



EfficiencyOne

IN THE MATTER OF *The Public Utilities Act, RSNS 1989, c. 380, as amended*

-and-

IN THE MATTER OF An Application for Approval of a New Benefit-Cost
Analysis Test for Evaluating Demand Side Management
Plans

Rebuttal Evidence of EfficiencyOne

M12282

Filed with the NOVA SCOTIA ENERGY BOARD

September 04, 2025

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1. INTRODUCTION

On May 16, 2025, EfficiencyOne (“E1”) submitted an Application for Approval of a New Benefit-Cost Analysis (“BCA”) Test for Evaluating Demand Side Management (“DSM”) Plans before the Nova Scotia Energy Board (the “Board”) in Matter 12282.

Information Requests (“IRs”) on the Application were filed on June 12 and June 16, 2025 to which E1 responded on July 4, 2025.

As part of this Application process, on July 17, 2025, Courtney Lane of Synapse Energy Economics, Inc. (“Synapse”) (consultant to the Board Counsel), Francis Wyatt of Green Energy Economics Group, Inc. (“Green Energy”) (on behalf of the Consumer Advocate), Melissa Whitten of Daymark Energy Advisors, Inc. (“Daymark”) (on behalf of the Small Business Advocate), Patrick Bowman of Bowman Economic Consulting Inc. (“Bowman”) (on behalf of the Industrial Group), Eastward Energy and their consultant Posterity Group Consulting Inc. filed evidence. Revised evidence of Mr. Bowman was submitted July 29, 2025. The remaining intervenors (Nova Scotia Power Inc. (“NS Power”), the Department of Energy, East Coast Environmental Law, Kwilmu’kw Maw-klusuaqn Negotiation Office, and the Assembly of Nova Scotia Mi’kmaq Chiefs) did not file any evidence.

On July 31, 2025, Board staff and several parties submitted IRs to certain intervenors and consultant to the Board Counsel. The responses to these IRs were submitted by August 21, 2025.

E1 is filing this evidence in response to the evidence filed by the intervenors and Synapse. E1 appreciates the thoughtful engagement of all parties and welcomes the opportunity to clarify and reinforce the rationale for the proposed BCA framework.

This Rebuttal Evidence addresses certain key themes raised by intervenors.

First, E1 addresses Mr. Bowman's evidence, submitted by the Industrial Group, which advocates for the adoption of an alternative primary BCA test instead of the one proposed by E1 in this Application. Thereafter, E1’s evidence responds to discrete points raised in various evidence, including the application of cost-effectiveness screening at the portfolio level, the use of proxy values for host customer non-energy

benefits (“NEBs”), inclusion of non-utility system impacts, and the selection of a discount rate. In this evidence, E1 sets out further details on its proposed ‘evergreen’ review of the BCA test.

E1 submits this Rebuttal Evidence in conjunction with the Rebuttal Evidence filed by David Hill of Energy Futures Group (“EFG”), attached as Appendix A.

2. BOWMAN EVIDENCE

2.1 PORTFOLIO-LEVEL SCREENING

Bowman

The evidence of Patrick Bowman of Bowman Economic Consulting Inc., for the Industrial Group, represents the only intervenor party to take issue with E1’s position that cost-effectiveness screening of DSM is to be assessed by the Board at the portfolio level, and not at the program or measures level (although E1 acknowledges the Board has, in past Applications, reviewed this data for informational purposes). Mr. Bowman argues that E1 has not accurately portrayed the economic and policy framework for DSM in Nova Scotia.¹ He states:

First, although the legislation indicates that cost-effectiveness shall be measured at the portfolio level, there is no prohibition against also assessing cost-effectiveness at other granularity levels, such as program or measure. Indeed, to fulfill its other mandates (i.e., to “determine the cost-effective DSM that must be undertaken” with DSM defined as “activities, programs and plan”), it appears the Board must consider cost effectiveness at a more granular level than simply the portfolio level.

In order to determine that any given portfolio of DSM is (i) in the best interests of customers (s.79L(4)), (ii) is comprised of activities and programs that are reasonable available (s.79I(1)), and (iii) any other interest it considers relevant (s.79L(5)), the Board will also require information regarding alternative DSM plans, comprised of different measures and programs, at both larger and smaller scales than E1’s main proposal. This

¹ M12282, E-14, Evidence of Patrick Bowman on behalf of the Industrial Group, Revised July 28, 2025, page 9, line 26; page 10, line 1.

1 *information is required to permit appropriate comparison of alternatives. Such analyses*
2 *cannot only be conducted solely at the Portfolio level.²*

3
4 **E1 Response**

5 The argument that the Board can, and must, measure cost-effectiveness at the measure level requires
6 legislative interpretation and is a legal argument. Questions of law are within the power of the Board to
7 determine.

8
9 Notably, in its evaluation of E1's 2023–2025 DSM Plan, the Board determined that cost effectiveness
10 screening at the program level (as it was then required under the *PUA*), was appropriate; further noting
11 that measure level screening was a “restrictive application of the cost-effectiveness test”.³

12
13 *Applying the TRC test at the measure level could prevent E1 from proactively considering*
14 *potential or future market development and may reduce the overall net economic benefits*
15 *of efficiency investments. In many cases, measures which fail the TRC individually may be*
16 *combined into programs which, cumulatively, are cost- effective. Furthermore, focusing on*
17 *measure cost-effectiveness could deny E1 the opportunity to deliver a portfolio of DSM*
18 *services that are accessible on an equitable and non-discriminatory basis and responsive*
19 *to the current market.⁴*

20
21 Subsequently, the November 2022 legislative amendments to the *Public Utilities Act* (in particular the
22 addition of section 79H(2)) now require the Board to measure cost-effectiveness of DSM at the portfolio
23 level.

24
25 E1 asserts that the BCA test is intended primarily as a screening tool at the portfolio level; however, it will
26 also be utilized at both the program and measure levels for informational purposes.

² Ibid., page 10, lines 2–12.

³ M10437, NSUARB Decision, EfficiencyOne (E1) 2023-2025 DSM Plan (Re), 2022 NSUARB 137, September 6, 2022, para 126.

⁴ Ibid., para 127.

