

EfficiencyOne

**Holder of the
Efficiency Nova Scotia Franchise**

2021 DSM Annual Progress Report

FILED

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1. EXECUTIVE SUMMARY

EfficiencyOne (E1) is pleased to provide its 2021 Annual Progress report (APR). The report summarizes E1's 2021 Demand Side Management (DSM) results and activities as administrator and operator of the Efficiency Nova Scotia (ENS) franchise.

In 2021, E1 achieved 109.4 GWh in net energy savings (90 percent of the mid-course adjusted target of 121.5 GWh) and 27.5 MW in net peak demand savings (83 percent of the mid-course adjusted target of 33.2 MW).

Lingering impacts caused by the ongoing COVID-19 pandemic situation challenged E1 in meeting its 2021 energy and demand savings targets. E1 experienced impacts such as the temporary suspension of certain activities due to COVID-19 public health restrictions (e.g. in-home and in-business activities) and impacts on E1's service delivery partners (e.g. supply chain issues, contractor capacity resulting in project delays). Despite E1's responsiveness and focus on mitigating these impacts, E1 did not meet its 2021 energy and demand savings targets.

Despite not meeting its 2021 savings targets, E1's results rebounded from these impacts more quickly in comparison to the levels achieved in 2020. E1 considers this robust recovery as continued progress towards "business as usual operations" and demonstrates that E1 was successful in its mitigating efforts to offset a number of direct COVID-19 impacts to operations.

E1 has updated its three-year Plan period forecast using savings results for 2020, 2021, and an updated forecast for 2022. Based on this Plan period forecast, E1 is working diligently to meet its three-year contractual target for cumulative annual energy savings, within the 90 percent threshold, however, at this time, E1 does not expect to meet the 90 percent threshold for the three-year contractual Performance Target for cumulative annual system-peak demand savings. E1 remains focused and committed in meeting its three-year contractual target for cumulative energy savings and in reducing the projected gap in its demand savings contractual target.

This report includes the following information:¹

- summary of the context, activities and milestones achieved in 2021 and status of the annual performance indicators;
- management discussion and analysis of any discrepancies (25 percent or greater variance) relative to the original plan's intent and forecasts;
- summary of expenditures, energy, and system-peak demand savings for each program; and
- DSM Plan period forecast information.²

¹See Reporting requirements in M09096, 2020-2022 DSM Resource Plan, Executed Supply Agreement for Electricity Efficiency and Conservation Activities between E1 and Nova Scotia Power, Schedule E, Section 8, Reporting , at PDF page 117-119. [November 18, 2019]

² As part of the Performance Alignment Study by KPMG, E1 agreed to provide additional forecast information in current reporting to provide the NSUARB and stakeholders with additional insight and greater understanding on how DSM Plan implementation is progressing mid-term. E1 provided annual forecast information for savings targets and spending starting in Q2 2020 and DSM Plan period forecast information in the 2020 Annual Progress Report. See M09750, Exhibit 1, EfficiencyOne Performance Alignment Study, page 4. [Date Filed: April 21, 2020].

2. 2021 PORTFOLIO RESULTS

E1's 2020-2022 DSM Plan (the "Plan") was approved by the Nova Scotia Utility and Review Board ("NSUARB" or "Board") in 2019. The approved Plan set out Performance Targets of total cumulative energy savings of 367.8 GWh and demand savings of 98.3 MW over the three-year Plan period.³

For the 2021 year, E1's Compliance filing ("Plan as filed") established savings targets of 121.5 GWh of incremental annual net energy savings and 33.2 MW of incremental annual net peak demand savings. In Q1 2021, E1 made mid-course adjustments to savings levels within some programs to better reflect updated organizational insights, including impacts from the COVID-19 pandemic, and the most recent years' program evaluations (i.e. 2020 impact evaluations). At the portfolio level, E1's mid-course adjusted savings targets were set at 121.5 GWh and 33.2 MW, in line with the 2021 Compliance filing plan.⁴

In 2021, E1 achieved incremental annual net energy savings of 109.4 GWh, representing 90 percent of the mid-course adjusted savings target of 121.5 GWh. The incremental annual net peak demand savings were 27.5 MW, 83 percent of the mid-course adjusted savings target of 33.2 MW.

In comparison to E1's 2021 year-end forecast⁵ (provided to stakeholders in the Q3 2021 DSM report), E1's incremental annual net energy savings of 109.4 GWh was 6 percent below the 116.2 GWh projected in the year-end forecast. E1 achieved alignment with the 27.7 MW of incremental annual net peak demand savings projected in the year-end forecast, with a result of 27.5 MW.

Throughout 2021, E1 responded to the challenges of COVID-19 as the pandemic situation evolved. E1 built upon many of its mitigation efforts implemented in 2020 and provided updates

³ M09096, NSUARB Order, September 16, 2019.

⁴ M10128, Q1 DSM Report, page 5, May 25, 2021.

⁵ E1 provided an updated 2021 forecast (year-end) of anticipated 2021 savings and expenditures in its Q3 2021 DSM Report. (E1 also provided a year-end forecast in its Q2 2021 DSM report; this was updated in the Q3 2021 DSM report).

1 to stakeholders and the NSUARB on these efforts in its quarterly reports.⁶ Despite the challenges
2 raised by the pandemic, the situation necessitated E1 to find and implement, innovative solutions
3 to lessen the impact on its business operations, such as modifying service delivery and piloting
4 new ways of delivering demand side management activities in Nova Scotia.

5
6 Despite E1's efforts to fully mitigate impacts due to COVID-19, E1 was not able to achieve its
7 savings targets. The shortfall in reaching E1's 2021 mid-course adjusted savings targets are as a
8 result of the following factors:

- 9 • continued impacts to some program components from COVID-19 (e.g., project
10 completion delays, contractor availability issues, supply chain issues, etc.); and
- 11 • savings impacts to some program components (e.g. Efficient Product Installation, Home
12 Energy Assessment, Mi'kmaw Home Energy Efficiency Project [MHEEP]) due to the
13 temporary suspension of in-person activities (e.g. in-home assessments, in-home
14 activities, in-business audits), from April 28 to June 1, 2021, and in December, due to the
15 re-emergence of COVID-19 and public health restrictions.)

16
17 A summary of E1's actions and efforts in 2021 in response to COVID-19 impacts is provided below:

- 18 • E1 suspended all in-person activities from April 28 to June 1, 2021, in response to
19 government and public health directives on COVID-19. Most marketing campaigns
20 continued their activity; however, marketing campaigns that promoted in-store activity
21 were suspended during this period (e.g. Instant Savings Spring Campaign); and
- 22 • service delivery modifications were made for some programs (e.g., contactless appliance
23 pick-up, virtual audits, etc.) during the April 28 to June 1 suspension and in December
24 (e.g. outdoor pick-ups for Appliance Retirement and suspension of appliance
25 replacements within HomeWarming and MHEEP due to the re-emergence of COVID-19
26 public health restrictions);

⁶ E1 provided updates on COVID-19 and its impact on E1's programs in its Q1 2021 Q2 2021, and Q3 2021 DSM Reports to the NSUARB and stakeholders.

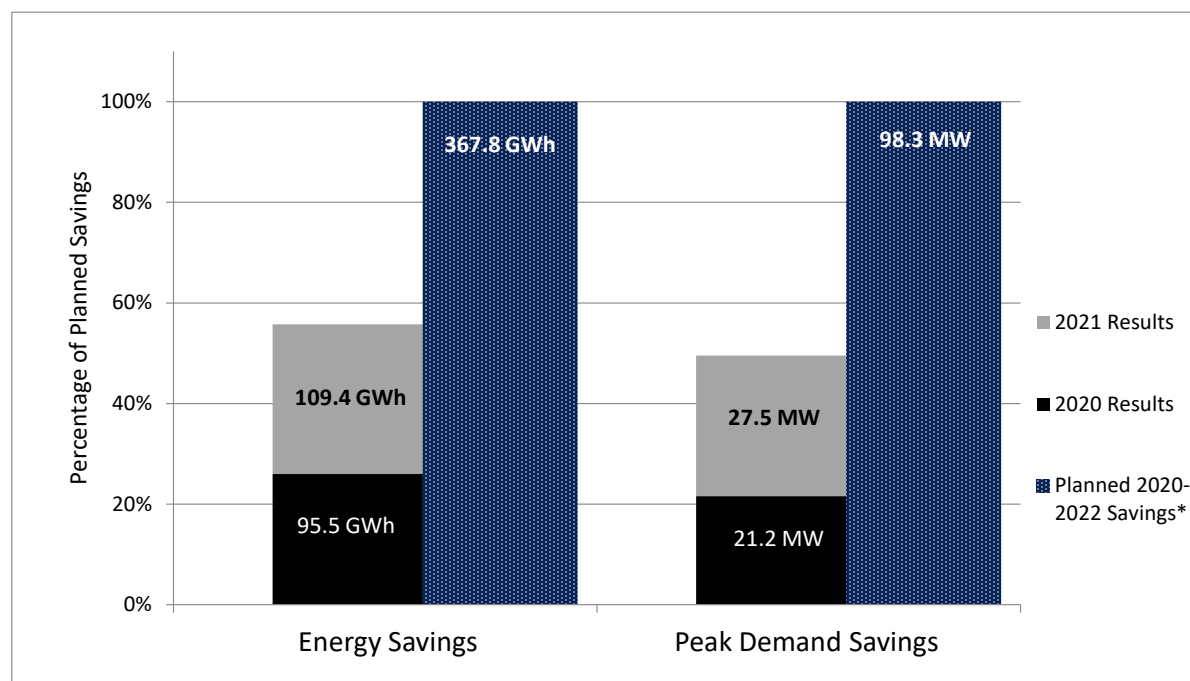
- protocols for Safe Work Practices for delivery partners and staff remained in effect throughout 2021 and were updated as public health directives evolved; these safety protocols were developed and implemented in 2020 and include requirements for physical distancing, enhanced cleaning, non-medical masks, and other safety measures;
- exploration of alternative service delivery approaches such as piloting virtual and remote audits, community drop-off events for small appliance retirements, and future expansion of online rebate offerings with online retail marketplaces (Instant Savings);
- E1 ended the April 28-June 1, 2021 suspension period on June 2, 2021, with the restart of in-person activity, such as in-home visits and assessments and in-business audits and visits. The MHEEP services remained on hold for a longer period in several communities than E1's restart date as MHEEP resumed activities in coordination with each Mi'kmaw community. Most communities permitted in-home visits by the end of June 2021, some with additional COVID-19 safety precautions in place. In December, due to the re-emergence of COVID-19 and public health restrictions, MHEEP activities slowed as several communities re-introduced visitor restrictions and E1 reintroduced outdoor pick-ups for Appliance Retirement and a suspension of appliance replacements;
- increased marketing activities and campaigns from June 2 to the end of 2021;
- increased incentives to drive uptake and savings within Business Energy Rebates, Appliance Retirement, Custom, Small Business Energy Solutions. E1 also increased the post-purchase application eligibility period from 90 to 180 days for Green Heat to help ease industry and contractor delays as related to COVID-19 impacts; and
- quarterly updates provided to stakeholders on E1's 2021 year-end forecast and E1's three-year Plan period forecast to assess ongoing COVID-19 impacts and potential impacts to achievement of E1's three-year contractual Performance Targets.

2.1 Progress towards Three-Year Performance Targets

The 2021 savings results mark progress towards the achievement of E1's three-year NSUARB approved Performance Targets.

Figure 1 outlines the progress E1 has made in 2020 and 2021 relative to E1's three-year contractual Performance Targets.

Figure 1: 2020 and 2021 Results as Progress towards 2020-2022 DSM Plan Performance Targets



Energy and demand savings are calculated at the generator and net of free ridership and spillover. 2020 results are evaluated results and 2021 results are evaluated and pending verification.

*Planned 2020-2022 savings refers to the 2020-2022 DSM Plan as Filed savings (Compliance Filing Plan).

2.1.1 Forecast for 2020-2022 DSM Plan Period

E1 has provided an updated three-year Plan period forecast in Table 1 to provide stakeholders and the NSUARB with additional insight on mid-term DSM Plan implementation.⁷

The three-year Plan period forecast for 2020-2022 uses currently available information (e.g. actual savings results and expenditures from 2020 and 2021). The three-year Plan period forecast also utilizes E1's updated forecast for 2022.

Using these inputs, the three-year Plan period forecast currently projects that E1 will achieve, within the 90% Board established threshold, the NSUARB approved Performance Target for cumulative annual energy savings⁸; however, it does not expect to reach its cumulative annual system-peak demand savings Performance Target.⁹ E1's expenditures remain within the approved three-year investment level of \$110 million for the Plan period. While E1 currently projects that it will achieve energy savings of 127.0 GWh in 2022, (which achieves 90% of the Performance target threshold), E1 notes that there remains a scenario where E1 may fall short of the energy savings Performance Target due to intervening circumstances. If at any time, E1 subsequently projects it is unlikely to achieve its 2022 target of 127.0 GWh, it will immediately advise the NSUARB and stakeholders.

During 2020 and 2021, E1 was subject to periods of service suspension due to COVID-19 public health restrictions for 18 weeks, out of a total of 104 weeks. This resulted in E1 having approximately 83 percent of total weeks available for savings opportunities and achievement and achieved 85 percent of the energy savings target over this two-year period. E1 expects that with the easing of public health restrictions effective March 21, 2022, service delivery will continue to increase for the balance of 2022. E1 expects to achieve 127.0 GWh in 2022, and 33.9 MW, as outlined in Table 1.

⁷ See Supra note 2.

⁸ 90 percent or greater of cumulative annual net energy savings at the generator of 367.8 GWh over the Term. (90 percent or greater and cumulative annual net peak demand savings at the generator of 98.3 MW over the Term)

⁹ 90 percent or greater and cumulative annual net peak demand savings at the generator of 98.3 MW over the Term.

E1's projected shortfall in meeting the demand savings Performance Target is related to E1's underachievement in energy savings in both 2020 and 2021 as well as pandemic related delays in launching new initiatives and activities focused specifically on utility peak demand savings. As E1 focused on managing and adapting its business operations in response to COVID-19 in 2020, and ongoing management of these challenges in 2021, it took significantly longer to develop and implement these new demand savings initiatives than originally anticipated. Consequently, this delayed savings results expected from these initiatives. An update on this item was provided to stakeholders and the NSUARB, including a summary of E1's demand savings initiatives and efforts, in E1's Q2 2021 report to the NSUARB.¹⁰

E1 has made the following key assumptions in the 2020-2022 DSM Plan period forecast:

- the pandemic impacts will continue to be felt during 2022 (e.g. supply chain issues, rising building and material costs, contractor availability/demand, etc.) however, no further periods of isolation/lock-downs will be required;
- protocols for E1 Safe Work Practices will evolve to reflect the updates to public health directives and protocols;
- delivery of DSM programs, services and portfolio activities remain consistent with initiatives outlined in E1's 2020-2022 DSM Resource Plan;
- underspend from 2020 and 2021 will be invested in 2022 activities; which may include the following:
 - an increase in customer incentive levels for programs to increase participation or offset impacts of rising building material costs, etc.;
 - incentives for new offerings from pilot initiatives; and
 - exploration of new technologies and modifications to service delivery
- alternative service delivery approaches such as contactless service (e.g. virtual audits, curbside appliance pick-up, community appliance drop-off events) will be re-introduced in the event COVID-19 public health restrictions return in 2022.

¹⁰M10243, E1 Q2 DSM 2021 Report, page 5

Updates on the progress of 2022 Plan implementation will be provided in E1's quarterly reports to the NSUARB. E1 will also provide its mid-course adjustments by program and their customer rate class impacts in the Q1 2022 DSM quarterly report, due to be filed May 25, 2022.¹¹

Table 1: 2020-2022 DSM Plan Period Forecast

Plan Year	2020-2022 DSM Plan Period Forecast									
	Energy Savings (GWh)			Demand Savings (MW)			Expenditures (\$ million)			
	Plan as Filed ¹	Results/Forecast	Variance	Plan as Filed ¹	Results/Forecast	Variance	Plan as Filed ¹	Amended ²	Results/Forecast	Variance
2020	119.2	95.5	-23.7	29.2	21.2	-8.0	\$34.4	\$34.4	\$28.4	-\$6.0
2021	121.5	109.4	-12.1	33.2	27.5	-5.7	\$36.6	\$34.6	\$36.0	\$1.4
2022	127.1	127.0	-0.1	35.9	33.9	-2.0	\$39.0	\$41.0	\$45.6	\$4.6
Cumulative	367.8	331.9	-35.9	98.3	82.6	-15.7	\$110.0	\$110.0	\$110.0	\$0.0
% of Target	-	-	90%	-	-	84%	-	-	-	100%

The underspend from 2020 expenditures was invested in 2021 E1 DSM activities and is included in the forecasted expenditures for 2022. E1's 2022 planned investment is set internally to operationalize the 2020-2022 DSM Plan.

As per the First Amending Agreement between Nova Scotia Power and EfficiencyOne, and approved by the NSUARB on November 30, 2020, the allocation of the approved investment amounts in 2021 and 2022 have been adjusted. NS Power has requested and E1 has agreed, that NS Power will defer \$2 million of its payment obligation in 2021 to 2022 (decreasing the investment from \$36.6M to \$34.6M in 2021 and correspondingly increasing investment in 2022 from \$39M to \$41M). See M09096, NSUARB Letter, First Amending Agreement [November 30, 2020].

¹¹ E1 often makes limited adjustments within an approved DSM Resource Plan to reflect changes in market conditions and updated insights from program and organizational evaluations unknown at the time of DSM Resource Plan development. See M09096, 2020-2022 DSM Resource Plan, Executed Supply Agreement for Electricity Efficiency and Conservation Activities between E1 and Nova Scotia Power, Schedule E, Section 8.3 Mid-Course Adjustments and Flexibility, at PDF page 119-120 [November 18, 2019].

Figure 2 provides a summary of E1's savings results in 2020 and 2021 and the forecasted savings for 2022 in comparison to the NSUARB approved three-year Performance Targets.

