

E1 Responses to Eastward Energy Inc. (Eastward Energy) Information Requests
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Request IR-01:

Reference: Evidence Page 7: A benefit-cost ratio threshold of 1.0 or greater of a DSM Plan must always be satisfied at the portfolio level. While measures that do not meet the ratio threshold can be included, E1 must justify their inclusion on the basis that they are required in order to ensure that the DSM Plan complies with the Balanced Plan Approach.

(a) Please describe in detail the process by which E1 intends to justify the measures that do not meet the benefit-cost ratio threshold of 1.0 or greater.

(b) Does E1 intend to get prior Board approval of all such measures? If not, explain why not.

(c) Does E1 intend to get input from interested parties with respect to the inclusion and justification for any such measures?

Response IR-01:

(a) EfficiencyOne (E1) intends to provide justifications for all measures that do not achieve a benefit-cost ratio of 1.0 or greater, based on the regulator approved cost-effectiveness test for demand side management (DSM) in Nova Scotia. Justifications will be provided on a measure basis in future DSM Plan applications. Without limiting the generality of the approach, such factors have historically included increasing equity and accessibility to residential customer segments who face greater barriers to DSM, supporting the adoption of emerging technologies, contributing to customer satisfaction, program reach and specific market needs, leading to the adoption of other energy efficiency measures, and supporting small businesses who often face several barriers to energy efficiency.

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1 (b) E1 was directed by the Nova Scotia Utility and Review Board in their Board Order on E1's
2 2023-2025 DSM Plan "To provide specific justification, on an individual basis, for each
3 measure that fails cost-effectiveness testing in future resource plan applications."¹ Thus,
4 E1 intends to include this justification as part of future DSM resource plan applications, the
5 next being the 2027-2031 DSM Plan.

6
7 (c) E1 develops its DSM resource plans through a robust engagement process with the Demand
8 Side Management Advisory Group (DSMAG). Through that engagement process E1 expects
9 to share measure level modelling detail with the DSMAG including cost effectiveness
10 information, consistent with past engagement processes. The DSMAG is offered the
11 opportunity to provide comments on all materials shared throughout the development
12 process.

¹ M10473, E1 2023-2025 DSM Plan, NSUARB Order, November 8, 2022, Directive (4), page 2.

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Request IR-02:

Reference: Evidence Page 13: Reference is made to section 79A(b)(iv) of the *Public Utilities Act* which refers to “strategic electrification of energy end uses currently powered by fossil fuels in a manner that reduces overall greenhouse gas emissions and electricity costs”.

(a) Please describe E1s understanding of what is meant by “strategic electrification” in this regard.

(b) Please describe the test E1 plans to use to compare greenhouse gas emissions between electricity production and end uses currently powered by fossil fuels.

(c) Please confirm that E1 did not solicit the input of Eastward Energy in the development of its proposed New Benefit-Cost Analysis Test.

Response IR-02:

(a) While EfficiencyOne (E1) has not yet formally adopted a definition of strategic electrification, the organization recognizes the growing importance of electrification as a pathway to support climate change goals. Generally speaking, strategic or beneficial electrification refers to the deliberate shift from fossil-fuel based energy uses to electricity in a way that reduces overall energy costs, greenhouse gas emissions, and enhances overall system efficiency and grid management – thus delivering broad public benefits.

E1 is monitoring developments in this area closely and is engaged in assessing how electrification opportunities may align with the mandate to deliver cost-effective demand side management. Through the development of the 2027-2031 DSM Plan in 2025, E1

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1 expects to continue exploring the inclusion of strategic electrification in a way that ensures
2 value for customers and supports broader energy system and policy objectives.
3

4 (b) The upcoming five-year DSM Plan for the period 2027-2031 is the first time that E1 will be
5 exploring the inclusion of strategic electrification in the DSM Plan. The 2027-2031 DSM Plan
6 is being developed throughout 2025 with an expected filing date of Q1 2026. The
7 development process for the 2027-2031 DSM Plan includes modelling strategic
8 electrification with the support of E1's modelling consultant Guidehouse and their ProCESS
9 Analytica modelling software. One of the modelling outputs being explored through the
10 DSM Plan development process is net lifetime emissions reductions from strategic
11 electrification.
12

