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Request IR-01:

In Table 1 on page 2, the lifetime energy savings listed in the mid-course adjustment column are significantly different than those in the 2017 results column, even though the first-year energy savings in both categories appear much closer. Please explain the reason for those large variances.

Response IR-01:

The variances in lifetime energy savings between the mid-course adjustment and 2017 results are due to measure life revisions resulting from the 2017 evaluation process. The most significant revision was due to the consideration of future baseline changes for general service lighting.

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Request IR-02:

Regarding the data tracking system, Dynamic DSM, page 10 states that the system will create efficiencies for program delivery, research, and marketing purposes. Please quantify the efficiencies that have been achieved and are still anticipated.

Response IR-02:

EfficiencyOne anticipates the implementation of the Dynamic DSM system will lead to several efficiencies, primarily because of improvements it brings over the pre-implementation environment. Prior to the Dynamic DSM project, EfficiencyOne utilized three main systems for managing customer and program data:

- the original data management system that supports several BNI programs;
- Excel tracking sheets; and
- Zendesk, which is a ticketing system used to track customer inquiries.

In 2014, EfficiencyOne hired a consultant to interview staff regarding their data processes. The consultant noted that reporting and analytics shortcomings were negatively affecting productivity. The productivity impacts were not quantified, but the consultant noted various time-consuming processes that would be made more efficient by an enhanced data system (e.g., manual data entry and re-entry, lack of automation, data housed in disparate locations).

Regarding program delivery, the Dynamic DSM system will increase efficiencies by, *inter alia*, consolidating data in a transactional system (removing the manual work of compiling data from disparate locations and Excel spreadsheets for reporting and analytical purposes). Similarly, the Dynamic DSM system will reduce data processing and program cycle times by automating data entry and quality assurance, among other things.

EfficiencyOne is already realizing these benefits for programs that have transitioned to the Dynamic DSM system. For example, the Dynamic DSM system has enabled Appliance Retirement

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1 program staff to streamline their weekly invoice process, which has had a positive impact on
2 program cycle time reducing it from 43 days in Q1 2015 to 29 days in Q1 2018. This means
3 customers receive their cheques an average of two weeks earlier than before the Dynamic DSM
4 system was implemented. Residential Efficient Production Installation program staff have noted a
5 reduction in the time spent manually completing quality checks on data received from partners.
6 The data quality check is automated in the Dynamic DSM system, removing the manual process.
7 Efficiencies like these will continue as more programs are migrated into the Dynamic DSM
8 system.

9
10 EfficiencyOne also anticipates the Dynamic DSM system will lead to marketing and research
11 efficiencies. With all program data moving to one system, the ability for targeted marketing,
12 research, and analytics is increased. This is anticipated to improve program uptake by having the
13 ability to tailor marketing and messaging based on specific customer attributes. It will also give
14 EfficiencyOne a holistic and client-centric view of its business.

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Request IR-03:

On page 11, it is noted that delays were experienced with implementing Dynamic DSM due to vendor development issues, and that E1 engaged with the vendor to mitigate risks.

- a) Please elaborate on the development issues.**
- b) Please explain the risks that were mitigated.**
- c) How were DSM programs impacted by this delay?**

Response IR-03:

a) EfficiencyOne identified several issues regarding the vendor's interpretation of EfficiencyOne's business requirements, which led to misinterpretations of EfficiencyOne's needs. The vendor also identified issues they were experiencing with their external development team.

b) The primary risk identified was that a solution might be built that did not fully meet EfficiencyOne's business requirements. To mitigate this risk, EfficiencyOne temporarily paused further project development and expenditure. EfficiencyOne then identified governance and process improvements, including improving communication by moving the responsibility for documenting project requirements from the vendor to EfficiencyOne. To mitigate the issues the vendor was experiencing with its development team, the vendor switched to a team that was specialized in the MS Dynamics CRM software, which forms the basis of the Dynamic DSM system.

EfficiencyOne and the vendor also established a remediation plan. EfficiencyOne is now in the process of restarting the project with confidence that the proper processes and procedures are in place to support the project moving forward.

c) The only impact to DSM programs is that the programs that have not yet been migrated to the Dynamic DSM system are delayed in experiencing the anticipated benefits of the

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1 move. The DSM programs that had already transitioned into Dynamic DSM continued
2 to use the system and were supported by the vendor during the downtime in the project.

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Request IR-04:

Regarding the residential sector results, please explain the changes in program measure distribution that resulted in a higher demand-to-energy ratio.

Response IR-04:

The demand-to-energy ratio is influenced by several factors. Distribution of measures plays a significant role in demand savings being disproportionately higher than the energy savings observed in 2017. Other factors that influence the higher demand-to-energy ratio include:

1. Updates to energy and demand savings estimation methodologies from program evaluations; and
2. The methodology used to determine the 2017 mid-course demand target.

Increases in demand-to-energy ratios at a measure-level can be due to increases in demand savings estimates and/or decreases in energy savings estimates. Program evaluation results have generally trended towards greater demand-to-energy ratios than were assumed in the 2016-2018 DSM Resource Plan, resulting in higher evaluated demand savings than energy savings when compared to the DSM Plan amounts.

The overall total energy and demand targets in the 2017 mid-course adjustment remained at the same levels as the 2017 planned amounts (136.5 GWh and 21 MW respectively). However, since recent program evaluations have shown higher demand-to-energy ratios than what was anticipated for 2017, the demand savings achieved in 2017 are disproportionately higher than the energy savings achieved when compared to the mid-course adjusted targets.

With respect to changes in measure distribution within the Residential sector, the Green Heat program component exceeded its 2017 planned demand savings, primarily due to considerable uptake in mini-split heat pumps and high evaluated demand savings. This resulted in a higher-than-anticipated demand to energy ratio for this measure.

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Request IR-05:

Referencing Table 4 on page 12, please elaborate on the municipal class participation in DSM programs. Please identify the municipal utility, programs or measures accessed, the number of participants in each program or measure, and the costs incurred by E1.

Response IR-05:

Please refer to Attachment 1 of this IR response.

	Program	Program Component	Units	Municipal Utility					Total
				Antigonish	Berwick	Canso	Mahone Bay	Riverport	
Residential	Efficient Products Rebates	Appliance Retirement	Units rebated	33	23	0	5	1	88
			Expenditures (\$ thousand)	7	4	0	1	0	17
		Instant Savings ¹	Units rebated			12,932			12,932
			Expenditures (\$ thousand)			51			51
	Existing Residential	Efficient Product Installation	Housing units	54	121	11	9	13	262
			Expenditures (\$ thousand)	11	35	4	2	5	72
		Green Heat	Housing units	9	6	0	0	0	20
			Costs	5	3	0	0	0	10
		Home Energy Assessment	Housing units	6	6	0	1	0	13
			Expenditures (\$ thousand)	12	15	0	11	0	38
Business, Non-Profit and Institutional (BNI)	Efficient Products Rebates	Business Energy Rebates ²	Units rebated	13,083	384	0	0	0	13,525
			Expenditures (\$ thousand)	313	27	0	0	0	341
	Custom Incentives	Custom	Projects	1	1	0	0	0	2
			Expenditures (\$ thousand)	135	29	0	0	0	164
		Energy Management Information Systems	Participants	0	0	0	0	0	1
			Expenditures (\$ thousand)	0	0	0	0	0	26
		Strategic Energy Management	Projects	0	0	0	0	0	0
			Expenditures (\$ thousand)	0	0	0	0	0	0
	Direct Installation	Small Business Energy Solutions	Projects	2	3	0	0	0	8
			Expenditures (\$ thousand)	4	29	0	0	0	85

Numbers may not sum due to rounding.

¹Instant Savings rebates are upstream and therefore transactional data, including participant location, is unavailable. Total municipal participation is estimated.

