted by the evaluation team<sup>21</sup>

The data collected in Table C-3 is shown as the number of customers and measures and the first year m<sup>3</sup> ex ante natural gas savings. The full sample design and achievement by strata can be found in Table C-4.

The evaluation collected FR-based attribution data for 40% of savings in the programs with a customer response rate of 55%.

**Table C-3. Summary of FR data collection for Custom Industrial program**

| Data collection category         | Targeted   | Completed    |            |                           |
|----------------------------------|------------|--------------|------------|---------------------------|
|                                  | # measures | # customers* | # measures | Population m <sup>3</sup> |
| Completed in-depth interview     | 38         | 31           | 38         | 32,698,905                |
| Attempted contact, not completed |            | 25           | 29         | 12,088,165                |
| Not attempted                    |            | 156          | 259        | 36,595,979                |
| <b>Total</b>                     |            | <b>181</b>   | <b>326</b> | <b>81,383,049</b>         |

\* Customers with multiple installed measures and differing survey responses will appear more than once, resulting in a total count exceeding the number of customers interviewed.

<sup>21</sup> Sites, projects, or units of analysis where contact was not attempted were either not selected for contact in sampling or in the backup sample and were not contacted due to strata quotas being met.



**Table C-4. FR sample achievement for Custom Industrial program**

| Segment            | Measure Group             | Stratum   | Max M3    | Target | Completed Measures | Completed M3      | Population Measures | Total M3          |
|--------------------|---------------------------|-----------|-----------|--------|--------------------|-------------------|---------------------|-------------------|
| Agricultural       | Heating or Water System   | 1         | 562,554   | 5      | 6                  | 1,141,697         | 54                  | 5,920,197         |
|                    |                           | 2         | 1,121,486 | 1      | 0                  | 0                 | 1                   | 1,121,486         |
|                    | HVAC                      | 1         | 329,614   | 4      | 4                  | 291,651           | 92                  | 7,210,971         |
|                    |                           | 2         | 674,178   | 4      | 4                  | 1,960,656         | 20                  | 9,570,651         |
|                    |                           | 3         | 1,357,522 | 3      | 3                  | 2,436,796         | 10                  | 9,860,497         |
|                    |                           | 4         | 1,402,217 | 1      | 1                  | 1,402,217         | 1                   | 1,402,217         |
| Process            | 1                         | 456,710   | 2         | 2      | 503,247            | 4                 | 1,237,533           |                   |
|                    | 2                         | 508,150   | 1         | 0      | 0                  | 1                 | 508,150             |                   |
| Industrial         | HVAC                      | 1         | 928,354   | 2      | 2                  | 1,358,895         | 20                  | 4,835,555         |
|                    |                           | 2         | 998,840   | 1      | 1                  | 998,840           | 1                   | 998,840           |
|                    | Process                   | 1         | 640,031   | 3      | 4                  | 498,397           | 46                  | 5,657,523         |
|                    |                           | 2         | 2,880,595 | 2      | 2                  | 3,947,738         | 5                   | 7,508,348         |
|                    |                           | 3         | 6,554,604 | 3      | 3                  | 14,877,636        | 3                   | 14,877,636        |
|                    | Steam or Hot Water System | 1         | 1,346,777 | 2      | 2                  | 71,839            | 25                  | 3,857,334         |
|                    |                           | 2         | 1,433,452 | 1      | 1                  | 1,433,452         | 1                   | 1,433,452         |
|                    | Steam Traps               | 1         | 380,624   | 2      | 2                  | 88,760            | 41                  | 3,695,575         |
| 2                  |                           | 1,687,084 | 1         | 1      | 1,687,084          | 1                 | 1,687,084           |                   |
| <b>Grand Total</b> |                           |           |           |        | <b>38</b>          | <b>32,698,905</b> | <b>326</b>          | <b>81,383,049</b> |

## Large Volume: Summary of participant data collected

Table C-5 summarizes the FR data collection efforts for the Large Volume program. The table shows the portion of the program that:

- Completed an in-depth interview
- Did not respond to an evaluation attempt at contact
- Was not contacted by the evaluation team<sup>22</sup>

The data collected in Table C-5 is shown as the number of customers and measures and the first year m<sup>3</sup> ex ante natural gas savings. The full sample design and achievement by strata can be found in Table C-6.

The evaluation collected FR data for 62% of savings in the program with a customer response rate of 55%. Both values are higher than the other two programs in this study, in part because DNV attempted to collect data with a census of participants.

**Table C-5. Summary of FR data collection for Large Volume**

| Data collection category                | Targeted   | Completed    |            |                           |
|---|------------|--------------|------------|---------------------------|
|   | # measures | # customers* | # measures | Population m <sup>3</sup> |
| <b>Completed in-depth interview</b>     | 14         | 6            | 11         | 29,798,070                |
| <b>Attempted contact, not completed</b> |            | 5            | 7          | 11,177,223                |
| <b>Not attempted</b>                    |            | 11           | 12         | 7,113,767                 |
| <b>Total</b>                            |            | 17           | 30         | 48,089,060                |

\* Customers with multiple installed measures and differing survey responses will appear more than once, resulting in a total count exceeding the number of customers interviewed.

<sup>22</sup> Sites, projects, or units of analysis where contact was not attempted were either not selected for contact in sampling or in the backup sample and were not contacted due to strata quotas being met.



**Table C-6. FR sample achievement for Large Volume**

| Segment      | Measure Group | Stratum | Max M3    | Target | Completed Measures | Completed M3 | Population Measures | Total M3   |
|--------------|---------------|---------|-----------|--------|--------------------|--------------|---------------------|------------|
| Large Volume | Large Volume  | 1       | 931,801   | 3      | 3                  | 300,502      | 17                  | 5,945,375  |
|              |               | 2       | 2,525,308 | 3      | 2                  | 4,272,728    | 5                   | 10,752,082 |
|              |               | 3       | 2,756,517 | 2      | 1                  | 2,606,469    | 2                   | 5,362,986  |
|              |               | 4       | 7,179,001 | 6      | 5                  | 22,618,371   | 6                   | 26,028,617 |
| Grand Total  |               |         |           |        | 11                 | 29,798,070   | 30                  | 48,089,060 |



## APPENDIX D. FREE-RIDERSHIP SURVEY RESPONSES

This section presents self-reported responses from the timing, efficiency, and quantity FR question battery where customers were asked “Why do you say that?”