13 (c) Confirmed. Aligned with the Nova Scotia Utility and Review Board's directive to E1 in their
14 Board Order on E1's 2023-2025 DSM Plan:

15 *To work with the DSM Advisory Group to assess and develop an optimal DSM cost-*
16 *effectiveness testing methodology.*¹
17

18 E1 established a rigorous engagement process with the Demand Side Management
19 Advisory Group (DSMAG) to undertake this work.

¹ M10473, E1 2023-2025 DSM Plan, Board Order, November 8, 2022, Directive (3), page 2.

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Request IR-03:

Reference: Evidence Pages 18/19: E1 indicates that the identified DSMAG members participated in workshops led by E1s Consultant Energy Futures Group, Inc.

(a) Please confirm that Eastward Energy is not one of the identified parties.

(b) Considering the potential for strategic electrification of fossil fuel powered energy uses, please advise whether E1 is amenable to having Eastward Energy join the DSMAG and participate in the discussions leading to E1s intended application for the five-year 2027-2031 DSM Plan in early 2026 as referenced at Evidence Page 9. If E1 is not in agreement please indicate why not.

Response IR-03:

(a) Confirmed.

(b) The Demand-Side Management Advisory Group (DSMAG), led by E1, has a clear and defined mandate aimed at fostering a collaborative environment for achieving energy efficiency and demand reduction goals in Nova Scotia.¹ The primary responsibilities of the DSMAG include:

- Reviewing and providing guidance on demand-side management strategies and initiatives.**
- Assisting in the development and implementation of comprehensive DSM plans.**
- Ensuring alignment with regulatory requirements and energy policy objectives.**

¹ M09096, Document No. 84486, DSMAG Terms of Reference, September 20, 2021.

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- Facilitating stakeholder engagement to incorporate diverse perspectives.
- Monitoring and evaluating the effectiveness of DSM programs and recommending improvements.

While Eastward Energy holds a significant position within the Nova Scotia energy sector, there are specific reasons why its participation in the E1 DSMAG is not suitable:

- Conflict of Interest: Eastward Energy's core business primarily revolves around fossil fuel-powered energy uses. Their strategic interests may conflict with the DSMAG's objectives of promoting DSM.
- Focus and Expertise: The existing DSMAG members have expertise in areas directly related to demand-side management and strategic electrification. Eastward Energy's primary focus on promotion of fossil fuels uses does not align with the group's specialized mandate.
- Regulatory and Policy Alignment: The DSMAG aims to support regulatory and policy goals that emphasize reducing reliance on fossil fuels and enhancing energy efficiency. On this basis, Eastward Energy's participation does not align with the group's mandate to meet these objectives effectively.

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Request IR-04:

Reference: Evidence Pages 35-37, Table 11 and Figure 2.

(a) Although only shown as an “illustrative example” please confirm that based on 1,000 Heat Pump Replacements in Program Year 2026 replacing Natural Gas yields a negative net benefit of (\$17.4 million) and a benefit-cost ratio of only 0.45.

(b) Please confirm that E1 would not propose to implement such a measure as a strategic electrification project. If not confirmed explain in detail.

(c) Please explain in detail the basis for the development of each of the Impact categories Benefits and Costs figures shown under the Heat Pump replacing Natural Gas heading of Table 11.

Response IR-04:

(a) The following IR response has been provided by Energy Futures Group (EFG).

Confirmed. If 1,000 heat pumps were all replacing gas as a primary heating fuel, the results of the illustrative example are a negative net benefit of \$17.4 million, and a benefit cost ratio of 0.45.