²Includes both BER Mail-In and Instant Rebates. Instant Rebates are upstream and therefore transactional data, including participant location, is unavailable. Instant Rebates breakdown by municipal utility is estimated based on the municipal utility distribution observed in BER Mail-in.

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Request IR-06:

Regarding appliance retirements, page 14 states that 386 appliances were replaced, and footnote 12 states that costs for replacements in non-electrically heated homes are paid by DSM funds.

- a) What was the total cost of the replacements that were funded by electricity ratepayers?**
- b) What are the amounts of energy and demand reduction achieved by those replacements?**
- c) Please explain the rationale for requiring electricity ratepayers to cover total cost for those replacements rather than a smaller incentive amount.**

Response IR-06:

- a) The total cost of replacements funded by ratepayers was \$299,000.
- b) Appliance replacements achieved the following energy and demand reductions in 2017:
 - First year energy savings: 0.448 GWh
 - Peak demand savings: 0.079 MW
- c) Free appliance replacements were originally offered through the former DSM-funded Low Income Homeowner Service. Its successor, the HomeWarming program, is delivered by both ENS and Clean Foundation, and free appliance replacements continue to be offered by both parties.

The costs for ENS replacements are paid for through DSM funds because they are necessary to achieve electricity savings from this low-income market segment, for whom a smaller incentive would not be sufficient to overcome the cost barrier to participation. Offering appliance replacement rebates to low-income participants is consistent with EfficiencyOne's balanced plan approach, which seeks to maximize

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1 energy savings while balancing costs and benefits, minimizing risk, and providing
2 broad access to savings opportunities for hard-to-serve customers (equity). Offering
3 appliance replacements to low-income homeowners reduces risk through portfolio
4 diversification and provides equitable access to savings opportunities to hard-to-serve
5 customers, i.e. low-income homeowners.

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Request IR-07:

Regarding the EnerGuide Real Estate Listing pilot that gives homeowners the option to have EnerGuide information included with their home listing on the ViewPoint.ca real estate website,

- a) Please explain any DSM costs for this option.**
- b) What has been the uptake since being launched in Q4 2017?**
- c) Are there any energy or demand savings associated with this option?**

Response IR-07:

- a) EfficiencyOne delivers the EnerGuide Real Estate Listings project with the support of the Government of Canada. To date, the Government of Canada has covered approximately 80 percent of the costs associated with the EnerGuide Real Estate Listings project. The DSM portion of the costs associated with the EnerGuide Real Estate Listings project to date are approximately \$30,000. The DSM costs associated with this project help promote and increase enrollment in the Home Energy Assessment (HEA) program.

Additionally, EfficiencyOne began offering a limited-time promotion to further encourage participants to enroll in HEA. Homeowners receive \$50 off the cost to enroll in HEA if they agree to share their EnerGuide energy performance information on the ViewPoint.ca website.

These initiatives will promote HEA and the EnerGuide Listings project as well as increase awareness of EnerGuide energy performance information.

- b) As of May 11, 2018, 77 homeowners have agreed to share their EnerGuide information on the ViewPoint.ca website.

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- 1 c) Since the Pilot is a promotion aimed to increase awareness of EnerGuide performance
2 information, HEA, and energy efficiency, there are no energy savings directly
3 generated from this pilot. Rather, all energy savings associated with the installation of
4 energy-efficient upgrades and are claimed within the HEA program component.

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Request IR-08:

Regarding the BNI sector results, please explain the changes in program measure distribution that resulted in a higher demand-to-energy ratio.

Response IR-08:

The demand-to-energy ratio is influenced by several factors. Distribution of measures plays a significant role in demand savings being disproportionately higher than the energy savings observed in 2017. Other factors that influence the higher demand-to-energy ratio include:

1. Updates to energy and demand savings estimation methodologies from program evaluations; and
2. The methodology used to determine the 2017 mid-course demand target.

Increases in demand-to-energy ratios at a measure-level can be due to increases in demand savings estimates and/or decreases in energy savings estimates. Program evaluation results have generally trended towards greater demand-to-energy ratios than were assumed in the 2016-2018 DSM Resource Plan, resulting in higher evaluated demand savings than energy savings when compared to the DSM Plan amounts.

The overall total energy and demand targets in the 2017 mid-course adjustment remained at the same levels as the 2017 planned amounts (136.5 GWh and 21 MW respectively). However, since recent program evaluations have shown higher demand-to-energy ratios than what was anticipated for 2017, the demand savings achieved in 2017 are disproportionately higher than the energy savings achieved when compared to the mid-course adjusted targets.

With respect to changes in measure distribution within the BNI sector, the Custom program component exceeded its 2017 mid-course adjusted demand savings. This is partly due to the realization of unanticipated demand savings in the New Construction service. Additionally, the New Construction service, which has a higher demand-to-energy ratio than other Custom services,

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- 1 made up a greater portion of Custom savings in 2017 than anticipated. This increased Custom's
- 2 overall demand-to-energy ratio in 2017.

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Request IR-09:

On page 14, it is stated that 386 appliances were replaced through the Home Warming service for low income homeowners. On page 30, it is stated that 466 low income participants received rebates to replace or retire old inefficient appliances. Please explain any relationship between those two statements.

Response IR-09:

The number of low-income participants who received rebates to replace or retire old inefficient appliances (466) reflects:

- i) the estimated number of appliance retirements¹ (80) from low income households within the Appliance Retirement component of the Residential Efficient Product Rebates program; and
- ii) the number of appliance replacements² (386) arranged for low-income households through HomeWarming (these energy savings and associated costs are allocated to Appliance Retirement).

As such, 466 represents the combined number of low-income appliance replacements or retirements completed through HomeWarming and Appliance Retirement.

¹ Retirement is defined as decommissioning the appliance and recycling the component materials.

² Replacement is defined as decommissioning the participant's existing appliance, recycling the component materials, and installing a new, more efficient replacement in its place.

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Request IR-10:

Referencing the HST Rebate section on page 45, please provide the latest status update.

Response IR-10:

The Settlement Conference scheduled for April 6, 2018 was adjourned and re-scheduled to May 16, 2018. Discussions continue, and currently no settlement has been reached.

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Request IR-11:

Tables 11, 12, and 13 show the planned and actual expenditures by rate class for 2015, 2016, and 2017. In each year, actual expenditures were less than planned. Please explain the status of those surplus amounts.

Response IR-11:

The 2015 underspend and interest earned of \$7,052,814 was used to offset the 2017 fee-for-service payment from NS Power of \$34,020,000. As a result, the 2017 net payment to EfficiencyOne was \$26,967,186.

The 2016 interest earned of \$189,891 was used to offset the 2018 fee-for-service payment from NS Power of \$34,920,000. As a result, the 2018 net payment to EfficiencyOne was \$34,730,109.

The 2017 interest earned of \$201,190 will be returned to NS Power in 2019 through a reduction in the fee-for-service payment to EfficiencyOne.

Any funding for 2016, 2017, and 2018 that is not spent will be returned to NS Power in 2020 through a reduction in the fee-for-service payment to EfficiencyOne.

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Request IR-12:

On page 9, E1 states that the proposed 2019 DSM investment is less than the amount of DSM cost recovery present in 2019 rates. Please provide both amounts.

Response IR-12:

The proposed DSM expenditure for 2019 is \$34.05 million.

As the Board stated on August 12, 2015 in its Decision on M06733, "...in 2014 approximately \$53 million was in rates in the DSM rider. By Order of the Board, at the request of the various customer classes, those funds which were not needed for DSM in 2015 because of the legislated deferral, were diverted to pay excess fuel costs. However, those amounts continue in rates and, as E1 argued, and the Board agrees, were put there for the purposes of paying for DSM."

To the best of EfficiencyOne's knowledge, those amounts continue to be in rates.

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Request IR-13:

Page 9 also states that 2019 evaluation activities will be condensed where appropriate in recognition of the maturity level of some program components. Please identify the components which will undergo a condensed evaluation.