A “yes” in the timing, efficiency, or quantity column indicates partial or full FR-based attribution for that source based on the scored questions (not the responses here). A “no” indicates no FR-based attribution for that source. For example, in the first table, a “yes” in the timing column indicates that the respondent answered the question DAT1a and DAT1b with responses that credited the program with influencing the acceleration of the project. A “no” in the timing column indicates that the respondent did not credit the program with influencing the acceleration of the project. A “no” for timing does not preclude the same respondent indicating the program affected the efficiency or quantity/size of the same project.

Additionally, following the specific timing, efficiency and quantity questions, customers were asked to summarize the program’s effect on the timing, efficiency and amount of the project installed (Dat4). These responses are presented with the scored level of FR-based attribution: full, partial, or none.

None of the responses provided below were used in the direct scoring of surveys. For respondent confidentiality, these responses are isolated from other responses from the interview and do not reflect the full story the respondent conveyed. The responses are provided here to provide insight into how customers describe their decision making on the project relative to the program. Responses are sometimes recorded in the voice of the participant and in other cases in the third person depending on the notation approach of individual interviewers. See the scope of work (APPENDIX H) for details on how FR-based attribution was scored.

### Custom Commercial program

**Table D-1. Timing verbatim responses for Custom Commercial program**

| Timing | Dat1a O. Why do you say that?  |
|--------|--|
| Yes    | Based on the 5 yrs CDM plan, we would have replaced it eventually, the incentives helped to meet the goals   |
| Yes    | This would have been a board decision, I can’t speak on behalf of them.  |
| Yes    | The design department might have prioritized it later if it became a burden to maintain.   |
| Yes    | Hard to say if someone would have suggested it but we weren’t considering it at all  |
| Yes    | Hard to say when   |
| Yes    | Impossible to say never but very unlikely it would have happened any time soon   |
| Yes    | Lots of useful life left   |
| Yes    | Maybe closer to never if we wouldn’t eventually have needed it.  |
| Yes    | Maybe would have done 1 AHU at a time, and simpler equipment. Incentives make it easier to make the business case with the board. Incentives help offset the overall cost and reduce NG consumption.   |
| Yes    | Much later if it hadn’t received the incentives.   |
| Yes    | Much less frequently, would be every two years or every other year   |
| Yes    | No funding and the calculations to do the analysis are very intense so I couldn’t do it myself   |
| Yes    | Same as heat recovery system - We have a difficult time getting any energy projects approved at full price. Enbridge’s assistance is the only way we get stuff done  |
| Yes    | The project would have been installed sometime in the future if not for the incentive, since the management would have to approve it and it has to meet key financial metrics, the incentive provides a good business case for installing the project. |
| Yes    | Tight funding  |

| Timing | Dat1a_O. Why do you say that?  |
|--------|--|
| Yes    | We have a difficult time getting any energy projects approved at full price. Enbridge's assistance is the only way we get stuff done   |
| Yes    | We would have needed to do it but it would have taken many years   |
| Yes    | We would have upgraded the BAS later when we had more funding and the system is older. The vendor provided incentive estimates which we could only get if we completed the project by a certain date which pushed the project to happen when it did. |
| Yes    | would have deferred it to later.   |
| Yes    | Because of the financial constraints   |
| Yes    | Due to cost  |
| Yes    | The Incentive helps but technical support helps justify to management as well for approval.  |
| Yes    | Would be later to secure funding   |
| Yes    | probably would have done the project but not sure on timings   |
| Yes    | Enbridge said if we could get the project in before October 2024, we could get incentives for the project. After that point, we could not get incentives. This deadline helped push the project to happen.   |
| Yes    | Not sure, certain amount of ensurity if you install it.  |
| Yes    | We would have installed the upgrades in pieces instead of all at once. This delay is due to high costs, we have to be mindful of their yearly budget. It definitely would have happened eventually but it would have taken longer to do it.          |
| Yes    | [Would have installed] in a year because there were changes to our operations team. New team and wouldn't have been on their radar.  |
| Yes    | Eventually they need to be replaced at some point  |
| Yes    | Project would have been installed anyways since condensing boilers are now mandated. The timing may have differed depending on how dire the need is.   |
| Yes    | We want a payback that adds the incentive and helps us   |
| No     | Maybe would have taken time to choose between condensing vs non-condensing boilers.  |
| No     | since its VFDs   |
| No     | Incentive comes after the fact anyway  |
| No     | It couldn't be maintained. We had to do it - we needed it  |
| No     | It didn't factor into the time. We needed it at that specific time and we already planned to do it. Enbridge provided support after the fact based on the work that we already did   |
| No     | They had to go together and same time  |
| No     | Timeline would not have been affected in terms of the project's implementation.  |
| No     | Would have done more research to do but would have installed it at the same time.  |

**Table D-2. Efficiency verbatim responses for Custom Commercial program**

| Efficiency | Dat2a_O. Why do you say that?   |
|------------|---|
| Yes        | Basic controls already existed.   |
| Yes        | Because of the funding; the incentives motivated us to install more advanced controls.  |
| Yes        | Less or Zero heat recovery capacity because of limited funding.   |
| Yes        | No funds  |
| Yes        | depends on the company's suggestions.   |
| Yes        | Had a steam boiler near the end of its useful life.   |
| Yes        | We would have tried to have a balance between the life cycle and energy savings without Enbridge's incentives/technical assistance.                                 |
| No         | We chose the technical specifications we needed for the BAS and this was provided to vendors to quote. We would have chose something with the same technical specs. |