(b) EfficiencyOne (E1) is exploring the inclusion of strategic electrification for the first time in its 2027-2031 DSM Plan. Through the development process that will be taken throughout 2025, E1 will be exploring potential strategic electrification program components and measures. While legislation requires the DSM Plan’s cost-effectiveness to be screened at

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1 the Plan level, the Nova Scotia Utility and Review Board's directive to E1 in their Board
2 Order on E1's 2023-2025 DSM Plan¹, E1 must provide justification for any measures
3 included in the DSM Plan that do not pass the Board approved cost-effectiveness test for
4 DSM in Nova Scotia.

5
6 (c) The following IR response has been provided by Energy Futures Group (EFG).

7
8 The EFG Report explains in detail the basis and approach for each of the impacts included
9 in the recommended benefit cost test. Figure 1 and Table 5 in the EFG report² provide the
10 results using the recommended benefit cost test, for the illustrative example of 1,000 heat
11 pumps, with three separate cases for the replacement of heating oil, natural gas and
12 electric resistance heat.

¹ M10473, E1 2023-2025 DSM Plan, Board Order, November 8, 2022, Directive (4), page 2.

² M12282, E1 BCA Test Application, May 16, 2025, Appendix B: Development of a Jurisdictional Benefit Cost Analysis Framework for Nova Scotia (EFG Report), Prepared by Energy Futures Group, Figure 1: page 21 of 68, Table 5: page 19 of 68.

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1 **Request IR-05:**

2
3 **Reference: Appendix 8, page 17: “EFG recommends treating gas impacts through the**
4 **commodity costs is appropriate due to the relatively small size of the gas system and the**
5 **anticipated level of “DSM portfolio impacts on the gas system”**

6
7 **(a) Please describe what is meant by the “anticipated level of DSM portfolio impacts on the**
8 **gas system”?**

9
10 **Response IR-05:**

11
12 The following IR response has been provided by Energy Futures Group (EFG).

13
14 (a) The savings of utility natural gas from EfficiencyOne’s (E1) demand side management
15 (DSM) portfolio are expected to be significantly less than savings for electricity and other
16 fuels. This expectation is based on the limited service territory served by the gas system,
17 and likely program design choices. The economics and benefit cost results for electrification
18 measures replacing natural gas are also expected to be less favorable than options
19 replacing other fuels, as demonstrated in the EFG Report’s illustrative example.¹

¹ M12282, E1 BCA Test Application, May 16, 2025, Appendix B: Development of a Jurisdictional Benefit Cost
Analysis Framework for Nova Scotia (EFG Report), Prepared by Energy Futures Group, Table 5, page 19 of 68.

M12282 – EfficiencyOne (E1) Application for Approval of a New Benefit-Cost Analysis (BCA) Test
for Evaluating Demand Side Management (DSM) Plans

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Request IR-06:

Reference: Appendix B, Page 54 “The starting prices for heating oil and pipeline gas are based on recent provincial data and include a carbon price components based on \$110/metric tonne in 2026”.

(a) Please provide the basis for applying this carbon price to pipeline gas and where it is derived or obtained from.

Response IR-06:

The following IR response has been provided by Energy Futures Group (EFG).

(a) Please refer to EfficiencyOne’s (E1) response to NSEB IR-26, specifically the ‘Other Fuel Impact Nat Gas’ worksheet in Attachment 1. The carbon price schedule reflected in the analysis is based on Environment Canada projections for Federal Carbon pricing (reference Rows 2-17 of the worksheet).