Response IR-13:

EfficiencyOne is currently working with the Evaluation Consultant to develop a 2018 Evaluation Plan. This process occurs during Q2 to enable EfficiencyOne to use feedback from the previous year's evaluation to inform resource allocation for the subsequent year's evaluations. EfficiencyOne anticipates sharing the 2018 Evaluation Plan with the DSM Advisory Group in the fall of 2018, alongside a rationale that details why certain program components are selected for condensed evaluations.

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Request IR-14:

On page 14, lines 28-29 state that E1's ability to track lifetime energy savings and increased sophistication in doing so has improved over the course of the 2016-2018 DSM Resource Plan.

a) Is this associated with the Dynamic DSM software implementation? Please explain.

b) What has been the impact of this improvement?

Response IR-14:

a) No. EfficiencyOne previously tracked lifetime energy savings using a program component-level average measure life. EfficiencyOne now tracks lifetime energy savings at the measure level for most programs. While measure-level tracking occurs with traditional program tracking systems, those programs which have transitioned to Dynamic DSM now experience a more streamlined process. Dynamic DSM, in combination with the eTRM, calculates lifetime energy savings and can quickly update measure lives when revisions are required, e.g., implementing program evaluation recommendations.

b) EfficiencyOne's previous methodology of using a program component-level average measure life was based on a fixed measure distribution. Tracking lifetime savings at a measure level provides a greater level of accuracy since the actual measure mix is inherently considered in this approach.

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Request IR-15:

Page 16 notes that the 2019 DSM Resource Plan includes increased demand reduction through pilots developed by E1 in collaboration with NSPI. Page 21 of Appendix A notes that \$1.0 million has been budgeted for this initiative which may include one pilot focused on residential customers and one pilot focused on BNI customers. Potential measures are also noted.

- a) Please expand the description of each of those pilots.**
- b) Please provide the budgeted amounts for each pilot.**
- c) Please describe any impact on other programs or measures as a result of the spending allocation to the pilots.**

Response IR-15:

EfficiencyOne anticipates the operation of two demand reduction pilot programs, one in the Residential sector, and the other in the Business Non-Profit and Institutional (BNI) sector. This arrangement was selected for two reasons:

- To allow equitable access to the demand reduction pilot programs across both sectors; and
- To allow EfficiencyOne to gain experience with these offerings across a wide cross-section of customer types.

EfficiencyOne anticipates having both pilots independently evaluated as part of the 2019 evaluation process.

- a) EfficiencyOne has identified high-level options for the proposed demand reduction pilots. None of these options are intended to limit the future design of the pilot programs.

EfficiencyOne has not yet reviewed these options with NS Power or other stakeholders and anticipates these discussions will be fulsome and result in modifications to the

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options described in this IR response. Similarly, EfficiencyOne anticipates that guidance from subject matter experts and/or the availability of new information may modify EfficiencyOne's approach to developing these demand reduction pilots.

Residential Demand Reduction Pilot

One option for the residential pilot program involves the provision of incentives for Electric Thermal Storage (ETS) systems. These heating systems allow for consistent reductions of a residential customer's contribution to system-coincident peak demand events by allowing overnight charging of the system (via electricity) and the provision of heat throughout the day (and night). These types of systems are available as both room units and central furnace and boiler systems.

An additional benefit of a pilot design using ETS systems as a demand reduction resource is their potential future benefits of providing intermittent renewable generation integration, as well as ancillary services through an AMI interface, or other direct load control techniques.

Beyond the provision of the initial incentives, continued customer bill savings require ETS customers to transition to a time-of-use rate supplied by NS Power. EfficiencyOne anticipates this could involve exploring streamlined administration of the rate change process with NS Power, as well as educating and supporting participants through the process. Education on how to maximize the benefit of a time-of-use rate through their consumption behaviour could also be provided.

If implemented, EfficiencyOne anticipates this pilot would operate within the Existing Residential program's Green Heat component.

A high-level budget for this residential pilot option is shown below in Table 1. Please note that these numbers are preliminary and likely to be modified based on the outcome of, *inter alia*, discussions with NS Power, stakeholders, and expert consultants.

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Table 1 - Residential ETS Pilot High-Level Budget

Residential ETS Pilot Program	
<i>Planned Participants</i>	<i>300</i>
Third-Party Research	\$37,500
Incentive Spending	\$300,000
Pilot Design and Administration	\$75,000
Marketing and Education	\$40,000
Evaluation	\$25,000
Total Budget	\$477,500

BNI Demand Reduction Pilot

One option for the BNI demand reduction pilot envisions expanding the Custom Incentives program to facilitate demand-focused projects at customer sites. These projects could serve to decrease participant monthly demand as well as system-coincident peak demand. This pilot could be composed of several different initiatives:

- Working with Energy Management Information System (EMIS) and Strategic Energy Management (SEM) participants to develop effective peak demand management strategies, including the modification and optimization of production techniques, controls, and schedules to reduce facility peak demand (i.e., billing demand) as well as system-coincident peak demand;
- Working with Building Optimization participants to bring both a demand and energy focus to the EBC participation process; and
- Allowing consultant feasibility studies and project proposals within Custom Retrofit projects that focus on facility peak demand and system-coincident peak demand.

In addition to these activities, EfficiencyOne anticipates it would promote the pilot program and educate market participants using its business development team and through more formal education events such as technical workshops.

EfficiencyOne anticipates that direct incentives could be used within the Retrofit and Building Optimization services, but would not be routinely used within the EMIS and

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SEM program components. ENS anticipates that mainly technical support and education would be used within these program components, as these large customers already have an inherent incentive to reduce facility demand, in the form of demand charges within their rate structures and would benefit more from technical support and education to better utilize existing equipment. This design choice would lead to higher pilot design and administration costs, and lower incentive costs, relative to the residential ETS pilot.

Incentive caps within the Custom program component could be limited on a per participant basis, to ensure the pilot captures a sufficient number of participants and participant types to allow for meaningful evaluation.

A high-level budget for this BNI demand reduction pilot option is shown below in Table 2. Please note that these numbers are preliminary and likely to be modified based on the outcome of, *inter alia*, discussions with NS Power, stakeholders, and expert consultants.

Table 2: Custom Incentives Demand Reduction Pilot High-Level Budget

Custom Incentives Demand Reduction Pilot Program	
<i>Planned Participants</i>	20
Third-Party Research	\$37,500
Incentive Spending	\$255,000
Pilot Design and Administration	\$125,000
Marketing and Education	\$80,000
Evaluation	\$25,000
Total Budget	\$522,500

b) Please refer to part a) of this response.

c) In the absence of these demand reduction pilots, the \$1.0M allocated to the pilots would have been spent on existing programs. Table 3 presents an alternative portfolio for 2019 activities, without investment in demand reduction pilots. Please note that this portfolio

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configuration differs from an earlier draft of the 2019 DSM Resource Plan that was circulated with the DSM Advisory Group in January 2018 (prior to the inclusion of demand reduction activities). These differences reflect the 2017 Evaluation Report findings and the desire to continue to diversify energy and demand savings.

