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Request IR-01: Avoided Costs

Reference: Appendix B – Attachment 5: Assumptions, Section 5. Avoided Costs.

(a) Does the DSM model’s avoided capacity in \$/kW include both bulk and local capacity values?

(b) Did E1 evaluate the Total Resource Cost and Societal Cost Test in addition to the Program Administration Cost Test?

(c) Could E1 provide an explanation for the assumption that the carbon pricing is embedded within the avoided cost of energy for the 2025 to 2055 period?

(d) Did E1 consider customer and grid resilience in the avoided costs quantification?

Response IR-01:

(a) The avoided costs of capacity values used in the DSM model reflect system-wide (bulk) capacity costs only and do not include local or constrained-area capacity values.

While constrained area (localized) avoided costs for transmission and distribution are available, EfficiencyOne (E1) has not applied these constrained-area avoided costs in the modelling, as no locationally restricted programs are proposed in the proposed 2027–2031 DSM Preferred Plan.

Please refer to E1’s response to Synapse IR-62, part (c) for the estimated Program Administrator Cost (PAC) test results if all demand response occurred in constrained areas.

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- 1 (b) Please refer to E1's response to Synapse IR-12.
- 2
- 3 (c) Please refer to E1's response to IG IR-07.
- 4
- 5 (d) Please refer to E1's response to NRStor IR-03, part (b).

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Request IR-02: Avoided Capacity from New Residential Batteries

Reference:

“The Preferred Plan represents a comprehensive suite of programs and service offerings which will deliver approximately 435.4 GWh of affordable, incremental net energy savings, 85.0 MW of cumulative system peak demand savings, 29.3 MW of available capacity from demand response and 1.7 GWh of energy reductions from solar-PV generation to Nova Scotians over the 2027–2031 Plan period. These energy savings reflect approximately 0.8 percent of NS Power’s load.”

(a) Has E1 evaluated the incremental available capacity from demand response under a scenario where new batteries were an eligible DSM measure?

Response IR-02:

(a) In the development of the proposed 2027–2031 Preferred DSM Plan, EfficiencyOne (E1) explored the inclusion of existing batteries as part of the demand response program, assuming participants would enroll existing batteries without receiving incentives for new battery purchases. E1 did not evaluate a scenario where new batteries were an eligible DSM measure, as providing incentives for new battery purchases would increase program costs and reduce cost-effectiveness – which did not align with E1's focus on delivering an achievable and cost-effective demand response program.

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Request IR-03: Eco Shift Program Cost Effectiveness

Reference:

“While the Residential Demand Response (Eco Shift) program component does not yet meet the standard cost-effectiveness threshold, there have been noted improvements.” (Page 28)

“Beyond cost-effectiveness metrics, Eco Shift contributes to electricity system resilience during cold weather events by enabling demand-side flexibility that complements supply-side resources and rate design.” (Page 29)

(a) In addition to the Program Administration Cost Test, did E1 evaluate the Total Resource Cost and Societal Cost Test for the EcoShift program?

(b) Could E1 confirm whether greenhouse gas emission reductions and customer and grid resilience were quantified and modeled as part of the avoided costs for the Eco Shift program? If yes, please provide a breakdown of these benefits.

Response IR-03:

(a) Please refer to Synapse IR-12.

(b) Greenhouse gas emission reductions or grid resilience benefits are not explicitly included in the avoided costs of capacity, energy, transmission, and distribution.

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Request IR-04: Program Design for Residential Demand Response under the Preferred Plan

Reference:

“E1 does not intend to enroll new customers in 2027–2031.” (Table 45 under 7.3.2 PROGRAM DESIGN)

“Available demand response capacity is evaluated based on events called from December to February.” (12.1.2 DEMAND RESPONSE EVALUATION APPROACH, Page 103)

- (a) Could E1 provide a rationale as to why new measures including batteries are not eligible in the Residential Demand Response Program under the Preferred Plan?**
- (b) Could E1 share the sizes and respective durations as well as capital and operating costs for new behind-the-meter residential battery systems that were considered in its modeling exercise?**
- (c) Could E1 share the cost and benefit categories included in the modeling of new residential batteries?**
- (d) Has E1 factored the incremental bulk capacity benefits in addition to local capacity that new residential batteries provide in its cost effectiveness tests?**
- (e) Could E1 confirm whether greenhouse gas emission reductions and customer and grid resilience were quantified and modeled as part of the avoided costs for new behind-the-meter batteries in the Residential Demand Response program? If yes, please provide a breakdown of these benefits.**