Starting price	\$9.39	per GJ	Commodity	https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/natural-gas/report/canadian-residential-natural-gasbill/nova-scotia.html
Carbon Price Schedule	Year			
	2023	\$ 65	metric tonne	https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information/federal-benchmark-2023-2030.html
	2024	\$ 80		
	2025	\$ 95		
	2026	\$ 110		
	2027	\$ 125		
	2028	\$ 140		
	2029	\$ 155		
	2030	\$ 170		
Avoided emissions per unit	52.91	kg CO2/MMBtu		https://www.eia.gov/environment/emissions/co2_vol_mass.php
Avoided emissions per unit	50.12	kg CO2/GJ	1 MMBtu is a	www.unitjuggler.com/convert-energy-from-GJ-to-MMBtu.html
Natural Gas Average Annual Escalation	-0.4%	Average of -C		https://www.eia.gov/outlooks/aeo/tables_side.xls.php

Please note the carbon price is removed from the estimated natural gas price to avoid double counting the greenhouse gas impacts calculated using the social cost of carbon. The other fuel impact for natural gas and other fuels therefore excludes the estimated federal

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price of carbon from the calculations. Please see columns G and H in the referenced 'Other
Fuel Impact Nat Gas' worksheet.

Other Fuel - Pipeline Gas Impact								
Carbon Price Escalation	Plan Year	Year	Carbon price per GJ	Escalated price including carbon price	Fuel Price minus carbon price	Annual Avoided Natural Gas (GJ)	2% Real Discount Rate	Value of Saved Natural Gas
		2023	\$ 3.26	\$9.39	\$ 6.13			
23.1%		2024	\$ 4.01	\$ 10.11	\$ 6.10			
18.8%		2025	\$ 4.76	\$ 10.83	\$ 6.06			
15.8%	1	2026	\$ 5.51	\$ 11.54	\$ 6.03	84,470	0.98	\$ 499,018
13.6%	2	2027	\$ 6.27	\$ 12.25	\$ 5.99	84,470	0.96	\$ 485,954
12.0%	3	2028	\$ 7.02	\$ 12.96	\$ 5.94	84,470	0.94	\$ 473,013
10.7%	4	2029	\$ 7.77	\$ 13.67	\$ 5.90	84,470	0.92	\$ 460,198
9.7%	5	2030	\$ 8.52	\$ 14.37	\$ 5.85	84,470	0.91	\$ 447,515
2.0%	6	2031	\$ 8.69	\$ 14.49	\$ 5.80	84,470	0.89	\$ 434,968
2.0%	7	2032	\$ 8.87	\$ 14.61	\$ 5.75	84,470	0.87	\$ 422,710
2.0%	8	2033	\$ 9.04	\$ 14.74	\$ 5.70	84,470	0.85	\$ 410,734
2.0%	9	2034	\$ 9.22	\$ 14.87	\$ 5.65	84,470	0.84	\$ 399,034
2.0%	10	2035	\$ 9.41	\$ 15.00	\$ 5.59	84,470	0.82	\$ 387,604
2.0%	11	2036	\$ 9.60	\$ 15.14	\$ 5.54	84,470	0.80	\$ 376,436
2.0%	12	2037	\$ 9.79	\$ 15.28	\$ 5.49	84,470	0.79	\$ 365,527
2.0%	13	2038	\$ 9.98	\$ 15.42	\$ 5.43	84,470	0.77	\$ 354,868
2.0%	14	2039	\$ 10.18	\$ 15.56	\$ 5.38	84,470	0.76	\$ 344,455
2.0%	15	2040	\$ 10.39	\$ 15.71	\$ 5.33	84,470	0.74	\$ 334,282
								\$ 6,196,318

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Request IR-07:

Reference: General

(a) How does the benefit-cost test capture the cost of additional pressure on meeting the increased electric utility peak demand caused by any “strategic electrification”, such as required electric system infrastructure upgrades.

(b) Has E1 specifically coordinated with the incumbent electric utility’s planning department in developing the proposed “strategic electrification” plan?

(c) Please confirm that E1 or EFG have not evaluated the benefit of hybrid peaking or dual fuel opportunities in the Application. If not confirmed, please provide an example of how this was evaluated.

Response IR-07:

(a) The benefit-cost analysis considers all electric utility costs and benefits within the test. For strategic electrification, any increases in electricity energy consumption would have costs of energy, transmission and distribution applied, while any increases in peak capacity on the system would have costs of capacity generation applied. These costs represent the electric utility costs of incremental load, including increased fuel/purchased power, transmission and distribution infrastructure, and generation infrastructure. These are the same electric utility avoided costs that are applied to the energy efficiency benefit cost analysis, however, rather than these costs being avoided – they are considered as a cost for strategic electrification.