Table 3: Draft 2019 DSM Resource Plan Savings and Investment

2019	Investment (\$ million)	Incremental Annual Net Energy Savings at Generator (GWh)	Lifetime Net Energy Savings at Generator (GWh) ^a	Incremental Annual Net Demand Savings at Generator (MW)	First Year Unit Cost (\$/kWh)	Lifetime Unit Cost (\$/kWh) ^a
Residential DSM Programs						
Efficient Product Rebates	3.5	15.2	135.5	2.2	0.230	0.026
Existing Residential ^b	9.1	32.6	449.5	7.9	0.279	0.020
New Residential	2.5	6.3	187.5	1.5	0.403	0.013
Residential Total	15.1	54.0	772.5	11.5	0.280	0.020
Business, Nonprofit and Institutional Programs						
Efficient Product Rebates	5.8	36.8	430.6	5.8	0.158	0.013
Custom Incentives	5.6	32.4	396.8	3.3	0.172	0.014
Direct Installation	4.1	9.3	118.4	1.5	0.443	0.035
BNI Total	15.5	78.4	945.8	10.5	0.197	0.016
Enabling Strategies						
Education & Outreach	1.6	n/a	n/a	n/a	n/a	n/a
Development & Research	1.2	n/a	n/a	n/a	n/a	n/a
Other Enabling Strategies	0.7	n/a	n/a	n/a	n/a	n/a
Enabling Strategies Total	3.5	n/a	n/a	n/a	n/a	n/a
Total	34.1	132.4	1718.3	22.0	0.257	0.020

Currency is expressed in 2019 dollars.

Columns may not add correctly, due to rounding.

^a Based on values of program Weighted Average Measure Life, which have been derived from the 2017 Evaluation process.

^b Includes participation by low income households.

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Request IR-16:

Regarding the electronic technical reference manual, E1 has stated that it will see several operational benefits through its use in 2019. In particular, two of those benefits are identified as decreased evaluation effort and impact evaluation costs, and decreased administrative burden. Please quantify those cost reductions.

Response IR-16:

The electronic technical reference manual (eTRM) presents several opportunities that will lead to operational benefits for EfficiencyOne in 2019, including a decreased administrative burden to implement changes in measure characterizations resulting from the 2018 impact evaluations and decreased evaluation efforts and impact evaluation costs. While EfficiencyOne is not able to quantify the impact evaluation cost reductions or potential cost reductions resulting from the decreased administrative burden, it does not anticipate they will be material. The material benefits associated with the evaluation process and the reduced administrative burden lie outside cost savings and are discussed below. Additional benefits are discussed at section 4.2 of EfficiencyOne's 2019 DSM Resource Plan Evidence. For more information on the eTRM, please refer to Attachment 1 of EfficiencyOne's response to Synapse IR-09.

Prior to the eTRM, individual programs relied upon spreadsheets to conduct energy savings calculations. The eTRM provides a central storage and calculation location for energy and demand savings methodologies across EfficiencyOne's portfolio. This central, standardized system eliminates the need for staff to create and manage their own energy savings and tracking systems. Because it provides a single access-point for all measure-level savings calculations, the Evaluation Consultant's need to be familiar with multiple tracking and savings calculation systems will reduce as more programs transition to the Dynamic DSM system (which houses the eTRM). Although the Evaluation Consultant will continue to conduct an independent evaluation of energy savings, having access to a standardized tracking and savings calculation system will make this review more efficient.

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2 The eTRM's integration into the Dynamic DSM system automates savings calculations, which
3 saves staff time and minimizes the opportunity for user error and time associated with
4 troubleshooting such issues. Additionally, the eTRM streamlines change management. For
5 example, a change such as adopting evaluation results has historically been a time-consuming
6 process involving multiple changes across a tracking sheet and/or EfficiencyOne's previous data
7 management system. In contrast, the eTRM allows for savings calculations to be updated quickly,
8 easily, and in such a way that allows all associated measures to readily (and instantly) adopt the
9 evaluation change. Updates are also non-destructive in that a version history is maintained, which
10 is helpful for programs staff that wish to monitor program changes.

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Request IR-17:

Referencing Table 1 of Appendix A, please provide a table showing actual first-year unit costs for the years 2015, 2016, 2017, and the projected unit costs for 2018 and 2019.

Response IR-17:

	Program	First-Year Unit Cost by Year (\$/kWh)				
		2015	2016	2017	2018 ¹	2019 ²
Residential	Efficient Product Rebates	0.298	0.152	0.187	0.220	0.235
	Existing Residential ³	0.301	0.273	0.257	0.259	0.276
	New Residential	0.303	0.347	0.410	0.441	0.410
	Energy Savings Actions	0.038	N/A	N/A	N/A	N/A
	Subtotal	0.199	0.212	0.237	0.260	0.278
Business, Non-profit, and institutional	Efficient Product Rebates	0.161	0.165	0.147	0.154	0.160
	Custom Incentives	0.197	0.156	0.188	0.198	0.176
	Direct Installation	0.553	0.693	0.476	0.423	0.443
	Subtotal	0.215	0.194	0.192	0.197	0.202
	Total	0.232	0.225	0.232	0.245	0.268

¹Based on mid-course adjusted targets.

²Based on DSM Plan targets.

³Includes participation by low income households.

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Request IR-18:

On page 7 of Appendix A, E1 states that it anticipates an increase in 2019 net incremental energy and peak demand savings when compared to the approved 2016-2018 DSM Resource Plan. On page 19 of its Evidence, E1 states that the proposed 2019 energy and demand savings targets of 127.2 GWh and 20.2 MW are similar to the approved annual averages in the 2016-2018 DSM Resource Plan (135.3 GWh and 20.8 MW).

a) Please indicate the level of anticipated increase in 2019 versus 2016-2018 averages.

b) Please explain why the 2019 targets are less than the 2016-2018 averages if E1 anticipates that 2019 results will be higher than the 2016-2018 averages.

Response IR-18:

a) Both energy and demand savings in 2019 will be slightly lower than the 2016-2018 annual averages. The reference on page 7 of Appendix A to an increase over the approved 2016-2018 DSM Resource Plan pertains only to the Residential Efficient Product Rebates program.

b) Please refer to part a).

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Request IR-19:

Regarding the 2019 Supply Agreement with NSPI, please highlight any material changes between that agreement and the previous 2016-2018 Supply Agreement.

Response IR-19:

Material changes to the 2019 Supply Agreement, as compared to the 2016-2018 Supply Agreement, are as follows:

- **Sections 1 (Interpretation) and 11 (Confidential and Personal Information)** were updated to include a definition of, and reference to, Canada's Anti-Spam Legislation (ss. 1.1(bb) and 11.3).
- **Section 2 (Term & Reservation of Rights)** was updated to reflect the term of the Agreement.
- **Section 16 (Insurance)** was expanded to specify that the referenced insurance policy shall also contain cross liability and severability of interest and blanket contractual liability (s. 16.1(a)).
- **Schedules A (Electricity Efficiency and Conservation Activities), B (Compensation), C (Performance Requirements), and E (EECA Plan)** of the Supply Agreement were updated to reflect the 2019 DSM Resource Plan. Changes made to Schedule C also removed cumulative savings as a performance indicator since, for a one-year DSM Resource Plan, cumulative and incremental savings will be the same value.

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1 **Request IR-20:**

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3 **Please provide E1's response to the evaluator's recommendations.**

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5 Response IR-20:

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7 Please refer to Attachment 1 of this IR response.