Utilizing the proposed BCA test to evaluate cost-effectiveness at the portfolio level ensures that Nova Scotian DSM policy objectives can be met, including the objectives of strategic electrification, providing efficiency programs to low-income households, and achieving provincial environmental and climate change reduction goals.⁵ This approach permits the inclusion of program components and measures which may not individually meet the 1.0 ratio, but fulfill other functions, such as supporting adherence to the Balanced Plan Approach. These elements may be deemed justified within the overall DSM plan when the cumulative cost-effectiveness threshold ratio for the portfolio reaches or exceeds 1.0.

Conversely, should Mr. Bowman's approach be adopted and E1 is required to establish/screen cost-effectiveness for each program and measure, all other inputs to a properly developed, jurisdictionally specific DSM plan would become secondary to this 1st consideration approach. Further, such approach would render recent legislative changes to the Board's mandate moot.

Notwithstanding the above, E1 remains committed to applying the BCA test at the measure level, the program level, and the portfolio level, for informational purposes, consistent with Board direction and past practice. This information is also used by E1 to inform program design. Consistent with Board direction, E1 will continue to provide justification on why any such measure falls below the 1.0 threshold when the BCA test is applied. Such information will inform decisions regarding inclusion of programs and measures, given

⁵ In comments on the 2022 amendments to the *Public Utilities Act* (Bill 228), and in the News Release relating to the *Energy Reform (2024) Act* (Bill 404), the Government of Nova Scotia confirmed that the amendments and new legislation were made in part to achieve its policy goals, including those of strategic electrification, delivering efficiency programs to low-income households, environmental protection and climate change reduction.

"Bill 228, An Act to Amend Chapter 380 of the Revised Statutes, 1989, the Public Utilities Act, Respecting Efficiency Nova Scotia", 2nd reading, Nova Scotia Legislature, 22-52 (7 Oct 2022) at 4156 (Hon Tory Rushton): "These changes we're making will help Efficiency Nova Scotia do these things even better. They clarify the Efficiency Nova Scotia role to help Nova Scotians move off oil. This is already their role, but we're making it clearer."

"Bill 228, An Act to Amend Chapter 380 of the Revised Statutes, 1989, the Public Utilities Act, Respecting Efficiency Nova Scotia", 3rd reading, Nova Scotia Legislature, 22-59 (9 Nov 2022) at 4796 (Hon Tory Rushton): "Efficiency Nova Scotia is one of our valued partners in the fight against climate change. Their goals are closely aligned with ours and Bill No. 228 puts them in a better position to achieve these goals. / Ultimately, these amendments make it possible for Efficiency Nova Scotia to do more for more people. I want to emphasize that they allow Efficiency Nova Scotia to deliver more programs to low-income households. This bill helps Nova Scotia get off oil faster, reduce our greenhouse emissions, and move towards climate change in a more readily pace."

Government of Nova Scotia, Department of Natural Resources and Renewables, "Legislation to Modernize Electricity System, Improve Regulation" (27 Feb 2024), online: <<https://news.novascotia.ca/en/2022/10/21/amendments-strengthen-efficiency-nova-scotia>>.: "The new Energy Board will be required to consider the Environmental Goals and Climate Change Reduction Act in its decisions."

1 that the portfolio as a whole must satisfy the cost-effectiveness threshold ratio of 1.0. It is also in line with
2 the Board's order in M10473 for E1 "to provide specific justification, on an individual basis, for each
3 measure that fails cost-effectiveness testing in future resource plan applications".⁶

4 5 **2.2 PAC VS PROPOSED BCA**

6 **Bowman**

7 Mr. Bowman's evidence argues that the primary test for DSM should be the Program Administrator Cost
8 ("PAC") test /Utility Cost Test ("UCT"), "as it would align E1 with most Canadian peer utilities, and would
9 encompass both the Board's requirement that it consider NSPI customer interests in the same metric as
10 the E1 program screening."⁷ [emphasis added]

11 12 **E1 Response**

13 E1 addresses these two arguments separately, below.

14 15 **2.2.1 PEER UTILITIES**

16 Nova Scotia legislation, and not peer Canadian utilities' practices, are the determining factor to consider
17 when assessing whether the proposed BCA test appropriately satisfies the Board and E1's respective
18 mandates regarding demand-side management in Nova Scotia. E1 submits that the proposed BCA test
19 aligns with the new/revised legislative mandate, including its recent expansion to include considerations
20 of strategic electrification (as referenced above), sustainable development and sustainable prosperity
21 through the *Energy Reform (2024) Act* and the *Public Utilities Act*.

22
23 Nova Scotia's jurisdiction-specific test, modelled on the National Standard Practice Manual ("NSPM"),
24 represents a significant advancement in Nova Scotia. This customised assessment aligns with new
25 legislative requirements to incorporate environmental and social impacts, demonstrating consistency with
26 policy developments and legislative requirements. As noted by Efficiency Canada in their letter of
27 comment to the Board:

⁶ M10437, NSUARB Decision, EfficiencyOne (E1) 2023-2025 DSM Plan (Re), 2022 NSUARB 137, September 6, 2022, para 197 (e).

⁷ M12282, E-14, Evidence of Patrick Bowman on behalf of the Industrial Group, Revised July 28, 2025, page 13, line 17– 19.

1 *Being the first to adopt such a test in Canada would align with Nova Scotia's pioneering*
2 *role in energy efficiency policy in Canada. Nova Scotia created the country's first energy*
3 *efficiency utility, and its electricity DSM programs have consistently achieved high rates of*
4 *savings compared to other Canadian DSM programs, documented in Efficiency Canada's*
5 *annual and semi-annual provincial policy scorecards.⁸*
6

7 2.2.2 NS POWER CUSTOMER INTERESTS

8 Unlike the PAC test, which accounts for only the DSM Administrator's costs and NS Power's avoided costs,
9 the BCA test accounts for the DSM Administrator's costs and customer costs while recognizing the
10 expanded benefits reflective of customer interests, including financial interests and consideration of Nova
11 Scotia specific legislative requirements of sustainable development and sustainable prosperity required
12 through the *Energy Reform (2024) Act* . It incorporates consideration of the costs for both utility system
13 impacts ("USI") and non-USIs. Neither the PAC nor UCT adequately address these.
14

15 The BCA represents a substantive advancement in cost-effectiveness testing, reflecting legislative changes
16 and priorities such as strategic electrification, environmental stewardship, and sustainable prosperity. By
17 integrating these factors, the BCA ensures that demand-side management is evaluated in a manner that
18 best serves the interests of ratepayers while aligning with Nova Scotia's legislative objectives.
19

20 2.3 NS POWER CUSTOMER INTERESTS AS PRIMARY

21 **Bowman**

22 Mr. Bowman further submits:
23

24 *E1 should be directed to pursue measures and programs that are cost-effective as the*
25 *primary criteria, minimizing the other "balanced" criteria in program design to support*
26 *non-cost-effective measures and programs.⁹*

⁸ M12282, E-15, Efficiency Canada Letter of Comment, August 22, 2025, pages 3–4.