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1 **(f) Are there areas in the Nova Scotia grid that experience greater outage hours that would**
2 **benefit from new residential batteries?**

3
4 **(g) Could E1 confirm whether the Demand Response benefits in the model capture only the**
5 **December to February period or if year-long benefits are quantified and captured?**

6
7 Response IR-04:

8
9 (a) New measures, including batteries, are not eligible in the Residential Demand Response
10 (DR) program component under the proposed 2027–2031 DSM Preferred Plan because
11 EfficiencyOne (E1) is maintaining Residential DR at the 2026 DSM Extension levels and
12 focusing on measures with stronger expected performance and cost-effectiveness.
13 Batteries were previously included in Eco Shift, but enrollment and cost-effectiveness have
14 been challenging. As a result, new enrollments of behind-the-meter residential batteries
15 are not included as eligible Residential DR measures under the proposed 2027–2031 DSM
16 Preferred Plan.

17
18 (b) As part of the development of the 2027–2031 DSM Plan, E1 did explore the inclusion of
19 battery control as part of the residential program component in early modelling, specifically
20 Round 1 modelling. E1 did not include battery control in subsequent modelling iterations
21 for the reasons described in part (a) of this IR response. In Round 1 modelling, E1 did not
22 model the full installed capital cost of new behind-the-meter residential battery systems.
23 The modelling assumed the batteries were already installed and customer-owned. In the
24 2027–2031 DR inputs file (please refer to Attachment 4 of E1’s response to NSEB IR-38),
25 the Unit Impact by End Use tab identifies the residential battery pathway as BTM Battery
26 Control-BYOB, with unit impacts of 1.31 kW/participant for Winter Morning and 1.69

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1 kW/participant for Winter Evening, based on tracked 2024/25 winter-season data and an
2 average battery size of 15.64 kWh.

3
4 The same workbook's Incentives tab includes a \$500 one-time enrollment incentive for
5 batteries, a \$300/kW-yr performance incentive, and the Delivery Costs EcoShift tab
6 includes annual battery DRMS/OEM device costs of approximately \$163.44/device-year
7 from 2027–2031.

8
9 (c) Round 1 modelling conducted cost effectiveness testing using the Program Administrator
10 Cost (PAC) test, the Total Resource Cost (TRC) test, and the NS Cost test (as proposed in
11 E1's Application for a New Benefit Cost Analysis Test for Evaluating Demand Side
12 Management). The cost effectiveness results for battery control in Round 1 modelling have
13 been provided in Attachment 1 of E1's response to Synapse IR-02. The PAC test benefits
14 include the applicable avoided generation capacity costs, avoided transmission and
15 distribution (T&D) capacity costs, and energy impacts and costs include program
16 administration, program delivery, marketing and recruitment, technology enablement, and
17 incentives. The TRC benefits remain the same as PAC with the additional costs included of
18 customer costs, and incentive costs becoming a transfer. For a full description of the
19 impacts included in the NS Cost test as proposed by E1, please refer to E1's BCA
20 Application.¹

21
22 For residential batteries, the full installed battery system cost was not modelled as an E1
23 program cost because the battery was assumed to be an existing customer-owned asset.

¹ M12282, E1 Application for approval of a New Benefit Cost Analysis Test for Evaluating Demand Side Management Plans, May 16, 2025.

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1 (d) E1 did not separately quantify incremental bulk capacity benefits in addition to local
2 capacity benefits for new residential batteries. The model uses the avoided cost framework
3 in the Nova Scotia DR Potential Input Workbook Assumptions 2026-03-20_IR Support.xlsx,
4 including avoided generation capacity and avoided T&D capacity cost categories.

5
6 (e) In Round 1 modelling when battery control was explored as part of the demand response
7 program (no new batteries were modelled), societal impacts of greenhouse gas emissions
8 were assumed to be immaterial and were not included in the NS Cost test nor was a
9 separate impact stream for customer resilience included in the NS Cost test. E1 uses the
10 utility avoided costs as provided by NS Power to perform cost effectiveness testing which
11 does not include a separate avoided cost of grid resilience. The avoided costs developed
12 by NS Power and used in the proposed 2027–2031 DSM Plan, includes avoided generation
13 capacity, avoided transmission & distribution capacity, and avoided energy, but does not
14 include a separate quantified resilience benefit. Please refer to E1 2027-2031 DSM Plan
15 Application, Appendix A – Attachment 1: Modelling Assumptions, for the full range of
16 avoided costs used for analysis.

17
18 (f) The following IR response has been provided by NS Power.