| Efficiency | Dat2a_O. Why do you say that?   |
|------------|---|
| No         | We want to go with something as efficient and technology is moving that way.  |
| No         | as efficient as possible, close to condensing.  |
| No         | maximum efficient   |
| No         | same efficiency but would have done it a lot later, probably 2030, technology needs and more energy efficient.  |
| No         | Not sure, a lot of it depends on the outside technical expertise  |
| No         | <vendor> would have recommended the same thing.   |
| No         | Not the driving force of the project, the outside consultant engineers that work for our company picked the design. It was not based on efficiency upgrades, it was based on what we needed for our site. |
| No         | That's what was needed  |
| No         | We chose the system based on our vendor's recommendation which would have stayed the same. It cannot be less advanced due to environmental control regulations.   |
| No         | More efficiency looking at the payback period. No different than lighting, it's based on the payback  |
| No         | Project would have been installed anyways since condensing boilers are now mandated.  |
| No         | Since we are focused on 2030, 2050 goals- we would have really focused on natural gas use   |
| No         | We select a system that works with our boilers.   |
| No         | We go with what's up to our standard  |
| No         | Because of the plant's requirement and also company's requirement of needing the boiler's under certain capacity.   |
| No         | Because the scope of the work was already determined without Enbridge's support. The work was what it was and we qualified for an incentive with the part that we wanted to take.                         |
| No         | Same energy efficient to have more lifetime on the equipment, and what <name> would have suggested.   |
| No         | The design department would have recommended the high efficiency option anyway, it's part of our guidelines   |
| No         | Would not have altered here and hasn't happened very often. We reach out to Enbridge on option a vs b and get a higher rebate. Didn't happen here.  |

**Table D-3. Quantity verbatim responses for Custom Commercial program**

| Quantity | Dat3a_O. Why do you say that?  |
|----------|--|
| Yes      | Maybe fewer or not installed any, the funding provided by Enbridge drove that project.   |
| Yes      | Might have been a little less, earlier boiler was a little oversized.  |
| Yes      | Still because of money   |
| Yes      | We need <vendor> and Enbridge's money and help   |
| Yes      | same - no funding  |
| Yes      | same- hard time getting funding without assistance   |
| Yes      | Due to cost  |
| Yes      | Around 20 VFDs were installed. Looking at the size of the pumps, few VFDs would have been installed. 2 are for heating in the winter and third was for a pool/domestic hot water. We try to install a third small boiler to run in the summer time to increase the useful life of all 3. |
| No       | Need to fulfill building demand for hot water. Old boiler might have been oversized.   |
| No       | The equipment was there so we didn't make a decision for anything else. It was either going to be completed as is or left as the status quo.   |
| No       | We would have replaced the failed steam trap but the incentive helps us put it an even better, more efficient trap   |
| No       | always installed 2 for redundancy, since we need backup  |
| No       | needed to replace the existing system for the building requirements.   |

| Quantity | Dat3a_O. Why do you say that?  |
|----------|--|
| No       | Would have done them all but would have pushed   |
| No       | A lot of it depends on outside technical expertise since its a bit complex system  |
| No       | We wanted to install the units on our 2 dehydrators  |
| No       | We would have still done both boilers, same size to meet site requirements   |
| No       | would have made the safe bet and had gone for <#> Boiler(s) because that's what the building is designed for, and we wouldn't have risked it.        |
| No       | Scope of the project. Project would have been installed anyways since condensing boilers are now mandated.   |
| No       | needs of the building  |
| No       | Because of the plant's and company's requirement   |
| No       | Just because of the requirement of the building  |
| No       | Needed to get done all at the same time during the summer  |
| No       | Our design engineer dictated the capacity of the system. We explored shifting our seasonal load but couldn't due to construction logistics.          |
| No       | The number of steam traps to be installed was based on steam trap survey and it would be immaterial of Enbridge's technical or financial assistance. |
| No       | We needed what we needed   |

**Table D-4. Dat4 verbatim responses for Custom Commercial program**

| Attribution | Dat4. Summarize the program's effect on the timing, efficiency, and amount that you installed.   |
|-------------|--|
| Full        | <vendor> and Enbridge are great and we really couldn't do it without their assistance. 50/50 likelihood of installing the boiler, might have been later but about 3-4 years later even though the boiler had 6-7 years left on it. Costs might have resulted in it being replaced before those 6-7 years. We needed 3 boilers, 2 for winter heating needs and a third smaller for summer hot water needs such as a pool. |
| Full        | 75% likely to have been installed but later(about 3- years).   |
| Full        | Enbridge was good to work with, very proactive, very timely, and very responsive, and overall very helpful.  |
| Full        | The Enbridge process was very smooth, the timing was good, and financial and technical expertise were really good as well.   |
| Full        | Without it it was not very likely to have been completed, maybe in 6-8 years but we would have installed a similar piping upgrade with the existing equipment  |
| Full        | Without the assistance, it would have been maybe 50/50 that we completed the replacement, we would do it less frequently, maybe every other year or wait 2 years. We would still replace the same number of failing steam traps but the incentive allows for a better steam trap.  |
| Full        | Would have been less likely to have been replaced (30%) because the boiler had 10 years of useful life on it. It might have been replaced before those 10 years were up but that would have been determined by design team or maintenance staff. The incentive helped move it up to sooner. Might have installed a boiler with less capacity to meet the building needs.   |
| Full        | they were a key partner in making it come about. we wouldn't have been able to get it at the same time, amount or efficiency without them.   |
| Partial     | Enbridge helped with the rebate; no rebates for another heat pump project.   |
| Partial     | The only reason for delays, less amount, etc is due to the cost of replacing the steam traps. We had a 50% likelihood of still doing the project, and would have replaced only about half of the amount without the funding from Enbridge at a later time. The only reason is the cost.  |
| Partial     | Without the incentive, would have been about 50/50 that we would have installed them. Might have delayed it a year but we still would have installed the VFDs. We would have installed all 3 but it might have been pushed out where we're only doing one every year.  |
| Partial     | Bunch of diff discussions on what was going in, some of the decision making happened before she joined in, was funded for the feasibility study,   |