⁹ M12282, E-14, Evidence of Patrick Bowman on behalf of the Industrial Group, Revised July 18, 2025, page 20, lines 29–31.

E1 Response

E1 submits that the non-USIs considered in the proposed BCA test address the goals of strategic electrification, sustainable development and sustainable prosperity. All these goals are legislated matters for consideration in the cost effectiveness of DSM. Compelling E1 to minimize other “balanced” criteria in program design risks eliminating the effectiveness of the secondary criteria and, therefore, risks eliminating the legislated goals to be achieved in DSM work.

Any attempt to reverse the widely stakeholder supported and Board approved Balanced Plan Approach in favour of a narrow, purely quantitative calculation would be inconsistent with established best practices. Such a shift would unnecessarily restrict the development of E1’s DSM programs, imposing limitations that run counter to the best interests of ratepayers and the broader objectives of effective demand-side management.

2.4 BALANCED PLAN DESIGN**Bowman**

Mr. Bowman suggests that E1’s focus on balanced plan design is problematic. He explains:

[T]his is generally inconsistent with NSPM Principle 1, unless explicitly established by policy. Just as generation energy resources are compared primarily on economics, cost-effectiveness should be the primary test for DSM. Further, utility resources are not generally designed around equity and access (e.g., a wind developer in the windy eastern portion of the province received a Power Purchase Agreement, so now one from a less-windy western portion of the province should get the next PPA, for balance). The fundamental five Nova Scotia IRP principles are safety, reliability, least cost, decarbonization, and robustness to changes in assumptions. Unless a jurisdiction has an explicit policy direction regarding balanced access to DSM, this type of criteria should be discouraged in most cases where DSM is funded by customer rates.¹⁰

¹⁰ Ibid., page 17, lines 14–22.

E1 Response

The balanced plan approach has been an established design principle of DSM in Nova Scotia for several years. In 2016, the Standardized Filing Framework (“Framework”) was developed in consultation with E1, NS Power, and the Demand Side Management Advisory Group (“DSMAG”), where it was agreed that E1 balance multiple aspects of DSM for the benefit of customers, including: short-term and long-term energy and capacity avoidance; program delivery costs; avoided energy and capacity investments; non-electric and non-energy benefits; diversity of program delivery; business relationships and maintenance of market presence; access to programs by all market sectors and rate classes by addressing barriers to participation; and rate impacts.¹¹

The objective of the Framework was to ensure consistent and standard content in future DSM Resource Plan (“DSM Plan”) filings. It was filed with the Board in a 2016 Consensus Agreement, in which stakeholders (including the Industrial Group) agreed that the “format and contents of the Standardized Filing Framework...fulfill the requirement to standardize future DSM Plans.”¹² The Framework identifies a “balanced plan approach” to guide the development of DSM plans. Under this approach, stakeholders agreed that E1 will “produce DSM Resource Plans that balance multiple aspects of DSM for the benefit of customers, including [...] [a]ccess to programs by all market sectors and rate classes by addressing barriers to participation.”¹³ The Industrial Group is a signatory to the Consensus Agreement which incorporates the Balanced Plan approach. The Nova Scotia Utility and Review Board (“NSUARB”) accepted the Framework for use in future DSM Plan applications.¹⁴

Since acceptance by the NSUARB in 2016, E1 has followed the Framework in its DSM Plan applications.

¹¹ M07543, E-3, EfficiencyOne Application for Approval of 2016-2018 DSM Resource Plan Matter deferred for DSM Advisory Group Collaboration, 2016 Consensus Agreement, July 22, 2016, Appendix 1, Standardized Filing Framework, page 10, s.4.3.1.

¹² M07543, E-3, EfficiencyOne Application for Approval of 2016-2018 DSM Resource Plan Matter deferred for DSM Advisory Group Collaboration, 2016 Consensus Agreement, July 22, 2016, page 2, s. 5(a).

¹³ Ibid., Appendix 1, page 10, s. 4.3.1.

¹⁴ M07543, EfficiencyOne Application for Approval of 2016-2018 DSM Resource Plan Matter deferred for DSM Advisory Group Collaboration, NSUARB Letter to E1, September 13, 2016, page 2. The letter stated, “The Board notes that only two of the deferred matters, the Standardized Filing and the Expenditure Justification Criteria, appear to have reached a conclusion. Appendix 1 to the Consensus Agreement filed on July 22, 2016 contained the Standardized Filing Framework, which included DSM Standards as a means of addressing the DSM Expenditure Justification Criteria requirement. The Board accepts this Standardized Filing Framework for use in future DSM Resource Plan applications.”

1 Adopting Mr. Bowman’s narrow approach would overturn the Board-approved Balanced Plan. This
2 approach would fundamentally alter future DSM plan development by eliminating dedicated low-income
3 and equity programs, and rate class equity considerations.
4

5 2.5 GHG EMISSIONS

6 **Bowman**

7 Mr. Bowman asks that the Board require E1 to show that any avoided GHG emissions are in fact the result
8 of DSM, and not due to an outside factor such as a cap.¹⁵
9

10 **E1 Response**

11 As part of the ‘evergreen’ process, E1 is proposing for the quantification of this impact, a methodology
12 that accounts for emissions caps and other environmental constraints that compares a ‘No DSM’ scenario
13 to a ‘DSM’ scenario. This analysis will demonstrate what GHG emissions are avoided as a result of DSM.
14

15 2.6 PARTICIPANT COST TEST AND CUSTOMER PAYBACK PERIODS

16 **Bowman**

17 Mr. Bowman suggests “E1 should provide calculations of the PCT or customer payback periods, to indicate
18 it has appropriately benchmarked proposed incentives.”¹⁶
19

20 **E1 Response**

21 Participant Cost Test (PCT) and customer payback period evaluate the financial benefits of a technology or
22 service compared to the financial costs, from the perspective of the participant. The PCT and customer
23 payback period can be used to support the development of incentives and participation goals. These are
24 questions of program design. Meanwhile, the BCA framework asks whether the incentive measures (along
25 with other costs and benefits) results in greater benefits than costs. Therefore, the PCT or customer
26 payback periods are not intended to be directly addressed by the BCA framework.