Figure 2: 2020-2022 DSM Savings and Forecast

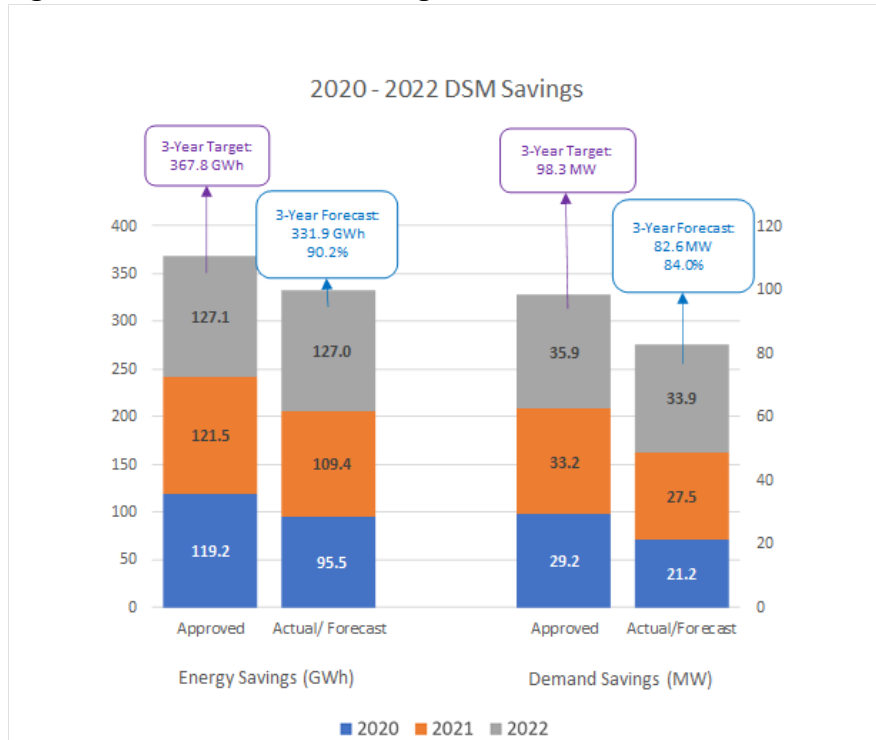


Table 2 below provides a breakdown of E1's 2021 savings results and expenditures by program as compared to the 2021 Plan as filed, E1's mid-course adjustments, and E1's 2021 year-end-forecast.¹²

Table 2: 2021 Results to 2021 Plan as Filed, Mid-Course Adjustments, and 2021 Year-End Forecast

		2021 Plan as Filed ¹				2021 Mid-Course Adjustment				2021 Forecast (Year-end)				2021 Results				Results to Forecast		Results to Mid-Course	
		First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand (MW)	Budget (\$ million)	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand (MW)	Budget (\$ million)	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand (MW)	Budget (\$ million)	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand (MW)	Expenditures (\$ million)	Program Status - First-Year Energy Savings ²	Program Status - Peak Demand Savings ²	Program Status - First-Year Energy Savings ³	Program Status - Peak Demand Savings ³
Residential	Efficient Product Rebates	11.9	80.2	1.3	3.0	13.0	104.3	1.7	4.1	14.5	97.9	1.5	4.7	16.8	130.9	2.0	4.7	●	●	●	●
	Instant Savings					10.6	93.7	1.2	2.7					14.3	121.0	1.6	3.2				
	Appliance Retirement					2.4	10.6	0.4	1.4					2.5	9.9	0.4	1.5				
	Existing Residential	31.8	484.5	15.1	10.4	24.3	347.5	11.2	9.1	18.0	244.0	7.5	7.4	18.8	273.6	9.4	7.0	●	●	●	●
	Home Energy Assessment					5.5	110.5	2.5	2.2					3.5	72.4	1.5	2.1				
	Green Heat					5.6	100.3	5.7	1.9					6.8	122.3	6.5	1.9				
	Efficient Product Installation					10.7	90.0	2.1	2.3					7.8	65.2	1.1	2.0				
	Affordable MultiFamily Housing					1.5	27.5	0.4	1.2					0.4	7.1	0.2	0.5				
	Mi'kmaw Home Energy Efficiency Project					1.0	19.1	0.5	1.4					0.3	6.6	0.1	0.6				
	New Residential	4.9	147.0	1.4	2.6	5.3	163.1	2.4	3.0	6.0	180.3	2.5	2.9	5.7	173.5	2.3	2.7	●	●	●	●
New Home Construction					5.3	163.1	2.4	3.0					5.7	173.5	2.3	2.7					
Residential Subtotal	48.5	711.7	17.7	15.9	42.6	614.9	15.2	16.2	38.5	522.3	11.5	15.0	41.3	578.1	13.6	14.5					
Low Income ⁴	7.6	79.7	1.1	3.7					3.5	38.5	0.8	1.4									
Business, Non-Profit and Institutional (BNI)	Efficient Product Rebates	35.0	498.1	7.6	6.4	35.7	536.3	7.2	5.9	40.5	576.1	7.3	6.8	33.5	488.2	5.4	6.2	●	●	●	●
	Business Energy Rebates					35.7	536.3	7.2	5.9					33.5	488.2	5.4	6.2				
	Custom Incentives	29.3	404.9	5.8	7.0	33.6	376.4	8.5	8.0	25.9	362.8	6.4	7.1	25.2	347.7	6.4	6.8	●	●	●	●
	Custom					30.3	369.6	8.2	7.0					23.3	337.3	6.1	6.2				
	Energy Management Information Systems					0.3	0.9	0.0	0.2					0.0	0.1	0.0	0.1				
	Strategic Energy Management					3.0	5.9	0.3	0.7					1.8	10.4	0.3	0.5				
	Direct Installation	8.6	115.7	2.0	3.8	9.6	152.6	2.3	5.4	11.3	150.9	2.5	6.1	9.5	134.7	2.0	5.5	●	●	●	●
	Small Business Energy Solutions					9.6	152.6	2.3	5.4					9.5	134.7	2.0	5.5				
	BNI Subtotal	73.0	1,018.6	15.5	17.2	78.9	1,065.3	18.0	19.3	77.7	1,089.8	16.2	20.0	68.1	970.7	13.8	18.4				
	Low Income ⁴	4.7	67.5	1.2	0.5					0.3	4.3	0.1	0.1								
Totals	Programs subtotal	121.5	1,730.3	33.2	33.1	121.5	1,680.2	33.2	35.5	116.2	1,612.1	27.7	35.0	109.4	1,548.8	27.5	32.9				
	Enabling Strategies	-	-	-	3.5	-	-	-	3.5	-	-	-	3.4	-	-	-	3.1				
	Total	121.5	1,730.3	33.2	36.6	121.5	1,680.2	33.2	39.0	116.2	1,612.1	27.7	38.4	109.4	1,548.8	27.5	36.0	●	●	●	●

Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover and are evaluated and pending verification. Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the year-end totals.

¹ 2021 Plan as Filed refers to the investment and savings targets as provided in the 2020-2022 DSM Resource Plan Compliance filing. See M09096, 2020-2022 DSM Resource Plan Compliance Filing, Appendix A, at page 9 [August 27, 2019]. The NSUARB approved the 2020-2022 DSM Plan on September 16, 2019.

² Green denotes a variance of less than 10% below the 2021 year-end forecast for energy and demand savings, yellow denotes a variance of 10% to 25% below the 2021 year-end forecast for energy and demand savings, and red denotes a variance of greater than 25% below the 2021 year-end forecast for energy and demand savings.

³ Green denotes a variance of less than 10% below the 2021 mid-course adjusted energy and demand savings targets, yellow denotes a variance of 10% to 25% below the mid-course adjusted energy and demand savings targets, and red denotes a variance of greater than 25% below the mid-course adjusted energy and demand savings targets. For more information on these variances, please refer to the relevant program sections of this report.

⁴ Reflects tracked and estimated participation by low-income customers; numbers are included in the overall Efficient Product Rebates (Residential and BNI), Existing Residential, Custom Incentives, and Direct Installation programs.

¹² E1 provided an updated 2021 year-end forecast of anticipated 2021 savings and expenditures in its Q3 2021 DSM Report. See M10363, E1 Q3 2021 DSM Demand Side Management Report, page 5 [November 25, 2021].

2.2 2021 Program Participation

E1's results for program participation are presented in Table 3 below. The table provides a comparison of 2021 participation results to the projected participation uptake as modelled in the 2020-2020 Plan.

The table provides insights into the impacts caused by COVID-19 to some program components. For example, in comparison to the projected participation for 2021, Mi'kmaw Home Energy Efficiency Project, Business Energy Rebates Mail-In, and Custom saw declines in participation. This was a result of ongoing and sustained COVID-19 impacts to these program components (e.g., contractor and project delays, supply chain challenges, temporary suspension of in-home and in-business activities due to COVID-19 public health restrictions).

In addition, the 2021 participation results provide insight into trends observed within E1's program components. Results within Home Energy Assessment and Efficient Product Installation reflect the issue of declining average savings per participant (kWh/participation unit). E1 continues to explore ways to address this issue within HEA and EPI.¹³ The issue of declining savings per participant has also been noted in the Affordable MultiFamily Housing (AMH) program component. AMH saw lower than anticipated savings per project, a result of a decrease in the average building size of comprehensive projects completed in 2021, as compared to 2020. (E1 had anticipated a decrease in savings per project with the introduction of a prescriptive rebate stream for smaller buildings.) For the BNI sector, participation results for the Custom program component are lower than originally anticipated due to fewer projects being initiated and projects not completing as expected due to delays caused by COVID-19.

¹³ E1 has observed this trend of declining average saving per participant since 2018. See E1 2018, 2019 and 2020 DSM Evaluation Reports, Existing Residential Program. See also M10056, E1 Summary Report: 2020 DSM APR, 2020 DSM Evaluation Reports, 2020 Savings Verification Report, Attachment A, page 4-6 [October 15, 2021].

1 **Table 3: 2021 Participation**

		2020-2022 Plan* participation (estimated if not available)	2021 Plan* participation (estimated if not available)	Participation Rates				Participation Unit
				2021 Results	% of 2021 Results to 2021 Plan as Filed ^a	2020 and 2021 Results	% of 2020 and 2021 Results to 2020-2022 Plan	
Residential	Efficient Product Rebates	566,702	189,703	207,034	109%	416,886	74%	Units rebated
	Instant Savings	553,785	185,489	201,175	108%	406,330	73%	Units rebated
	Appliance Retirement	12,917	4,214	5,859	139%	10,556	82%	Units rebated
	Existing Residential	43,647	14,718	14,550	99%	27,174	62%	Housing units
	Home Energy Assessment	2,417	857	961	112%	2,001	83%	Housing units
	Green Heat ¹	15,914	5,621	3,456	61%	6,316	40%	Housing units
	Efficient Product Installation ²	24,874	8,093	10,028	124%	18,713	75%	Housing units
	Affordable MultiFamily Housing ³	102	34	23	68%	38	37%	Projects
	Mi'kmaw Home Energy Efficiency Project	339	113	82	73%	106	31%	Housing units
	New Residential	2,109	693	853	123%	1,765	84%	Participants
	New Home Construction	2,109	693	853	123%	1,765	84%	Participants
Business, Non-Profit and Institutional (BNI)	Efficient Product Rebates	958,031	316,443	243,944	77%	469,947	49%	Units rebated
	Business Energy Rebates - Mail-In ⁴	266,163	87,915	54,988	63%	120,682	45%	Units rebated
	Business Energy Rebates - Instant ⁴	691,868	228,528	188,956	83%	349,265	50%	Units rebated
	Custom Incentives	574	189	149	79%	362	63%	Projects and participants
	Custom ⁵	552	183	142	78%	347	63%	Projects
	Energy Management Information Systems ⁶	6	2	1	50%	3	46%	Participants
	Strategic Energy Management ⁶	16	4	6	150%	12	76%	Participants
	Direct Installation	1,855	608	512	84%	801	43%	Projects
	Small Business Energy Solutions ⁷	1,855	608	512	84%	801	43%	Projects

*2020-2022 Plan Participation and 2021 Plan Participation columns refers to the projected participation in the 2020-2022 DSM Resource Plan. See M09096 2020-2022 DSM Resource Plan Compliance Filing, Appendix A [August 27, 2019]. The NUSARB approved the 2020-2022 DSM Plan on September 16, 2019.

All participation units reflect E1's Evaluation Consultant's participation figures from the 2021 DSM Evaluation reports unless noted otherwise. Participation results reported in previous quarters may have been updated and are reflected in the year-end totals. Please refer to Table 11 for estimates of low-income participation in program components. "Participation Unit" (e.g. Units Rebated, Housing Units, Participants, Projects) is defined as completed homes/projects unless noted otherwise.

¹ The 20/22 DSM Plan expresses Green Heat participation in counts of measures installed. 20/22 plan participation expressed in housing units is a post-hoc estimate based on typical number of and mix of measures installed in a household. For the Green Heat program component, E1 tracks housing units whereas E1's Evaluation Consultant tracks measures installed. This number reflects E1's year-end results for housing units.

² The 20/22 DSM Plan expresses EPI participation in counts of measures installed. 20/22 plan participation expressed in housing units is a post-hoc estimate based on typical number of and mix of measures installed in a household.

³ The 20/22 DSM Plan expresses AMH participation in projects. Projected participation for the 2020-2022 Plan and 2021 Plan has been updated as per Table 9 and Table 10 in the 2020-2022 Compliance Filing, Appendix A, page 36.

⁴The 20/22 DSM Plan does not differentiate between BER Mail-In and BER-Instant. 20/22 plan participation is a post-hoc estimate based on the typical division between these two delivery methods. For the Business Energy Rebates (BER) program component, E1 tracks units rebated within the Mail-In service, whereas E1's Evaluation Consultant tracks unique participants, corresponding to the number of businesses that participated in the service. This number reflects E1's year-end results of units rebated within the BER Mail-In service.

⁵The 20/22 DSM Plan expresses Custom participation in GWh. 20/22 plan participation expressed in units of "participants" is a post-hoc estimate based on typical GWh per participant. For the Custom program component, E1 counts milestones with savings claimed whereas E1's Evaluation Consultant tracks completed projects and projects that claimed partial savings.

⁶The 20/22 DSM Plan expresses EMIS and SEM participation in GWh. 20/22 plan participation expressed in units of "participants" is a post-hoc estimate based on typical GWh per participant. Each participating EMIS and SEM project is counted once for the year, although participation in the program component is ongoing and most facilities generate savings every month.

⁷The 20/22 DSM Plan expresses SBES participation in counts of measures installed. 20/22 plan participation expressed in projects is a post-hoc estimate based on typical number of and mix of measures installed in a business.

2.3 2021 Unit Cost Data

Table 4 below presents unit cost data for the 2021 Plan as filed, 2021 mid-course adjustments, 2021 year-end forecast, and 2021 results. In 2021, E1 achieved an overall unit cost of \$0.33/kWh, a result that aligns with the Plan as filed unit cost of \$0.32/kWh in addition to E1's year-end forecasted unit cost of \$0.33/kWh.

Table 4: 2021 Unit Cost

		First-Year Unit Cost				
		2021 Plan as Filed ¹ (\$/kWh)	2021 Mid-Course Adjustment (\$/kWh)	2021 Year-End forecast (\$/kWh)	2021 Results (\$/kWh)	Program Status ²
Residential	Efficient Product Rebates	0.25	0.31	0.32	0.28	●
	Instant Savings					
	Appliance Retirement					
	Existing Residential	0.33	0.38	0.41	0.37	●
	Home Energy Assessment					
	Green Heat					
	Efficient Product Installation					
Business, Non-Profit and Institutional (BNI)	Affordable MultiFamily Housing					
	Mi'kmaw Home Energy Efficiency Project					
	New Residential	0.53	0.56	0.49	0.48	●
	New Home Construction					
	Residential Subtotal	0.33	0.38	0.39	0.35	
	Low Income ³	0.49			0.41	
Business, Non-Profit and Institutional (BNI)	Efficient Product Rebates	0.18	0.17	0.17	0.18	●
	Business Energy Rebates					
	Custom Incentives	0.24	0.24	0.27	0.27	●
	Custom					
	Energy Management Information Systems					
	Strategic Energy Management					
	Direct Installation	0.44	0.56	0.54	0.58	●
Total	Small Business Energy Solutions					
	BNI Subtotal	0.24	0.24	0.26	0.27	
	Low Income ³	0.11			0.24	
	Programs Total	0.27	0.29	0.30	0.30	
	Enabling Strategies		-			
	Total	0.30	0.32	0.33	0.33	●

First-year unit cost is provided to two decimal places due to the relative magnitude of the figures. E1 provides comments on unit cost variances of 25% or more (2021 results as compared to E1's mid-course adjusted unit cost). In 2021, there were no unit cost variances of 25% or more at the program or portfolio level as compared to E1's mid-course adjusted unit cost targets. Unit costs are calculated using evaluated energy savings at the generator, net of free-ridership and spillover (pending verification), and unaudited expenditure amounts.

¹2021 Plan as Filed refers to the investment and savings targets as provided in the 2020-2022 DSM Resource Plan Compliance filing. See M09096, 2020-2022 DSM Resource Plan Compliance Filing, Appendix A, at page 9 [August 27, 2019]. The NSUARB approved the 2020-2022 DSM Plan on September 16, 2019.

The 2021 year-end forecast refers to the forecast provided in E1's Q3 2021 DSM report. See M10363, E1 Q3 2021 DSM Demand Side Management Report, page 5 [November 25, 2021].

²Green denotes a variance of less than 10% of the 2021 mid-course adjusted unit cost, yellow denotes a variance of 10% to 25% of the 2021 mid-course adjusted unit cost, and red denotes a variance of greater than 25% of the 2021 mid-course adjusted unit cost.