| Attribution | Dat4. Summarize the program's effect on the timing, efficiency, and amount that you installed.   |
|-------------|--|
| Partial     | It has been a really good relationship with Enbridge for years. We meet with the Enbridge rep once a year and discuss the potential projects. The timing was good; there has never been a delay with the project. It includes a lot of work and communication. The timing and efficiency have been great.                      |
| Partial     | The only impact Enbridge had on the project is the timing. We knew the boilers needed to be replaced because they were at end of life, but Enbridge said if they can do it by October 2024, then you can get rebates, if later, no rebates. This helped push the project to happen at the time.                                |
| Partial     | Project would have been installed anyways since condensing boilers are now mandated.   |
| Partial     | The incentive lowers the payback period, didn't change the design but we wanted to get the incentive.  |
| Partial     | The funding was helpful for the VFDs project, verification and confirmation in terms of technical expertise was really helpful,  |
| None        | Enbridge's technical assistance/incentives played a limited role, because the steam trap replacements are part of an annual preventative maintenance.  |
| None        | It was enticing to get the incentives, but either way the project was needed to be done.   |
| None        | It's always nice to have a rebate - it pushes you to do it and it's a good thing to do. It's actually making me consider changes in my home. But for this project there wasn't any impact on the timing, efficiency or amount. We needed to do the replacement at that time, at that efficiency level and with that amount.    |
| None        | The availability of rebates encouraged us to move forward with the project. The rebates helped offset the project's cost and aided in the decision-making process.   |
| None        | The steam trap replacement was part of an annual preventative maintenance program that the site conducts every year. We would be installed irrespective of the financial/technical assistance provided by Enbridge. The steam trap survey determined the number of traps to be replaced.                                       |
| None        | Without Enbridge, it would have been likely that we would have installed the boilers at the same time and with similar efficiency. The hot water needs of the building are set and need to be met by the boiler.   |
| None        | Without the assistance, the boiler were very likely to have been installed at the same time with the <#> that were needed. It wouldn't have made much sense to do the install piecemeal (like <#> boilers at a time). Incentives might cover 10% of project cost at most and that's usually not enough to impact our decision. |

## Custom Industrial program

Table D-5. Timing verbatim responses for Custom Industrial program

| Timing | Dat1a O. Why do you say that?   |
|--------|---|
| Yes    | Enbridge was involved in the start of the project   |
| Yes    | Enbridge's financial assistance sped the timeline up, we would have still installed it at some date.  |
| Yes    | I wouldn't say never. It may have come through in a different audit as the equipment was installed in 2018 so we would have needed an audit eventually. It wasn't like it was installed a few months before.  |
| Yes    | Maybe later if at all. Due to cost which is due to increase in fertilizer, water usage, plant costs   |
| Yes    | Project would have been delayed until the right conditions were met.<br>Sooner or later we would have installed it because we would have needed it. The incentives helped the financial people approve. In this economy we would have had to wait longer than 2 years to install because it wouldn't have made financial sense for us |
| Yes    | The project would not have been installed as-is, but the project may have been installed with drastically reduced scope.  |
| Yes    | This wouldn't have been on my priority list. Can't figure out the ROI and, without technical expertise cant quantify the benefit for the farm.  |
| Yes    | We didn't have the kind of money and technical support to execute... It was nice how much Enbridge got involved - more than typical third parties do. They gave so much engineering support.  |
| Yes    | Without ROI, there would have been no motivation to do the project. Enbridge helps with the rate of approval of the project.  |
| Yes    | Later. Maybe not implemented at all since the scope would not have been adhered to if the project was completed at a later date without Enbridge's incentive.   |
| Yes    | Enbridge's involvement with providing the optimal thickness and the cost/energy savings definitely influenced the timeline of the project. We were replacing the drum itself and decided to have it insulated   |

| Timing | Dat1a O. Why do you say that?  |
|--------|--|
|        | directly by the manufacturer at time of purchase. If no assistance, it would have been later by a local company after the drum was installed.  |
| Yes    | Later because we didn't have the money at the time and it was still a need identified because of the natural gas savings and we are a green company - we never cut down a tree. However if we waited till now and we saw the way the economy it would have been even much later or we would have said never. |
| Yes    | Might have delayed it by a year, so would have installed in fall of 2024   |
| Yes    | The industry and carbon taxes have been steering us towards that direction. Enbridge motivated to reduce gas consumption.  |
| No     | The equipment we put in was required for the process.  |
| No     | As they failed, we would have replaced them. 40% that we would have done it right away, but 60% of experiencing issues   |
| No     | Project could not have been delayed.   |
| No     | Same time. The installation has to be done during the interval between crop cycles.  |
| No     | Incentive amount was low in terms of the scope of the project. Would not make a difference to equipment spec or timeline.  |
| No     | It's what we know  |
| No     | No change in timing. The project is critical to growing lettuce, so the incentive was seen as a "nice-to-have" but not key to the implementation of the project.   |
| No     | Same time due to needing to meet emissions reduction goals, we had a company meeting to identify energy savings projects where this one was proposed.  |
| No     | Small project, incentive does not play a key role.   |
| No     | The project was part of a barn expansion, would have installed ventilation equipment at the same time  |
| No     | Wanted to save on energy savings; CO2 emissions reduction was the goal   |
| No     | We planned to do a project, and didn't have to wait on Enbridge for incentives to go ahead and start   |

**Table D-6. Efficiency verbatim responses for Custom Industrial program**

| Efficiency | Dat2a O. Why do you say that?  |
|------------|--|
| Yes        | Enbridge made the payback more attractive and the technical support made the difference  |
| Yes        | Financially we wouldn't have been able to afford one that is so thick  |
| Yes        | Less extensive and less efficient  |
| Yes        | Scope would have been reduced without Enbridge's incentive.  |
| Yes        | Wouldn't have done it without the Enbridge support.  |
| Yes        | Reduced scope of work without the incentive  |
| Yes        | Enbridge provided us with the optimal insulation thickness of 2 inches. Without their help, we would have taken the manufacturer or local insulation company recommendation. I am unsure what they would have recommended. |
| Yes        | The incentive was important because it helped offset the costs for the high efficient equipment. If there was no incentive, the project would have been installed but with a lower spec energy curtain.                    |
| No         | To meet industry efficiency standards, what would be installed if it was a new construction facility   |
| No         | Might have been different format/layout but ultimately we would have done something similar.   |
| No         | We went with the most basic system that we could find. We've could do some upgrades inn the future. We got more sensors, more advance sensors. Future proofing it for new systems.   |
| No         | Already knew the equipment and its specs and knew that this was the appropriate equipment for the capacity expansion project.  |
| No         | Designed to meet our facility's needs, our capacity is based on largest amount they can get out of the system.   |
| No         | Same would have selected the same set of controls  |
| No         | Still tried to install the same equipment; being able to capture the CO2 for our plant use and also be able to capture the heat  |

| Efficiency | Dat2a O. Why do you say that?   |
|------------|---|
| No         | To meet industry standards, they have other similar insulated steam piping around the facility which they matched.  |
| No         | We installed what we had at our existing greenhouse for this new one.   |
| No         | We were familiar with the company that provided the ventilation units and have their equipment in other spaces. We chose to go with the same company with the heat recovery capacity. We would have not changed the type of equipment or the capacity even if no funding or assistance. |