¹⁵ M12282, E-14, Evidence of Patrick Bowman on behalf of the Industrial Group, Revised July 18, 2025, page 20, lines 36–39.

¹⁶ Ibid., page 20, lines 32–33.

1 In accordance with E1's Board approved Incentive Setting Methodology,¹⁷ E1 does not use any singular
2 metric to determine incentive levels or to screen measures. Payback period is one of a number of factors
3 that E1 may consider during the financial analysis of a proposed incentive. Using payback period
4 exclusively to evaluate whether E1 has appropriately benchmarked proposed incentives fails to account
5 for other reasons why many customers would not invest in measures with shorter payback periods without
6 incentives.

7
8 Mr. Bowman states in his evidence that "E1 should be directed to provide information on the results of
9 the PCT by measure (or comparable measures, such as customer payback periods), to indicate whether E1
10 has proposed a reasonable scale of incentives to achieve positive (but not excessive) beneficial outcomes
11 for participants."¹⁸ In accordance with the Board's direction in the 2023-2025 DSM Plan Decision, E1 has
12 already been directed by the Board to provide additional information for measures where the payback
13 period is three years or less.

15 3. SYNAPSE EVIDENCE

16 In response to Ms. Lane's concerns regarding justifying proxy adders, E1 relies on the Rebuttal Evidence of
17 EFG. E1 addresses Ms. Lane's suggestion for a 2029 updating process below.

19 3.1 2029 UPDATING PROCESS

20 Synapse

21 Ms. Lane suggests that "[t]he Board should direct E1 to launch a process for updating the NEB proxies in
22 2029 for use in the next DSM Plan."¹⁹

24 E1 Response

25 E1 supports this recommendation with the addition of a review and update for all impacts—not solely
26 those related to NEB proxies—commencing prior to the development of the next DSM Plan via the
27 proposed 'evergreen' process. E1 anticipates that engagement with the DSMAG will likely start in 2029, or
28 possibly earlier, for the DSM plan covering 2032-2036.

¹⁷ M07544, NSUARB letter, E1 Incentive Setting Methodology, July 18, 2017, page 2.

¹⁸ Ibid., page 18, lines 13–15.

¹⁹ M12282, E-9, Evidence of Courtney Lane on behalf of Counsel to Nova Scotia Energy Board, July 17, 2025, page 4, lines 18–19.

E1 proposes that the 'evergreen' process reviewing the BCA test with the DSMAG be completed prior to each new DSM plan to ensure the BCA test remains current, accurate, timely and jurisdictionally specific going forward. This review would also include the quantification of the impacts proposed for the next DSM Plan. To support this, in addition to NS Power's avoided costs, E1 would provide the quantification of all other impacts informed by jurisdictional scans, literature reviews, current market data and customer surveys to be further discussed with the DSMAG. E1 proposes that; consistent with the BCA Application process currently before the Board, E1 would lead the 'evergreen' process following a multi-step DSMAG engagement process in which the BCA would be reviewed and modified, as appropriate. The steps are as follows:

- Review applicable policy goals to ensure BCA test continues to be compliant with legislation.
- Ensure inclusion for all utility system impacts that should be considered.
- Determine which non-utility system impacts to include (based on applicable policy goals).
- Review methodology for quantification of all impacts to ensure benefits and costs are properly addressed.

4. GREEN ENERGY EVIDENCE

4.1 ONGOING STAKEHOLDER ENGAGEMENT

Green Energy

Mr. Wyatt states:

I express overall support of the proposed benefit cost test as a more balanced test. The new benefit values in the proposed test should be vetted and include stakeholders in the process.²⁰

E1 Response

E1 supports the need for ongoing stakeholder engagement and proposes an 'evergreen' periodic review process via the DSMAG. Additional information regarding the proposed 'evergreen' process can be found in Section 3.1 of this Rebuttal Evidence.

²⁰ M12282, E-10, Evidence of Francis Wyatt on Behalf of the Consumer Advocate, July 17, page 2, lines 17–19.

4.2 COST OF CARBON

Green Energy

Mr. Wyatt raised the following concern:

I support the addition of externalized cost of carbon in the new test, but ask that the internalized cost of carbon be kept separate from the externalized cost of carbon for use with the Program Administrator Cost (PAC) test.²¹

E1 Response

E1 agrees that the internalized cost of carbon for gas and other fuels should be included in these specific impacts similar to the electric utility's avoided cost of energy, and not included in the externalized cost of carbon. However, E1 notes that only the electric utility's avoided costs, which do include the internalized cost of carbon, are included in the PAC.

5. DAYMARK EVIDENCE

5.1 BIAS

Daymark

Melissa Whitten of Daymark Energy Advisors, Inc. ("Daymark") provides the following observations and conclusions regarding the Application:

- The proposed BCA test framework relies on proxy values for certain non-energy benefits as E1 does not have sufficient information to quantify them.*
- Relying on benefits in a benefits-cost analysis that cannot be quantified nor independently measured and verified could introduce bias into the test results.*
- A BCA test framework that is at risk of bias can result in less-than-optimal decision making when determining the composition and cost of the entire DSM Plan.*

²¹ Ibid., page 2, lines 19-21.

- *A DSM Plan that costs more than a plan that results from an unbiased BCA framework should not be considered in the best interest of customers.*²²

E1 Response

E1's position is that the use of proxy values for certain non-energy benefits is both reasonable and appropriate and consistent with jurisdiction specific studies. The NSPM for screening energy efficiency and distributed energy resources, published by the National Energy Screening Project (NESP) which provided foundational structure and guidance for the development of E1's proposed BCA states that a proxy is "a simple, quantitative value that can be used as a substitute for a value that is not monetized by conventional means."²³ Consistent with the NSPM, the use of proxy values to estimate the combined impact of the harder-to-measure non-energy benefits was recommended by E1's consultant EFG.²⁴ Additionally, as stated above, Courtney Lane of Synapse Energy Economics, Inc. finds that the use of proxy values is a reasonable approach.