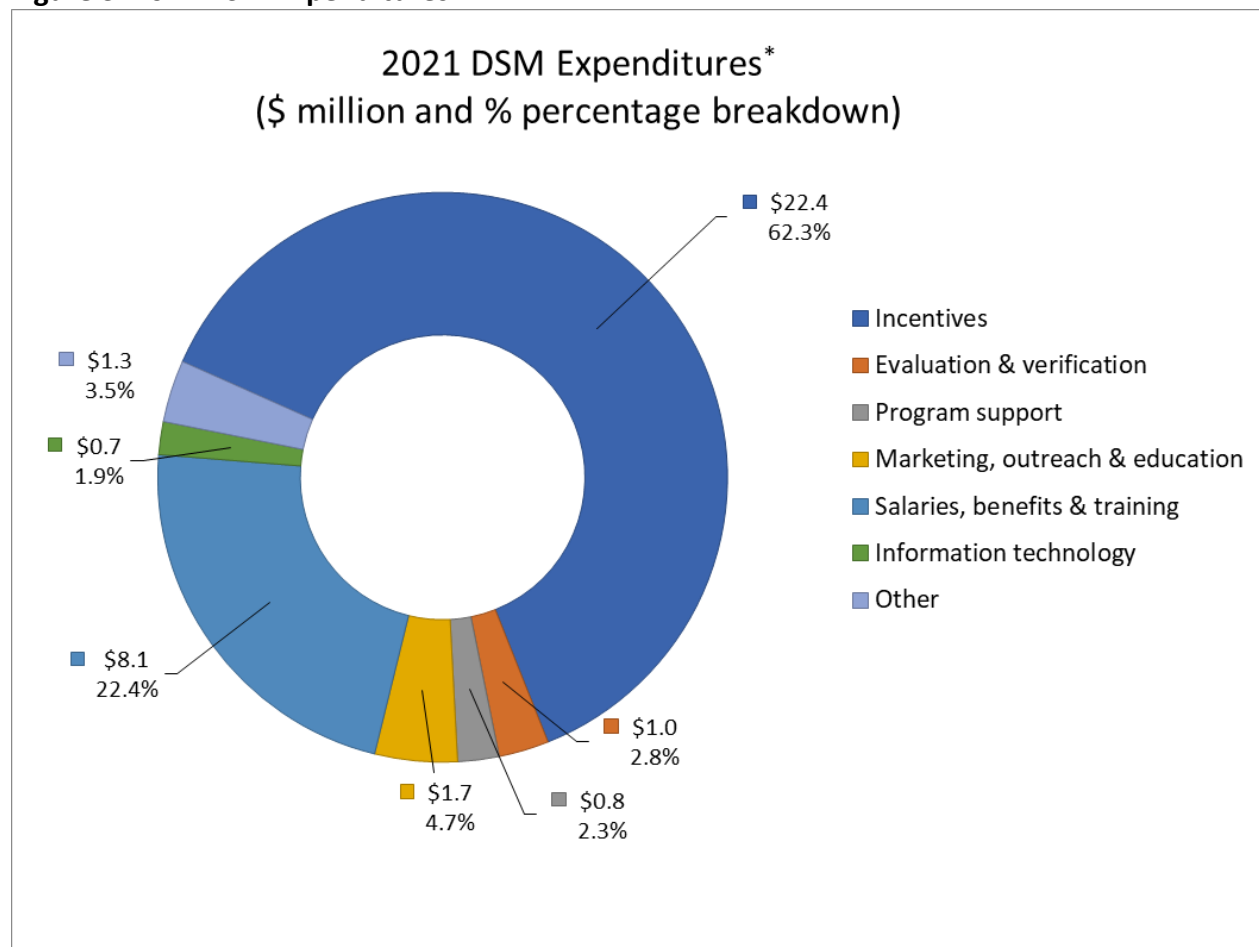
³Reflects tracked and estimated participation by low-income customers; numbers are included in the overall Efficient Product Rebates (Residential and BNI), Existing Residential, Custom Incentives, and Direct Installation programs.

2.4 2021 DSM Expenditures

In 2021, E1's total expenditures were \$36.0 million, \$3.0 million or 8 percent below the mid-course adjusted planned spending levels of \$39.0 million. Figure 3 below provides a breakdown of 2021 DSM Expenditures.

E1's underspend, as compared to its mid-course targets, is directly related to a reduction in incentive costs from the shortfall in energy and demand savings. Of the \$3 million underspend, 96 percent of this amount was related to incentive expenditures and the reduction in savings as a result of COVID-19. In total, all other expenditures were less than planned.

Figure 3: 2021 DSM Expenditures



*Expenditure amounts are unaudited and are rounded to the nearest million. Expenditure amounts reported in previous quarters may have been updated and are reflected in the 2021 annual total.

3. 2021 PROGRAM RESULTS AND DISCUSSION

The following section provides an overview of 2021 Evaluation activities, 2021 program level results and activities for E1's Residential and BNI sector programs, discussion of program variances (where applicable), low-income results, Enabling Strategies, and additional 2021 results. Rate class results by program are provided in Attachment 1.

3.1 2021 Evaluation Activities

Evaluation activities are conducted annually to ensure accurate determination of net electrical energy and net system-peak demand savings. E1 utilizes the annual impact evaluations as up-to-date progress indicators and results towards its E1's three year Plan Performance Targets. These results are presented in the 2021 DSM Evaluation reports, filed concurrently with this APR.

In 2021 the following evaluation activities occurred:

- each program completed a condensed or comprehensive impact evaluation. A condensed impact evaluation involves using some or all of the previous year's impact evaluation parameters; a comprehensive impact evaluation is a full impact evaluation involving review of baselines, methodologies, values, and net-to-gross-ratios;
- Instant Savings, Green Heat, Business Energy Rebates, and Custom (New Construction service) underwent a market evaluation. Market evaluations characterize current market conditions, assess program satisfaction/influence, and analyze market evolution;
- the Custom program component completed a process evaluation for the New Construction service. A process evaluation reviews program design, effectiveness of program administration and delivery, analyze partner/participant perspectives, program barriers, effectiveness of tracking systems, and opportunities for improvement; and
- research on the integration of market transformation (MT) programs was completed, including a literature review on MT programs and related evaluation best practices; and interviews with program administrators from other jurisdictions that have integrated MT programs in their portfolio.

In consultation with E1's Evaluation Consultant, modifications were made to some 2021 evaluation activities due to ongoing pandemic restrictions. For example, data collection activities were modified for the Custom program component. Rather than on-site visits, the Evaluator performed energy model reviews and technical projects reviews with the assistance of follow-up phone interviews. Similar to last year, Instant Savings participant surveys were delivered online rather than in person. E1 intends to explore how to leverage insights from these virtual/online activities with the Evaluation Consultant to support the continued use of these more cost effective approaches, where appropriate.

3.2 Residential Sector Results

In 2021, the Residential sector achieved net incremental energy savings of 41.3 GWh and net peak demand savings of 13.6 MW compared to the 2021 mid-course adjusted planned savings amounts (targets) of 42.6 GWh and 15.2 MW, respectively. The Residential sector consists of the following programs:

- Efficient Product Rebates;
- Existing Residential; and
- New Residential.

Tables 5 through 7 provide a summary of 2021 results and activities by program in the Residential Sector.

1 **Table 5: Residential EPR Program Results**

Residential EPR (2021)			
Residential EPR	Energy Savings (GWh)	Demand Savings (MW)	Expenditures (\$ million)
2021 Results	16.8	2.0	4.7
2021 MCA Target	13.0	1.7	4.1
Program Components	- Instant Savings offers point-of-sale rebates to retail customers who purchase eligible energy efficient products. - Appliance Retirement retires old, inefficient household appliances (e.g. refrigerators, freezers, room air conditioners) by offering a free appliance pick-up from homes, proper recycling, in addition to a financial incentive. The program component also replaces inefficient appliances (dehumidifiers, refrigerators, freezers, clothes dryers), for eligible participants in both the HomeWarming service¹⁴ and the Mi'kmaw Home Energy Efficiency Project.		
Discussion of Program Variance	- Results for Residential Efficient Product Rebates (EPR) were 29% above the mid-course adjusted energy savings target and 20% above the mid-course adjusted peak demand savings target. The higher than expected savings in EPR is attributable to Instant Savings; this program component contributes the majority of EPR's savings. Instant Savings results were stronger than expected due to: - strong uptake in year-round rebate appliance products such as ENERGY STAR® certified clothes dryers and air purifiers, with a 73% increase in uptake over 2020 levels¹⁵; and - higher than expected participation in the Fall Campaign due to increased rebate levels for some products such as smart thermostats for electrical heat, programmable thermostats, and outdoor heavy-duty timers. 2021 saw a 31% increase in the number of control products rebated as compared to 2020 levels.¹⁶		
Instant Savings Highlights	- A total of 201,175 eligible products were rebated, similar to 2020 participation levels.¹⁷ - The Spring Campaign was delivered from April 9 to May 23, 2021 at 170 store locations across the province and included curbside, online, and in-store purchase options. A total of 92 in-store events were held with COVID-19 safety precautions in place along with the development of do-it-yourself videos for ongoing social media promotion (programmable thermostats, outdoor lighting, heavy duty timers.) Approximately 40 additional in-store events were cancelled in late April with the re-emergence of COVID-19 and corresponding public health restrictions.		

¹⁴ The HomeWarming program provides low-income homeowners with a service that includes energy assessments and significant energy-saving home upgrades. EfficiencyOne receives funding from the Province of Nova Scotia to administer this program for non-electrically heated homes. Costs for appliance replacements in non-electrically heated homes are paid for by DSM funds.

¹⁵ Residential Efficient Product Rebates Program, 2021 DSM Evaluation: EfficiencyOne, Final Report, March 10, 2022 at page 26-27.

¹⁶ Ibid., at page 26-27.

¹⁷ Ibid., at page 26-27.

Residential EPR (2021)	
	• Year-round rebates were introduced following the Spring Campaign on select products such as LED lighting fixtures, LED recessed downlights, LED fixtures with motion sensors, and clotheslines. • E1 approached new partners to provide Instant Rebates to customers who purchase eligible products online. • The Fall Campaign ran from September 24 to November 14, 2021 at 173 locations across the province and a total of 280 in-store engagement events were held. • Efforts to diversify product offerings led to an increase in savings from non-lighting measures; for example, measures other than LED lamps and fixtures accounted for 59% of savings (e.g. air purifiers, outdoor timers, programmable thermostats).¹⁸ • Marketing activities included promotion of the Spring and Fall Campaigns (radio, social media, digital ads, Spotify, search engine marketing, social media influencers, in-store signage, social media toolkit for retail partners, etc.) and promotion of the new year-round rebates on select products.
Appliance Retirement Highlights	• Participation increased by 25% over 2020 levels¹⁹ and returned to pre-pandemic levels, a result of increased incentives (\$50 from \$30) for full sized appliances, introduced mid-year (effective June 21 to December 31, 2021). • Modified operations were in place (contactless outdoor-only pick-ups) from April 28 to June 1 and in December due to the return of COVID-19 public health restrictions. Appliance replacements within the HomeWarming program and MHEEP were suspended from April 28 to June 1 and the month of December due to COVID-19 public health restrictions. • Four community small appliance drop-off events were held in Whitney Pier, North Preston, Wolfville, and Bridgewater, with a total of 120 appliances retired. • Marketing campaigns from July through December promoted the increased rebate offer, including targeted emails, social media and digital ads, promotion of the community drop-off events, and targeted postcard mailings.

¹⁸ Ibid., at page 26.

¹⁹ Ibid., at page 4.

1 **Table 6: Existing Residential Program Results**

Existing Residential (2021)			
Existing Residential	Energy Savings (GWh)	Demand Savings (MW)	Expenditures (\$ million)
2021 Results	18.8	9.4	7.0
2021 MCA Target	24.3	11.2	9.1
Program Components	- Home Energy Assessment (HEA) encourages homeowners to improve the energy efficiency and comfort of their homes by improving building envelopes, as well as installing space heating and water heating systems, by providing rebates or low-interest financing for eligible energy efficiency upgrades. - Green Heat provides financial incentives to homeowners to reduce electricity consumption through the installation of high-efficiency space and water heating systems. Eligible heating systems include heat pumps, biomass, and solar heating systems. Eligible systems also include peak demand reduction measures, such as Electric Thermal Storage (ETS), three-element water heaters, and domestic hot water heater timers. - Efficient Product Installation (EPI) provides homeowners and tenants with free-of-charge direct installation of energy efficient products such as LED lamps, air sealing kits, water-saving measures and other products. - Affordable MultiFamily Housing and Non-Profit Organizations (AMH) program component assists non-profit organizations (e.g., shelters, transition houses, community hubs etc.) and affordable housing owners with financial incentives for building retrofit projects. - The Mi'kmaw Home Energy Efficiency Project (MHEEP) provides energy efficiency upgrades to band-owned homes in the 13 Mi'kmaw communities in Nova Scotia. Activities include a home energy assessment (pre-retrofit or D assessments and post-retrofit or E assessments), along with the completion of recommended upgrades (e.g., building envelope, space heating or water heating equipment upgrades and other measures). MHEEP is delivered in partnership with E1, community housing managers, delivery agents, and Mi'kmaw preferred contractors. All upgrades are managed by E1 and/or its delivery agents on behalf of the community and participant. MHEEP also facilitates replacement of old inefficient appliances through the Appliance Retirement program component.²⁰		
Discussion of Program Variance	Existing Residential fell short of its mid-course adjusted energy savings and demand savings targets by 23% and 16% respectively. This was attributed to lower than anticipated savings results in four program components: Home Energy Assessment, Efficient Product Installation, Affordable MultiFamily Housing, and the Mi'kmaw Home Energy Efficiency Project. This is explained further in the respective program component sections below.		

²⁰ These appliance replacements and their electrical savings are presented in the 2021 DSM Evaluation Reports. See Residential Efficient Product Rebates Program 2021 DSM Evaluation: EfficiencyOne, Final Report, March 10, 2022 page 4.

Existing Residential (2021)	
Home Energy Assessment Highlights	• HEA saw lower participation levels in 2021 (a 8% decrease as compared to 2020).²¹ Many files, and their corresponding savings, were pushed forward for completion in 2022 due to customer extension requests resulting from contractor/material delays (an impact from COVID-19) and customers wanting to compete additional work to receive Natural Resources Canada (NRCAN) Greener Home Grant Program (Greener Homes) incentives. E1 also experienced delays in the processing of completed files due to outages of NRCAN's file transfer server (referred to as the mailbot) in August and December and NRCAN delays associated with the launch of the Greener Homes program. • The issue of decreased average savings per participant continued in 2021.²² E1 has also observed an increasing number of electrically heated homes entering HEA with pre-existing mini-split heat pumps installed, which decreases the potential energy saving opportunities for these homes (e.g. in 2021, 8% more electric customers had pre-existing heat pumps installed as compared to 2020). • 51% of DSM participants generated both electrical and non-electrical savings; this decreases electric energy savings per participant.²³ Participating homes that are heated primarily by non-electric fuels, and have secondary electric heating, generate a small amount of electricity savings; these electricity savings are funded via DSM funds and are counted as a DSM participating housing unit. E1 anticipates this trend to remain throughout 2022 as opportunities to offer the program to more customers continue for both electric and non-electric customers.²⁴ • E1 is nearing a partnership with NRCAN to co-deliver the Greener Homes program in Nova Scotia through the HEA program component. As this moves forward, E1 expects to be able to better assess potential impacts to HEA and provide further insight on options that may help abate the issue of decreasing electrical energy savings per participant. • HEA saw a 125% increase in enrolments in 2021, as compared to 2020 due to the introduction of the Greener Homes program. DSM savings from many of the new HEA enrolments generated by the Greener Homes program are expected to be realized in 2022. • E1 worked with delivery partners to increase Energy Advisor capacity so that new customers could be accommodated while maintaining appointments for existing customers looking to receive their final assessments. • HEA was offered to property owners/landlords of small multi-unit residential buildings (2 to 6 unit properties) to access rebates on heat pumps, insulation, ETS systems, and other whole building upgrades.

²¹ Existing Residential Program, 2021 DSM Evaluation: EfficiencyOne, Final Report, March 10, 2022, at page 6.

²² Ibid., page 6. Effective July 2018, E1 received funding from the federal government and Province of Nova Scotia via the Low Carbon Economy Fund to administer HEA for participants with non-electrically heated homes, meaning HEA is open to both electrically and non-electrically heated homes. With space heating being the main source of savings under HEA, having more non-electrically heated homes under HEA reduces the potential for average electrical savings per participant, as compared to the average electrical savings potential when HEA was available solely to electrically heated homes.

²³ Ibid., at page 6.

²⁴ Non-electrically heated homes are funded via the Low Carbon Economy Fund (LCEF) and Province of Nova Scotia. DSM funds are utilized for electrically heated homes. In May 2021, the federal government announced the launch of the Canada Greener Homes Grant program.

Existing Residential (2021)	
	- E1 piloted a “remote energy assessment” component (part of a virtual home assessment) for a small sample of electric properties. This initiative allowed customers access to an Energy Advisor using video technology. See the Development & Research section for additional information (Table 12) on this initiative. - The amount a homeowner pays for a Home Energy Assessment was increased from \$99 to \$199 on August 1, to reflect the additional scope of work required by NRCan for service delivery partners. Homeowners who qualify for Greener Homes and install at least one eligible Greener Homes measure recommended by their Energy Advisor, will be reimbursed \$100 following their final assessment. - E1 supported demand reduction activities including the Klondike Pilot. - Marketing efforts included a spring media campaign, inclusive of digital and social media, digital display, and sponsored content pieces (e.g., posts, photos, stories) with social media influencer DIY MOM. Initiatives also included customer retention emails (tailored emails to HEA participants to encourage completion of the program). E1 paused plans for a summer and fall marketing campaign due to the high volume of HEA enrolments in June and to allow the contracted delivery partners to work through existing customer enrolments.
Green Heat Highlights	- Green Heat saw its highest savings levels achieved to date, a result of higher than anticipated participation (8% increase over 2020 levels), increased uptake in demand reduction measures (almost double the installs from 2020), and a downward adjustment in free-ridership in the 2021 evaluation for mini-split heat pumps from 2020 levels.²⁵ - Effective April 1, Green Heat extended the deadline for rebate applications from 90 to 180 days post-purchase and installation of qualifying Green Heat products (i.e., heat pumps, wood, pellet, solar thermal equipment, water heating equipment, etc.). This extension was introduced to help ease industry and contractor delays as related to the COVID-19 pandemic. - Mini-split heat pumps (MSHPs) contributed the majority of the program component’s energy savings and represented the most frequently installed measure in 2021 (similar to results observed since 2016).²⁶ - Green Heat increased incentives for three-element water heaters and increased rebates, effective October 1, for ETS units to \$40/kWh of storage energy, up from \$25/kW. - E1 supported demand reduction activities including the Klondike pilot. - Continued development of a mid-stream delivery approach for ETS units, to be launched Q1 2022. The mid-stream delivery approach will allow ETS installers to apply on behalf of customers (installers will provide a net after rebate price to customers) with the incentives reimbursed back to the installers.