Recommendation Text	Source	Status	Comments	Expected Completion Date
Foster the implementation of non-lighting energy efficiency measures. Among the wide variety of energy efficiency measures offered by ENS, lighting measures accounted for most savings achieved in 2017. For example, Instant Savings, Efficient Product Installation, and Business Energy Rebates, which together represent 64 percent of ENS energy savings in 2017, generated most of their energy savings through lighting measures (89% for Instant Savings, 67% for Efficient Product Installation and 86% for Business Energy Rebates). Additionally, the Evaluator analyzed the market evolution of LED lighting and concluded that market barriers are decreasing. Consequently, the Evaluator predicts that the baseline efficiency for lighting will continue to increase and thus reduce savings. ENS offers many non-lighting measures in its portfolio. The Evaluator believes there is potential for achieving more energy and peak demand savings from non-lighting measures and recommends that ENS look for new ways to encourage their implementation. This represents an opportunity for ENS to increase energy and peak demand savings while mitigating the risk of declining lighting energy and peak demand savings.	2017 CR-R1	In Progress	ENS agrees with this recommendation. The 2018 spring and fall campaigns for Instant Savings will have a strong focus on dehumidifiers and air purifiers, in attempts to diversify the program component. ENS plans to promote non-lighting technologies and energy efficiency trends, beyond lighting, through a “technical series”, which will be delivered on ENS’s website in 2018, as well as through its <i>The Switch</i> BNI e-newsletter which is sent to a list of BNI participants six times per year. Please refer to EfficiencyOne’s response to SBA IR-19 for more information on lighting transformation.	2018
Continue to perform the metering activity to increase sample sizes. This year, the Evaluator developed a new metering protocol, which greatly improved the quality of the metering data. Although the metering approach used in 2017 was improved, the sample sizes were not large enough to provide acceptable margins of error on gross energy consumption values. Therefore, the Evaluator recommends continuing the metering activity in 2018 using the same age categories and the same protocol as used in 2017 to increase the sample size of each age category. As for the metering activity to be performed next year, the Evaluator also suggests implementing some minor changes, such as using a better tool to measure the power factor of each appliance type and measuring old appliances’ inside temperature at the time of pick-up, as recommended in the Metering Review section of this report.	2017 ARet-R1	In Progress	ENS agrees with this recommendation and is currently working with the Evaluator to determine the sample size of each age category required to produce an acceptable margin of error. ENS has acquired new metering equipment that will measure the power factor of each appliance. ENS has also acquired temperature sensors that will be used to measure the inside temperature of refrigerators and freezers at participants’ homes prior to pick-up, to ensure they meet the “in working order” criteria and eligibility for rebates.	2018
Improve the process for tracking appliances retired through the pilot. This year, the savings of those appliances retired through the ARet pilot were tracked using the same parameters and methodology as for full-sized residential appliances. After conducting an interview with a representative of HRSB schools, the Evaluator used different unitary gross and net savings values for the pilot. Going forward, the Evaluator recommends using the unitary savings values established in this year’s evaluation for appliances retired through the pilot. The Evaluator also recommends improving the tracking process by clearly identifying the appliances retired through the pilot.	2017 ARet-R2	Complete	ENS agrees with this recommendation, which was implemented in Q1 2018. ENS and the service provider have created a new process for coding appliances retired through the Halifax Regional School Board (HRSB) pilot. This will ensure that the savings will be calculated accurately, based on the 2017 unitary gross savings presented in the Evaluation Report.	Complete
Continue providing program component support to expand the share of LED bulbs in the Nova Scotia residential lighting market while beginning to plan an exit strategy for A-type bulbs. Given the high participation level in this program component, high purchase volume of A-type bulbs and reductions in LED prices, ENS should consider decreasing incentive levels for A-type bulbs. In addition, ENS should consider possible opportunities for shifting the focus of the program component, for example to bulb types with lower market adoption, to extend Instant Savings beyond the short-term.	2017 Instant-R1	In Progress	ENS agrees with this recommendation. ENS is reviewing rebate amounts for all Instant Savings product categories. Decisions regarding rebate levels for the 2018 fall campaign will be made following the 2018 spring campaign. ENS is exploring opportunities for adding additional non-lighting products to the 2018 fall campaign.	2018

Recommendation Text	Source	Status	Comments	Expected Completion Date
Continue monitoring market indicators and collect additional information to further characterize the LED market. Because the lighting market is in a period of change, the Evaluator recommends continuing to monitor market indicators such as market share of lighting technologies, socket saturation and LED prices. Also, to better characterize the current state of the lighting market, the Evaluator recommends collecting data about the following aspects: (1) Different LED and halogen bulb types installed in homes. This information could be collected during site visits in future socket studies; and (2) Customer knowledge of LEDs. This information could be collected using questions included in a periodic Omnibus survey. An Omnibus survey is a cost-effective method where data on a wide variety of subjects is collected during the same interview.	2017 Instant-R2	In Progress	ENS agrees with this recommendation. ENS is collaborating with the Evaluation Consultant to develop an evaluation plan for 2018. An intercept survey is anticipated for the fall campaign. This survey will ask questions to help determine free-ridership rates, baselines, awareness of Instant Savings, and LED penetration. A market evolution update is also being considered for 2018, whereby the Market Evolution section in the 2017 Evaluation Report will be updated with the latest sales, shipment, and price data. ENS will consider a socket study and general population Omnibus survey in future years to determine socket saturation, different LED/Halogen bulb types installed in homes and customer knowledge of LEDs.	2018
Review the current incentive structure to look for possible ways to simplify it. EAs and participants alike consider rebate calculations complicated. Knowing that ENS has already begun reviewing the incentive structure to make necessary changes, the Evaluator recommends continuing this effort while trying to make this structure as simple and straightforward as possible for both EAs and participants.	2017 HEA-R1	In Progress	ENS agrees with this recommendation. ENS is currently redesigning the rebate guide and simplifying the incentive structure. This should allow for Energy Advisors (EAs) to provide a straight-forward explanation to participants. ENS anticipates the new incentive structure to be launched in Q3 2018.	2018
Conduct a billing analysis to review the overestimation ratio. The Evaluator has found that a new version of HOT2000 was used to calculate savings for 9 percent of HEA participants. The Evaluator predicts that this proportion will probably increase in 2018. The Evaluator recommends conducting a new billing analysis in the next evaluation to establish an overestimation ratio specific to the new version of HOT2000 for HEA.	2017 HEA-R2	In Progress	ENS agrees with this recommendation. ENS anticipates that a HOT2000 billing calibration (referred to as billing analysis in the 2017 HEA-R2 recommendation) will be performed by the Evaluator in 2018. The billing calibration will provide an overestimation ratio to be applied to the new version (version 11) of HOT2000 models. Participants who had their home modeled with the old version (version 10) of HOT2000 will have the 2015 overestimation ratio applied.	2018
Perform the ASHP billing analysis again in 2018. Similar to MSHPs, the billing analysis resulted in a major change made to the average savings values for ASHPs. As part of this analysis, participants were categorized based on their existing heating system type. Because of the small sample sizes for each category, it was difficult to establish distinct savings for each category. The Evaluator believes that the ASHP billing analysis should be conducted again in 2018 to obtain a larger sample of participants and improve the accuracy of savings.	2017 GH-R1	In Progress	ENS agrees with this recommendation. ENS anticipates the Evaluation Consultant will perform an ASHP billing analysis in 2018. The analysis will include all participants for which a full heating season of data is available post-participation.	2018
Conduct a survey with a larger sample of participants who installed MSHPs in non electrically heated households. As part of the 2017 evaluation, a participant survey was conducted to establish the baseline scenario for MSHPs installed in previously non electrically heated households. Unfortunately, the sample size was small because a low number of participants had installed MSHPs in non-electrically heated households at the time of the survey. The Evaluator believes that a survey with participants living in non electrically heated households should be conducted again in 2018 to determine the most appropriate baseline scenario to be used for such participants. This survey should ask participants about Green Heat's influence on their decision to purchase an MSHP and how this impacted the timing of their decision. Since MSHPs installed in non electrically heated households generated lower savings, this feedback could provide more insight on whether the inclusion of this measure in Green Heat should be reconsidered.	2017 GH-R2	Not Recommended for Action	ENS appreciates this recommendation. ENS is currently in the process of securing an agreement with the Nova Scotia Department of Energy that would allocate funding of the federal Low Carbon Economy Leadership Fund to ENS for residential programs. ENS anticipates that all non-electrically heated households will obtain rebates from federal funding, and therefore, a DSM funded survey may not be appropriate. ENS will reassess if the agreement does not materialize.	n/a

