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**Request IR-01:**

**Regarding the 2014 IRP Mid-Case savings projections.**

- a) Does EfficiencyOne (E1) think that it would be achievable to acquire the energy savings at the same level as the 2014 IRP preferred resource plan?
- b) If E1 were to acquire savings at the same level as the 2014 IRP preferred resource plan, would E1 expect to achieve higher TRC net benefits than what E1 is proposing in its 2020-2022 DSM Plan? If so, how much more?
- c) Has E1 performed any rate and bill impact analysis for the mid-level DSM scenario from the 2014 IRP? If so please provide the results of this analysis.

**Response IR-01:**

- a) Yes. However, under such a scenario EfficiencyOne would suggest increasing over a multi-year period to those levels of energy savings in reasonable step changes so as to maximize the achievability of targets in this range.
- b) Yes, EfficiencyOne would expect higher TRC net benefits. Based on a comparative analysis of 2020-2022 DSM Resource Plan and the 2014 IRP Mid-Case (the DSM profile in the 2014 IRP), EfficiencyOne estimates an additional \$171M in net TRC benefits.
- c) EfficiencyOne has not performed this analysis.

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**Request IR-02:**

**Referencing pages 11 and 12 of Application regarding the new IRP to be filed in mid-July  
2020. Does E1 anticipate modifying its 2020-2022 DSM Plan based on findings from the new  
IRP? Why or why not?**

**Response IR-02:**

Please refer to EfficiencyOne's response to NSUARB-Pronko IR-02.

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**Request IR-03:**

**Table 2 of E1's Application shows that the five-year average of past DSM energy savings is approximately 76% of the 2014 IRP Mid-Level DSM projections from the 2014 IRP. Pages 14 to 16 of E1's Application show that historical saving as a percent of generation are around 1.2% compared to industry leaders at 2%. Why does E1's 2020-2022 DSM Plan target savings that are so much lower than these benchmarks?**

**Response IR-03:**

EfficiencyOne's approach was to move directionally closer to the level of DSM in the 2014 IRP Preferred Resource Plan while considering trends in leading jurisdictions. The table below presents the step changes required to achieve the various potential energy savings levels. EfficiencyOne's consideration of balancing short-term and long-term affordability was the primary consideration that resulted in the Preferred Plan target of a 7 percent increase in first year energy savings.

| <b>2020-2022 DSM Resource Plan<br/>Comparison of Average Annual First Year Energy Savings</b> |                                            |                      |          |
|-----------------------------------------------------------------------------------------------|--------------------------------------------|----------------------|----------|
|                                                                                               | Avg. First Year<br>Energy Savings<br>(GWh) | Step Change<br>(GWh) | Change % |
| 2015-2019 Board Approved Historical Average (1.2%)                                            | 130.9                                      |                      |          |
| Preferred Plan (1.3%)                                                                         | 140.6                                      | 9.7                  | 7%       |
| 2014 IRP (mid-level DSM)                                                                      | 162.8                                      | 31.9                 | 24%      |
| 2014 IRP Gap                                                                                  | 181.0                                      | 40.4                 | 29%      |
| Leading Jurisdictions (2.0%)                                                                  | 225.0                                      | 94.1                 | 72%      |

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**Request IR-04:**

**If E1 is trying to move closer to the 2014 IRP preferred plan, why are the E1 proposed annual energy savings acquired in 2022 less than 2021?**

Response IR-04:

Please refer to EfficiencyOne's response to Synapse IR-10 part a).

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**Request IR-05:**

**Could more savings than E1 is proposing from market-driven opportunities – such as new construction and failed equipment replacement – be cost-effectively acquired in 2020-2022? If so, how much more?**

**Response IR-05:**

Yes. Approximately 850 GWh of additional savings are economically possible (i.e. cost-effective), based on the 2013 DSM Potential Study.