²⁵ Ibid., at page 31 and page 61. The Evaluation Consultant counts measures installed for Green Heat participation levels. E1 counts completed projects/homes as per Table 3 of this report (3,456 for 2021). For example, if a homeowner installed two measures (a woodstove and a MSHP), E1 would track this as one home/project.

²⁶ Ibid., at page 31.

Existing Residential (2021)	
	- E1 implemented improvements to allow installers to submit applications for customers via E1's customer information system and their Efficiency Preferred Partner (EPP) account (the customer still receives the rebate). - Marketing activities included a summer, fall and winter campaign. The summer campaign focused on home cooling options; the fall campaign promoted heating rebates for ETS units, wood, and pellet stoves. The campaigns included transit shelter posters, digital billboard advertisements, social media, digital display advertisements, and contractor leave-behind postcards, and promotion of Green Heat's online application tool.
Efficient Product Installation Highlights	- In-home activities were temporarily suspended from April 28 to June 1, 2021 due to COVID-19; no installations (and savings) were completed during this period. - EPI saw a decline in savings per participant in 2021, a trend observed since 2017. This is a result of decreasing opportunities for LED lamp replacements (both A-type and non-A-type). On average 15.5 products were installed in 2021 per household in comparison to 17.5 in 2020.²⁷ - E1 continues to assess the issue of declining savings per participant and will utilize insights from participant surveys gathered in the 2021 Evaluation and conduct data analytics research on the residual potential for EPI, in 2022. EPI also intends to pilot new measures to increase energy savings opportunity in homes (e.g. the introduction of smart thermostats for mini-split heat pumps as a pilot measure in February 2022). - Despite the savings shortfall, EPI had 10,028 participants, a 15% increase from 2020 levels. Surveyed participants had high satisfaction with EPI with an average score of 8.7 on a 10-point scale.²⁸ - EPI delivered, on behalf of the Small Business Energy Solutions (SBES) program component, a Commercial Direct Install (CDI) pilot in September. Savings results for this pilot are included within the SBES program component. - Marketing efforts for EPI included a summer and fall marketing campaign comprised of a free clothesline giveaway promotion, a postcard mail-out to over 10,000 homes in the province, targeted emails (Gmail-sponsored email), social media posts, and a direct mail drop to communities and counties throughout Nova Scotia that have had low participation to date.
Affordable MultiFamily Housing Highlights	AMH's results were lower than anticipated, a result of the suspension of service due to COVID-19 (April 28 to June 1, 2021) and customer and contractor delays (e.g., contractor availability issues, shortage of supplies for building upgrades, building access restrictions, competing demands on property managers to coordinate upgrade projects, etc.). In addition, some projects substituted certain products due to ongoing supply chain issues (e.g. heat pumps). These substituted products had different specifications than those originally quoted, which led to unexpected reductions in project savings. Savings were also lower per project due

²⁷ Ibid., at page 67.

²⁸ Ibid., at page 72.

Existing Residential (2021)	
	to a 44% decrease in the average building size of projects in 2021 as compared to 2020, related to the introduction of a prescriptive rebate stream for smaller buildings/projects. • A review of runtime assumptions for prescriptive heat pumps was also conducted internally; this decreased full-load hours and decreased savings potential on some prescriptive projects (these new assumptions were confirmed in the 2021 Evaluation and resulted in a downward adjustment for heat pump savings.) • Despite its lower than anticipated savings, AMH grew in 2021, with 23 projects completed, a 53% increase over the 15 projects completed in 2020 and eight completions in 2019,²⁹ related to the introduction of the prescriptive pilot for smaller buildings. • E1 launched a prescriptive pilot for smaller buildings (3 or fewer units) to allow for up to 80% rebate on heat pumps and heat pump water heaters. • Six dedicated energy auditing companies were secured to provide auditing services for the program. • E1 introduced topped up DSM rebates in Q2 (using the provincial Nova Scotia Green Fund) to lower project costs for participants (project costs often present a barrier for AMH participants). • Customer satisfaction with AMH was very high; participants provided a rating of 10 on a 10-point scale.³⁰ • Marketing activities included a spring and fall campaign, inclusive of social media advertising, digital advertising, targeted e-newsletters, direct e-mail to property managers and owners across Nova Scotia, development of Facebook leads and a referral program; and improvements to the website landing page along with the addition of a lead generation form.
Mi'kmaw Home Energy Efficiency Project Highlights	• From April 28 to June 1, 2021, MHEEP paused activities with the suspension of in-person activities due to COVID-19. No activities, upgrades or assessments were completed during this time. MHEEP resumed activities in coordination with each Mi'kmaw community; however, MHEEP's services were on hold for a longer period in several communities than E1's suspension period. Most communities permitted in-home visits by the end of June 2021, some with additional COVID-19 safety precautions in place. MHEEP activities slowed again in December 2021 as several communities re-introduced visitor restrictions due to the re-emergence of COVID-19. This resulted in appointment cancellations and files that could not be closed in December as planned. • Contractor capacity continued to be a challenge throughout the year; contractors experienced a high level of interest in energy efficiency upgrades, which led to project and file completion delays.

²⁹ Ibid., at page 132.

³⁰ Ibid., at page 136.

Existing Residential (2021)	
	• Delivery Agents experienced unexpected staff changes in 2021 and a high demand for their services as related to the Greener Homes program; this led to delivery agent challenges in dedicating adequate resources for MHEEP. • MHEEP added a second delivery agent in Q2 to increase energy advisor and project management capacity. • MHEEP saw 82 participants complete projects in 2021, a 242% increase over 2020 levels, and slightly higher than pre-pandemic levels.³¹ • Marketing activities included the development of a MHEEP website landing page and a photoshoot in a Mi'kmaw community for these marketing materials. (The website will be bilingual [English and Mi'kmaq] and website translation activities began in 2021.)

³¹ Ibid., at page 120-121.

1 **Table 7: New Residential Program Results**

New Residential (2021)			
New Residential	Energy Savings (GWh)	Demand Savings (MW)	Expenditures (\$ million)
2021 Results	5.7	2.3	2.7
2021 MCA Target	5.3	2.4	3.0
Program Component	The New Home Construction (NHC) program component aims to encourage homeowners and builders to exceed energy efficiency building code requirements in new home constructions by providing modelling support for a participating homeowner/builders' building plans and tiered incentives.		
Discussion of Program Variance	The New Residential program was 6% above the mid-course adjusted energy savings target and 4% below the mid-course adjusted demand savings target.		
New Home Construction Highlights	- NHC saw 853 project completions, 6% lower than the number of completions in 2020, yet remains the second highest participation level achieved by NHC since 2014.³² Of the provinces' total number of housing completions in 2021, 32% participated in NHC. - E1's 2023-2025 DSM Plan anticipates the wind up of the NHC program component in 2023 due to requirements for a heat pump baseline (compared to the current electric baseboard baseline). E1 anticipates that by mid-year 2022, NHC registrations will be required to cease in order to align with the wind up timeline. 22 buildings have registered for the Multi-Unit Residential Building (MURB) pilot at the end of 2021 (This pilot first launched in 2020 for 25, two-to-four multi-unit buildings). Seven of these buildings completed the pilot in 2021. - E1 launched a "No Fee NHC Assessment" pilot, part of a High Performance Energy Efficiency initiative funded by the government of Nova Scotia to promote high efficiency building practices and DSM savings. The pilot will provide 5 free program registrations for up to 150 new builders and 2 free registrations for up to 125 builders who have previously participated in the program to increase builder registration and DSM savings. At the end of 2021, 15 builders have enrolled (4 new builders and 11 previous program participants) and 26 no fee assessments have been conducted since the pilot launch. E1 anticipates that no further initial DSM "No fee NHC assessments" will be offered or registered past mid-year 2022 to align with NHC's wind up timeline. - Marketing efforts included website updates and launch of a marketing campaign for the No Fee NHC Assessment pilot (e.g. targeted emails to Nova Scotian builders and direct outreach to builders).		

³² New Residential Program, 2021 DSM Evaluation: EfficiencyOne, Final Report, March 16, 2022, at page 5-6.

3.3 Business, Non-Profit and Institutional (BNI) Sector Results

The BNI sector is comprised of the following programs:

- Efficient Product Rebates;
- Custom Incentives; and
- Direct Installation.

In 2021, the BNI sector achieved net incremental energy savings of 68.1 GWh and net peak demand savings of 13.8 MW, compared to mid-course adjusted planned savings of 78.9 GWh and 18.0 MW, respectively.

E1 continued its On-site Energy Manager (OEM) partnership. This initiative places an energy manager within a large organization to identify new energy efficiency projects and opportunities to participate in E1's DSM programs. OEM services are paid for by the host organization, in some cases through a recovery on project incentives. In 2021, E1 had a total of nine OEM placements with DSM accounts and ten placements funded in part by the Province of Nova Scotia. DSM savings from the OEM service are claimed within the three BNI programs listed above.

Marketing efforts spanning the BNI sector in 2021 targeted the following market sectors:

- Small Businesses;
- Retail;
- Non-Profit Organizations;
- Commercial;
- Hospitality; and
- Industrial.

2021 marketing activities included:

- campaigns to promote awareness of E1's programs and incentives to all business; this included digital displays, social media advertising, targeted emails and billboards;

- specific campaigns to target certain business sectors, such as a Commercial Building Campaign, Small Business Campaign (including Small Business Week), Hospitality Campaign, Industrial sector, and the not-for-profit sector;
- marketing campaigns to promote offerings and increased incentives (e.g. eblast to small business on SBES increased incentives, contractor spotlight stories in BER, targeted emails to the hospitality industry, industry associations, etc.);
- BNI e-newsletters throughout the year;
- updated website content with pages dedicated to each of the business programs, including application forms, and a website landing page for the not-for-profit sector;
- updated in-store signage for BER In-Store campaign for distributors of rebated products; and
- virtual engagements and virtual meetings with business customers and partners (e.g. Industrial Sector Event in partnership with Canadian Manufacturers and Exporters, Building Owners & Managers Association (BOMA) Webinar Series, Scotia Horticulture Congress, Chambers of Commerce, etc.).

Tables 8 through 10, provide a summary of 2021 results and activities by program in the BNI sector.

Table 8: BNI Efficient Product Rebates Program Results

BNI Efficient Product Rebates (2021)			
BNI EPR	Energy Savings (GWh)	Demand Savings (MW)	Expenditures (\$ million)
2021 Results	33.5	5.4	6.2
2021 MCA Target	35.7	7.2	5.9
Program Component	The Business Energy Rebates program component (BER) provides financial incentives in the form of prescriptive rebates or financing to BNI participants through both Mail-In and Instant Rebate services. Mail-In requires a project application to E1 (available on the ENS website). Instant Rebates are available through distributors across the province.		
Discussion of Program Variance	Results for BNI Efficient Product Rebates (EPR) were 6% below the mid-course adjusted target and 25% below its mid-course demand savings target.		

BNI Efficient Product Rebates (2021)	
	• The shortfall in net peak demand savings can be attributed to the following factors: ○ Several lighting projects for Mail-In were completed at facilities that were not operational during peak demand hours. This resulted in minimal, or no demand savings being claimed on these projects;³³ ○ The product mix that generated the energy and demand savings (some product measures have lower demand savings, proportional to energy savings); and ○ An increase in free-ridership levels for lighting measures from the 2021 Evaluation, which led to a downward adjustment in BER's peak demand and energy savings.³⁴
Business Energy Rebates Highlights	• Participation increased in 2021 by 18% as compared to 2020; however participation for Mail-In has not yet returned to pre-pandemic levels. Over 188,956 energy-efficient products were rebated through the Instant Rebates service and 301 Mail-In projects implemented by 187 participants within the Mail-In service.³⁵ Lighting measures accounted for the majority of savings within both Mail-In and Instant Rebates. • E1 launched a pilot to provide enhanced agricultural rebates including increased incentives for select dairy equipment, high efficiency fans, and high-volume low speed (HVLS) fans, with the fan rebates broken out into tiers based on their size. • E1 introduced horticultural lighting as a new measure (products must be used in horticultural applications and be certified by the Design Lights Consortium (DLC)). • E1 adjusted the minimum performance requirements for large air source heat pumps and air-to-water heat pump categories to better align E1's minimum performance requirements with the available equipment in the local heat pump market, improving access to the rebates. • E1 increased incentives on select lighting and heating measures for both Mail-In and Instant Rebates, effective September 15. • A social media marketing campaign was launched in October to spotlight contractors who purchase energy efficient products for their customers through Instant Rebates and to promote the increased incentives. • Additional marketing efforts for BER included customer targeted email, articles in business newsletters, and marketing materials for specific BNI sectors. Refreshed marketing materials were provided to all distributor partners for Instant Rebates this included in-store signage, give away products digital and social marketing.

³³ Demand savings attributed to energy savings are proportional for most projects; although demand savings can be reliant on the nature of the projects.

³⁴ Efficient Product Rebates Program (Business Energy Rebates), 2021 DSM Evaluation: EfficiencyOne, Final Report, March 17, 2022, page 32, 49.

³⁵ Ibid., page 4-6. For BER Mail-In, the Evaluation Consultant counts projects (301) implemented by unique participants (187). As per Table 3 of this report, E1 tracks units rebated for BER Mail-In with 54,988 for the Mail-In service and 188,956 for the Instant Rebate service for a total of 243,944 units rebated.

1 **Table 9: Custom Incentives Program Results**

Custom Incentives (2021)			
Custom Incentives	Energy Savings (GWh)	Demand Savings (MW)	Expenditures (\$ million)
2021 Results	25.2	6.4	6.8
2021 MCA Target	33.6	8.5	8.0
Program Components	- Custom provides large business, non-profit and institutional participants with technical assistance, financial incentives and project financing to help reduce electricity consumption and demand. Custom includes three services: Retrofit; Building Optimization; and New Construction. - Energy Management Information Systems (EMIS) assists institutional and industrial participants in using energy consumption data from metered systems to inform decisions about their processes. This involves helping participants conduct an EMIS audit, develop and implement the EMIS plan that involves configuration of metering and monitoring equipment, and training and organizational support. - Strategic Energy Management (SEM) focuses on operational and procedural changes companies can make to reduce their energy usage. The goal of SEM is to help develop an energy management plan within organizations that focuses on business practice changes that enhance long-term energy performance and help participants achieve continuous energy savings.		
Discussion of Program Variance	- Custom Incentives fell 25% short of its mid-course adjusted energy savings and demand savings targets. The savings shortfall is attributable to the Custom program component as follows: - Several large projects did not complete as expected in 2021. These delays were caused by COVID-19 supply chain issues and contractor/consultant capacity issues in finalizing savings claims; this pushed these projects, and their associated savings claims into 2022. - A slowdown in the initiation of new projects since the beginning of the pandemic. Custom projects typically have longer lead times for project completion and a decline in projects initiated in 2020 impacted savings opportunities and achievement in 2021. E1 has initiated efforts to assess and mitigate this decline.		
Custom Incentive Highlights	In 2021, within the Custom Incentives program, E1 introduced a new Large Industrial Offering for large industrial customers. Incentives are offered to support a full-time Industrial Energy Manager at a customer's site to further efforts in energy management. At the end of 2021, E1 had four participants signed up to participate in this offer.		
Custom Program Component Highlights	- The Retrofit service accounted for over half of the savings achieved through the Custom program component. Participation levels in Retrofit and New Construction improved over 2020 levels.³⁶ - Custom launched many new initiatives and pilots in 2021 such as:		

³⁶ Custom Incentives Program, 2021 DSM Evaluation: EfficiencyOne, Final Report, March 17, 2022, page 66-67.

Custom Incentives (2021)	
	○ a Commercial and Institutional SEM pilot (one large municipality has signed up to participate); ○ an Airtightness pilot with one project expected to close in Q1 of 2022; ○ an Operational Demand Incentive pilot; this pilot has two customers reducing utility peak demand across numerous facilities; ○ a “Flexible Projects” pilot that provides incentives for measures or projects that do not meet criteria for existing E1 programs (e.g. new technology, or new construction projects); and ○ a Building Optimization Enhanced Incentives pilot. This initiative allows for an assessment study prior to an investigation study with increased incentives (\$0.08/kWh to \$0.10/kWh saved) and offers greater study incentives to larger customers to promote a more rigorous energy audit in facilities with greater complexity. • E1 introduced a revised incentive structure for New Construction to encourage construction of even higher performing buildings, with tiers ranging from 25% better than code, all the way to Net Zero. • The Small New Construction pilot completed, which saw 2 projects participate. • E1 worked with industrial facilities to increase efforts for the completion of compressed air audits. • A new free-ridership questionnaire was developed for New Construction, as part of the process evaluation, to better assess free-ridership and E1’s influence on building design.
Energy Management Information Systems Highlights	• EMIS supported two participants. Only one customer reported energy and demand savings in 2021.³⁷ (This customer also took part in SEM so savings were divided between the two program components). This customer also experienced delays in EMIS implementation; this lessened the amount of time to realize savings. Recruitment efforts for EMIS continued throughout 2021.
Strategic Energy Management Highlights	• SEM saw lower than anticipated savings in 2021 due to delays in customer implementation. Several of SEM’s customers entered the program later in the year than originally expected; this reduced the time to generate savings by year-end and pushed savings forward into 2022. A total of six customers participated in SEM in 2021.³⁸ • A pilot was launched to offer performance-based incentives to large industrial customers. The pilot aims to increase the savings achieved through the SEM program component by incentivizing operational/behaviour change savings resulting from energy management activities. Incentives will be determined at the end of 12 months, upon completion of the energy model or energy savings

³⁷ E1 supported two participants in 2021; however, only one participant claimed savings in 2021, as indicated in Table 3 of this report. See also Custom Incentives Program, 2021 DSM Evaluation: EfficiencyOne, Final Report, March 17, 2022, page 76 and 82.