Recommendation Text	Source	Status	Comments	Expected Completion Date
Improve the collection of technical information about ASHPs. Peak demand savings for ASHPs are based on technical information such as heating capacity and the coefficient of performance at a temperature of -15°C. In 2015, the Evaluator was able to locate technical information on 15 ASHP models and established an average unitary peak demand savings value of 3.04 kW. Although it was recommended in the 2015 evaluation report that ENS start collecting performance data about ASHPs at -15°C, such information is still not tracked by ENS. In the absence of more accurate performance data, the unitary savings value of 3.04 kW is still used. Considering the fact that the number of ASHPs installed through Green Heat has significantly increased in the past two years (from 52 in 2015 to 143 in 2017), the Evaluator reiterates the recommendation to start tracking ASHP performance data at -15°C to increase the accuracy of the peak demand savings calculations.	2017 GH-R3	In Progress	ENS agrees with this recommendation. ENS has found it difficult to obtain additional technical information about Air-Source Heat Pumps (ASHP) from manufacturers. ENS is researching options to improve the collection of technical information about ASHPs. Northeast Energy Efficiency Partnerships (NEEP) manages a Cold Climate ASHP Specification list. ENS is considering adopting the NEEP specification requirements. ENS staff will determine what changes are required for ENS ASHP criteria to align with NEEP's specification criteria. NEEP has coefficient of performance data at -15°C for a broad range of ASHPs (same criteria as ENS), however, NEEP's Heating Seasonal Performance Factor requirement is higher than ENS's current requirement. ENS needs to determine how many ASHPs would no longer qualify if the NEEP specification list is adopted. If ENS chooses to adopt the NEEP specification list, the Evaluation Consultant will be able to determine peak demand savings for all models.	2018
Gather additional information to further characterize the MSHP market. While the market indicators presented in the Market Evolution section of this report provide some indication of the evolution of the market for MSHPs, certain key data points were unavailable or rely on information from participating contractors. As a result, the Evaluator was unable to formulate a clear conclusion on the current state of the MSHP market in Nova Scotia. Additional data should be collected in 2018, such as: - Market share of efficient MSHPs in Nova Scotia from a broader data set, including market share of secondary systems. -Minimum efficiency levels of units sold by contractors -Data on the incremental cost difference between standard versus high-efficiency MSHPs and Green Heat eligible MSHPs.	2017 GH-R4	In Progress	ENS agrees with this recommendation. ENS anticipates the Evaluation Consultant will perform a market evolution analysis of MSHPs in 2018 to further characterize the MSHP market. This will enable the Evaluation Consultant to update and improve the Market Evolution section from the 2017 Evaluation Report with new data. ENS understands the Evaluation Consultant intends to interview major distributors of heat pumps in Nova Scotia to determine sales and types of heat pumps sold. As part of this analysis, ENS understands the Evaluation Consultant intends to gather data (secondary data through manufacturer associations and import data) and potentially sales data from NS Power.	2018
Develop a way for potential participants to better understand which ASHP equipment is eligible. Non-MSHP participants do not have a simple list of rebated equipment to choose from and therefore must rely on contractors to determine if equipment is eligible. To drive interest in non-MSHP measures, such as ASHPs, and prevent dissatisfied participants who purchased equipment thinking it was eligible for a rebate, ENS should develop a list of eligible equipment, similar to the list established for MSHPs. Contractors could be asked to develop and update this list.	2017 GH-R5	In Progress	ENS agrees with this recommendation. This recommendation is tied to recommendation 2017 GH-R3. Once ENS has determined if it will adopt the Northeast Energy Efficiency Partnerships' specification criteria, an approved list similar to the one for MSHPs will be created.	2018
Document the energy-saving potential related to halogen incandescents and CFL lamp replacements. The tracking report indicated that the average number of A-type LED lamps installed per household significantly decreased among participating single family homes. Although EPI achieved high savings in 2017, this trend suggests that fewer incandescents are present in homes, and will consequently provide fewer opportunities for LED replacements in the future. The Evaluator recommends that ENS start gathering information about the types of lamps installed in EPI participants' homes to analyze the savings potential that can be tapped if general-service lamp types other than incandescents are made eligible for replacement.	2017 EPI-R1	In Progress	ENS agrees with this recommendation. ENS plans to begin tracking halogen incandescents and CFLs that are currently installed in participants' homes. ENS will have Service Providers record the types of lamps available for replacement when performing a direct installation. ENS is working with the Evaluation Consultant to ensure appropriate information is collected to facilitate a savings potential review.	2018

Recommendation Text	Source	Status	Comments	Expected Completion Date
Conduct a process evaluation for NHC in 2018. During the 2017 evaluation, participants and builders made certain criticisms about NHC, especially on incentive levels and the participation process. Also, the NHC participation level continued to decrease. In light of these findings and the substantial changes made to NHC in 2017, the Evaluator recommends conducting a process evaluation of NHC next year to determine if current program component processes, parameters and model of delivery are optimized to meet market needs. The process evaluation's scope could include a benchmarking study of other Canadian or North American jurisdictions to compare NHC to other similar programs, and an in depth consultation with builders and other key actors involved in the residential new construction market to find the most effective ways to generate more projects through a simple and straightforward participation process. Market data should also be collected to obtain insights about market forces that may be influencing the decline in NHC participation.	2017 NHC-R1	In Progress	ENS agrees with this recommendation. ENS is collaborating with the Evaluation Consultant to develop an evaluation plan for 2018. ENS anticipates the Evaluation Consultant will perform a full process evaluation for NHC in 2018. ENS is executing a builder engagement plan, which is anticipated to increase builder participation and engagement in the NHC program.	2018
Conduct a billing analysis to review the overestimation ratio. The current overestimation ratio was obtained from a billing analysis of Home Energy Assessment participant data. In past years, no billing analyses were conducted with NHC participants since only a few participants had their as-built energy consumption value available. Now that energy consumption is available for more participants and a new version of HOT2000 is being used to calculate energy savings, the Evaluator recommends conducting a new billing analysis in the next evaluation to establish an overestimation ratio specific to new houses under NHC and the new version of HOT2000.	2017 NHC-R2	In Progress	ENS agrees with this recommendation. However, ENS has observed only a few completions under the new HOT2000 (version 11) rating system and, as such, the data is not currently available for an appropriate sample size. ENS is working with the Evaluation Consultant to explore alternative options for a billing analysis.	2018
Continue to monitor the market evolution of LED lamps and adapt the BER offer when needed. The 2017 evaluation served to confirm solid market evolution. The high number of LEDs sold during the 2017 year, their declining retail prices, as well as the increased market share and free-ridership levels for these products indicate that market barriers are decreasing. Moreover, the market analysis confirmed that while LED products are still in a growth phase, they are approaching maturity as the BNI sector increasingly adopts these technologies. The Evaluator therefore recommends that ENS continue to monitor the evolution of the LED market by examining market indicators such as those discussed in Section 7 to identify when some product categories should be removed from the service due to a high level of market transformation.	2017 BER-R1	In Progress	ENS agrees with this recommendation. ENS will continue to monitor market evolution of LED lamps. ENS understands that in 2018, the Evaluation Consultant will update the Market Evolution section of the 2017 Evaluation Report with latest sales, shipment, and price data. ENS also understands that in 2018, the Evaluation Consultant will perform a participant survey with Instant Rebate participants, which will include market questions to obtain participant perspectives for the market analysis. ENS will evaluate if rebates need to be adjusted and/or if product categories need to be removed. ENS will not be implementing rebate changes this year but will re-evaluate each year as results are presented in evaluation reports. Please refer to EfficiencyOne's response to SBA IR-19 for more information on lighting transformation.	2018