However, EfficiencyOne notes that it is difficult to draw perfect comparisons between the 2020-2022 DSM Resource Plan and past potential study results at the replacement type level due to changes in the measure mix and adjustments to replacement type based on market intervention strategies. A rough comparison shows that savings from replace on burnout (ROB) and new construction (NEW) forecasted in the plan are about 10 percent total annual economic potential forecast for NEW and ROB in the 2013 DSM Potential Study for the 2020-2022 period. The 2013 potential study estimates circa 950 GWh in first-year energy savings per year of economic potential for 2020-2022. Since economic potential assumes full customer awareness of technologies, 100 percent program engagement, and a winner-take-all view where the cost-effective measure with the highest savings in each competition group (i.e. measures that compete for the same baseline technology) replaces the burnt-out baseline stock, this represents a high upper-limit on the amount of savings that could be acquired and should be interpreted with some caution as a theoretical maximum.

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**Request IR-06:**

**When compared in the same year's real dollars, how does the E1 proposed 2020 through 2022 spending compare to the spending in 2015 through 2018?**

**Response IR-06:**

EfficiencyOne's proposed 2020 through 2022 spending compared to the spending in 2015 through 2018 is provided in Table 1 below. Table 2 provides the inflation rates used.

Table 1: EfficiencyOne Spending by Year Nominal vs. 2019 Dollars

| Year          | Investment in<br>Nominal Dollars<br>(\$ millions) | Investment in 2019<br>Dollars<br>(\$ millions) |
|---------------|---------------------------------------------------|------------------------------------------------|
| 2015 Actual   | 32.0                                              | 34.7                                           |
| 2016 Actual   | 30.8                                              | 33.0                                           |
| 2017 Actual   | 30.3                                              | 32.0                                           |
| 2018 Actual   | 33.9                                              | 35.2                                           |
| 2019 Planned  | 34.1                                              | 34.1                                           |
| 2020 Proposed | 41.9                                              | 41.1                                           |
| 2021 Proposed | 43.3                                              | 41.6                                           |
| 2022 Proposed | 43.9                                              | 41.3                                           |

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1 Table 2: Inflation Rates Used<sup>1</sup>

| Inflation Rates Used |       |
|----------------------|-------|
| 2015                 | 1.12% |
| 2016                 | 1.44% |
| 2017                 | 1.60% |
| 2018                 | 2.24% |
| 2019                 | 1.69% |
| 2020                 | 1.93% |
| 2021                 | 2.00% |
| 2022                 | 2.15% |

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<sup>1</sup> Source: <https://www.statista.com/statistics/271247/inflation-rate-in-canada/>

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**Request IR-07:**

**Does the comparison of unit costs in Table 5 of E1's Application include the effects of inflation? If not, please provide an inflation-adjusted comparison of unit costs.**

**Response IR-07:**

Please see Tables 1 and 2 below for the comparison of unit costs in Table 5 adjusted for inflation.

**Table 1: 2016-2018 DSM Results Restated for Lighting Changes in 2019 Dollars**

| <b>2016-2018 DSM Results<br/>Restated for Lighting Changes in 2019 Dollars</b> |                                                  |                                                         |                                    |                                                     |                                           |                                                            |
|--------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------|------------------------------------|-----------------------------------------------------|-------------------------------------------|------------------------------------------------------------|
|                                                                                | <b>2016-2018 Results (Restated 2019 Dollars)</b> |                                                         |                                    |                                                     |                                           |                                                            |
| <b>Sector</b>                                                                  | <b>First Year Energy Savings (GWh)</b>           | <b>First Year Energy Savings (GWh) Lighting Removed</b> | <b>Fully Allocated Spend (\$M)</b> | <b>Fully Allocated Spend (\$M) Lighting Removed</b> | <b>Fully Allocated Unit Cost (\$/kWh)</b> | <b>Fully Allocated Unit Cost (\$/kWh) Lighting Removed</b> |
| <b>Residential</b>                                                             | 174.4                                            | 132.7                                                   | 42.7                               | 37.5                                                | 0.24                                      | 0.28                                                       |
| <b>BNI</b>                                                                     | 247.5                                            | 180.9                                                   | 48.0                               | 41.4                                                | 0.19                                      | 0.23                                                       |
| <b>Enabling Strategies</b>                                                     |                                                  |                                                         | 9.6                                | 9.6                                                 |                                           |                                                            |
|                                                                                | <b>421.9</b>                                     | <b>313.6</b>                                            | <b>100.3</b>                       | <b>88.5</b>                                         | <b>0.24</b>                               | <b>0.28</b>                                                |