³⁸ Ibid., at page 88-89.

Custom Incentives (2021)	
	calculations. Three new customers were recruited in 2021 due to the introduction of this performance-based incentives offer.

Table 10: Direct Installation Program Results

Direct Installation (2021)			
Direct Installation	Energy Savings (GWh)	Demand Savings (MW)	Expenditures (\$ million)
2021 Results	9.5	2.0	5.5
2021 MCA Target	9.6	2.3	5.4
Program Components	The Direct Installation (DI) program is comprised of the Small Business Energy Solutions (SBES) program component. SBES offers small businesses incentives and resources to encourage them to make energy efficient upgrades in their facilities. Within the program component, eligible participants choose an audit path (with a no-charge energy audit by a Small Business Energy Auditor) or a do-it-yourself (DIY) path. Participants are directed to contractors through the Efficiency Preferred Partner Network (EPP) or a contractor of their choosing to complete and install approved measures.		
Discussion of Program Variance	Results for Direct Installation were 1% below the mid-course adjusted energy savings target and 10% below the mid-course adjusted peak demand savings target.		
Small Business Energy Solution Highlights	- Participation in the Small Business Energy Solutions program component increased by 77% as compared to 2020 levels, returning close to pre-pandemic participation levels.³⁹ This is a result of E1's increased incentives, first launched in 2020 and extended for 2021. The incentive increase applies to select lighting and heating measures such as linear replacement lamps, outdoor lighting, case lighting/sign retrofit applications, commercial heating, and integrated LED fixtures. E1 intends to offer these increased incentives into Q2 2022. - Although uptake remained strong throughout 2021; some lingering COVID-19 impacts remained for SBES. This included some project completion delays that were caused by supply chain issues and contractor availability. These projects (along with their associated savings) were expected to complete in 2021 and have been pushed forward into 2022. - Surveyed participants indicated a high level of satisfaction with SBES, with a rating of 9.1 on a 10-point scale.⁴⁰ - E1 introduced horticultural lighting as a new measure. - E1 launched a Commercial Direct Install pilot from September 29 through December 31, 2021 (EPI delivered this pilot on behalf of the SBES program; however, savings are claimed through SBES.) This pilot provided free direct		

³⁹Direct Installation Program, 2021 DSM Evaluation: EfficiencyOne. Final Report, March 17, 2022 at page ix and 26.

⁴⁰ Ibid., at page 9

Direct Installation (2021)	
	installation of LED light bulbs, night lights, showerheads, faucet aerators, pipe wrap and tank wrap for electric hot water tanks to eligible small business. At the end of 2021, 76 customers participated in this pilot. SBES intends to continue to offer this service in 2022.

3.4 Low-Income Highlights

In 2021, E1's low-income savings results were approximately 69 percent lower in energy savings, 63 percent lower in demand savings, and 65 percent lower in expenditures⁴¹ than E1's projected participation and expenditures for low-income participation, as compared to the 2021 Plan as filed. (E1 did not file 2021 mid-course adjustments for low-income participation).

E1's progress in meeting its low-income projected savings has been impacted by the continuing effects of COVID-19. Three program components within the Existing Residential program that contribute the majority of low-income savings (EPI, AMH, MHEEP), fell short of their 2021 savings targets. This directly affected E1's low-income results for these Residential program components. This is consistent with the BNI sector for Custom and EPR. Custom's lower than anticipated low-income results (as compared to the 2021 Plan as filed) are a result of a decline in the number of projects initiated in 2020 (due to COVID-19), which, in turn, has impacted savings opportunities and achievement in 2021, including low-income results. In addition, with BER Mail-In, the 2021 savings results are indicative of fewer projects completing than anticipated (as compared to the 2021 Plan as filed), a result of the lingering COVID-19 impacts to this program component.⁴² Conversely, where the Residential Efficient Product Rebates program, met its 2021 savings targets, it also met its projected low-income savings targets.

E1 supported the following work for low-income Nova Scotians in 2021 (based on direct information where provided or demographic data):

⁴¹ In the 2020-2022 DSM Compliance filing Plan, low-income expenditures were filed at the Residential and BNI sector level; program levels expenditures were not included in the low-income performance indicators tables by program.

⁴² E1's current methodology for estimating DSM low-income impacts for Custom, BNI Efficient Product Rebates, and Small Business Energy Solutions, utilizes savings results achieved from Housing Nova Scotia projects. Moving forward, E1 is exploring whether additional low-income related projects should also be captured within the low-income savings data (e.g. completed projects within other organizations that provide shelter, serve as community hubs, low-income services, etc.)

- Over 3,500 low-income Nova Scotians received free installation of low-cost energy efficiency measures through the Efficient Product Installation program component;
- 245 low-income participants received rebates to replace or retire old, inefficient appliances; and
- Over 100 buildings/projects received rebates through Residential and BNI programs, resulting in energy savings for low-income Nova Scotians who are residents of these buildings.

E1 has used a variety of methods, where appropriate on a program-by-program basis, to estimate the proportion of incidental low-income impacts generated through E1 programs. These estimates are provided for informational purposes and are presented in Table 11, below.

Table 11: 2021 Low-Income Results

		2021 Plan* Low-Income Performance Indicators (estimated if not available)					2021 Results					
		First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ million)	Participation (#)	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ million)	Participation (#)	Participation Unit
Residential	Efficient Product Rebates	0.3	2.0	0.0	-	1,374	0.3	1.7	0.0	0.1	1550	Units rebated
	Instant Savings ¹						0.2	1.4	0.0	0.0	1,305	
	Appliance Retirement ^{1,2}						0.1	0.4	0.0	0.1	245	
	Existing Residential	7.2	77.8	1.1	-	3,578	3.2	36.8	0.7	1.3	3904	Housing units/Projects
	Efficient Product Installation ³						2.5	20.9	0.4	0.3	3,799	Housing units
	Affordable MultiFamily Housing ⁴					34	0.4	9.3	0.2	0.4	23	Projects
	Mi'kmaw Home Energy Efficiency Project ⁵					113	0.3	6.6	0.1	0.6	82	Housing units
Residential Low Income Subtotal		7.6	79.7	1.1	3.7	-	3.5	38.5	0.8	1.4	-	
BNI	Efficient Product Rebates ⁶	2.9	41.0	1.1	-	26,012	0.1	2.6	0.1	0.0	2,407	Units rebated
	Business Energy Rebates - Mail-In ⁷						0.1	2.6	0.0	0.0	206	
	Business Energy Rebates - Instant ⁸						0.0	0.0	0.1	0.00	2,201	
	Custom Incentives	1.8	26.4	0.1	-	14	0.1	0.8	0.0	0.0	10	Projects
	Custom ⁷						0.1	0.8	0.0	0.0	10	
	Direct Installation	0.0	0.1	0.0	-	1	0.1	0.9	0.0	0.0	3	Projects
	Small Business Energy Solutions ^{7,9}						0.1	0.9	0.0	0.0	3	
BNI Subtotal		4.7	67.5	1.2	0.5	-	0.3	4.3	0.1	0.1	-	
Programs Total		12.3	147.2	2.3	4.3	-	3.7	42.9	0.9	1.5	-	

*2021 Plan Low Income Performance Indicators refers to the projected low-income savings and participation filed in the 2020-2022 DSM Resource Plan Compliance filing. (See low-income performance indicators by program: Table 8, page 23; Table 10, page 36; Table 14, page 49; Table 16, page 56; and Table 18, page 62). Low-income performance indicators are assumed to be zero for Home Energy Assessment, Green Heat, New Home Construction, EMIS, and SEM program components so are not included in the above table. See M09096 2020-2022 DSM Resource Plan Compliance Filing, Appendix A [August 27, 2019]. The NSUARB approved the 2020-2022 DSM Plan on September 16, 2019.

2021 low-income results includes estimates of low-income participation in program components where income is not disclosed. Estimates reported in previous quarters may have been updated and are reflected in the annual totals. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover and are evaluated and pending verification. Expenditure amounts are unaudited. Numbers may not sum due to rounding.

¹ Low income Nova Scotians are assumed to be 10 percent as likely to participate as the general population.

² Includes appliance replacements delivered through the HomeWarming service and the Mi'kmaw Home Energy Efficiency project.

³ The 20/22 DSM Plan expresses participation in products rebated/counts of measures installed for EPI. 2021 low-income participation expressed in housing units is a post-hoc estimate based on the typical number of and mix of measures installed in a household. Income disclosure is optional for program participation. 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.

⁴ The 20/22 DSM Plan expresses AMH participation in projects. E1's AMH program is considered dedicated low-income programming.

⁵ Reflects homes participating in the Mi'kmaw Home Energy Efficiency Project. The Mi'kmaw Home Energy Efficiency Project program component is delivered in partnership with Nova Scotia Mi'kmaw communities with community housing managers identifying and enrolling eligible homes.

⁶ The 20/22 DSM Plan does not differentiate between BER Mail-In and BER Instant.

⁷ Participation numbers are totals that include varying proportions of low income and non-low income tenants. Investment and savings are estimated for the low-income portion.

⁸ The exact installation location of products receiving Business Energy Rebates (BER) Instant Rebates is unknown. The proportion of BER Instant Rebates measures installed in apartments is assumed to be the same as the proportion of BER Mail-In Rebates installed in apartments.

⁹ 2021 Plan participation for SBES is expressed in units/counts of measures installed. 2021 plan participation expressed in projects is a post-hoc estimate based on typical number of and mix of measures installed in a business

3.5 Enabling Strategies

Highlights of 2021 activities are provided in Table 12.

Table 12: 2021 Enabling Strategies Highlights

Enabling Strategies (2021) Highlights	
Education and Outreach	In 2021, Education and Outreach activities included the following: • participated in community outreach events, draft-proofing workshops, information sessions, conferences, home shows and trade shows across the province; these were a combination of in-person and virtual events, many organizations preferred virtual events due to COVID-19; • developed videos for ongoing social media promotion; • appearances on local TV and radio shows; • outreach to diverse communities including Mi'kmaw, African Nova Scotian, and immigrant communities (e.g. Green Career workshops with the Immigrant Settlement Association of Nova Scotia and the Confederacy of Mainland Mi'kmaw, Paqtnkek Mi'kmaw Nation and Pictou Landing First Nation, data collection for the Benchmarking Survey for Diverse communities with the survey developed in partnership with African Nova Scotian Affairs (ANSA), appliance retirement community events in Whitney Pier and North Preston); • three Better Building Speaker webinars in partnership with the Ecology Action Centre (EAC) reaching over 130 building owners and operators; • completed 1,600 virtual Green Schools engagements in schools throughout Nova Scotia reaching 22,000 students. Approximately 84% of Nova Scotia's public schools are now participating in Green Schools. Other activities included 20 episodes of "The Futures: A Green Schools Podcast", that highlights Green Heroes and professionals working in Nova Scotia, averaging 31 plays per episode, and the introduction of Virtual Field trips, which invites classrooms to experience a day-in-the-life of an energy efficiency professional. 45 classrooms participated engaging over 900 students; • post-secondary courses in energy efficiency in partnership with Dalhousie University and Saint Mary's University and an annual bursary awarded to a Nova Scotia Community College (NSCC) student enrolled in their final semester in the Energy Sustainability Engineering Technology program; • ongoing enhancement of the ENS website and tools for improved customer experience; • distribution of ENS's The Switch monthly e-newsletter for both the Residential and BNI sector and bi-monthly EPP Network News;

Enabling Strategies (2021) Highlights	
	• 2020 E1 Annual Report (distinct from the E1 Annual Progress Report); • outreach to local elected leaders, including MLAs and MPs on ENS program offerings; and • continued engagement on social media platforms. By the end of 2021, ENS had 46,000 Facebook likes and 7,200 Twitter followers, consistent with 2020 levels. In 2021, E1/ENS saw 186 media mentions, an increase from the 169 media mentions in 2020 returning closer to 2019 levels.
Development and Research	In 2021, Development and Research activities included the following: • recurring research to track quality assurance, participant satisfaction, and other attitudinal metrics among the general population of Nova Scotia households to help E1 respond to changing market conditions; • as part of the annual Efficiency Preferred Partners (EPP) Network survey, a series of questions was included to gather feedback on current market and economic conditions, including impacts of the COVID-19 pandemic on key partners, such as staffing challenges and supply chain issues (e.g. cost increases, material shortages or delays); • completed a comprehensive online survey among a sample of Nova Scotia ratepayers to explore perceptions of energy efficiency and understand interest in various types of programs and services to inform DSM planning; and • completed the virtual/remote audit research project on March 31, 2021.⁴³ Virtual home energy audit reports were created for 1,143 residential electrically heated homes using pre-existing data on each home (e.g., electrical energy use, age and size of home, type of structure) and advanced analytical methods (machine learning models). Homeowners were invited to view their report on a secure portal. A 'remote audit' component was also part of the research project. This involved the use of video technology to connect a homeowner with a certified energy advisor (EA), who collected key physical attributes of the home and updated the virtual audit report/efficiency recommendations where appropriate. Remote audits were completed on 29 homes, along with a collection of customer and EA feedback. A final report was submitted to NRCAN in May 2021. <i>Locational DSM/Klondike Pilot</i>⁴⁴ • Pilot activities concluded March 31, 2021. In 2020, E1 extended the deadline for participation in the Klondike pilot to March 31, 2021 for some program component activities (i.e., Green Heat, Custom, completion of HEA E audits), in recognition of COVID-19 impacts on pilot activities in 2020 (e.g. pause in activity and slow restart in activity); and

⁴³ First launched in April 2019, the pilot was conducted with Simptek Technologies, with support from NRCAN.

⁴⁴ First launched in December 2019, in collaboration with NS Power, the pilot aims to reduce NS Power system peak demand, sub-station peak demand, and facility peak demand (where applicable) and establish a foundation for the implementation of future demand reduction activities. The pilot was offered to customers located in the Kentville area and served by NS Power's Klondike substation service area. Enhanced incentives were provided through five of E1's existing program components; Custom, SBES, BER, Green Heat, and HEA. In 2020, E1 extended the deadline for participation in the Klondike pilot to March 31, 2021 for some program component activities (i.e., Green Heat, Custom, completion of HEA E audits), in recognition of the three-month pause in activity in 2020 and the slow restart in activity as related to COVID-19.

Enabling Strategies (2021) Highlights	
	- E1's independent Evaluation Consultant evaluated the net peak demand savings generated by the Klondike pilot as part of each program component's annual impact evaluation. The Klondike savings generated in 2021 are reported separately with each program component's respective DSM Evaluation Report and included as part of the total evaluated net peak demand savings achieved by the participating program component. In 2021, the Klondike pilot generated 0.059 MW through pilot activities.⁴⁵ <i>Commercial Energy Benchmarking Pilot</i>⁴⁶ 19 customers (381 buildings) were enrolled at the end of 2021. 173 buildings have completed models in ENERGY STAR® Portfolio Manager® tool and submitted to E1. Participants were also referred to E1's DSM programs for support for energy efficient upgrades and optimization projects. The pilot is scheduled to end in March 2022; - a data analysis workshop was held to support participants in the pilot in their benchmarking efforts (how to collect and analyze performance data using the Portfolio manager tool); - developed case studies to showcase participants on social media and to promote the benefits of energy benchmarking; and - updated a script to automatically upload NS Power consumption data to participant's Portfolio Manager models to reduce participant barriers.
Other Enabling Strategies	In 2021, other Enabling Strategies activities included the following: <i>Efficiency Preferred Partners (EPP)</i> - officially launched the EPP (a rebrand of the Efficiency Trade Network [ETN]) along with a new website directory to connect home and business owners with EPP professionals and a new Resource Hub for members. At the end of 2021, EPP had a total of 234 members, a decrease from the 384 members in 2020 (the decrease was a result of re-registration requirements during the transition from the ETN to the EPP); - hosted and sponsored training and events (e.g. a virtual information session on NRCan's Greener Homes program, participation in a Heating Refrigeration and Air Conditioning round table, information session on E1's Residential and BNI programs, etc.);

⁴⁵ 2021 DSM Programs Evaluation Executive Summary, EfficiencyOne, Final Report, March 17, 2022, at page 20.

⁴⁶ In partnership with the Canada Green Building Council (CaGBC) and the Province of Nova Scotia, the pilot encourages commercial, institutional, and multi-unit residential building owners and manager to learn more about the energy performance of their buildings using the ENERGY STAR® Portfolio manager tool. The pilot was launched in 2020.