**Table D-7. Quantity verbatim responses for Custom Industrial program**

| Quantity | Dat3a O. Why do you say that?   |
|----------|---|
| Yes      | Also for financial reasons. There may have also been the likelihood we don't install anything   |
| Yes      | Because of the limited expertise in designing the system.   |
| Yes      | Enbridge incentive was key to installing the project. Without the incentive, the project would not have been installed.   |
| Yes      | Only had been doing small trials, would probably not have done the project at all due to cost   |
| Yes      | Project would not have been installed if not for the incentive from Enbridge.   |
| Yes      | The project would not have been installed without Enbridge's incentive. Enbridge's incentive was key to the project moving forward.   |
| Yes      | We wouldn't have known about the issue. If we eventually did learn about it, it would have been the same.   |
| Yes      | Yearly/monthly - within 2 years - based on the funds available;   |
| Yes      | Would have replaced them but would have been delayed. Might have been 1 trap at a time per month over the course of a year. So, 12 traps replaced per year without the assistance.                      |
| No       | To meet industry efficiency standards, what would be installed if it was a new construction facility  |
| No       | The energy curtain had to be installed because the pre-existing one was at the end of life.   |
| No       | For the plant requirement   |
| No       | Requirements of the project. The project was a capacity expansion project and required additional boiler capacity to serve new areas of greenhouse. Additionally, new boiler would serve as redundancy. |
| No       | Small project, incentive does not play a key role. Would have done the project anyways.   |
| No       | To meet industry standards and emissions reduction, we insulated all the steam piping which was uninsulated. We had no reason to leave anything uninsulated.  |
| No       | its what we know and needed at the site   |

**Table D-8. Dat4 verbatim responses for Custom Industrial program**

| Attribution | Dat4. Summarize the program's effect on the timing, efficiency, and amount that you installed.  |
|-------------|---|
| Full        | Enbridge's incentive and assistance were the reason why the project was installed as described.   |
| Full        | Enbridge's incentive was key to the project moving forward.   |
| Full        | Enbridge's only affect was the timing of the project, we would have installed the same thing and the same amount to meet industry efficiency standards. The financial assistance helped them install the project sooner.  |
| Full        | Everything was great. <vendor> was quick in getting the questions and key things needed which made the go ahead faster. There wasn't a hold up on our timeline. But none of this would have happened without Enbridge noticing an issue existed so they set the time, efficiency and quantity and gave us the info. |
| Full        | Project would not be financially viable without the incentive owing to high capital costs involved and this would be feasible only with the incentive.  |
| Full        | The incentive helped approve the project with our finance team and made it happen at the desired timing, efficiency and size.   |
| Full        | There was no impact in the overall project. This is the most efficient plant that we have because of the expertise and the funding provided by Enbridge.  |
| Full        | There were a lot of condensate and steam losses due to inefficient steam traps. Enbridge calculated the amount we were losing because of the steam loss on a yearly basis. Enbridge suggested different   |

| Attribution | Dat4. Summarize the program's effect on the timing, efficiency, and amount that you installed.   |
|-------------|--|
|             | scenarios and introduced the program of financial support. They continuously send the report every week to make sure we are aligned. They specified the start and the end date, and after the project completion, they did a site visit to verify the steam traps. They verified invoices, took photos, and after checking everything, the incentives were provided. The Enbridge involvement was at the beginning of 2021, and then we got to the point where condensate return was dropped to 20%, per Enbridge's advice they started the process quickly followed by *** survey in May 2024, followed by the decision to do the project was made in August 2024, and the project was completed by mid-November 2024. The whole process was very smooth. |
| Full        | We have previously only trialed this increased plant density in small quantities. Enbridge provided the push to do it at a large scale due to their incentives. We would probably still be doing trials right now without receiving help from Enbridge.  |
| Partial     | Without the assistance, it wouldn't have been likely that we complete the steam trap replacement. We might have replaced failing traps about 8 months later or so and we would have only replaced about 1 trap per month. A steam trap leak audit might be useful and this plant deals with those leaks. It would help us identify those leakage problem, not a steam trap audit if those incentives existed.  |
| Partial     | Enbridge's incentive was important for installing the project since it helped offset the total cost.   |
| Partial     | The incentive was important because it helped offset the costs for the high efficient equipment. If there was no incentive, the project would have been installed but with a lower spec energy curtain.  |
| None        | The incentive/assistance provided by Enbridge had minimal impact n the project's installation. This is because this was a large capacity expansion project worth over 4 million dollars and this project alone was about 600K. The incentive provided by Enbridge was very small compared to the scope of the project. Also, I have many years of experience in the industry and am familiar with equipment and best practices. So the choice of equipment and the timing of the installation would have remained the same irrespective of the incentive.  |
| None        | The project was started based on needing to meet our company's emission reduction goals. We had a meeting with a global leader where they identified energy savings projects, where this one was proposed. We would have installed the exact same insulation, at the same time, regardless of the assistance from Enbridge. The assistance was nice to have, but they were mostly focused on their company's goals.  |
| None        | Without the assistance, we would have 100% installed the boilers at the same time with a similar set of 3 efficient boilers  |
| None        | Working with Enbridge was very helpful, didn't delay on any of our project, It worked v well overall.  |