E1 does not agree with the assertion that inclusion of certain non-energy benefits which are quantified using proxy values results in a biased BCA. Conversely, the NSPM sets out that "if each type of impact is not treated symmetrically, the result will be a sub-optimal selection of resources, where the BCA test will result in bias in favor of or against DERs",²⁵ and states that "[w]hile some DER impacts are difficult to quantify in monetary terms – either due to the nature of the impact or the lack of available information about the impacts – informed approximating of hard-to-quantify impacts (i.e., not using arbitrary values) is preferable to assuming that the relevant benefits do not exist or have no value."²⁶ E1 submits that the inclusion of NEBs, while difficult to quantify, have been reasonably justified.

Further, E1 notes that the BCA test is one tool the Board uses to consider the DSM Plan approval and assessment of portfolio design. The Board can, and does, consider various other factors under the Balanced Plan approach (including rate class equity and access considerations).

²² M12282, E-13, Evidence of Melissa Whitten on Behalf of the Small Business Advocate, July 17, 2025, page 7, line 16; page 8, line 4.

²³ M12282, E-1, Notice of Application and Evidence, Appendix A, Attachment 2, NSPM, C-4, C.2.3 Proxies, page 243.

²⁴ Ibid., Appendix B, Development of a Jurisdictional Benefit Cost Analysis Framework for Nova Scotia, page 17.

²⁵ Ibid., Appendix A, NSPM, 2-5, page 50.

²⁶ Ibid., Appendix A, NSPM, C-2, s. C.2, page 241.

1 Finally, the evergreen process proposed by E1, discussed in Section 3.1, can help to mitigate against risk
2 by providing for a regular systematic review of proxy factors to be applied in future DSM plans.

4 5.2 ASSESSMENT

5 Daymark

6 In relation to quantification and risk of bias, Ms. Whitten recommends that “E1’s proposed BCA test not
7 be approved until E1 has completed a thorough assessment of the proposed non-energy benefits
8 presented in this Application.”²⁷ In particular, she submits that the Board should direct E1 to:

9
10 *Obtain from an independent third party not associated with this Application reviewable*
11 *evidence that shows the following non-energy benefits can be independently quantified:*

- 12 • *Amenity*
- 13 • *Empowerment*
- 14 • *Pride*²⁸

16 E1 Response

17 E1 does not support the recommendation for further third-party evaluation, where it has been established
18 these are challenging to quantify, or postponement. E1 maintains that incurring additional costs and
19 extending the timeline is unlikely to produce a materially different outcome than what has already been
20 reviewed and proposed. As such, pursuing further analysis would not serve the best interests of
21 ratepayers, who may bear increased regulatory costs without clear benefit.

22
23 A thorough assessment of the proposed NEBs has already been completed as part of this Application
24 process. The NEBs included in the Application reflect the recommendations of EFG, a third-party expert
25 who specializes in the design, implementation, and evaluation of programs and policies to promote
26 investments in energy efficiency, renewable energy, other distributed resources, and strategic

²⁷ M12282, E-13, Evidence of Melissa Whitten on Behalf of the Small Business Advocate, July 17, 2025, page 8, lines 6–8.

²⁸ Ibid., page 16, lines 17–22.

1 electrification. EFG's recommendations on the impact categories to include in the BCA test are consistent
2 with economic theory and NSPM guidance.²⁹

3
4 The proposed inclusion of NEBs and use of proxy values were also subject to extensive discussions within
5 the DSMAG consultation process. Postponing approval of the proposed BCA test for further discussion and
6 evaluation is unlikely to yield additional relevant information beyond what has already been reviewed by
7 the DSMAG, E1, and their respective experts. Conversely, such a delay may impose greater regulatory
8 burdens and costs on E1—and consequently on ratepayers—without assurance that new NEB values
9 would be more suitable than those previously considered and submitted to the Board by E1 and its expert.

10
11 E1's proposed 'evergreen' process will allow for the included impacts and quantification of all impact
12 categories to be re-evaluated and refined on an ongoing basis. The proposed BCA test can ensure that a
13 thorough assessment of values is considered before application to future DSM Plans, as recommended by
14 Ms. Whitten.

15
16 E1 further clarifies that the host customer's non-energy benefits proxy value does not represent a sum of
17 quantified individual components. Instead, it reflects an overarching percentage of estimated net energy
18 benefits, which is intended to capture the aggregated value of all non-energy benefits. Therefore, the non-
19 energy benefits of amenity, empowerment and pride cannot be individually removed from the proxy
20 value. The proxy was presented as "an approximate approach, which recognizes it may not be timely or
21 worth the cost to develop empirical hard numeric impact estimates for each non-energy benefit, while
22 recognizing that excluding non-energy benefits is an implicit valuation of zero".³⁰

23 24 5.3 QUANTIFICATION

25 Daymark

26 In the alternative to the recommendation for further analysis on NEBs, Ms. Whitten suggests that the
27 Board "make the value assigned to the Unquantified Non-Energy Benefits Nil until the work outlined above
28 can be completed and approved by the Board".³¹

²⁹ M12282, E-1, Notice of Application and Evidence, Appendix B, Development of a Jurisdictional Benefit Cost Analysis Framework for Nova Scotia, page 13.

³⁰ Ibid., Appendix B, Development of a Jurisdictional Benefit Cost Analysis Framework for Nova Scotia, page 9.

³¹ M12282, E-13, Evidence of Melissa Whitten on Behalf of the Small Business Advocate, July 17, 2025, page 9, lines 1–3.

E1 Response

To assign a nil value to unquantified NEBs defaults such benefits to zero, notwithstanding the associated benefit. Utilising this approach would lead to greater distortion of the results than employing the conservative proxy values proposed by E1 in its suggested BCA test. As noted by Francis Wyatt of Green Energy:

Q. SHOULD ONLY THOSE BENEFITS THAT CAN BE PRECISELY QUANTIFIED BE INCLUDED IN THE NEW BENEFIT COST TEST?

A. No. If one excludes all benefits that are difficult to quantify precisely, then those values are by default assigned a value of zero. If benefits are known to exist (are greater than zero), then it is better to use a rough estimate than to assume a value of zero.³²

Excluding non-energy benefits on the basis that they are challenging to quantify is not consistent the NSPM principles which set out that DER benefits and costs that are relevant and expected to be material should be accounted for, even if they are difficult to quantify and monetize.³³

6. POSTERITY EVIDENCE

6.1 HYBRID HEATING

Posterity Group

Posterity Group Consulting Inc. ("Posterity") "recommends that E1 specifically recognize the benefits of hybrid heating to reduce peak load impacts as part of the 2027-2031 DSM Plan,"³⁴ and prepared two quantitative illustrative examples to illustrate there is a net benefit for hybrid heating under the proposed BCA test.