Enabling Strategies (2021) Highlights	
	- secured additional training/course offerings for EPP members, offered at a discounted rate (e.g. Canadian Institute for Energy Training (CIET) virtual training courses); - one-on-one engagement with members, outreach, and recruitment efforts (efforts focused on small business contractors and new home builders); - developed partnerships with organizations to collaborate on professional development opportunities and networking events; and - distribution of <i>The Network News</i>, EPP's bi-monthly newsletter that highlights updates on programs, procurement opportunities, upcoming industry events, energy efficiency success stories, and training opportunities. <i>Codes and Standards</i> - joined the Canadian Standards Association's (CSA) technical committee to establish a performance standard for rating large and single packaged vertical air conditioners and heat pumps (CSA C746); - discussions with the Nova Scotia Department of Natural Resources and Renewables and the Nova Scotia Department of Housing and Municipal Affairs on the support E1 and the departments can provide for the roll out of tiered codes in the upcoming 2020 National Energy Code for Buildings and the National Building Code; - E1 is supporting accreditation of the Canadian Standards Association (CSA) EXPO7 group, a load-based, climate specific testing and rating procedure for heat pumps. This standard will help identify the best performing heat pumps, which will help to inform future E1 program design; and - participation in CSA Performance, Energy Efficiency and Renewables (SCOPEER) Strategic Task Force. This effort was expected to conclude in 2021 but remains ongoing. <i>Regulatory Affairs</i> - engagement with regulatory stakeholders and the DSM Advisory Group (DSMAG) including: - avoided Costs DSMAG session and request for written stakeholder comments; - stakeholder written comments on the revised DSMAG Terms of Reference, the 2020 APR and 2020 Evaluation and Verification Reports (the NSUARB referred these reports to the DSMAG for consideration); - DSMAG sessions on the proposed 2023-2025 DSM Resource Plan, including the Stakeholder Engagement Plan, the proposed Portfolio Scenarios Plan, modelling (Round 1 and 2) and requests for written comments; and - one-on-one sessions with stakeholders on the 2023-2025 DSM Resource Plan. - filed the following reports with the NSUARB:

Enabling Strategies (2021) Highlights	
	○ Information Requests and Evidence on NS Power's Time Varying Pricing (TVP) Application; ○ Written comments on NS Power's 2020 Integrated Resource Plan (IRP); ○ 2020 Evaluation Reports, 2020 Annual Progress Report; ○ 2020 Audited Financial Statements and 2020 Affiliate Code of Conduct Annual Compliance Report; ○ 2021 Quarterly DSM Reports (Q2, Q2, and Q3 2021); ○ Information Requests regarding NS Power's 2021 Load Forecast Report; ○ Revised DSMAG Terms of Reference (annual review process); ○ Responses to Information Requests on E1's 2020 Code of Conduct Report; ○ Information Requests and E1 Reply Comments on NS Power's Customer Energy Management Application; and ○ E1's 2021 Rate and Bill Impact Analysis. ● Other regulatory activities included: ○ ongoing implementation and consideration of evaluation and verification recommendations. An update on the status of evaluation and verification recommendations is provided in Attachment 2; and ○ worked with E1's independent Evaluation Consultant to finalize the 2021 DSM Annual Evaluation Plan and facilitated the 2021 evaluation and verification processes.

3.6 Demand Response Initiatives: E1 and NS Power Working Group

In 2019, the E1-NS Power Demand Response Working Group was established to work collaboratively on the development, assessment, and evaluation of demand response measures.⁴⁷

2021 activities involved the development, design, and logistics of a domestic hot water direct load control (DLC) pilot and development work on the design and logistics for a commercial demand response pilot for BNI customers. Highlights of 2021 activities for these two pilots are provided below.

E1 has also provided additional information on the Commercial Demand Response Pilot, as directed by the NSUARB in its January 19, 2022 letter regarding E1's Q3 2021 DSM report. E1 was directed to provide costing details and expected results for Phase Two of the Commercial Demand Response Pilot and "*... include a cost breakdown, the rationale used in determining the \$125/kW incentive, whether this is a one-time payment, and what levels of energy and demand savings are expected to result from this initiative.*"⁴⁸

3.6.1 Domestic Hot Water Direct Load Control Pilot

Highlights of 2021 activities include:

- a public procurement was initiated by the subcommittee of the Working Group (Demand Response Technical Group or DR Tech Group);
- 202 controllers were procured; the equipment procured for testing and for participating homes includes direct load control water heater technologies from two different vendors/manufacturers and two different communication types.⁴⁹ These technologies were selected by an Evaluation Committee comprised of members from the DR Tech Group);

⁴⁷ In its Order regarding M09096, the NSUARB directed E1 and NS Power to begin engagement to develop, assess and evaluate potential demand response measures [NSUARB Order, September 16, 2019]. E1 has provided updates on the initiatives and efforts of the working group in its quarterly reports in 2020 and 2021.

⁴⁸ M10363, NSUARB letter regarding E1 Q3 2021 DSM report, January 19, 2022, page 3.

⁴⁹ M10363, E1 Q3 2021 DSM report, Table 11, page 31.

- a test period was executed with NSCC's Applied Research Laboratory and employee volunteers to trial the installation of controllers and demand response event dispatch for electric water heaters (sample size for testing purposes was six controllers/participants);
- the first recruitment campaign was launched August 2021. This involved inviting 1,456 past participants of the EPI program component via email. From this campaign, 263 potential participants requested to join the pilot;
- additional recruitment campaigns were conducted through November and December 2021, inviting a total of 272 past participants from the EPI and NHC programs via email. From these campaigns, 33 potential participants requested to join the pilot;
- bookings and installations of controllers in participants homes began in September 2021; a total of 119 controllers were installed in participant homes by the end of 2021;
- dispatching of demand response events to the fleet of participant controllers started November 2021;
- a survey plan was developed, with the first of three surveys issued to participants; and
- E1's independent Evaluation Consultant will provide evaluated savings generated by the pilot as part of E1's 2022 annual impact evaluation (annual E1 DSM Evaluation Report).

3.6.2 Commercial Demand Response Pilot

2021 activities included the development, design, and logistics for this pilot. The pilot will be conducted in two phases.

Phase One

Phase One involves working with Siemens, NS Power's distributed energy resource management system (DERMS) provider. An annual incentive of \$125/kW is to be provided to customers that have demand response controls/technologies in place (e.g., Siemens building automation systems) and participate in demand response events called by NS Power over the pilot's winter periods. 2021 activities included:

- determining pilot goals, party responsibilities, and grid use cases to be tested;
- development of pilot documentation for Phase One applicants; and

- meetings with Siemens and potential customers from E1's OEM's to identify demand response opportunities for Phase One of the pilot and relevant measurement and verification considerations.

Phase Two

Phase Two of the pilot involves procuring an aggregator to conduct recruitment, identify opportunities, select equipment, and execute events at a larger scale and with a greater variety of technology than what will occur in Phase One. 2021 activities included:

- drafting a scope of work for use in a Preliminary Market Consultation (PMC) that was issued in October 2021; and
- refining the scope of work with the feedback this PMC obtained from experienced demand response aggregators from across North America, for use in a Request for Proposals which was issued in November 2021.

Demand response events for this pilot are expected to commence in December 2022 and continue through to February 2024.

Cost Breakdown

For Phase One of the pilot, the direct costs of the pilot are solely incentives (\$125/kW) as the program structure does not require E1 to procure for a service provider, enabling technology, or installation and programming. Pricing for Phase Two will be determined via a competitive procurement process. Proponents will propose both incentive levels and administrative costs to deliver DR aggregation services, subject to contract negotiations and program design discussions with E1.

Unlike energy efficiency programs, DR programs issue recurring incentives based on participation in DR events called each year. This payment could align with customers' billing cycles or at the end of the peak demand period, for example. These program design details will be developed in collaboration with the DR aggregator.

For Phases One and Two of the Commercial Demand Response Pilot, \$451,000 has been budgeted for activities in 2022. This amount includes incentives for any customers enrolled partway into the 2021-2022 Winter peak period under Phase One, as well as initiation costs for the demand response aggregator being procured under Phase Two. The budget for the 2023 and 2024 period is still being finalized, dependent on procurement findings and DR model amounts as well as approval of the 2023-2025 DSM Plan.

Rationale for \$125/kW incentive

An annual performance-based incentive of \$125/kW was offered to participants in Phase One of this pilot. This incentive was chosen to align with the Custom program's Operational Demand⁵⁰ Incentive of \$125/kW, ensuring that participants are compensated equally for the peak demand savings provided regardless of the path taken to achieve these savings.

Expected/Estimated/Anticipated Savings

The procurement for a demand response aggregator is to obtain and make available a minimum of 3 MW of demand response capacity to NS Power. Additional capacity beyond these 3 MW may be procured based on need, availability, and price. Anticipated savings for Phase One is 0.1 MW (approximately 2-3 facilities at 20-50 kW apiece).

3.7 Additional 2021 Results and Updates

E1 has additional Performance Indicators (a set of particular performance metrics) that indicate progress towards its Performance Targets.⁵¹ In 2021, the results of E1's additional performance indicators are as follows:

- Total lifetime ratepayer benefits resulting from 2021 energy savings are \$175.4 million;⁵²

⁵⁰ Operational demand reduction projects do not rely on utility signals to call demand response events; instead, demand savings are achieved through routine adjustments, e.g., adjusting equipment operation schedules and/or parameters to avoid peak periods.

⁵¹ A complete list of Performance Indicators are provided in Schedule C, M09096, 2020-2022 DSM Resource Plan, Executed Supply Agreement for Electricity Efficiency and Conservation Activities between E1 and Nova Scotia Power, Schedule C, at PDF page 4-5 and page 123. [November 18, 2019]

⁵² Lifetime benefits are expressed as the net present value of the avoided costs, including energy, capacity, transmission, distribution, and carbon over the life of the program measures.

- Using the most recent NS Power emissions intensity data, E1's Evaluation Consultant found that DSM measures installed in 2021 are estimated to result in 63,911 tonnes of annual avoided CO₂e emissions;⁵³ and
- E1 achieved a Customer Satisfaction Index score of 89.5 percent based on interviews completed with commercial and residential program customers.⁵⁴ Total awareness of Efficiency Nova Scotia, considering both aided and unaided awareness, was approximately 82 percent.⁵⁵ (These results are on par with 2020 results with a customer satisfaction score of 88.8 percent and aided/unaided awareness at 85 percent).

4. CONCLUSION

In 2021, E1 achieved 109.4 GWh in net energy savings (90 percent of the mid-course adjusted planned savings of 121.5 GWh) and 27.5 MW in net peak demand savings (83 percent of the mid-course adjusted planned savings of 33.2 MW).

E1 is pleased with the noted rate of recovery from pandemic operating levels which occurred over the course of 2021 and anticipates a continued recovery of business operations to pre-pandemic levels during 2022.

E1 will continue to update the NSUARB and stakeholders on its progress towards its 2022 DSM Plan as filed savings targets and its three-year contractual Performance Targets.

⁵³ 2021 DSM Programs Evaluation, Executive Summary: EfficiencyOne, Final Report, March 17, 2022, at page 1 and 29.

⁵⁴ MQO Research, prepared for EfficiencyOne, January 2022.

⁵⁵ Narrative Research, Commissioned Results 2021 Year End, Prepared for EfficiencyOne, February 2022.

ATTACHMENT 1: 2021 RATE CLASS RESULTS

EfficiencyOne 2021 DSM Annual Progress Report

Attachment 1: 2021 Rate Class Results

Planned and Actual Rate Class Expenditures

E1 reports on planned and actual DSM expenditures by rate class to aid in cost recovery allocations.⁵⁶ Table 1 below provides planned and actual DSM expenditures by rate class for 2021.

Annual planned expenditures per rate class are established using E1's internal 2021 budget and historical spending by rate class per program. In 2021, actual expenditures per rate class were lower than the planned amounts for all rate classes (except General), as a result of E1's 2021 underspend related to the shortfall in savings.

Table 1: 2021 Planned and Actual DSM Expenditures by Rate Class

Rate Class	2021 Expenditures by Rate Class		
	2021 Planned Expenditures (Full-Year) (\$ million)	Actual 2021 Expenditures (\$ million)	2021 Expenditures as Percentage of 2021 Planned Expenditures
Residential/Charitable (2,3,4)	17.5	16.2	92%
Small General (10)	2.9	2.2	74%
General (11)	11.7	12.0	103%
Large General (12)	1.4	1.3	95%
Small Industrial (21)	2.4	2.0	83%
Medium Industrial (22)	0.9	0.6	76%
Large Industrial (23, 25)	1.6	1.4	87%
Municipal (24)	0.6	0.3	54%
Unmetered (999)	0.0	0.0	0%
Total	39.0	36.0	92%

Numbers may not sum due to rounding. Expenditure amounts are unaudited.

Planned 2021 Expenditures refers to the annual planned mid-course adjusted expenditures.

⁵⁶ The October 7, 2015 NSUARB Order directed NS Power to file its proposed accounting treatment and cost recovery for the 2015 DSM programs and the 2016-2018 programs. E1 reports on planned and actual DSM expenditures to aid in these cost recovery calculations. See M06733, The Public Utilities Act and An Application for Approval of a Supply Agreement for electricity efficiency and conservation activities between EfficiencyOne and Nova Scotia Power Incorporated, the establishment of a final agreement between the parties, and approval of a 2016-2018 Demand Side Management Resource Plan, NSUARB Order [October 7, 2015].

2021 Rate Class Results by Program

Tables 2 through 7 provides a breakdown of the 2021 net incremental energy and net peak demand savings, expenditures, and participation achieved, by rate class, and within each program.

Table 2: 2021 Residential Efficient Product Rebates Rate Class Results

	Residential Efficient Product Rebates (2021)				
	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ thousand)	Units Rebated (#)
Residential/Charitable (2,3,4)	16.1	125.1	1.9	4,508	197,603
Small General (10)*	0.2	2.0	0.0	60	3,161
General (11)*	0.1	1.1	0.0	43	1,711
Large General (12)*	0.0	0.0	0.0	0	0
Small Industrial (21)*	0.0	0.0	0.0	2	31
Medium Industrial (22)*	0.0	0.0	0.0	1	15
Large Industrial (23, 25)*	0.0	0.0	0.0	0	0
Municipal (24)	0.3	2.8	0.0	77	4,513
Unmetered (999)	0.0	0.0	0.0	0	0
Total	16.8	130.9	2.0	4,691	207,034

Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover and are evaluated and pending verification. Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the year-end totals.

Residential Efficient Product Rebates includes the Appliance Retirement and Instant Savings program components. Appliance Retirement includes appliance replacements delivered through the HomeWarming service and the Mi'kmaw Home Energy Efficiency Project.

*The Appliance Retirement program component collects eligible residential appliances from BNI customers (e.g., rental apartment buildings, condominium buildings, and community groups in commercial rate classes), in addition to residential customers.

Table 3: 2021 Existing Residential Rate Class Results

	Existing Residential (2021)				
	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ thousand)	Housing Units (#)*
Residential/Charitable (2,3,4)	18.2	264.9	9.2	6,646	14,198
Small General (10)	0.2	4.2	0.1	198	143
General (11)	0.1	1.3	0.0	94	10
Large General (12)	0.0	0.0	0.0	0	0
Small Industrial (21)	0.0	0.0	0.0	0	0
Medium Industrial (22)	0.0	0.0	0.0	0	0
Large Industrial (23, 25)	0.0	0.0	0.0	0	0
Municipal (24)	0.2	3.2	0.1	105	200
Unmetered (999)	0.0	0.0	0.0	0	0
Total	18.8	273.6	9.4	7,042	14,550

Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover. Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the year-end totals.

Existing Residential includes the Home Energy Assessment, Green Heat, Efficient Product Installation, the Mi'kmaw Home Energy Efficiency Project, and the Affordable MultiFamily Housing and Non-Profit Organizations program components.

The Home Energy Assessment program component is mainly comprised of homes heated by electricity. As participating homes heated primarily by non-electric fuels generate a small amount of electricity savings, they receive a small amount of DSM funding and are counted here.

*Includes apartments.

Table 4: 2021 New Residential Rate Class Results

	New Residential (2021)				
	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ thousand)	Participants (#)
Residential/Charitable (2,3,4)	5.4	165.2	2.2	2,599	814
Small General (10)	0.0	0.0	0.0	0	0
General (11)	0.0	0.0	0.0	0	0
Large General (12)	0.0	0.0	0.0	0	0
Small Industrial (21)	0.0	0.0	0.0	0	0
Medium Industrial (22)	0.0	0.0	0.0	0	0
Large Industrial (23, 25)	0.0	0.0	0.0	0	0
Municipal (24)	0.3	8.4	0.1	123	39
Unmetered (999)	0.0	0.0	0.0	0	0
Total	5.7	173.5	2.3	2,722	853

Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover. Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the year-end totals.

New Residential includes the New Home Construction program component.

Table 5: 2021 BNI Efficient Product Rebates Rate Class Results

	BNI Efficient Product Rebates (2021)				
	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ thousand)	Units Rebated (#)
Residential/Charitable (2,3,4)*	1.7	24.2	0.3	319	12,480
Small General (10)	2.6	38.1	0.5	502	18,924
General (11)	18.5	267.5	3.0	3,471	143,287
Large General (12)	4.0	56.9	0.6	675	28,729
Small Industrial (21)	2.8	38.0	0.5	522	18,309
Medium Industrial (22)	0.9	15.1	0.1	170	5,928
Large Industrial (23, 25)	3.0	48.0	0.4	525	15,389
Municipal (24)	0.0	0.5	0.0	6	898
Unmetered (999)	0.0	0.0	0.0	0	0
Total	33.5	488.2	5.4	6,190	243,944

Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover. Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the year-end totals.

BNI Efficient Product Rebates includes the BER program component.

EPR (BNI) includes some residential customers as eligible participants (e.g., farms, community groups in charitable rate classes, rental apartment buildings, and condominium buildings).

Table 6: 2021 Custom Incentives Rate Class Results

	Custom Incentives (2021)				
	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ thousand)	Projects (#)
Residential/Charitable (2,3,4)*	0.3	5.0	0.0	91	5
Small General (10)	2.1	30.6	0.4	561	11
General (11)	13.0	187.8	3.1	3,448	89
Large General (12)	2.0	28.6	0.5	525	10
Small Industrial (21)	3.8	54.5	1.9	1,000	17
Medium Industrial (22)	1.3	16.1	0.2	414	8
Large Industrial (23, 25)	2.7	25.2	0.2	716	9
Municipal (24)	0.0	0.0	0.0	0	0
Unmetered (999)	0.0	0.0	0.0	0	0
Total	25.2	347.7	6.4	6,755	149

Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover. Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the year-end totals.