19
20 Residential batteries that are configured to reduce demand behind the meter during
21 system peak hours may be beneficial to system capacity, regardless of the areas in Nova
22 Scotia they are installed. NS Power counts outages whenever the utility is not supplying the
23 meter, regardless of any customer owned backup, meaning backup power cannot improve
24 NS Power's reliability metrics in any event.

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- 1 (g) The Demand Response capacity benefits in the model are based on available demand
- 2 response capacity evaluated for winter events, specifically the December to February
- 3 period.

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Request IR-05: Combined Effects and Benefits

References: Section 7.2 CRITICAL PEAK PRICING OVERLAP & Appendix B – Attachment 5: Assumptions

(a) Has E1 conducted a jurisdictional scan on the overlap of time-varying rates and demand response programming, such as the case in Ontario with the Peak Perks program and the eligibility of solar and battery incentives under Home Renovation Savings Program for the residential customers that are on the time-of-use or ultra-low overnight retail electricity rates?

(b) Has E1 studied the combined effect of new residential batteries and electrification measures such as heat pumps on electricity bill affordability?

Response IR-05:

(a) EfficiencyOne (E1) has not conducted a jurisdictional scan specifically focused on the overlap of time-varying rates, demand response programming, and eligibility for residential solar or battery incentives. To support ongoing discussions with NS Power regarding the interaction of rate signals and demand response programs, E1 has engaged a consultant to conduct research in this area.

E1 has identified the interaction between time-varying pricing and demand response as an area requiring further coordination with NS Power. As discussed in Appendix A – Preferred Plan, Section 7.2, Critical Peak Pricing Overlap, E1 expects continued discussion with NS Power on the interaction between E1’s demand response programs and NS Power’s time-varying pricing initiatives.

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- 1 (b) E1 has not conducted a specific study of the combined effect of new residential batteries
2 and electrification measures, such as heat pumps, on electricity bill affordability. However,
3 E1 has identified this as a potential innovation activity in the proposed 2027–2031 DSM
4 Plan (Appendix A – Attachment 5).

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Request IR-06: Residential batteries in Mi'kmaw homes

Reference:

“Energy efficiency remains the foundation of the 2027–2031 Preferred Plan portfolio, complemented by growth in demand response, and the introduction of solar photovoltaic (solar-PV) support for Mi'kmaw communities.” (Page 1)

“The Preferred Plan introduces a new Mi'kmaw New Home Construction and residential solar-PV offer to ensure continued support to Mi'kmaw communities after the completion of the Mi'kmaw Home Energy Efficiency Project in 2027.” (Page 53)

(a) Has E1 consulted with Mi'kmaw communities to confirm their interest in new battery installations for the Mi'kmaw New Home Construction programs as well as in existing Mi'kmaw homes?

Response IR-06:

(a) EfficiencyOne (E1) has ongoing engagement with Mi'kmaw communities through E1's Mi'kmaw Home Energy Efficiency Project service delivery team, Roving Mi'kmaw Energy Manager, Community Engagement Lead for Mi'kmaw Communities, Community Engagement Specialist and the Communities Business Development Manager as well as through the Demand Side Management Advisory Group (DSMAG) about their interests in various energy technologies and support. The 2027–2031 Preferred DSM Plan support for Mi'kmaw communities was developed in response to feedback from these communities. Battery technology was not an explicit engagement topic.

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Request IR-07: Residential batteries in Innovation Framework

Reference: Appendix A, Attachment 5, Table 1

Table 1: Projected Direct Expenditures by Focus Area

Focus Area	DSM Direct Expenditure (\$)					Total (\$)
	2027	2028	2029	2030	2031	
Demand Response	160,650	178,815	123,175	110,250	111,500	684,390
Demand Flexibility	183,600	204,360	221,715	198,450	200,700	1,008,825
Strategic Electrification	45,900	51,090	24,635	22,050	22,300	165,975
Market Transformation	22,950	25,545	24,635	22,050	22,300	117,480
Locational DSM	45,900	51,090	98,540	88,200	89,200	372,930
Total Direct (\$)	459,000	510,900	492,700	441,000	446,000	2,349,600

(a) Will new residential batteries be eligible under these four focus areas, including Virtual Power Plants under Demand Flexibility and Locational DSM?

Response IR-07:

(a) Yes, new residential batteries are eligible to be included under four of the five focus areas for research and/or pilot consideration, excluding market transformation. EfficiencyOne’s innovation activities will focus on long-term ratepayer benefits and broader electricity system needs identified through the latest distribution and system planning.