## Large Volume

Table D-9. Timing verbatim responses for Large Volume

| Timing | Dat1a O. Why do you say that?  |
|--------|--|
| Yes    | Enbridge incentives would help move the projects higher in the priority list of projects. I think it probably gets bumped up in the priority when we know we have the backing and assistance of companies like Enbridge.   |
| No     | Timing of cleanings is independent of Enbridge   |
| No     | Would have done something right away due to safety concerns and loss of condensate but maybe not as many steam traps without Enbridge assistance. Without Enbridge we probably would have replaced the <#> more critical ones right away and left the others for later |
| No     | Enbridge is not influencing our decision that much for the cleaning and the potential energy savings is much bigger than the incentives. Also the springtime is ideal for doing these projects because summer the plant needs to be at max capacity                    |
| No     | Regardless of Enbridge support, we do the steam trap replacement, this is a proceduralized project   |
| No     | Same reasons as before - greenhouse gas reduction and reduced operating costs  |
| No     | The cleanings are triggered by an efficiency and safety assessment and so the incentives do not influence these decisions  |
| No     | The energy savings and unit throughput benefits were compelling enough on their own  |
| No     | There were safety and financial reasons. We also do the steam replacements in the spring when its warmer.  |
| No     | We had done the analysis including financial to justify the project going forward  |

**Table D-10. Efficiency verbatim responses for Large Volume**

| Efficiency | Dat2a O. Why do you say that?  |
|------------|--|
| No         | The <list of equipment> etc are all one system. One piece won't work without the others. You're all in or nothing. You can't put in half of it but not the other half. |
| No         | We don't plan for the incentives to approve the scale of the cleaning  |
| No         | Cleanings are required to be complete not partial  |
| No         | Cleanings would have to be complete not partial  |
| No         | Safety, efficiency, and cost savings were the drivers determining how many heat exchangers they do.  |
| No         | The incentives do not influence these decisions.   |
| No         | Safety, efficiency, and cost savings were the drivers determining how many heat exchangers we do. The incentives do not influence these decisions.                     |
| No         | The <> cleaning scope was determined based on need and they would have done regardless of Enbridge   |

**Table D-11. Quantity verbatim responses for Large Volume**

| Quantity | Dat3a O. Why do you say that?   |
|----------|---|
| Yes      | The incentives help us to do more cleanings than otherwise.   |
| Yes      | Without the Enbridge incentives they probably would have only replaced the <#> most leaky steam traps right away and delayed the replacement of the <#> less critical steam traps until later                       |
| No       | Our monthly monitoring of the heat exchangers drives the decision to clean the heat exchangers based on safety, efficiency, and cost drivers.   |
| No       | The quantity was already funded regardless of the Enbridge assistance   |
| No       | The reason they would have done the same amount b/c the decisions to clean are based on safety, efficiency, and cost considerations and so the rebate was not a driver for quantity                                 |
| No       | We do these steam trap replacement first and then we fill out the Enbridge applications. The Enbridge incentives are a nice bonus, but they would have done the same number anyway to meet operational standards.   |
| No       | When they do the analysis of the heat exchangers to be cleaned, they don't consider the availability of the Enbridge incentives. The number of cleanings is based on other considerations besides Enbridge support. |
| No       | When we do the analysis of the heat exchangers to be cleaned, we don't consider the availability of the Enbridge incentives. The number of cleanings is based on other considerations besides Enbridge support.     |

**Table D-12. Dat4 verbatim responses for Large Volume**

| Attribution | Dat4. Summarize the program's effect on the timing, efficiency, and amount that you installed.  |
|-------------|---|
| Partial     | The Enbridge incentives allowed us to replace more of the steam traps sooner. If the incentives and tech assistance had not been available, we probably would have only replaced 6 of the more leaky steam traps right away and then delayed the replacements of the other less critical steam traps until later. |
| Partial     | The Enbridge support had no impact on the likelihood of the cleaning, or the timing of the cleaning, or the extent of the cleaning. However, the Enbridge support did allow the company to do more heat exchanger cleanings otherwise.  |
| None        | The Enbridge assistance didn't impact the likelihood of the steam replacements, nor the timing, nor the quantity.   |
| None        | We would have done the same # of steam traps at the same time   |
| None        | We would have done the same number of heat exchanger cleanings at the same time as they did without the Enbridge assistance b/c efficiency, safety, and cost considerations drive the cleaning decisions.   |
| None        | We would have done the same number of heat exchanger cleanings at the same time without the Enbridge assistance. The rebates are nice but they don't influence the project decision-making  |



**None**

We would have done the same timing, efficiency, and size of heat exchangers without Enbridge. However, we could inform the contact engineers about the Enbridge incentives which might prompt them to plan more heat exchangers, but it's not something that we have done so far.

## APPENDIX E. ATTRIBUTION RESULTS WITH ADDITIONAL STATISTICS

The results in this section are not applied to calculate savings totals. These results are different aggregations of the data that provide additional information to the programs and stakeholders. In the tables, results with less than five completes or absolute precision ( $\pm$ ) greater than 35% are not shown, but the categories remain in the table to provide context for the results that can be reported.

The final table in each section has the application domain, Segment, which is the same domain as in the body of the report. Unlike the body of the report, these values are reported both with and without finite population corrected (FPC) errors. FPC errors provide a more appropriate estimate of error for applying results onto populations that were part of the sample frame, i.e. the 2024 program year.

Overall ratios in these tables are the sample weighted average and not used in calculating net savings for the programs.