**Table 2: 2016-2018 DSM Results Restated for Lighting Changes**

| <b>2016-2018 DSM Results<br/>Restated for Lighting Changes</b> |                                        |                                                         |                                    |                                                     |                                           |                                                            |
|----------------------------------------------------------------|----------------------------------------|---------------------------------------------------------|------------------------------------|-----------------------------------------------------|-------------------------------------------|------------------------------------------------------------|
|                                                                | <b>2016-2018 Results</b>               |                                                         |                                    |                                                     |                                           |                                                            |
| <b>Sector</b>                                                  | <b>First Year Energy Savings (GWh)</b> | <b>First Year Energy Savings (GWh) Lighting Removed</b> | <b>Fully Allocated Spend (\$M)</b> | <b>Fully Allocated Spend (\$M) Lighting Removed</b> | <b>Fully Allocated Unit Cost (\$/kWh)</b> | <b>Fully Allocated Unit Cost (\$/kWh) Lighting Removed</b> |
| <b>Residential</b>                                             | 174.4                                  | 132.7                                                   | 40.5                               | 35.4                                                | 0.23                                      | 0.27                                                       |
| <b>BNI</b>                                                     | 247.5                                  | 180.9                                                   | 45.6                               | 39.3                                                | 0.18                                      | 0.22                                                       |
| <b>Enabling Strategies</b>                                     |                                        |                                                         | 9.1                                | 9.1                                                 |                                           |                                                            |
|                                                                | <b>421.9</b>                           | <b>313.6</b>                                            | <b>95.1</b>                        | <b>83.7</b>                                         | <b>0.23</b>                               | <b>0.27</b>                                                |

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**Request IR-08:**

**Regarding E1 discussion of Affordability on pages 39-40 of the Application.**

**a) What impact on short-term rates would E1 consider to be on the high end before it is no longer affordable? Please explain your response.**

**b) Does E1 believe that the \$82.5 Million average annual investment that resulted from the 2014 IRP (page 41) would still be considered affordable?**

**Response IR-08:**

a) Affordability is not subject to a precise determination under the existing legislation. EfficiencyOne also notes that ratepayers are not a homogeneous group – and that affordability- while an individual determination – must be assessed on an entire rate class basis. In an effort to address affordability EfficiencyOne has focused on avoiding large step changes in both energy savings and investment levels in favour of a measured directional movement toward the optimal levels determined by the current Integrated Resource Plan (IRP). EfficiencyOne intends to adopt this same approach when informed by the anticipated 2020 IRP.

b) EfficiencyOne considers this scenario results in the lowest revenue requirement rendering it affordable and optimal over the long term. However, when looking at affordability, EfficiencyOne was guided by the direction of the Nova Scotia Utility and Review Board (NSUARB) in Matter MO6733 where it was noted that affordability cannot be merely a short term consideration of rates and bill impacts- that it requires an examination of the long term potential benefits to ensure that ratepayers benefit from cost effective and available DSM programs. From that analysis, and the further comments of the NSUARB in relation to the interpretation of s. 79L (9) of the Public Utilities Act, EfficiencyOne

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1 concluded that in the alternative, a focus only on maximum long term benefits, as would  
2 exist under the 2014 IRP, may not be found by the NSUARB to be “affordable” under the  
3 existing statutory regime.

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**Request IR-09:**

**If “181 GWh until 2040 in order to meet the optimal level of savings which is in the best  
interests of ratepayers.” (Application page 42), why does the Preferred Scenario target  
lower savings?**

**Response IR-09:**

Please refer to EfficiencyOne’s response to CA IR-03.

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**Request IR-10:**

**Has E1 done any analysis on alternative scenarios where savings are higher than the Preferred Scenario? If so, please provide detailed projections of costs, savings, and cost-effectiveness for these scenarios. If not, please explain why not.**

**Response IR-10:**

Please refer to EfficiencyOne's response to Synapse IR-11 b).