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1 (b) EfficiencyOne (E1) does not have a proposed strategic electrification plan. E1 is considering
2 the inclusion of strategic electrification as part of its upcoming 2027-2031 DSM Plan to be
3 filed in early 2026. As with previous DSM Plans, NS Power will be engaged in the
4 development of the 2027-2031 DSM Plan as part of the Demand Side Management
5 Advisory Group (DSMAG).

6
7 (c) Evaluating the specific benefits of hybrid peaking or dual fuel opportunities is outside the
8 scope of this Application. E1 understands that, in general, the electric utility benefit of
9 hybrid peaking or dual fuel opportunities is the minimization (or elimination) of electric
10 utility capacity generation costs associated with peak capacity impacts of electrification.
11 This may be considered as part of modelling and program design of E1's 2027-2031 DSM
12 Plan and reflected in any benefit cost analysis.

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Request IR-08:

Reference: Appendix B, Table 5

(a) Please explain what is meant by “Social cost of carbon & electric and avoided fuel” under the “Basis for Estimation” column in the Greenhouse Gas Impacts Category row.

(b) For the “direct measure costs” impact, the “Basis for Estimation” column includes the description “Host customer measure costs net of incentives”. Please explain what should be considered in the calculation of “Host customer measure cost” with respect to:

- i) Measure equipment cost, including whether the full cost of the measure equipment should be considered, or the incremental cost of the measure compared to a baseline or alternative equipment**
- ii) Measure installation cost**
- iii) Measure operating and maintenance costs**
- iv) Any other host customer measure costs**

(c) For the direct measure costs impact, does \$4.8M represent the full, installed cost of 1000 heat pumps? Alternately, does \$4.8M represent the incremental cost of 1000 heat pumps compared to a baseline fuel oil furnace, natural gas furnace and electric resistance system?

(d) For the “Reliability” impact, the “Basis for Estimation” column includes the description “Should be reflected in Avoided Costs”. Please discuss the reliability impact of measures which increase peak load on the electric system, and how reliability should be reflected in the avoided electric system costs for these measures.

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1 **(e) Is reflecting reliability impacts in avoided electricity system costs consistent with E1's**
2 **current practice?**

3
4 **(f) Does E1 propose to consider reliability benefits and/or costs to the electric system**
5 **associated with fuel switching measures, including measures which increase system or**
6 **local peak loads?**

7
8 Response IR-08:

9
10 (a) The following IR response has been provided by Energy Futures Group (EFG).

11
12 In the EFG Report (Appendix B), Table 5¹ the greenhouse gas impacts are estimated based
13 on the annual changes (increase or decrease) in electricity and other fuels, multiplied by
14 the carbon intensity per unit of energy for each type of energy. The result is an estimate of
15 the annual increase or decrease (in metric tonnes) of greenhouse gas emissions for a
16 measure or group of measures. The value per tonne of greenhouse gases in each year is
17 based on the Government of Canada's guidance on the social cost of carbon, reflecting the
18 economic and environmental impacts associated with each metric tonne of greenhouse gas
19 emissions. The social cost of carbon estimate is based on global climate modeling and
20 damage estimates.

21
22 (b) The following IR response has been provided by Energy Futures Group (EFG).

¹ M12282, E1 BCA Test Application, May 16, 2025, Appendix B: Development of a Jurisdictional Benefit Cost
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1 i) Equipment costs depend on whether the measure is installed at the time of
2 replacement (incremental cost to alternative or standard measure option is
3 appropriate), or whether it is an early retirement of existing equipment (when the
4 full measure cost can be considered, along with some credit for an avoided future
5 replacement cost). The illustrative example was based on an average full measure
6 cost for a heat pump replacement, including labor and make ready costs of \$8,000,
7 with a 40% program incentive.