³² M12282, E-10, Evidence of Francis Wyatt on Behalf of the Consumer Advocate, July 17, page 3, lines 7–11.

³³ M12282, E-1, Notice of Application and Evidence, Appendix A, NSPM, 2-6, page 51.

³⁴ M12282, E-12, Evidence of Posterity Group Consulting Inc., July 17, 2025, page 2, lines 12–13.

E1 Response

E1 acknowledges the value of hybrid heating. Such measures can accurately be evaluated under the proposed BCA framework. The inclusion of specific hybrid heating measures may be considered in the 2027-2031 DSM Plan, but program design decisions have not been finalized.

7. EASTWARD EVIDENCE**7.1 AVERAGE VS MARGINAL EMISSIONS RATES****Eastward**

Eastward Energy addresses emissions rates, stating:

[...]he use of average versus marginal emissions rates is not appropriate given that going forward, incremental generation will be served by coal and later by heavy fuel oil and natural gas/fuel oil combustion turbines operating at low efficiencies. Hybrid heating systems when utilizing natural gas infrastructure will operate at over 90 percent efficiency. Therefore, using marginal generation emissions is a more appropriate and representative approach.³⁵

E1 Response

The approach E1 is proposing in the ‘evergreen’ process for calculating the emissions intensity of DSM savings for the purposes of benefit cost analyses is the Difference in Carbon Emissions (DICE) method. This approach considers the long-term mix of generation resources DSM is forecast to offset based on Integrated Resource Plan (“IRP”) modelling and is in line with the IRP difference in revenue requirement methodology used to produce avoided costs of capacity and energy. The resulting emissions intensity is a marginal emissions intensity that accounts for the expected long-term effects of DSM, the savings profile of DSM, and the expected magnitude of DSM. This approach aligns with NSPM guidance and is more accurate for long-term planning than using the emissions intensity of the generator on the margin, so long as the IRP inputs and assumptions remain valid.

³⁵ M12282, E-11, Evidence of Eastward Energy, July 17, 2025, page 6, lines 11–15.

1 The emissions intensity of the generator on the margin is relevant for relatively small changes in load over
2 the short-term, while the Difference in Carbon Emissions methodology is more appropriate for changes in
3 load over the long-term that are significant enough to alter the build-out of generation assets.

4 5 **7.2 NATURAL GAS TO ELECTRIC CONVERSIONS**

6 **Eastward**

7 Eastward Energy notes that “[b]ased on the illustrative example provided by EFG, Eastward does not
8 believe that the conversion of gas heating systems to electric heat pumps should be considered as strategic
9 electrification, as it has a negative net benefit of \$17.4 million and a benefit cost ratio of 0.45.”³⁶

10 11 **E1 Response**

12 E1 notes the information provided regarding the conversion of gas heating systems to electric heat pumps
13 represented an illustrative example only. These are not intended to reflect actual results and were
14 presented to assist the reader.

15
16 In the actual event that conversion of gas heating systems to electric heat pumps results, under the
17 application of the proposed BCA yielded a negative net benefit of \$17.4 million and a benefit-cost ratio of
18 0.45, under existing Board directives, E1 would be required to provide justification to the Board for
19 inclusion of these measures in any future DSM plan.

20 21 **7.3 AVOIDED COST VALUES**

22 **Eastward**

23 Eastward Energy requests that NS Power confirm that reliability impacts are embedded in its avoided cost
24 values and explain how this has been achieved:

25
26 *Eastward is concerned that this key item of peak costs and system reliability is only*
27 *“assumed” to be embedded in the avoided cost values provided by NS Power, and believes*

³⁶ Ibid., page 9, lines 14–17.

1 *this should be confirmed and an explanation provided of how such costs are captured by*
2 *the avoided cost values if they are so captured.*³⁷

3
4 **E1 Response**

5 E1 notes that NS Power's avoided cost of capacity implicitly includes reliability impacts through a planning
6 reserve margin adjustment. This captures any changes in reliability requirements based on changes in
7 load. If reliability differs between modelled scenarios, there may be an opportunity to assess the
8 incremental reliability impacts beyond those captured in the existing avoided costs.

9
10 **7.4 LOST VALUE OF THE NATURAL GAS SYSTEM RELIABILITY**

11 **Eastward**

12 Eastward Energy also argues:

13
14 *[...A]ny benefit cost analysis related to natural gas must incorporate the expanded*
15 *legislated mandate of the natural gas system as noted above. It must also capture the lost*
16 *value of the natural gas system reliability.*³⁸

17
18 **E1 Response**

19 E1 interprets this as referring to customer reliability impacts rather than system reliability impacts.

20
21 E1 agrees in principle that if a customer's reliability decreases as a result of electrification this should be
22 considered as part of the host customer proxy impacts. In E1's view this is only likely to apply if:

- 23 • An existing natural gas customer fully electrifies (removing any back-up natural gas capability at
24 the facility or appliance level)
- 25 • The customer previously had the capability of operating natural gas appliances without electricity
26 (e.g., the customer had back-up power at the facility or appliance level, or appliances that require
27 no electricity to operate).

³⁷ Ibid., page 7, lines 23–26.

³⁸ Ibid., page 8, lines 9–11.

- Where the above factors have been met, E1 would consider including reduced customer reliability within the host customer impacts proxy adder. This review would be dealt with through E1's proposed 'evergreen' process.

7.5 DSMAG PARTICIPATION EASTWARD

Eastward

Eastward Energy argues for inclusion in the DSMAG. In particular, it notes:

*[...]his Application is the first time that E1 has substantively referred to the potential for it to start strategic electrification, and has in its Application provided a direct example of how its proposed BCA test could be used to analyze the cost effectiveness of potential gas to electric conversions. In this regard, Eastward now has a direct interest in ensuring that the perspective, insight and information of Eastward, as the incumbent natural gas supplier, is provided to E1 and the other members of the DSMAG.*³⁹

and

*Eastward has as one of its defined purposes to facilitate the use of gas as a hybrid peaking resource to satisfy the electric system demand, and it brings with it the specialized expertise of a sophisticated energy utility supplier in Nova Scotia.*⁴⁰

E1 Response

E1 acknowledges that Eastward's valuable information and perspectives regarding DSM are best understood within the scope of its specific, narrowly focused interest. Given this context, E1 recognises that engaging Eastward through one-on-one meetings and discussions with the DSMAG would allow for more tailored exchanges addressing Eastward's particular concerns, while also helping to avoid potential conflicts arising from differing economic interests. Additionally, should Eastward choose to participate as an intervenor in Board application processes, its contributions will reflect its distinct involvement and focus in current proceedings.