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**Request IR-11:**

**In Section 7 of its Application, E1 discusses the addition of a lifetime energy savings target.**

- a) Does E1 support the phasing out of the cumulative annual savings targets in favor of a lifetime savings target? Why or why not.**
- b) Will E1 be utilizing assumptions around shifting baselines, and/or measure persistence to determine lifetimes savings? If so, how will these assumptions be handled?**

**Response IR-11:**

- a) No, EfficiencyOne does not support this. EfficiencyOne believes the two existing Performance Targets also provide ongoing value and accountability to ratepayers. Cumulative Annual Demand Savings as a Performance Target provides completely independent information from the other two proposed Performance Targets (i.e. results relating to the reduction of NS Power's Annual System Peak Demand). While Cumulative Annual Energy Savings and Cumulative Lifetime Energy Savings targets are related through the Weighted-Average Measure Life of EfficiencyOne's portfolio, situations could arise whereby one of these Performance Targets is met, while the other is not. Both of these scenarios (i.e. not meeting one Performance Target, while meeting the other) are theoretically possible, but meeting the Cumulative First-Year Energy Savings Performance Target, while not meeting the Cumulative Lifetime Energy Savings Target is envisioned by EfficiencyOne as being more likely. Table 1 provides a theoretical example of such a situation for a Program.

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Table 1: Example Program Results - Cumulative First-Year Energy Savings Performance Target Met

| <b>Program A</b>                                | Program Targets | Program Results |
|-------------------------------------------------|-----------------|-----------------|
| Cumulative First-Year Energy Savings (GWh/year) | 10              | 11              |
| Weighted-Average Measure Life (Years)           | 10              | 8               |
| Cumulative Lifetime Energy Savings (GWh)        | 100             | 88              |

The example demonstrates a decrease in Weighted-Average Measure Life between planned program targets that would generally be the result of a difference in the delivered measure portfolio versus planning expectations. An example of such a difference would be an increase in the delivery of Light Emitting Diode (LED) lighting measures with relatively short Effective Useful Life (EUL) values, and a decrease of ductless heat pump measures with a relatively long EUL, relative to planning expectations.

Table 2 provides an example of a situation where the Cumulative Lifetime Energy Savings Performance Target is met, while the Cumulative First-Year Energy Savings Target is not.

Table 2: Example Program Results - Cumulative Lifetime Energy Savings Performance Target Met

| <b>Program A</b>                                | Program Targets | Program Results |
|-------------------------------------------------|-----------------|-----------------|
| Cumulative First-Year Energy Savings (GWh/year) | 10              | 9               |
| Weighted-Average Measure Life (Years)           | 10              | 12              |
| Cumulative Lifetime Energy Savings (GWh)        | 100             | 108             |

The example demonstrates an increase in Weighted-Average Measure Life between planned program targets that would also generally be the result of a difference in the delivered measure portfolio versus planning expectations. An example of such a

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1 difference would be a decrease in the delivery of refrigeration control measures with  
2 relatively short Effective Useful Life (EUL) values, and an increase of building envelope  
3 measures with a relatively long EUL, relative to planning expectations.  
4

5 This second situation is considered less likely, as measures with longer EUL values are  
6 typically associated with higher upfront costs and are more challenging with respect to  
7 participant recruitment.  
8

- 9 b) EfficiencyOne expects its independent evaluator to continue to consider future baseline  
10 changes in its evaluation of Lifetime Energy Savings (LES), as was done for certain LED  
11 lighting measures in its 2017 evaluation. The approach used in the 2017 evaluation was  
12 based on a multi-baseline approach, which adjusted projected annual energy savings  
13 throughout the measure's EUL to arrive at LES values for these measure types. Any  
14 approach employed by the independent evaluator in the future is expected to be at the  
15 discretion of the evaluator.

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**Request IR-12:**

**Section 10.2 of E1’s Application discusses the inclusion of CO2 emissions in cost-effectiveness screening. If a suitable methodology for counting the value of CO2 emissions in cost-effectiveness screening is determined:**

- a) Will E1 provide updated cost-effectiveness projections for its 2020-2023 DSM Plan?**
- b) Will E1 provide cost-effectiveness results including the cost of CO2 in its annual reports?**