8 ii) Installation costs are included in the estimated measure costs.

9 iii) Changes in operating and maintenance costs (which can be positive or negative) are
10 considered in estimation of the host customer non-energy benefits. Increased
11 operations and maintenance costs would decrease the overall non-energy benefits.

12 iv) Other host customer measure costs are also included in the estimation of the host
13 customer non-energy benefits proxy adder. Increased costs would reduce the overall
14 host customer non-energy benefit.

15
16 (c) The following IR response has been provided by Energy Futures Group (EFG).

17
18 Please refer to part (b) of this IR response. The \$4,800 per unit cost is the host customer
19 cost after a \$3,200 per unit incentive. These are based on a full replacement cost estimate
20 of \$8,000. As noted in part (b) if the units are being replaced at the end of their life, then a
21 lower incremental measure cost in comparison to standard alternatives would be used to
22 calculate the measure cost. The program incentives and program administration costs are
23 accounted for under the general utility system impacts.

24
25 (d) The following IR response has been provided by Energy Futures Group (EFG).

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Measures that increase peak load and other electric utility system costs will have increased costs for electric system impacts in the recommended benefit cost test. The increase in total electric system costs for heat pumps replacing fuel oil and natural gas is reflected by the negative numbers in the appropriate columns in Table 5. The heat pumps replacing electric resistance heat, provide electric system savings due to the higher efficiency of a heat pump in comparison to electric resistance heat and these savings are reflected in the positive level of electric system impact savings for this option. The value of increased or decreased system peak impacts and reliability are assumed to be embedded in the avoided cost values provided by NS Power.

(e) Yes, reliability impacts are assumed to be embedded in the avoided cost values provided by NS Power. This is consistent with E1's current practice.

(f) Yes, please refer to parts (d) and (e) of this IR response.

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1 **Request IR-09:**

2
3 **Reference: Appendix B, Textbox 1, Item 8 “EFG also recommends the use of the benefit per**
4 **kilowatt hour estimates for local non-greenhouse gas air pollutants be based on estimates from**
5 **the US Environmental Protection Agency for the New England Region. This is an approximation,**
6 **and if deemed appropriate, more specific analysis of ambient air conditions, dispersion, and**
7 **health impacts from changes in electric generation in Nova Scotia can be undertaken. (See**
8 **Figure 4 and Section V).”**

9
10 **(a) Please explain how benefit per kilowatt hour estimates for local non-greenhouse gas air**
11 **pollutants are derived by the US Environmental Protection Agency and why estimates for**
12 **the New England region are an appropriate approximation for use in Nova Scotia.**

13
14 **Response IR-09:**

15
16 The following IR response has been provided by Energy Futures Group (EFG).

17
18 (a) Please refer to EfficiencyOne’s (E1) response to NSEB IR-23.

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Request IR-10:

Reference: Appendix B, Table 14

(a) Please explain why the NEB proxy adders recommended are appropriate for Nova Scotia.

**(b) Please describe the potential risk increase to the host customer that is derived from
“strategic electrification.”**

Response IR-10:

The following IR response has been provided by Energy Futures Group (EFG).

(a) Please refer to EfficiencyOne’s (E1) response to NSEB IR-15.

(b) The reduced risk in Table 14 of the EFG Report¹ relates to a reduction in exposure to fuel price volatility as delivered fuel prices have historically been more volatile than electric rates. A potential increase in risk associated with beneficial electrification could be prolonged exposure to grid outages.

¹ M12282, E1 BCA Test Application, May 16, 2025, Appendix B: Development of a Jurisdictional Benefit Cost Analysis Framework for Nova Scotia (EFG Report), Prepared by Energy Futures Group, page 45 of 68.

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Request IR-11:

Reference: Appendix B, Table 23

(a) The following table has been generated from Appendix B Table 23. Please confirm whether the projected electricity emissions factors below were used to develop the 2026-2040 values in the “Annual Increased Electric Emissions Metric Tonnes” column of Table 23. If this is not confirmed, please provide the emissions factors used to develop these values.