Custom Incentives includes the Custom, EMIS, and SEM program components. EMIS and SEM participants are each counted once, but their participation is ongoing throughout the year.

Custom Incentives includes some residential customers as eligible participants (e.g., farms, community groups on charitable rate codes, rental apartment buildings, and condominium buildings).

1 **Table 7: 2021 Direct Installation Rate Class Results**

	BNI Direct Installation (2021)				
	First-Year Energy Savings (GWh)	Lifetime Energy Savings (GWh)	Peak Demand Savings (MW)	Expenditures (\$ thousand)	Projects (#)
Residential/Charitable (2,3,4)	1.1	15.3	0.3	619	58
Small General (10)	1.1	16.3	0.3	662	62
General (11)	6.8	96.6	1.4	3,915	367
Large General (12)	0.0	0.0	0.0	0	0
Small Industrial (21)	0.5	6.4	0.1	260	24
Medium Industrial (22)	0.0	0.1	0.0	4	0
Large Industrial (23, 25)	0.0	0.0	0.0	0	0
Municipal (24)	0.0	0.0	0.0	0	0
Unmetered (999)	0.0	0.0	0.0	0	0
Total	9.5	134.7	2.0	5,460	512

- 2 Numbers may not sum due to rounding. Energy and demand savings are calculated at the generator and are net of free-ridership and spillover.
3 Expenditure amounts are unaudited. Savings and expenditures reported in previous quarters may have been updated and are reflected in the
4 year-end totals.
5 Direct Installation includes the Small Business Energy Solutions program.

ATTACHMENT 2: EVALUATOR AND VERIFIER RECOMMENDATION UPDATES

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Table 2: Update on Implementation of 2013-2019 Verification Recommendations

Table 3: Update on Implementation of 2020 Evaluation Recommendations

Table 4: Update on Implementation of 2020 Verification Recommendations

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2013	Evaluation	Continue to work on including as much information as possible in standardized database format: In 2013, more information was available on the DSMDS in the form of automated reports. In order to facilitate savings tracking and future evaluation activities, ENSC should continue to work on including all necessary information in the DSMDS in the form of standardized entries. This includes technical specifications of equipment, answers to pre-screening questions and savings equations.	OV-R6	Complete	E1 agrees with this recommendation. In 2020, E1 continued to work on the implementation of an improved information tracking system (the Customer Information System, or "CIS"), a system that will provide the technical foundation for E1's customer-centered approach for service delivery, marketing, and communication. The CIS is currently implemented and will provide fully integrated DSM data tracking, includes an integrated Customer Relationship Management (CRM) system, and will enable overall better, faster and more efficient customer service and operations through better information management.	Complete
2013	Evaluation	Evaluate the benefits/costs in acquiring a Customer Relations Management (CRM): This type of system could be a key tool for ensuring effective data collection (customer, loyalty, segmentation, benchmarking/competitive, etc.) and evidence-based decision-making.	TPE-R3	Complete	E1 agrees with this recommendation. CRM capabilities is a key component of the CIS that has been implemented by E1.	Complete
2013	Evaluation	Adapt the tracking system (DSMDS) to the QA program: A QA program was implemented in 2013 by ENSC and will become more mature in 2014. This continuous process will involve reviewing a sample of files, particularly targeting projects with low EnerGuide ratings or high delta EnerGuide. The Evaluator commends ENSC on this action and therefore recommends that the results of these reviews be tracked in the DSMDS.	HEA-R4	Not Recommended for Action	E1 has considered the cost and scope of work involved in integrating QA activities into the CIS tracking system. E1 has contracted an external party to conduct an internal audit to identify the quality assurance of Service Providers performance. E1 will be provided recommendations and a roadmap for implementation of improving the QA program. E1 will evaluate the recommendations and determine the next appropriate steps for tracking quality assurance of Service Providers.	Not Recommended for Action
2013	Evaluation	Adapt the next tracking system (DSMDS) to the QA program: A QA program will be fully implemented by ENSC in 2014. This continuous process will involve reviewing a sample of files of HOT2000 simulation results compared with low EnerGuide ratings or high delta EnerGuide. The Evaluator commends ENSC on this action and recommends that these review results be tracked in the DSMDS. However, the Evaluator is aware that this process might take time to be perfectly implemented. In the meantime, ENSC can track the QA results on a separate spreadsheet using an identification number that allows merging the information easily with the tracking system. Moreover, the QA results should include the identification of the CEAs who conducted each assessment to provide more support or training to CEAs with less experience.	PP-R1	Complete	E1 does track QA site visit details, including CEA identification and date of visits.	Complete
2014	Evaluation	Adapt the tracking system (DSMDS) to the QA program: A QA program was implemented in 2013 by ENSC and will become more mature in 2014. This continuous process will involve reviewing a sample of files, particularly targeting projects with low EnerGuide ratings or high delta EnerGuide. The Evaluator commends ENSC on this action and therefore recommends that the results of these reviews be tracked in the DSMDS.	HEA-R4	Not Recommended for Action	E1 has considered the cost and scope of work involved in integrating QA activities into the CIS tracking system. E1 has contracted an external party to conduct an internal audit to identify the quality assurance of Service Providers performance. E1 will be provided recommendations and a roadmap for implementation of improving the QA program. E1 will evaluate the recommendations and determine the next appropriate steps for tracking quality assurance of Service Providers.	Not Recommended for Action

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2014	Evaluation	Adapt the next tracking system (DSMDS) to the QA program: A QA program will be fully implemented by ENSC in 2014. This continuous process will involve reviewing a sample of files of HOT2000 simulation results compared with low EnerGuide ratings or high delta EnerGuide. The Evaluator commends ENSC on this action and recommends that these review results be tracked in the DSMDS. However, the Evaluator is aware that this process might take time to be perfectly implemented. In the meantime, ENSC can track the QA results on a separate spreadsheet using an identification number that allows merging the information easily with the tracking system. Moreover, the QA results should include the identification of the CEAs who conducted each assessment to provide more support or training to CEAs with less experience.	PP-R1	Complete	E1 does track QA site visit details, including CEA identification and date of visits.	Complete
2016	Evaluation	Consider extending the SEM cycle to engage participants for a longer period of time. The service provider suggested having longer periods of participation in SEM, and participant feedback suggests that having participants engage with the service provider for a longer period of time may yield additional savings and help further institutionalize energy management in the culture of participating firms. This has been common in other SEM programs in North America.	SEM-R3	Complete	E1 agrees with this recommendation. E1 has been offering customers the option to extend their SEM engagement year over year, but has not required customers to agree to multi-year engagements.	Complete
2017	Evaluation	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	Not Recommended for Action	E1 does not intend to fully implement the Northeast Energy Efficiency Partnership (NEEP) list criteria for ASHPs since it would further reduce the number of models that are currently available and could result in less participation in the program component. E1 tracking of model and AHRI numbers has improved. The Evaluator has noted that this recommendation was made at a time when CASHPs were growing in popularity in the program component and represented a larger portion of participation. CASHPs make up a small portion of program savings, therefore reducing available models would not benefit the program.	Not Recommended for Action

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2017	Evaluation	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	Not Recommended for Action	E1 made criteria changes in the Green Heat Program Component effective July 1, 2020 for centrally ducted heat pumps. The changes helped E1 align with the Air-Source Heat Pump (ASHP) NEEP list, with the exception of criteria for coefficient of performance (COP). If E1 were to adjust the COP criteria to meet NEEP criteria, there would be many heat pump models that would no longer be eligible for a rebate, although they are still energy efficient models. ASHP or Centrally ducted heat pumps make up a small proportion of heat pumps rebated in Green Heat. Therefore E1 will continue to monitor the heat pump market and assess the feedback from customers and partners, but does not intend to implement the NEEP list criteria fully for ASHP.	Not Recommended for Action
2017	Evaluation	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	Deferred	E1 agrees with this recommendation and has consulted with the Evaluation Consultant. A comprehensive evaluation, including a billing analysis, was planned for 2021 to determine the overestimation ratio. The billing analysis was deferred due to impacts from the COVID-19 pandemic and as the program is considering design changes.	2023
2018	Evaluation	Continue to perform the metering activity and ensure the metering protocol is followed. In the 2017 evaluation, the Evaluator recommended continuing the metering activity to increase the sample size of each age category and lower margins of error of measured appliance consumption. ENS continued the metering activity in 2018, although in-depth analysis indicated that the metered consumption data were inconsistent and could not be used as is. The Evaluator therefore recommends continuing the metering activities in 2019. Moreover, the metering protocol should be closely followed to ensure that the obtained data provide accurate results, notably by ensuring that metering is conducted in a room with controlled temperature.	2018 Aret-R1	Deferred	E1 agrees with this recommendation however due to facility restrictions E1 has been unable to perform a metering study. The 2017 metering results were used for the 2021 evaluation as it complies with the Uniform Methods Protocol. E1 will work with the evaluator to address this issue and research and investigate possible solutions for 2022.	2022

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2018	Evaluation	Perform a socket study through on-site visits to document energy savings potential related to lighting. Market data point to higher penetration rates of LED lamps and fixtures in Nova Scotia homes. To document the remaining energy savings potential related to lighting in existing homes, the Evaluator recommends conducting a socket study in Nova Scotia homes. The socket study, conducted through on-site visits, should serve to collect information such as the number and type of lamps installed in homes. This study would be helpful for all program components that offer residential lighting measures by providing insights on the current state of lighting market.	2018 Instant - R1	Deferred	E1 agrees with this recommendation. E1 is currently reviewing this recommendation as part of the 2022 Evaluation Plan.	2023
2018	Evaluation	Conduct a billing analysis to review the overestimation ratio when a sufficient participant sample becomes available. The billing analysis conducted in 2018 was initially aimed at estimating a new overestimation ratio for the new version of HOT2000, although it revealed that the space heating systems in place, particularly heat pumps, had a much more significant impact on the overestimation than the difference between the versions of HOT2000 that are used. Moreover, the Evaluator believes that further analyses should be conducted to evaluate the impact of the different HOT2000 versions on the overestimation ratio and confirm whether there is no significant difference on the overestimation ratio established for the D and E assessment periods. The Evaluator believes that version 11 of HOT2000 will progressively be used more in upcoming years and will enable conducting a billing analysis on a sample of participants large enough to consider: (1) D assessments and E assessments; (2) the various versions of HOT2000 (i.e. versions 11.3; 11.4; 11.5); and (3) evaluate the impact of the different heating systems in place, including the presence of wood or pellet stoves. Since overestimations significantly impact HEA net energy and peak demand savings, the Evaluator recommends conducting a billing analysis when a large enough participant sample becomes available.	2018 HEA - R1	Deferred	E1 agrees with this recommendation and has consulted with the Evaluation Consultant. A comprehensive evaluation, including a billing analysis, was planned for 2021 to determine the overestimation ratio. The billing analysis was deferred due to impacts from the COVID-19 pandemic and as the program is considering design changes. The billing analysis is planned for 2022 to update the overestimation ratios, results will be presented in the 2022 Evaluation report which will be filed March 31, 2023.	2023

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2018	Evaluation	Conduct a billing analysis to review ORs when a sufficient NHC participant sample becomes available. The current ORs used for NHC were obtained from a billing analysis of Home Energy Assessment (HEA) 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. The HEA billing analysis conducted in 2018 was initially aimed at estimating an OR for the new version of HOT2000, although it revealed that the space heating systems in place, particularly heat pumps, had a much more significant impact on the OR than the difference between the versions of HOT2000 that are used. Since more NHC projects will be completed under the HOT2000 version 11 rating system in upcoming years, the Evaluator recommends conducting a billing analysis specific to NHC participants when a large enough sample becomes available to both consider the various versions of HOT2000 (i.e. versions 11.3; 11.4; 11.5) and evaluate the impact of the different heating systems in place.	2018 NHC - R4	Deferred	E1 agrees with this recommendation and has consulted with the Evaluation Consultant. A comprehensive evaluation, including a billing analysis, was planned for 2021 to determine the overestimation ratio. The billing analysis was deferred due to impacts from the COVID-19 pandemic and as the program is considering design changes.	2023

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2018	Evaluation	Investigate ways to liaise more clients with non-lighting contractors. Contractors are key players in achieving the goal of implementing more non-lighting measures through BER and ENS programs overall. Fewer interviewed participants have go-to non-lighting contractors than lighting contractors for potential projects. The Evaluator recommends findings ways to connect participants to non-lighting contractors and training the latter to further promote non-lighting projects.	2018 BER - R3	Deferred	E1 agrees with this recommendation. Due to COVID-19 constraints however, E1 was unable to offer training to lighting distributors. E1 continues to work closely with the Efficiency Trade Network (ETN) team to promote training and engagement opportunities for non-lighting contractors.	2023
2019	Evaluation	Maximize the potential for deeper savings per home by encouraging EAs to recommend measures with high savings potential. The evaluation results demonstrated that the D assessment is a critical participation process stage to achieving deeper savings per home; participants rely on EAs to determine which upgrades to implement, and EAs strongly rely on participant intentions and interest in measures to recommend certain upgrades or not. This dynamic reduces the number of recommended upgrades in the Renovation Upgrade Reports and, consequently, the number of upgrades implemented as well as the savings per home. Therefore, EOne should investigate ways of encouraging EAs to look beyond the upgrades in which participants are interested to better align their recommendations with the HEA goal of increasing savings per participant. Simultaneously, EOne should consider opportunities to increase energy efficiency awareness among participants since the more they are aware of and knowledgeable about energy efficiency upgrades and their various benefits at the time of the D assessment, the more likely EAs are to recommend measures that will allow participants to achieve deeper savings.	2019 HEA-R1	In Progress	E1 agrees with this recommendation. E1 will investigate ways of encouraging energy advisors to recommend measures with high energy savings potential beyond those that participants are interested in. With the incorporation of Greener Homes incentives, participants will have less of a financial barrier to complete deeper retrofits. E1 is currently focused on working with energy advisors on elements of program delivery.	2022
2019	Evaluation	Develop and document a long-term strategy to improve contractor engagement with HEA. Although not required by HEA, the majority of participants hire one or more contractors to complete projects. The evaluation revealed that contractors are not familiar with HEA and do not provide detailed information regarding HEA measures for fear of misinforming homeowners. As part of the jurisdictional scan, the Evaluator found that other residential programs leverage the relationship contractors have with participants to achieve deeper savings. The Evaluator recommends that EOne develop documentation for its long-term strategy to increase awareness about HEA among contractors and equip them with the knowledge to help homeowners achieve deeper savings. It should be noted that contractors mentioned finding HEA complex to navigate with its current lists of eligibility criteria, incentives, and eligible measures, so greater contractor involvement in HEA would have to be developed with this in mind. This recommendation is meant to cover both the development and documentation stages of this long-term strategy.	2019 HEA-R2	Deferred	E1 agrees with this recommendation. E1 will develop a strategy to engage and educate contractors on the HEA program, while incorporating Greener Homes. E1 expects strategy development to be completed in 2022.	2022

Table 1: Update on Implementation of 2013-2019 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2019	Evaluation	Improve participant understanding of incentive levels. The 2019 participant survey revealed that 40% of participants thought that HEA incentives were unclear. Some participants also specifically mentioned not understanding the efficiency levels required to meet certain incentives. The Evaluator observed that the Renovation Upgrade Report provided to participants following the D assessment does not contain information about the rebates associated with the recommended upgrades, thereby requiring participants to connect measures and their efficiency levels to rebate amounts on their own. To improve participant understanding of HEA incentives, the Evaluator recommends that EOne explore ways to offer simplified and tailored rebate information to participants to walk them through the requirements for obtaining the rebates associated with recommended upgrades.	2019 HEA-R3	Deferred	E1 agrees with this recommendation. E1 will develop a strategy to improve participant understanding of incentive levels and engage/educate contractors on the HEA program, while incorporating the Greener Homes grant. E1 will update the rebate guide, website, and other communication tools. E1 expects strategy development and rebate updates to be completed in 2022.	2022
2019	Evaluation	Evaluate the market for EPI to quantify the residual potential for direct installations. EPI has been successfully operated for several years and is still achieving high participation levels. However, due to a decreasing pool of potential participants, participation levels are decreasing. A-type lamps remain the number one product installed and account for almost half of EPI gross savings, although the residential lighting market is rapidly evolving. A market evaluation should serve to examine EPI participation history compared to the potential pool of participants as well as characterize lighting energy savings opportunities for these potential participants.	2019 EPI-R2	Deferred	E1 agrees with this recommendation. E1 anticipates that the Evaluation Consultant will perform a market evaluation in 2022 to allow the market to rebound after the COVID-19 pandemic. The results will be presented in the 2022 Evaluation report which will be filed March 31, 2023.	2023
2019	Evaluation	Better document peak demand savings calculations. Large adjustments to tracked peak demand savings were made to projects, particularly for Retrofit. In many cases, the peak demand savings calculations were not explicit in project documentation, and the peak coincident factor (PCF) was sometimes only available in the tracking sheet. The Evaluator believes describing the calculation approach in project completion documents would lead to better capturing peak demand savings and improving accuracy. This could be accomplished using a standard form that includes all the questions to be considered when establishing the PCF or peak demand savings.	2019 Custom-R2	Complete	E1 agrees with this recommendation. E1 has developed a model library file to accurately capture peak demand savings for NC projects modeled in eQuest. E1 has developed a guideline document that will result in better capturing peak demand savings. E1 has deployed the document in 2021 and the guidelines will be followed for all projects closing in 2022 and beyond.	2021