**Response IR-12:**

- a) EfficiencyOne will consider reproducing the 2020-2022 cost effectiveness screening for information purposes to illustrate the effect of CO<sub>2</sub> avoided costs during efforts to determine a suitable methodology.
- b) No. Although EfficiencyOne plans to incorporate CO<sub>2</sub> into future cost-effectiveness screening EfficiencyOne does not conduct ex-post cost-effectiveness testing. After energy efficiency measures have been delivered, EfficiencyOne has three verified metrics: program administrator spending, energy savings, and demand savings. EfficiencyOne does not have verified customer costs or verified utility avoided costs, both of which are required to retroactively perform cost-effectiveness screening with actual results. Because EfficiencyOne has actual savings and spending, unit cost is the most accurate, meaningful measure of program performance. Unit cost can be expressed as a first-year energy savings unit cost, lifetime energy savings unit cost, and demand savings unit cost. However, it should be noted that the actual spending, energy savings, and demand savings will inform subsequent cost-effectiveness screening exercises (i.e. the 2023-2025 DSM plan), just as

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- 1 actual results have informed savings and cost assumptions in the 2020-2022 plan cost
- 2 effectiveness screening.

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**Request IR-13:**

**For each program, please provide the projected number of low-income participants and/or the number and type of measures that are associated with low-income customers.**

**Response IR-13:**

Please refer to the following tables in Appendix A- 2020-2022 DSM Resource Plan for estimates of low-income participation:

- Table 8: 2020-2022 Residential Efficient Product Rebates Low-Income Performance Indicators
- Table 11: 2020-2022 Existing Residential Low-Income Performance Indicators
- Table 17: 2020-2022 BNI Efficient Product Rebates Low-Income Performance Indicators
- Table 20: 2020-2022 Custom Incentives Low-Income Performance Indicators
- Table 23: 2020-2022 Direct Installation Low-Income Performance Indicators

The New Residential program is assumed to have no low-income participation.

The tables referenced above summarize estimated incidental low-income participation (i.e. estimated low-income participation in market-rate programs) and known low-income participation (e.g. participation in the Affordable Multi-Family Housing and Non-Profit Organizations program component).

Incidental low-income participation in the 2020-2022 Plan is based on historical results. The methodology for calculating incidental participation was shared with the DSM Advisory Group (DSMAG) on April 27, 2018 and is provided as Attachment 1 of this response. This is a top-down approach to estimating incidental participation, so individual measure types and counts are not available.

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- 1 Thirteen measures which are exclusive to or primarily oriented towards low-income populations
- 2 were modelled at the measure level (referred to above as “known” low-income participation).
- 3 These measures are summarized over the 2020-2022 period in Table 1 below.

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Table 1: Summary of low-income measures for the 2020-2022 Preferred Plan

| <b>Program</b>                        | <b>Program Component</b>                                     | <b>Measure</b>                             | <b>Measure Quantity<br/>(2020-2022 totals)</b> | <b>First Year Energy<br/>Savings (2020-2022<br/>totals) - MWh</b> |
|---------------------------------------|--------------------------------------------------------------|--------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|
| Existing Residential                  | Affordable Multi-Family Housing and Non-Profit Organizations | Custom Energy Efficiency                   | N/A <sup>1</sup>                               | 4,762                                                             |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Dehumidifier replacement (Low income only) | 30                                             | 22                                                                |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Drain Water Heat Recovery                  | 20                                             | 18                                                                |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Freezer replacement (Low income only)      | 30                                             | 47                                                                |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Refrigerator replacement (Low income only) | 30                                             | 24                                                                |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Whole Home First Nations Retrofit          | 337                                            | 2,739                                                             |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Clothes Dryers                             | 30                                             | 6                                                                 |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Clothes Washers                            | 30                                             | 4                                                                 |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Heat Pump Water Heater                     | 20                                             | 17                                                                |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Programmable Thermostats                   | 83                                             | 20                                                                |
| Existing Residential                  | First Nations Home Energy Efficiency                         | Dehumidifier replacement (Low income only) | 30                                             | 22                                                                |
| Residential Efficient Product Rebates | Appliance Retirement                                         | Dehumidifier replacement (Low income only) | 241                                            | 177                                                               |
| Residential Efficient Product Rebates | Appliance Retirement                                         | Freezer replacement (Low income only)      | 330                                            | 513                                                               |
| Residential Efficient Product Rebates | Appliance Retirement                                         | Refrigerator replacement (Low income only) | 97                                             | 76                                                                |

<sup>1</sup>. Affordable Multi-Family Housing and Non-Profit Organizations was modelled as a single custom measure with a unit basis of Gross GWh saved instead of quantity installed

## 1 OBJECTIVE AND BACKGROUND

Efficiency Nova Scotia (ENS) delivers the HomeWarming service to Nova Scotians that primarily use non-electric heating. Since HomeWarming is only offered to low income Nova Scotians, it is considered “dedicated” low income programming.