Year	Emissions Factor (tonnes CO ₂ e/MWh)
2026	0.448
2027	0.355
2028	0.431
2029	0.393
2030	0.086
2031	0.159
2032	0.320
2033	0.360
2034	0.369
2035	0.269
2036	0.355
2037	0.288
2038	0.239
2039	0.218
2040	0.221

(b) Please provide the source of the projected electricity emissions factors for 2026-2040 used in Table 23 and clarify whether these factors represent estimated projections for average annual emissions intensities for the province, marginal emissions intensities based on the generation resources required to meet winter peak, or some other estimate.

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1 (c) Please confirm that the natural gas combustion emissions factor used to develop the
2 2026-2040 values in the “Annual Avoided Nat Gas Electric Emissions Metric Tonnes”
3 column of Table 23 is 0.180 tonnes CO₂e/MWh (0.050 tonne CO₂e/GJ). If this is not
4 confirmed, please provide the emissions factor used to develop these values.

6 (d) Please provide the following emissions factors for 2024 or the most recent year available,
7 or provide estimates if these values are not available:

8 i) Average emissions factor for grid-supplied electricity in Nova Scotia in tonnes
9 CO₂e/MWh.

10 ii) Marginal 2024 emissions factor for grid-supplied electricity in Nova Scotia in tonnes
11 CO₂e/MWh

13 (e) Please discuss the appropriateness of using either average or marginal grid electricity
14 emissions factors for the purpose of estimating the emissions increases in the “Annual
15 Increased Electric Emissions Metric Tonnes” column of Table 23.

17 Response IR-11:

19 (a) The following IR response has been provided by Energy Futures Group (EFG).

21 Confirmed. These values are taken from the Difference in Carbon Emissions (DICE) method
22 used for screening the 2023-2025 Demand Side Management (DSM) Plan. Please refer to
23 EfficiencyOne’s (E1) response to NSEB IR-26, specifically the ‘Electric Emissions Intensity’
24 worksheet in Attachment 1.

26 (b) The following IR response has been provided by Energy Futures Group (EFG).

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1 Please refer to part (a) of this IR response.

2
3 (c) The following IR response has been provided by Energy Futures Group (EFG).

4
5 Confirmed, the natural gas combustion emission coefficient is 50.12 kG/GJ.

6
7 (d)

8 i) Historical average annual emissions factors for Nova Scotia Power grid-supplied
9 electricity are available on their website: [Air Emissions Reporting | Nova Scotia Power](#).

10
11 ii) E1 does not currently have any data pertaining to the 2024 marginal emissions factor
12 for Nova Scotia grid-supplied electricity.

13
14 (e) The following IR response has been provided by Energy Futures Group (EFG).

15
16 For calculating impacts for the portfolio, average emissions rates is an appropriate, but
17 approximate estimate. With sufficient data and analytics, calculating emissions impacts
18 based on each measure's change in marginal generation and marginal emissions rates for
19 each hour can provide a more granular estimate of the emission reduction impacts.

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Request IR-12:

Appendix B, Page 54 "Both examples assume an approximate representative annual space heating consumption of 80 million BTUs (MMBtu), and an assumed existing system efficiency of 84%, and an average heat pump COP of 2.5."

(a) Is 84% meant to represent the efficiency of the installed furnace stock, or does it represent the efficiency of a new furnace?

(b) Please discuss the appropriateness of 84% for the furnace efficiency for a natural gas furnace.

Response IR-12:

The following IR response has been provided by Energy Futures Group (EFG).

(a) 84% is an estimate of the average efficiency for installed natural gas furnace stock.

(b) A new natural gas furnace, appropriate for a replace on burn-out, would be expected to have a higher efficiency of at least 90% average annual fuel use efficiency. For the installed stock, which includes a range of furnaces with varying ages, an estimated weighted average efficiency of 84% is appropriate.