³⁹ Ibid., page 2, line 27; page 3, line 2.

⁴⁰ Ibid., page 4, lines 4–6.

Appendix A

Rebuttal Evidence of Energy Futures Group Inc.

M12282

IN THE MATTER OF *The Public Utilities Act*, RSNS 1989, c. 380, as amended
-and-

IN THE MATTER OF An Application for Approval of a New Benefit-Cost
Analysis Test for Evaluating Demand Side Management
Plans

Filed with the NOVA SCOTIA ENERGY BOARD

September 04, 2025

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1. INTRODUCTION

On May 16, 2025, EfficiencyOne (“E1”) submitted an Application for Approval of a New Benefit-Cost Analysis (“BCA”) Test for Evaluating Demand Side Management (“DSM”) Plans before the Nova Scotia Energy Board (the “Board”) in Matter 12282. The Application included, and relied upon, a report written by David Hill of Energy Futures Group, Inc. (“EFG”).

As part of this Application process, on July 17, 2025, Courtney Lane of Synapse Energy Economics, Inc. (consultant of the counsel to the Board, “Synapse”), Francis Wyatt of Green Energy Economics Group, Inc. (on behalf of the Consumer Advocate), Melissa Whitten of Daymark Energy Advisors, Inc. (“Daymark”) (on behalf of the Small Business Advocate), Patrick Bowman of Bowman Economic Consulting Inc. (“Bowman”) (on behalf of the Industrial Group), Eastward Energy and their expert Posterity Group Consulting Inc. filed evidence. Revised evidence of Mr. Bowman was submitted July 29, 2025.

In this Rebuttal Evidence, EFG provides responses to certain of the concerns set out in the various reports of the intervenors and the Board Counsel consultants.

2. SYNAPSE EVIDENCE

Synapse

Courtney Lane of Synapse states:

The use of proxy values is a reasonable approach to estimate host customer non- energy benefits (NEB) in cost-effectiveness analysis. However E1 has not sufficiently justified its proposal for NEB proxy values. While proxies are often based on professional judgement, they should not be arbitrarily chosen and should be based on a review of literature, proxy values used by other jurisdictions, and should consider differences between jurisdictions.¹

¹ M12282, E-9, Evidence of Courtney Lane on behalf of Counsel to Nova Scotia Energy Board, July 17, 2025, page 3, line 19 – page 4, line 2.

EFG Response

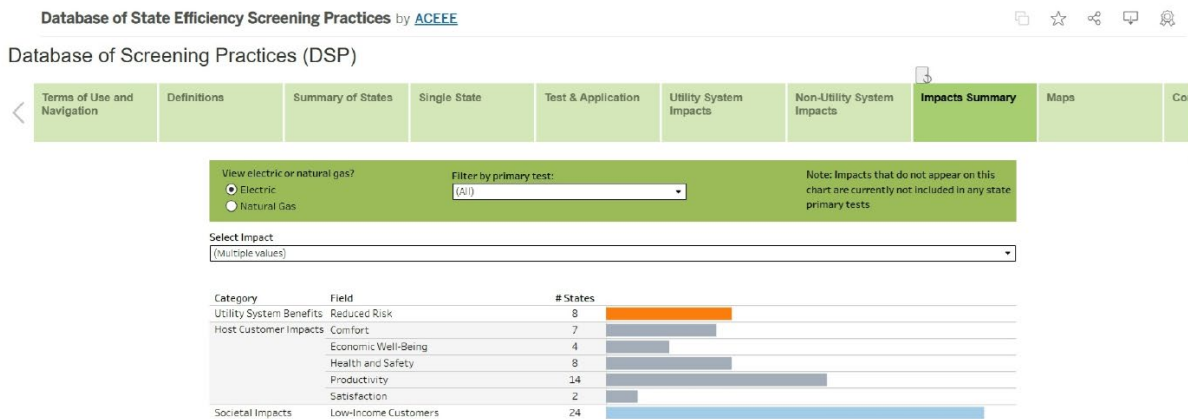
The approach of using proxy values was deliberate and not arbitrary. The approach was reviewed and discussed with the Demand Side Management Advisory Group (“DSMAG”) in two workshop sessions, and open to written review and comment by DSMAG members. The approach was compared and contrasted with the approach used by the DSMAG and E1 in 2018, which attempted to translate values from Massachusetts for adoption in Nova Scotia. At that time, the DSMAG and E1 engaged in a multi-month effort to adapt NEB adder values from Massachusetts to Nova Scotia, but this process did not lead to any values which were satisfactory for the group.

The use of “borrowed” or comparative values from other jurisdictions can be of limited value. EFG deems it more appropriate to acknowledge that a strict translation from one jurisdiction is not precise and may not reflect Nova Scotia’s priorities and legislative requirements. Recognising that non-energy impacts (“NEIs”) are not zero and selecting a proxy value provides a practical and transparent approach without introducing unnecessary complexity or misleading accuracy.

The considerations and procedures followed to determine the proxy values are set out in pages 41 – 48 of the EFG report.² The EFG report and discussions with DSMAG referenced the Database of State Efficiency Screening Practices, administered by the American Council for an Energy-Efficient Economy. The following results for host customer NEIs and hard-to-quantify utility system and societal impacts summarize the number of states with NEI impacts:³

² M12282, Exhibit E-1, EfficiencyOne Application for Approval of a New Benefit-Cost-Analysis Test for Evaluating Demand Side Management Plans, Notice of Application and Evidence, May 16, 2025, Appendix B.