It is assumed that low income Nova Scotians also participate in other ENS programs in varying proportions. This is “incidental” low income programming. This document presents assumptions used to estimate the incidental participation in each program. The resulting estimates are included in low income impacts presented in Quarterly and Annual Progress Reports. These estimates are provided for informational purposes only as ENS does not have regulated performance targets for low income services. The estimation methodology for each program is based on the best available data for that program.

## 2 KEY ASSUMPTIONS

### **County Prevalence (CP) of Low Income Nova Scotians**

Census data for Nova Scotia provides the population and percentage of low income residents by county. The percentage of low income Nova Scotians in a certain county is the County Prevalence (CP) for that county.

### **Overall Prevalence (OP) of Low Income Nova Scotians**

From the county-level low income census data, the provincial average percentage of low income residents was calculated to be 14%. This is the Overall Prevalence (OP).

### **Apartment Prevalence (AP) of Low Income Nova Scotians**

Research commissioned by ENS in 2015 reported on the incidence of low income Nova Scotians in apartment buildings. The conclusion was that 53% of 1-unit apartment residents are low income, and 57% of 2-4 unit apartment residents are low income. ENS currently uses the average, 55%, as the Apartment Prevalence (AP).

### **Energy, Demand, Expenditures, and Participants**

The calculations used in this document use the general term “savings”. The same calculations are applied to energy savings, peak demand savings, program expenditures, and in most cases, participation numbers, but substituting “savings” for those other parameters.

## 3 PROGRAM CALCULATIONS

### **3.1 RESIDENTIAL - EFFICIENT PRODUCT REBATES**

EfficiencyOne

Estimation of Incidental Low Income Impacts

### 3.1.1 INSTANT SAVINGS

#### Assumption

Low income Nova Scotians are assumed to be 10 per cent as likely to participate as the general population (as estimated by a local low-income expert).

#### Calculation

Low income savings = (total savings) x (OP) x (10%)

### 3.1.2 APPLIANCE RETIREMENT

#### Assumptions

When tracking savings and expenditures, ENS includes appliance *replacements* (which are delivered through the HomeWarming service) within the Appliance Retirement program component, however the low income participation is calculated differently.

Appliance *replacements* are exclusively low income, as they are only available to HomeWarming participants.

For appliance *retirements*, low Income Nova Scotians are assumed to be 10% as likely to participate as the general population (as estimated by a local low-income expert).

#### Calculation

Low income *replacement* savings = (total *replacement* savings)

Low income *retirement* savings = (total *retirement* savings) x (OP) x (10%)

Low income total savings = (low income replacement savings) + (low income retirement savings)

## 4 RESIDENTIAL - EXISTING RESIDENTIAL

### 4.1 HOME ENERGY ASSESSMENT

#### Assumption

No low income participation.

### 4.2 GREEN HEATING SYSTEMS

#### Assumption

EfficiencyOne

Estimation of Incidental Low Income Impacts

No low income participation.

#### **4.3 RESIDENTIAL DIRECT INSTALL - HOUSES**

##### **Assumptions**

Income disclosure is optional for this program component. Low income participants are tracked where income information is available; otherwise low income Nova Scotians are assumed to participate in proportion to the general population, within each county.

##### **Calculation**

Low income savings in county Z from undisclosed income group = (total savings in county Z from undisclosed income group) x (CP for county Z)

Total low income savings = (tracked low income savings) + (total low income savings from undisclosed income groups in all counties)

#### **4.4 RESIDENTIAL DIRECT INSTALL - APARTMENTS**

##### **Assumptions**

Income disclosure is optional for this program component. Low income participants are tracked where income information is available; otherwise the proportion of low income tenants in participating apartments is assumed to be the same as the proportion of low income tenants in Nova Scotia apartments overall.