Table 2: Update on Implementation of 2013-2019 Verification Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2014	Verification	Develop evaluation guidelines. A separate document from a TRM is a set of evaluation guidelines covering methods, practice and reporting. The New York evaluation guidelines and appendices could be reviewed and modified to form an initial document. This would set certain evaluation standards for future evaluations.	Savings Verification Recommendation No. 3	In Progress	E1 agrees with this recommendation and are currently defining the modified guidelines for Nova Scotia. E1 anticipates that this initial internal document will be complete within 2022.	2022
2016	Verification	We agree with the Service Provider recommendation of greater coordination between the EMIS and SEM program. Further, we recommend that ENS consider merging the two programs into a single customer offer. While there are unique attributes of each that would need to be considered when combining SEM and EMIS, other utilities offer a single program for both.	EMIS-SV-1	Not Recommended for Action	E1 continues to encourage cross-participation in EMIS and SEM. Participants in SEM are encouraged to expand their energy management capabilities through the use of the EMIS program. E1 continues to explore the most effective relationship between these two offerings, but does not anticipate merging the two offerings into one.	Not Recommended for Action
2016	Verification	We support the Service Provider recommendation of a longer engagement with SEM participants.	SEM-SV-R2	Complete	E1 agrees with this recommendation and is currently looking to offer longer engagement periods as part of our engagement strategy with our Large Industrial customers. To-date, E1 has been offering customers the option to extend their SEM engagement year over year, but has not required customers to agree to multi-year engagements.	Complete
2018	Verification	For SEM and EMIS, experiment with provision of a circuit rider to maintain contact and occasional sociotechnical engagement projects to help maintain technologies and self- and corporate discipline when the service provider is no longer available to a project. A pragmatic rule of thumb is that changes stay in place if they can be maintained for over five years and through at least one change of lead personnel.	Recommendation 2018 SEM/EMIS-SVR-6	In Progress	E1 agrees with this recommendation. E1 will continue to look for opportunity to keep participants engaged and work with the evaluator on determining LES. Once LES are determined, E1 will look into implementing changes to the program.	2022

Table 3: Update on Implementation of 2020 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Completion Date
2020	Evaluation	Continue monitoring program performance as the response to the COVID-19 pandemic evolves to continue to make adjustments to programs as needed. EOne did not meet its energy and peak demand savings targets largely due to the public health guidelines associated with the COVID-19 pandemic. As the impacts of the pandemic on Nova Scotians' energy consumption and behaviour continues to evolve, it will be important to continue monitoring a range of indicators for program performance, such as program participation levels, savings per participant, and program savings, to further adapt programs if needed. Should EOne wish to bolster program participation and results, increases to incentives for targeted sub-sectors and measures could be considered to encourage more residential and business customers to pursue efficiency projects.	2020 CR-R1	In Progress	E1 agrees with this recommendation. E1 will continue to monitor program performance such as participation levels and program savings, as the response to the COVID-19 pandemic evolves and make adjustments to programs as needed. E1 could consider increasing incentives for targeted sub-sectors and measures to encourage more residential and business customers to pursue efficiency projects.	2022
2020	Evaluation	Explore new evaluation approaches to align with EOne's strategy for the new construction market in the context of evolving baselines and updated building codes. The 2020 evaluation included several findings related to how the new construction market is evolving. EOne's presence in that market over the years has likely had an influence on this evolution. As new building codes are introduced and baselines change, evaluation approaches that capture the transformation of the new construction market, including savings from codes, should be explored.	2020 CR-R2	Complete	E1 agrees with this recommendation. E1 has worked with the Evaluation Consultant to explore new evaluation approaches to align with E1's strategy for the new construction market in the context of evolving baselines and updated building codes. As part of the 2021 Evaluation, the Evaluation Consultant performed a jurisdictional scan to understand under which circumstances a market transformation approach is applied versus a resource acquisition codes and standards approach, and how these different approaches would be evaluated. Results from the jurisdictional scan are presented in the 2021 Codes and Standards Evaluation report to be filed with the NSUARB on March 31, 2022.	Complete
2020	Evaluation	Monitor market indicators and collect information to characterize the market for LED fixtures. EOne should begin collecting information to better characterize the market for LED fixtures. One way this could be accomplished is by incorporating this product category into the residential market evolution work planned as part of the Overall Strategic Evaluation Plan intended to provide up-to-date insights regarding LED lamp market transformation in Nova Scotia. Where possible, information should be collected for LED recessed downlight fixtures and other LED fixtures because the market may be evolving differently for these products.	2020 Instant Savings -R1	Complete	E1 agrees with this recommendation. The 2021 Residential Efficient Product Rebates evaluation report will be filed with NSUARB on March 31, 2022. The evaluation report includes a market evolution and characterization study that focuses on how the residential lighting market for LED lamps and fixtures is evolving.	Complete
2020	Evaluation	Update the unconverted D assessment spillover calculation assumptions to reflect the current participation mix and obtain more representative results. The 2016 assumptions currently used by EOne and the Evaluator are not representative of the evolution of HEA toward more non-electrically-heated projects being completed.	2020 HEA-R1	Deferred	E1 agrees with this recommendation, however after consultation with the Evaluation Consultant, the data collection timeframe should be considered for the 2022 evaluation cycle. The billing analysis is planned for 2022 to update the overestimation ratios, results will be presented in the 2022 Evaluation report which will be filed March 31, 2023.	2023

Table 3: Update on Implementation of 2020 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Completion Date
2020	Evaluation	Consider tracking the parameters of heat pumps installed through HEA to increase the accuracy of the new heat pump peak demand savings calculation. Currently, the calculation consists of multiplying the capacity of each heat pump installed under HEA with the average unitary peak demand savings per capacity obtained from the mini-split heat pump measures installed under Green Heat. Including the heating capacity and the coefficient of performance (COP) at -15°C, the AHRI certificate number, as well as the indoor and outdoor heat pump models in the tracking sheet would allow for a more precise calculation of the peak demand savings for heat pumps, similar to that of Green Heat and NHC. Another consideration to improve the accuracy of the heat pump peak demand savings calculation would be to isolate mini-split heat pumps from the other heat pump measures by establishing a calculation specific to this measure. Mini-split heat pumps account for more than 80% of the heat pumps installed under HEA. The second most popular type of heat pump is central-air source heat pumps, for which a specific calculation could also be applied in the future.	2020 HEA-R2	In Progress	E1 agrees with this recommendation. E1 has adapted the HEA tracking sheet to more clearly track the heat pump parameters noted by the Evaluation Consultant. E1 has updated heat pump information for 2021 projects using information from HOT2000 and clarifying HOT2000 procedures for Energy Advisors to ensure this info is consistently tracked and shared with E1 moving forward. E1 will update the heat pump specifications required to perform the demand savings calculations in 2022.	2022

Table 3: Update on Implementation of 2020 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Completion Date
2020	Evaluation	Encourage EAs to include insulation measures in their audit reports and ensure that such measures are recommended to participants in the recommendation summaries. Although a significant increase in electrical projects may be difficult for AMH to achieve, insulation measures could contribute to greater electrical savings for those participants with electrical heating, and greater non-electrical savings for those participants who are non-electrically heated.	2020 AMH-R2	Complete	E1 agrees with this recommendation. E1 has implemented changes to the audit report which now emphasises building envelope upgrades, including insulation.	2021
2020	Evaluation	Consider ways to increase the uptake of measures other than the installation of mini-split heat pumps (MSHPs) for participants to achieve program tiers. With the increasing popularity of heat pumps in the new residential market, the effectiveness of incentivizing this measure for new homes is diminishing. While MSHPs will remain a key measure for new homes to qualify under both NHC and the new upcoming 2020 building code tiers, it is important for EOne to identify ways to encourage participants to go the extra mile and further improve the energy performance of their new homes. This consideration will be crucial to pave the way toward a future baseline adjustment that will not incapacitate builders in their efforts to reach the higher tiers of NHC and of the new code.	2020 NHC-R1	Not Recommended for Action	E1's 2023-2025 DSM Resource Plan proposes the wind up of the NHC program component in 2023, therefore this recommendation is no longer applicable.	Not Recommended for Action
2020	Evaluation	Review the strategy for data collection among builders. It has become increasingly difficult to reach builders whose feedback is central to the current free-ridership and spillover assessments as part of the annual evaluations. The high margins of error obtained through the 2020 evaluation, which were notably caused by the smaller number of participant builders who responded to the survey, as well as the difficulty to receive answers for each tier category, prevented the Evaluator from measuring the free-ridership and spillover levels in 2020.	2020 NHC-R2	Deferred	E1 agrees with this recommendation. The scope of the New Residential evaluation for 2021 was changed from a comprehensive billing analysis to a condensed evaluation and therefore builder interviews will not occur in 2021. E1 will continue to work with the Evaluation Consultant to discuss approaches for conducting these surveys in the future.	2022
2020	Evaluation	Implement improved M&V activities in Retrofit and Building Optimization. The Evaluator identified two areas where EOne could concentrate its efforts, particularly for projects with relatively higher complexity and/or higher energy savings. First, provide participants more guidance and support in terms of M&V requirements so that they better understand M&V methodologies, parameters, and nomenclature as well as program expectations for their project. This could take the form of a more comprehensive M&V guide that would be made available to project implementers and/or participants. Second, increase structure with respect to existing EOne quality control processes to ensure they are followed and best practices for M&V are implemented by participants. This could take the form of checklists along with a mechanism to ensure that checklists are completed for all projects. Participants are not always motivated to pursue M&V activities on their own and, thus, EOne staff must be proactive in ensuring that participants meet program requirements, particularly for establishing baseline conditions.	2020 Custom-R1	In Progress	E1 agrees with this recommendation. E1 is currently investigating ways to better inform participants of the M&V requirements (e.g. website, guide, study application, sales process) and to improve the structure of M&V to ensure quality control processes are followed as well as ensuring best practices are used. E1 is actively discussing a simplified M&V approach for less complex and smaller projects with the Evaluation Consultant. E1 is proposing a more comprehensive M&V template for complex projects and has developed a new M&V Process Flow chart and M&V Plan & Result templates for Small, Medium, and Large Custom Projects. E1 also plans to create a training plan and internal M&V guide.	2022

Table 3: Update on Implementation of 2020 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Completion Date
2020	Evaluation	Improve project file documentation processes. To maximize evaluation resources, there should be greater consistency across projects in terms of both the types of information collected and project file contents. Furthermore, this information should be easily accessible and organized to ensure all relevant documentation is available for evaluation and quality assurance. The Evaluator recommends that EOne develop processes to gather consistent and complete documentation for all projects and to ensure they are organized in such a way to be readily available by project. This should facilitate quality assurance activities for EOne staff as well as future evaluation activities.	2020 Custom-R2	Complete	E1 agrees with this recommendation. E1 has developed a checklist and folder structure to ensure consistency across projects to include relevant and complete documentation prior to submitting files to the Evaluation Consultant. E1 has included a written procedure in the Program Manual to describe the process of using the checklist and folder structure. E1 will modify the checklist based on any feedback received following the current evaluation.	2022
2020	Evaluation	Incorporate a multi-source approach to measure free-ridership for projects that account for a large proportion of savings. Large and complex projects may involve more than one decision maker. Using a multi-source approach for such projects ensures that the responses of key decision makers are collected and analyzed to establish free-ridership. Consulting more than one decision maker is resource intensive, therefore the Evaluator recommends doing so only for large projects that have a significant influence on overall free-ridership results.	2020 Custom-R3	Complete	E1 agrees with this recommendation. E1 worked with the Evaluation Consultant to develop a multi-source approach to free ridership assessment that is now is use for large projects that involve more than one decision maker.	Complete
2020	Evaluation	Update the New Construction Program Guide to include the cases identified during the evaluation that were not covered and/or required more clarity in their interpretation. The Program Guide is aimed at clarifying the modelling approach and interpretation of the code for all parties involved in New Construction. The Evaluator recommends incorporating the following topics, including specific guidance on how to model parameters. - Window-to-wall ratio (WWR): An equal WWR is used for both the baseline and proposed buildings in the case where the WWR of the proposed building is lower than the limit defined in the National Energy Code of Canada for Buildings, the NECB, (40% for Halifax based on heating degree days). In the case where the proposed building has a higher WWR than the NECB limit, the WWR of the baseline building is set as the NECB limit. -Thermal bridging at balcony slabs: The thermal bridging at balcony slabs does not need to be accounted for in NECB unless the total cross-sectional area of balconies is greater than 2% of the total wall area. -Outside air flow rate: The building standard in Nova Scotia on outside air ventilation rates is based on ASHRAE 62.1. If the ventilation system design does not allow to reach the ASHRAE 62.1 rate, the building simulation should represent the installed capacity of the ventilation system. The Evaluator recommends that the outside air flow rate be modelled using the maximum flow rate of installed equipment if the flow rate is lower or equal to ASHRAE 62.1. If the outside air flow rate in the proposed case is superior to ASHRAE 62.1, the baseline outside air flow rate should be equal to the ASHRAE 62.1 flow rate.	2020 Custom-R4	In Progress	E1 agrees with this recommendation, as applicable to Custom New Construction projects with an NECB 2015 baseline. E1 is working with the Evaluation Consultant to assess the specific guidance required on these topics for projects with an NECB 2017 baseline. E1 will update the Custom New Construction Program Guide to include the cases identified during the 2020 evaluation which include Window-to-wall ratio (WWR), Thermal bridging at balcony slabs and Outside air flow rate. The updated program guide will be provided to the Evaluation Consultant for review prior to distribution to modelers.	2022

Table 3: Update on Implementation of 2020 Evaluation Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Completion Date
2020	Evaluation	Perform an HVAC market characterization study for New Construction. Currently, the baseline of building models for New Construction is based on NECB. This code includes several ambiguities that can lead to differences in interpretation concerning HVAC system modelling. This was the case for a number of multi-unit residential building projects with respect to their ventilation systems. An interim approach has been adopted that is currently defined in the Program Guide until a market characterization study is performed to define a more accurate baseline for HVAC systems installed in Nova Scotia commercial new constructions.	2020 Custom-R5	In Progress	E1 agrees with this recommendation. E1 has included an interim approach in the New Construction Program guide. A market characterization study is planned as part of the 2022 Custom evaluation to define the baseline for HVAC systems installed in new construction multi-unit residential buildings in Nova Scotia.	2023
2020	Evaluation	Offer support for semi-annual management reviews to SEM participants that leave the program at the conclusion of the two-year participation period.	2020 SEM-R2	Not Recommended for Action	E1 appreciates this recommendation. E1 has no immediate plan to support participants with management reviews after concluding their participation in the SEM program. Due to the limited budget that the SEM program tends to operate under, it is difficult to commit to addressing this recommendation at this time.	Not Recommended for Action
2020	Evaluation	Use the Evaluator's peak demand savings calculation guidelines to develop a protocol to track peak demand savings. To ensure consistency in EMIS and SEM peak demand savings tracking and prevent adjustments at the time of evaluation, EOne should develop a structured approach and protocol to calculate peak demand savings based on the Evaluator's protocol guidelines. The protocol should evolve with the program component to account for the uniqueness of EMIS and SEM projects and cover as many situations as possible as well as consider any evaluation findings. The protocol should be applicable to both EMIS and SEM	2020 SEM-R3, EMIS-R1	In Progress	E1 agrees with this recommendation. E1 will develop a protocol to track peak demand savings in SEM and EMIS based on the Evaluation Consultants' peak demand savings calculation guidelines. This protocol will account for the uniqueness of SEM and EMIS projects and attempt to cover as many situations as possible. E1 has applied this to 2021 calculations, and will formally include in internal guidelines in 2022.	2022

Table 4: Update on Implementation of 2020 Verification Recommendations

Year	Evaluation/ Verification	Recommendation Text	Source	Status	Comments	Expected Period of Completion
2020	Verification	The Savings Verification study recommends acceptance of the 2020 evaluation results for energy savings and for demand-reduction for all programs.	2020 SVR-1	n/a	n/a	n/a
2020	Verification	Add a table to the Summary Evaluation to indicate where each program evaluation is placed in the other evaluation report documents.	2020 SVR-2	Complete	E1 agrees with this recommendation. E1 will work with the Evaluation Consultant to incorporate a column to Table 1 in the 2022 DSM Overall Executive Summary Report to indicate where each program evaluation is located.	Complete
2020	Verification	Conduct a study of appliance durability (resilience).	2020 SVR-3	Not recommended for Action	E1 appreciates this recommendation. E1 is unaware of energy savings calculations for appliances that incorporates appliance durability, although E1 and the evaluator will monitor the development in this area and will apply any relevant changes to the savings and EUL methodology as it becomes available. E1's energy savings calculation for retired or replaced appliances is available in the 2020 and 2021 Measure Assessment document filed with the Evaluation Reports.	Not recommended for Action
2020	Verification	(Econoler CR-R2): Explore new evaluation approaches to align with strategy for the new construction market in the context of evolving baselines and updated building codes. The 2020 evaluation included several findings related to how the new construction market is evolving. Efficiency Nova Scotia's presence in that market over the years has likely had an influence on this evolution. As new building codes are introduced and baselines change, evaluation approaches that capture the transformation of the new construction market, including savings from codes, should be explored.	2020 SVR-4	In Progress	E1 agrees with this recommendation, as applicable to Custom New Construction projects with an NECB 2015 baseline. E1 is working with the Evaluation Consultant to assess the specific guidance required on these topics for projects with an NECB 2017 baseline. E1 will update the Custom New Construction Program Guide to include the cases identified during the 2020 evaluation which include Window-to-wall ratio (WWR), Thermal bridging at balcony slabs and Outside air flow rate. The updated program guide will be provided to the Evaluation Consultant for review prior to distribution to modelers.	2022
2020	Verification	Include a classification table for Affordable Multifamily Housing.	2020 SVR-5	Complete	E1 agrees with this recommendation. E1 will work with the Evaluation Consultant to incorporate a classification table with a breakdown of prescriptive versus audit projects into the Affordable Multi-Family section of the Existing Product Rebates Evaluation Report that is to be filed on March 31, 2022.	Complete
2020	Verification	Calculate and report annually on Efficiency Nova Scotia business operations GHG and GHG reduction.	2020 SVR-6	Not recommended for Action	E1 recognizes the importance as an organization of calculating and reporting on GHG reductions and appreciates the recommendation. This exercise though, is a corporate initiative and is not specifically related to only DSM activities or the scope of this work. E1 does and will continue to report on GHG savings related to the evaluated savings.	Not recommended for Action