³ [Database of State Efficiency Screening Practices \(DSP\) | ACEEE](#), Impacts Summary



The following proxy adders are currently indicated in the Database of State Efficiency Screening Practices:⁴

- Colorado 20%
- District of Columbia 5% and monetized
- Maryland 10% and 20% low income
- Nevada 10% and 25% low income
- New Jersey 5% and 10% low income
- Vermont 15% and monetized

An additional 19 states are listed as using monetized estimates for one or more non-energy impacts, with either measure specific or per participant (per home values):

⁴ Ibid., Comparison Tables

Database of Screening Practices (DSP)

Definitions	Summary of States	Single State	Test & Application	Utility System Impacts	Non-Utility System Impacts	Impacts Summary	Maps
State	Accounting Method	Asset Value	Comfort	Economic Well-Being	Health and		
Arizona	Monetized						
Arkansas	Monetized	\$0.08/kWh					
Colorado	Proxy (20% adder)	In adder	In adder	In adder		In adder	
Connecticut	Monetized						
Delaware	Monetized		\$35.35/home			\$182/home	
District of Col.	Proxy (5% adder) and monetized	In adder	In adder	In adder		In adder	
Idaho (low-inc.)	Monetized					Measure spe	
Illinois	Monetized						
Iowa	Monetized						
Kentucky	Monetized						
Maine	Monetized						
Maryland	Proxy (10% adder for specified p.					In adder	
Maryland (low.)	Proxy (20% adder)					In adder	
Massachusetts	Monetized	Measure specific	Measure specific	Measure specific		Measure spe	
Minnesota	Monetized	PA Specific					
Nevada	Proxy (10% adder)	In adder	In adder	In adder		In adder	
Nevada (low-L.)	Proxy (25% adder)	In adder	In adder	In adder		In adder	
New Hampshire	Monetized						
New Hampshire	Monetized		\$406/home			\$406/home	
New Jersey	Proxy (5% adder)						
New Jersey	Proxy (10% adder)					In adder	

It should also be noted that the levels of proposed proxy adders result in values that represent small contributors to overall cost effectiveness. We believe a regular review (evergreening), of the value of proxy adders is the most appropriate and cost-effective manner of ensuring that such adders are most accurate and reflective of current knowledge and understanding.

A balance should be maintained between seeking too great a level of precision for harder-to-quantify impacts and the use of proxies that ensure they are not, by default, counted as zero.

EFG recommends adoption of the values in the filing and an ongoing evergreen process.

3. DAYMARK EVIDENCE

Daymark

In the alternative to Ms. Whitten's detailed recommendation for further analysis on NEBs, she suggests that the Board "make the value assigned to the Unquantified Non-Energy Benefits Nil until the work outlined above can be completed and approved by the Board".⁵

⁵ M12282, E-13, Evidence of Melissa Whitten on behalf of the Small Business Advocate, July 17, 2025, page 9, lines 1 – 3.

EFG Response

To make the value assigned to the unquantified NEBs nil would result in bias – the result which Ms. Whitten is seeking to avoid. E1 notes that completely excluding known, but hard-to-quantify benefits would default such benefits to zero. This would distort the BCA test results even more than using the conservative proxy values that have been suggested by E1 in its proposed BCA test; thus resulting in a false and potentially misleading interpretation of BCA test results.

4. BOWMAN EVIDENCE**4.1 GHG EMISSIONS – OUTSIDE FACTOR****Bowman**

Mr. Bowman asks that the Board require E1 to show that any avoided GHG emissions are in fact the result of DSM, and not due to an outside factor such as a cap.⁶

EFG Response

We agree the avoided emissions estimate for E1 initiatives should be based on emission impacts caused by the DSM activity and be net of emission impacts due to an outside factors such as Nova Scotia's Output Based Performance Standard (OBPS). The DSM emissions impacts credited and valued using the social cost of carbon can be based on an estimate of the long-run marginal emissions rates derived from analyses of IRP scenarios with and without DSM. This is consistent with the difference in carbon intensity (DICE) method used in E1's 2023-2025 plan application and used in the illustrative examples in our report.

4.2 2% DISCOUNT RATE**Bowman**

Mr. Bowman opposes the use of a 2% social discount rate, in favour of the NSPI Weighted Average Cost of Capital ("WACC") as the discount rate for calculations. He argues:

E1 indicates that the social discount rate is appropriate as it is consistent with the guidance of the Treasury Board of Canada. However the referenced sources are for analysis of regulatory proposals (e.g., new rulemaking for federal policy), not for investment in physical infrastructure or electrification activities.⁷

⁶ M12282, E-14, Evidence of Patrick Bowman on behalf of the Industrial Group, Revised July 29, 2025, page 20, lines 36 – 39.

⁷ Ibid., page 16, lines 15 – 18.

1 and

2
3 *Because the principle for DSM as per NSPM Principle 1 is that DSM should be evaluated*
4 *on an equal footing as other energy resources (such as new generation), the only*
5 *reasonable interpretation for any comparison that uses utility savings, avoided*
6 *generation, etc. is to use the same discount rate as is used for utility IRP, which is the*
7 *WACC.⁸*
8

9 **EFG Response**

10 The WACC is insufficient as a discount rate. While it can be used by NS Power for their own capital planning,
11 it does not represent the regulatory perspective, which needs to consider broader societal and
12 multigenerational impacts, impacts the Board and E1 are now mandated to consider. Therefore, reliance
13 on WACC alone would fail to meet the Nova Scotia policy objectives. The proposed 2% social discount rate
14 is designed to address Nova Scotia policy objectives.

15
16 Further, the proposed 2% discount rate is consistent with federal guidance for long-term societal impacts
17 and is appropriate for evaluating decarbonization and resilience benefits. As noted at page 64 of EFG's
18 evidence,⁹ the social costs of greenhouse gases are based on the Interim Updated Guidance for the
19 Government of Canada issued in December 2022.¹⁰ This document explains:

20
21 *In Canada, SC-GHG estimates have been used since 2010 to value expected changes in*
22 *GHG emissions as part of cost-benefit analysis (CBA) of regulatory proposals. More*
23 *generally, these estimates are appropriate to use whenever weighing a decision that*
24 *would lead to changes in GHG emissions, such as in the context of federal impact*
25 *assessments for major projects.*
26

27 Therefore, a 2% discount rate can appropriately be applied to decisions regarding investment in physical
28 infrastructure or electrification activities for DSM purposes where such activities would lead to changes in
29 GHG emissions.

⁸ Ibid., page 17, lines 1 – 4.

⁹ M12282, E-1, EfficiencyOne Application for Approval of a New Benefit-Cost-Analysis Test for Evaluating Demand Side Management Plans, Notice of Application and Evidence, May 16, 2025, Appendix B, page 64.

¹⁰ Government of Canada, *Social Cost of Greenhouse Gases*, online: <<https://www.canada.ca/en/environment-climate-change/services/climate-change/science-research-data/social-cost-ghg.html>>.