##### **Calculation**

Total low income savings = (tracked low income savings) + [(total low income savings from undisclosed income group) x (AP)]

### **5 RESIDENTIAL - NEW RESIDENTIAL**

#### **5.1 NEW HOME CONSTRUCTION**

##### **Assumption**

No low income participation.

### **6 BNI - EFFICIENT PRODUCT REBATES**

#### **6.1 BUSINESS ENERGY REBATES - MAIL-IN**

##### **Assumptions**

## EfficiencyOne

## Estimation of Incidental Low Income Impacts

Actual program participants are apartment building owners. Avoided energy benefits are assumed to flow-through to tenants either a) directly, where tenants pay power bills, or b) indirectly, by means of deferred increases in rent.

**Calculation**

Low income savings = (total savings from apartment buildings) x (AP)

**6.2 BUSINESS ENERGY REBATES - INSTANT REBATES****Assumption**

Actual program participants are apartment building owners. Avoided energy benefits are assumed to flow-through to tenants either a) directly, where tenants pay power bills, or b) indirectly, by means of deferred increases in rent.

The exact installation location of products receiving Business Energy Rebates – Instant Rebates (BER-IR) is unknown, as it is a point-of-sale rebate program. The proportion of low income BER-IR measures is assumed to be the same as the proportion of low income BER Mail-In (BER-MI) measures.

**Calculation**

BER-IR low income savings = [(BER-MI low income savings) / (BER-MI total savings)] x BER-IR total savings

**7 BNI - CUSTOM INCENTIVES****7.1 CUSTOM****Assumption**

Actual program participants are apartment building owners. Avoided energy benefits are assumed to flow-through to tenants either a) directly, where tenants pay power bills, or b) indirectly, by means of deferred increases in rent.

**Calculation**

Low income savings = (total savings from apartment buildings) x (AP)

**7.2 ENERGY MANAGEMENT INFORMATION SYSTEMS****Assumption**

No low income participation.

EfficiencyOne

Estimation of Incidental Low Income Impacts

### **7.3 STRATEGIC ENERGY MANAGEMENT**

#### **Assumption**

No low income participation.

## **8 DIRECT INSTALLATION**

### **8.1 SMALL BUSINESS ENERGY SOLUTIONS**

#### **Assumption**

Actual program participants are apartment building owners. Avoided energy benefits are assumed to flow-through to tenants either a) directly, where tenants pay power bills, or b) indirectly, by means of deferred increases in rent.

Savings from projects in the Affordable Multifamily Housing Pilot are also included in this calculation.

#### **Calculation**

Low income savings = [(total savings from apartment buildings) x (AP)] + (total savings from Affordable Multifamily Housing Pilot)

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**Request IR-14:**

**Please provide any surveys or studies that E1 relied on for the development of 2020 – 2022  
DSM Plan regarding Nova Scotia’s low-income sector.**

**Response IR-14:**

EfficiencyOne, through the administration of the HomeWarming program and engagement  
with the Affordable Energy Coalition, identified that there were limited services accessible  
for low-income renters that included deep energy retrofits, such as insulation. This in addition to  
a 2017 agreement with the Province of Nova Scotia to offer these services to  
non-electrically heated buildings, informed the inclusion of these services in the 2020-2022  
DSM Resource Plan for electrically heated buildings.

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**Request IR-15:**

**Has E1 considered or done any analysis on the addition of a residential behavior program, such as a Home Energy Report program, to its 2020-2022 DSM Plan? If so, what were the results of this analysis. If not, why not?**

**Response IR-15:**

EfficiencyOne is aware of residential behaviour program offerings, including the growing trend to incorporate residential behaviour programs into DSM portfolios. EfficiencyOne also has direct experience by offering its own Home Energy Report program, which operated from 2013 to 2015. An analysis of residential behaviour programs was not completed when developing the 2020-2022 DSM Plan.

In the past several years EfficiencyOne has tracked its lifetime energy savings. As part of the 2020-2022 DSM Plan, EfficiencyOne is requesting lifetime energy savings become a performance target for the first time. EfficiencyOne decided not to include residential behaviour programs into its 2020-2022 DSM Plan because the persistence of these energy savings is relatively low. While behaviour programs have many benefits, EfficiencyOne wanted to place a focus on ensuring that the energy savings persist long into the future. If behaviour programs were to be considered, it could greatly reduce the persistence of the energy savings being achieved (average measure life of 14.2 years).