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Identify opportunities to diversify the portfolio of projects completed through BER Mail-In. As demonstrated in the 2017 evaluation, lighting projects account for over 60 percent of gross savings in BER Mail-in. Since Instant Rebates is designed to offer almost exclusively lighting products, Mail-in is the best option to diversify the BER portfolio which generates the most savings of all ENS program components. With LED lighting products becoming increasingly popular and transforming the lighting market, ENS is at risk of seeing its savings decline for this service. The Evaluator expects to see continued increases in both free-ridership and baselines as the technology is more widely adopted. Therefore, the Evaluator recommends that ENS identify BNI sectors that are currently underrepresented in the Mail-in service and that could potentially generate significant savings.	2017 BER-R2	In Progress	ENS agrees with this recommendation. The BER program manager plans to reach out to contractors and distributors for non-lighting measures to determine if BER rebates are considered reasonable and if BER categories are capturing the relevant technologies. ENS plans to promote technologies and energy efficiency trends, beyond lighting, through a "technical series" to be delivered on its website. Similar trends (beyond lighting) are highlighted in the ENS e-newsletter which is distributed to a list of BNI participants six times per year.	2018
Continue and improve the tracking of BER Instant Rebates participants. The 2017 evaluation was the first time that the Evaluator had access to a list of Instant Rebates participants and could therefore conduct a survey of participants. However, the participant list did not include all participants and information was not collected systematically. The Evaluator recommends that ENS continue tracking individuals and businesses participating in the service. ENS should document the data-collection process and, if possible, record the proportion of tracked participants among all participants as well as the savings attributable to each participant. This would allow the Evaluator to refine the quality of the impact analysis, notably with better estimations of annual hours of use as well as free-ridership and spillover levels.	2017 BER-R3	In Progress	ENS agrees with this recommendation. ENS will continue to track participants' information. If distributors do not provide this information, invoices can be withheld until such information is provided. ENS has added a clause to revised contracts indicating that this participant information is required and has documented the data-collection process. ENS will work with the Evaluation Consultant to provide as much detail as possible at a participant level.	2018
Continue relying on BDMs to assist participants and find new markets. The 2017 evaluation showed that many participants heard about Retrofit from a BDM and those who worked with a BDM were satisfied with their interactions. This support included providing answers to the participants' inquiries, especially about eligibility requirements, and informing about the latest service changes. In some cases, these relationships also resulted in identifying additional projects. The BDMs have successfully brought in numerous participants from the aquaculture industry and are looking for new markets to replicate this success. To maintain a high level of participation in Custom, the Evaluator recommends that ENS continue to expand outreach efforts via BDM contacts with specific business groups in the industrial and agricultural sectors.	2017 Custom-R1	In Progress	ENS agrees with this recommendation. BDMs and Custom staff collaborate on a regular basis for project, program, and participant-related matters. BDMs are building relationships with major developers and consultants to secure New Construction projects. ENS is expanding BDM outreach to the seafood/fish-processing and mining sectors; this could result in large refrigeration and equipment upgrade projects, respectively.	2018
Continue conducting an in-depth review of energy models as part of the evaluation and improve ENS staff's capacity to identify discrepancies in energy models. The more in-depth review of energy models conducted during the 2017 evaluation identified discrepancies in all five projects and resulted in significant downward adjustments to savings. Modelling of heat pump systems and manual calculations to adjust baselines were most problematic. This showed that a systematic review should be conducted, even if energy models are prepared by experienced consultants. The Evaluator also recommends that ENS provide tools and training to their staff so that they are better able to conduct technical reviews of energy models. Those tools could include checklists of parameters to validate for certain types of projects or building systems.	2017 Custom-R2	In Progress	ENS agrees with this recommendation. ENS is considering contracting a third-party energy model reviewer to assist with this. ENS is also developing a quality assurance (QA) procedure to ensure that key variables are consistently reviewed.	2018

Recommendation Text	Source	Status	Comments	Expected Completion Date
Establish clear objectives for Building Optimization. The Building Optimization projects reviewed this year differed widely in scope. Some projects involved detailed investigative work to tap into deep energy savings, while others were limited to replacing known broken equipment or repairing recently installed mechanical systems that had never worked as intended. While all projects generated savings and all participants benefited from Building Optimization, the participants' needs were quite different from one another. The Evaluator believes that clearly establishing the objectives of the service would result in providing the right level of support to each participant and maximizing the added value of ENS support, that is, involving specialized consultants in retrocommissioning only when detailed investigation of energy-saving opportunities is a project's objective. Better defining objectives and eligibility criteria would also clarify how the basecase should be established. For example, the project whose mechanical systems had never worked as intended had a basecase with such a high number of hours of use that the cooling towers would have provided far too much cooling to the building. An analysis of what should qualify as an acceptable Building Optimization project would allow for distinguishing between the ordinary repairs that a building owner needs to make his or her building function normally and the real energy-saving opportunities for improving energy performance above a minimum level. Better objective-setting would allow for allocating Building Optimization's financial and technical resources to those projects that will most benefit from them.	2017 Custom-R3	In Progress	ENS agrees with this recommendation. ENS is updating program documents to more effectively screen projects and reflect clear objectives and eligibility criteria. ENS is also working towards developing requirements for ENS's Building Optimization Service Provider list. These requirements will ensure that Service Providers are engaged in Building Optimization and have the appropriate qualifications.	2018
Better document the basecase conditions for Building Optimization projects. The Evaluator observed that the basecase conditions were sometimes not measured or documented (using photos, for instance). Since these conditions cannot be verified because they no longer exist after project implementation, the Evaluator recommends that ENS gather more information about the pre-implementation conditions to support savings evaluation afterwards.	2017 Custom-R4	In Progress	ENS agrees with this recommendation. ENS will now require more in-depth documentation of base case conditions, including gathering more information about the pre-implementation conditions. Projects that are mid-implementation will be updated as much as possible, although this may not be possible. Resources will also be developed to assist Service Providers.	2018
Ensure that the tracking sheet is complete and accurate. While reviewing the project documentation, the Evaluator found several discrepancies between the savings figures reported in the final tracking sheet and the savings figures documented in the annual savings reports. Also, two of the four projects claimed peak demand savings in their annual reports; however, this information was not tracked by ENS in the tracking sheet. The Evaluator recommends that, from now on, the final tracking sheet be updated with the final values documented in the annual reports and that annual peak demand savings be tracked.	2017 EMIS-R1	In Progress	ENS agrees with this recommendation. ENS will update its process for submitting the final tracking sheet to the Evaluation Consultant. This will include a QA step to validate the tracking sheet with the annual reports for both peak demand savings and final monthly energy savings. ENS will ensure the tracking sheet is accurate prior to being submitted to the Evaluator.	2018