### Custom Commercial Program

Table E-1. Applied domains with additional statistics for Custom Commercial program

| Segment                       | Free-ridership-based attribution | Sample customers | Sample measures | $\pm$ FPC on | $\pm$ FPC off | Population measures | Percent population m <sup>3</sup> savings |
|-------------------------------|----------------------------------|------------------|-----------------|--------------|---------------|---------------------|---|
| Commercial                    | 77%                              | 18               | 19              | 12%          | 12%           | 298                 | 28%                                       |
| Institutional                 | 96%                              | 9                | 12              | 5%           | 6%            | 64                  | 40%                                       |
| Market Rate Multi-Residential | 64%                              | 12               | 12              | 15%          | 16%           | 426                 | 32%                                       |
| Custom Commercial - Overall   | 78%                              | 38               | 43              | 7%           | 7%            | 788                 | 100%                                      |

Table E-2. Targeted sample domain for Custom Commercial program

| Segment                                 | Free-ridership-based attribution | Sample customers | Sample measures | $\pm$ FPC on | $\pm$ FPC off | Population measures | Percent population m <sup>3</sup> savings |
|---|----------------------------------|------------------|-----------------|--------------|---------------|---------------------|---|
| Commercial - Boilers                    | 87%                              | 6                | 6               | 24%          | 24%           | 166                 | 11%                                       |
| Commercial - Other Commercial           | 74%                              | 9                | 10              | 11%          | 12%           | 127                 | 16%                                       |
| Commercial - Steam Traps                | ***                              | 3                | 3               | 0%           | 0%            | 5                   | 1%  |
| Institutional - Other Institutional     | 97%                              | 5                | 7               | 6%           | 6%            | 42                  | 31%                                       |
| Institutional - Steam Traps             | 94%                              | 5                | 5               | 9%           | 10%           | 22                  | 9%  |
| Market Rate Multi-Residential - Boilers | 56%                              | 6                | 6               | 16%          | 17%           | 242                 | 19%                                       |
| Market Rate Multi-Residential - Other   | 83%                              | 6                | 6               | 30%          | 31%           | 184                 | 13%                                       |
| Custom Commercial - Overall             | 78%                              | 38               | 43              | 7%           | 7%            | 788                 | 100%                                      |

## Custom Industrial Program

Table E-3. Applied domains with additional statistics for Custom Industrial program

| Segment                            | Free-ridership-based attribution | Sample customers | Sample measures | ± FPC on | ± FPC off | Population measures | Percent population m <sup>3</sup> savings |
|------------------------------------|----------------------------------|------------------|-----------------|----------|-----------|---------------------|---|
| Agricultural                       | 54%                              | 14               | 20              | 22%      | 25%       | 183                 | 45%                                       |
| Industrial                         | 73%                              | 17               | 18              | 11%      | 22%       | 143                 | 55%                                       |
| <b>Custom Industrial - Overall</b> | 64%                              | 31               | 38              | 13%      | 18%       | 326                 | 100%                                      |

Table E-4. Targeted sample domain for Custom Industrial program

| Segment                                | Free-ridership-based attribution | Sample customers | Sample measures | ± FPC on | ± FPC off | Population measures | Percent population m <sup>3</sup> savings |
|--|----------------------------------|------------------|-----------------|----------|-----------|---------------------|---|
| Agricultural - Heating or Water System | 25%                              | 6                | 6               | 32%      | 36%       | 55                  | 9%  |
| Agricultural - HVAC                    | 66%                              | 8                | 12              | 28%      | 31%       | 123                 | 34%                                       |
| Agricultural - Process                 | ***                              | 2                | 2               | 61%      | 79%       | 5                   | 2%  |
| Industrial - HVAC                      | ***                              | 3                | 3               | 0%       | 0%        | 21                  | 7%  |
| Industrial - Process                   | 63%                              | 9                | 9               | 13%      | 30%       | 54                  | 34%                                       |
| Industrial - Steam or Hot Water System | ***                              | 3                | 3               | 61%      | 66%       | 26                  | 7%  |
| Industrial - Steam Traps               | ***                              | 3                | 3               | 24%      | 25%       | 42                  | 7%  |
| <b>Custom Industrial - Overall</b>     | 64%                              | 31               | 38              | 13%      | 18%       | 326                 | 100%                                      |

## Large Volume

Table E-5. Applied domains with additional statistics for Large Volume

| Segment      | Free-ridership-based attribution | Sample customers | Sample measures | ± FPC on | ± FPC off | Population measures | Percent population m <sup>3</sup> savings |
|--------------|----------------------------------|------------------|-----------------|----------|-----------|---------------------|---|
| Large Volume | 15%                              | 6                | 11              | 6%       | 12%       | 30                  | 100%                                      |

## APPENDIX F. FREE RIDERSHIP SENSITIVITY ANALYSIS

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Consistent with the 2023 study, five sensitivity analyses were performed to assess the influence of DNV assumptions in the participant FR scoring method. These scores are not intended for application in determining program net savings. We grouped the five sensitivity tests into three dimensions, two of which we tested in two ways:

1. What is the sensitivity of the attribution score to our assumption of 2 years for the acceleration period? We tested this two ways:

1a. Using an assumption of 1 year rather than 2 years when the acceleration period is equivalent to a “never would have implemented” response (100% FR-based attribution) for all measures in all programs. Mathematically, this increases attribution and helps inform us how much the assumption matters.

1b. Using an assumption of 4 years rather than 2 years when the acceleration period is equivalent to a “never would have implemented” response (100% FR-based attribution) for all measures in all programs. Mathematically, this decreases attribution and helps inform us how much the assumption matters.

2. What is the sensitivity of the attribution score to the scoring approach for efficiency?

2. Giving 100% FR-based attribution to programs for customers who say they would have done a different efficiency than what they did, rather than FR-based attribution that ranges from partial to full based on a later response. Mathematically, this increases attribution and informs us how much the assumption matters.

3. What is the sensitivity of the attribution score to the scoring methodology change from previous studies to the current study? We tested this two ways:

3a. Calculate results using the life cycle net savings (LCNS) scoring method. This will test the sensitivity of results to the combined effect of measure life weighting of results and the different treatment of acceleration period savings.

3b. Calculate results using the life cycle net savings (LCNS) scoring method and include vendor attribution. This is the same as 3a but adds back in vendor effect. This will test the sensitivity of different methodologies for participant scoring to adding in vendor effect.

Across the programs, the high-level findings from each test are described below. Due to the small sample sizes in this study it is best to track the patterns in the sensitivity analysis over multiple studies to understand if the effect is consistent.

1: Tests 1a and 1b indicate that changing the “never would have implemented” assumption would have a significant effect on the industrial and large volume segments, suggesting that we should include future research to verify the assumed planning horizon for these projects. Changing the assumption from 2 years to 4 years had a smaller effect than changing from 2 years to 1 year, though the magnitude of ratio changes were comparable.