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**Request IR-16:**

**The list of measures offered under the Instant Savings program, on pages 26 to 27 of the 2020-2022 DSM Plan, includes both “programmable thermostats” and “smart thermostats for electric heating”.**

**a) What specifies a “smart thermostat”?**

**b) How will E1 be promoting these competing technologies (programmable vs. smart thermostat)?**

**c) Appendix A, Attachment 1 to the 2020-2022 DSP Plan does not include any detailed values for a “smart thermostat”. Please provide the detailed measure assumptions for the “smart thermostat”.**

**Response IR-16:**

a) Like programmable thermostats, smart thermostats allow the homeowner to control the temperature of their home throughout the day through a schedule. In addition to this function, Smart thermostats are required to have internet connectivity allowing the homeowner to control their home heating remotely. Smart thermostats may also employ learning algorithms and sensors to help set the most efficient schedules.

b) EfficiencyOne offers rebates on both programmable thermostats and smart thermostats through the Instant Savings program component. The rebate for smart thermostats is higher since the technology has the same functionality of programmable thermostats, in addition to the ability to learn occupant behavior and be controlled remotely, which is expected to result in greater savings opportunities. Due to these additional features, smart thermostats have a higher cost than programmable thermostats.

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1 Programmable thermostats are still attractive to customers with a lower cost and some  
2 simplicity benefits. Additionally, only one brand of locally available smart thermostat can  
3 be used for electric resistance heating (Mysa). As the unit cost of smart thermostats  
4 continues to drop and more options become available, EfficiencyOne will reassess rebates  
5 for programmable thermostats.

- 6  
7 c) EfficiencyOne has not yet undergone a third-party impact evaluation for smart thermostats.  
8 Since evaluated information is not available, EfficiencyOne has only modelled  
9 programmable thermostats, which is a reasonable proxy for smart thermostat measure  
10 characterization.

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**Request IR-17:**

**Please describe any coordination with either natural gas or water utilities that E1 plans to do as part of the 2020-2022 DSM Plan. If E1 plans no coordination, please describe why not.**

**Response IR-17:**

There is currently no coordination planned with natural gas or water utilities as part of the 2020-2022 DSM Plan. As opportunities arise, EfficiencyOne is receptive to working with natural gas and water utilities as appropriate under its mandate.

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**Request IR-18:**

**What opportunities exist to assist with the construction of new efficient multifamily buildings  
under the 2020-2022 DSM Plan?**

**Response IR-18:**

Under the 2020-2022 DSM Plan, opportunities to assist the construction of multi-unit residential  
buildings include:

- Construction of smaller multi-unit residential buildings through the Small New Construction service;
- Continuing to provide design and technical assistance for larger multi-unit residential buildings through the New Construction service;
- Increasing participants' awareness of building envelope and building automation opportunities through business development activities related to new developments;
- Continuing to evolve the measure offerings with market trends, resulting in cost-effective, efficient projects that decrease operating costs for participants; and
- Continuing financial assistance through rebates and funding for energy models.

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**Request IR-19:**

**How did E1 set incentive levels for the residential programs in the 2020 - 2022 DSM Plan?**

Response IR-19:

EfficiencyOne's incentive levels for residential programs were initially established based on the actual incentive offerings in place at the time of initial Plan development (Q3 2018). These existing incentives have been considered as part of EfficiencyOne's Incentive Setting activities, as described in EfficiencyOne's response to IG IR-21. During EfficiencyOne's vetting process, Program Managers updated some expected residential incentives on the basis of:

- The availability of more detailed historical information or historical average (for mature measures with variable incentive amounts per project);
- Updated contractual expectations with respect to incentives;
- Program Manager expectations with respect to market conditions (future pricing due to technological advances and inflation); and
- Anticipated Incentive Setting Process consideration (i.e. anticipated changes to incremental cost as reflected in the modelling, expected measure unit costs).

Incentives for new pilots and measures were established by the modelling team, taking into account project and incremental costs, and expected energy and demand savings of the measure (affecting measure unit cost).

EfficiencyOne expects that as market conditions change throughout the 2020-2022 DSM Resource Plan implementation period, incentives may be further adjusted using the incentive setting process.