Recommendation Text	Source	Status	Comments	Expected Completion Date
Design baseline regressions and plan M&V activities to ensure accurate savings calculations even when changes occur in the facility. This year, the Evaluator discovered that one project had an increase in the weekend production time, which impacted potential energy savings for the measures implemented through EMIS. Since the production level variable was not documented, the Evaluator could not adjust the savings accordingly. To avoid such an issue, the Evaluator suggests that ENS and the service provider proactively identify and track independent variables so that the baseline remains relevant even when changes in operations occur. The Evaluator also recommends that M&V activities and non-routine adjustments be planned as needed. In the case of the Custom Retrofit compressed-air projects implemented after the baseline period for instance, ENS and the service provider could have planned on the implementation of those Custom Retrofit projects by gathering the baseline data before their implementation and made the necessary baseline adjustments afterwards.	2017 EMIS-R2	In Progress	ENS agrees with this recommendation. ENS has updated the tracking sheet to include an event log for participants and has sent the updated tracking sheet to the Evaluation Consultant for review. ENS will conduct quarterly calls with all participants to track cross-participation, production changes, facility changes, and if updates to the model are required. This will ensure that independent variables are proactively identified, and the baseline can be adjusted if needed. ENS is working with participants and the Service Provider to complete any non-routine adjustments as they take place throughout the year. ENS will be using the updated tracking sheet to track when the need for non-routine adjustments arise, and document when and how the model has been changed to reflect these adjustments.	2018
Implement an internal procedure to identify and thoroughly review the most complex custom projects to ensure savings calculation accuracy. During the projects review, the Evaluator found one large custom project which was based on an incorrect energy model and that could not be revised with the limited information available. Modelling software or complex engineering equations are often used to estimate custom projects' savings. Validating their savings requires specialized technical knowledge and a more in-depth review procedure, unlike other more typical SBES projects. Since custom measures often represent the ones with the largest savings, ENS should review in greater detail the savings calculations for these custom measures. To that end, it may be advisable for the SBES team to seek assistance from the Custom Incentive Program's personnel, who already have the skills and expertise needed for reviewing this type of project.	2017 SBES-R1	In Progress	ENS agrees with this recommendation. ENS is currently developing an internal procedure for the review of complex custom measures. This will involve working closely with Custom staff members and enrolling an SBES staff member in the Certified Measurement & Verification course.	2018
Closely monitor the new lighting application forms' effectiveness to confirm that they are achieving their intended goals. Following last year's recommendations, ENS developed new lighting application forms to better document on-site operating conditions, thereby enabling more accurate savings estimates. Since these forms were not put in use until January 2018, the Evaluator could not judge the impact these new forms had with respect to their intended goals. Nonetheless, the similarities between this year and last year in the adjustments made to lighting projects suggest that these new forms, if properly used, could indeed help improve savings calculation accuracy. ENS should carefully monitor how participants complete these forms and how the collected information is used to calculate the savings. Special attention should be paid to the peak coincidence factor used to calculate the peak demand savings to ensure that the daily operating schedule coincides with the system peak demand period, since the Evaluator found multiple cases where adjustments were required.	2017 SBES-R2	In Progress	ENS agrees with this recommendation. ENS will closely monitor the new lighting worksheets to confirm effectiveness on the intended goals. ENS is considering more contractor education and site visit verifications to help improve measure location and business run-time hours.	2018

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Investigate new ways to encourage the implementation of non-lighting measures to increase their share of savings and ultimately increase SBES's total savings. Although SBES offers a wide variety of measures, lighting retrofits accounted for 82 percent of SBES's total gross savings in 2017. This predominance is not surprising among DIY participants, because lighting upgrades are energy-saving opportunities which are easy to identify. Surveyed participants mentioned that a lack of knowledge about equipment is one main barrier to installing energy-efficiency upgrades; so this is consistent with the small number of projects that include technologies that are more complex than lighting. With SBES gaining in maturity and as the market for energy efficient lighting becomes saturated, the Evaluator believes that ENS would benefit from exploring various options to favor a wider variety of measures among the DIY participants to ensure SBES's continued strong performance. Such options could include the development of new marketing and educational materials to better promote non-lighting measures and educate DIY participants with respect to dormant energy-saving opportunities, other than lighting, in their facilities. Project analyses under in the audit path can be used to identify sector-specific opportunities and provide content for the development of success stories on non-lighting measures. Another option would be to provide additional support to participants who do not complete the audit path, for instance by having an ENS staff member follow up to help them consider non-lighting measures if the facility includes other large energy-consuming equipment.	2017 SBES-R3	In Progress	ENS agrees with this recommendation. ENS is currently exploring new marketing strategies, capturing opportunities while performing site visits, and following up with past participants to help identify new opportunities for energy savings. ENS plans to promote technologies and energy efficiency trends, beyond lighting, through a technical series to be delivered on its website. Similar trends (beyond lighting) are highlighted in ENS's <i>The Switch</i> BNI e-newsletter which is distributed to a list of BNI participants six times per year.	2018
Include some Amendment 13 standards in the 2018 evaluation. The new standards set forth in Amendment 13 came into force at the end of June 2017. Most of these new standards were not included in the 2017 evaluation since their impact was expected to be limited until January 2018 while retailers sell their existing stocks. For the 2018 evaluation, these new standards should be considered for inclusion. However, a review of Amendment 13 shows that many of the new MEPS will only have a limited impact in terms of savings, since the new MEPS either bring very little change to the standard level or target products with small markets. The Evaluator therefore recommends selecting two or three products from the Amendment 13 standards based on their savings potential and a consideration of how much effort will be needed to estimate their market sizes. The 2017 evaluation showed that clothes washers (Amendment 13) provided considerable savings and should still be included in the 2018 evaluation, whereas refrigerators (Amendment 13), due to their low savings, should no longer be included. The Evaluator recommends continuing to evaluate the impacts associated with lighting, street-lighting and building codes in 2018 since they provide significant savings.	2017 CS-R1	In Progress	ENS agrees with this recommendation and will work with the Evaluation Consultant to plan the 2018 C&S evaluation.	2019

NON-CONFIDENTIAL

1 **Request IR-21:**

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3 **Please provide E1's response to the verifier's recommendations.**

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5 Response IR-21:

6 Please refer to Attachment 1 of this IR response.

Recommendation Text	Source	Status	Comments	Expected Completion Date
The Savings Verification study recommends acceptance of the 2017 evaluation results for energy savings and for demand-reduction for all programs.	Recommendation 2017 General-SVR-1		No action required.	
The Savings Verification study recommends increase in the level of effort in process evaluation for the next evaluation.	Recommendation 2017 General-SVR-2	In Progress	ENS agrees with this recommendation. ENS is currently working with the Evaluation Consultant to develop a 2018 Evaluation Plan. This process will occur during Q2 to enable ENS to use feedback from the previous year's evaluation to inform resource allocation for the subsequent year's evaluations. ENS anticipates sharing the 2018 Evaluation Plan with the DSM Advisory Group in the fall of 2018, alongside a rationale that details why certain program components are selected for condensed evaluations and which programs will undergo a process evaluation.	2018
The Savings Verification study recommends that Efficiency Nova Scotia work on marketing and promotion of non-lighting measures for the next DSM cycle	Recommendation 2017 General-SVR-3	In Progress	ENS agrees with this recommendation. The 2018 spring and fall campaigns for Instant Savings have a strong focus on dehumidifiers and air purifiers, in an attempt to diversify the program component. ENS plans to promote non-lighting technologies and energy efficiency trends, beyond lighting, through a "technical series", which will be delivered on ENS's website in 2018, as well as through its <i>Switch</i> BNI e-newsletter which is sent to a list of BNI participants six times per year.	2018
Determine if additional health and safety issue training, including mold problems and fiberglass precautions is required for HEA.	Recommendation 2017 HEA-SVR-4	Complete	ENS agrees with this recommendation, which was implemented in Q1 of 2018. In January 2018, ENS provided all Service Organizations (SOs) with health and safety training with respect to building science and indoor air quality with a focus on moisture and mold. The training included a review of Energy Advisor technical procedures and expectations, and a commitment from SOs to ensure Energy Advisors are reminded of their requirements to identify signs of moisture problems. Energy Advisors are required to recommend that the participant have a qualified specialist investigate further if the home has suspected indoor air quality problems.	Complete
In future evaluations, the Evaluator should report on the structure and process of inspection/verification for Green Heat installations, including proportions of inspections carried out by the equipment installer/contractor and those final inspection/verifications carried out directly on-site by Efficiency Nova Scotia or by an independent inspection service reporting to Efficiency Nova Scotia rather than to the equipment seller or installer.	Recommendation 2017 GH-SVR-5	In Progress	ENS agrees with this recommendation. Inspection and/or verification of installed equipment is not performed by ENS staff or installers/contractors. Rebates are issued following the purchase and installation of the equipment; ENS site visits are conducted subsequently to this. The intent of ENS staff site visits is to confirm that the correct model(s) is (are) installed at the site, and to ensure the correct rebates were allocated to the participant. ENS is working with the Evaluation Consultant to define the scope of work for the 2018 Program Process Evaluation. ENS anticipates the Evaluation Consultant will review and report on ENS quality assurance processes for the verification of Green Heat installations as part of the 2018 Evaluation Reports.	2018