2: Test 2 indicates that the specific scoring of the efficiency question has an effect on any commercial scores, which was not seen in the 2023 study.

3: Test 3a shows a large effect for each segment. The primary difference in the approaches is the incorporation of measure life both in the weighting of results and the individual measure free-ridership score.

Test 3b provides a way for readers to see how comparable the LCNS results are for the full standard approach including vendor surveys, which is the likely approach that would have been taken if CCM remained the key metric for program goal achievement.



In Table F-1, the first column (standard approach, vendor) is the official free-ridership based attribution that corresponds to the body of the report, shown here at the segment level. To ascertain the results of the sensitivity analysis, the reader should compare columns (standard approach 1 year, standard approach 4 year, no partial efficiency, and LCNS no vendor) to the second column (standard approach, no vendor):

- The first column (standard approach, vendor) to the second column (standard approach, no vendor), to show the effect of including the results of the vendor survey.
- The second column (standard approach, no vendor) to the next four columns (Test 1a, Test 1b, Test 2, and Test 3a) to show the effect of the sensitivity analysis.
- The final column (test 3b) to the adjacent column (test 3a) to see the effect of including the results of the vendor survey in the LCNS method.
- The final column (test 3b) to the first column (standard approach, vendor) to see the relatively apples to apples comparison of the 2024 standard approach and the LCNS method when both include the results of the vendor survey.

Table F-1 shows the results of the sensitivity analysis by sector for the programs. Three tests showed statistically significant sensitivity, The Multi-family test 1a, and the Industrial and Large Volume test 3 (both a and b).

**Table F-1 Sensitivity analysis for Enbridge custom program segments**

| Program      | Segment                  | Standard Approach: Year 1 Net Savings, Vendor | Standard Approach: Year 1 Net Savings | Test 1a: 1 year acceleration = Never | Test 1b: 4 year+ acceleration = Never | Test 2: No Partial Efficiency Score | Test 3a: Lifecycle Net Savings Method | Test 3b: Lifecycle Net Savings Method, Vendor |
|--------------|--------------------------|---|---------------------------------------|--------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---|
| Commercial   | Commercial               | 77%   | 71%                                   | 86%                                  | 63%                                   | 79%                                 | 63%                                   | 70%   |
|              | Institutional            | 96%   | 96%                                   | 98%                                  | 95%                                   | 96%                                 | 96%                                   | 96%   |
|              | Market Rate Multi-Family | 64%   | 56%                                   | 85%                                  | 29%                                   | 56%                                 | 19%                                   | 33%   |
| Industrial   | Agricultural             | 54%   | 54%                                   | 60%                                  | 50%                                   | 55%                                 | 40%                                   | 40%   |
|              | Industrial               | 73%   | 73%                                   | 81%                                  | 64%                                   | 77%                                 | 57%                                   | 57%   |
| Large Volume | Large Volume             | 15%   | 15%                                   | 19%                                  | 12%                                   | 15%                                 | 3%                                    | 3%  |



## APPENDIX G. FREE-RIDERSHIP SURVEY DATA QUALITY CONTROL

This appendix includes summaries of survey responses used to conduct quality control (QC) on the scored FR-based attribution responses. The QC process involves comparison of scored question responses to responses to other questions in the same interview. Interviews with potentially conflicting responses are reviewed by the project manager (PM), who reads the entire interview before determining if an adjustment to a score is required. The options for adjusting a score include:

- Drop the measure from the sample – for very muddled responses
- Replace the inconsistent response with a “Don’t Know” (effectively using the average if it is clear that there should be some FR-based attribution for the component, but unclear how much)
- Adjust the flagged score to more accurately reflect the intent of the respondent (employed in cases where there is overwhelming evidence of intent; for instance, the open-ended response says clearly what the score should be)

Table G-1 provides the count of measures adjusted for each utility and whether the adjustment increased (Inc) or decreased (Dec) FR-based attribution for that measure. In total, 5 out of 95 FR-based attribution scores were adjusted through this process. The percent of adjusted scores (5%) is consistent with the prior studies.

**Table G-1. PM quality assurance adjustments**

| PM Quality Assurance Status                  |   | Overall       |     |       |   |
|--|---|---------------|-----|-------|---|
|  |   | Inc           | Dec | Total |   |
| <b>Total Measures Completed from FR IDIs</b> |   |               |     | 95    |   |
| <b>Not Adjusted</b>                          |   |               |     | 90    |   |
| <b>PM Adjustments from QA</b>                | Dropped   |               |     | 0     |   |
|  |   | Timing        | 0   | 0     | 0 |
|  | Assign “Don’t Know” Attribution due to unclear amount.                        | Efficiency    | 1   | 0     | 1 |
|  |   | Quantity/Size | 0   | 0     | 0 |
|  | Adjust Score Attribution Clear based on open, conflicted with scored response | Timing        | 1   | 1     | 2 |
|  |   | Efficiency    | 1   | 0     | 1 |
| Quantity/Size                                |   | 0             | 1   | 1     |   |

## APPENDIX H. KEY DOCUMENTS

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Four key documents previously reviewed by the EAC preceded this final report: the scope of work, which includes details on the methodologies and scoring used; the sample design memo; and the interview guides for participants and vendors.

### Sample design memo



Ontario Gas FR 2024 -  
FR Sample Design Memo

### Participant IDI guide



Ontario Gas FR  
Participant IDI

### Vendor IDI guide



Ontario Gas FR  
Vendor IDI Guide



## **About DNV**

DNV is an independent assurance and risk management provider, operating in more than 100 countries, with the purpose of safeguarding life, property, and the environment. Whether assessing a new ship design, qualifying technology for a floating wind farm, analyzing sensor data from a gas pipeline or certifying a food company's supply chain, DNV enables its customers and their stakeholders to manage technological and regulatory complexity with confidence. As a trusted voice for many of the world's most successful organizations, we use our broad experience and deep expertise to advance safety and sustainable performance, set industry standards, and inspire and invent solutions.