

E1 Responses to Small Business Advocate (SBA) Information Requests
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Request IR-01:

Refer to Exhibit E-1 EfficiencyOne’s Application for Approval of a New Benefit-Cost Analysis (BCA) Test for Evaluating Demand Side Management (DSM) Plans, (the “Application”) filed May 16, 2025, E1 Evidence, page 34 of 38, Table 10. For each non-utility impact category provided:

- (a) The detailed formula or spreadsheet used to calculate the dollar benefit, or cost, with all underlying data inputs, e.g., avoided fuel prices, social cost of carbon values, proxy adder percentage.**
- (b) Data sources, year, and any adjustments made due to regional factors and inflation.**
- (c) Specific examples with formulas showing step by step calculations.**

Response IR-01:

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

- (a) Please refer to EfficiencyOne’s (E1) response to NSEB IR-26. This workbook was developed and used by EFG to calculate the cost and benefit impacts for the illustrative example, summarized in Table 11 on pages 35 and 36 of E1’s Evidence.¹ EFG’s Report provides additional discussion and details on the quantitative example of the recommended BCA framework. The results are presented in Table 5 and Figure 1 of EFG’s report.²

¹ M12282, E1 BCA Test Application, May 16, 2025, E1 Evidence, page 35-36 of 38.

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. page 19 and 21 of 68.

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- 1 (b) Please refer to E1's response to NSEB IR-26. Data sources are noted in the workbook.
2 Workbook calculations are in real dollars, though not all values are adjusted to a common
3 base year value. A 2% real discount rate is applied. Regional factors include Nova Scotia
4 price and avoided cost estimates as noted.
5
6 (c) Please refer to E1's response to NSEB IR-26. The specific example of 1,000 heat pumps
7 installed in 2026 is presented in EFG's report and the referenced workbook, tables and
8 graphic results.

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Request IR-02:

Refer to Exhibit E-1, the Application, Notice of Application, page 5, paragraph 24.

(a) Explain why E1 proposes a 2 percent real discount rate for societal impact.

**(b) Provide any internal or external studies, regulatory precedents, or stakeholder comments
that support the choice of 2 percent versus other discount rates.**

Response IR-02:

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

(a) Please refer to part (c) of EfficiencyOne's (E1) response to NSEB IR-20.

(b) The American Council for an Energy Efficient Economy (ACEEE) database of state screening practices identifies 16 states or territories that use a low risk (social) discount rate for screening energy efficiency activities, as provided in the figure below.¹

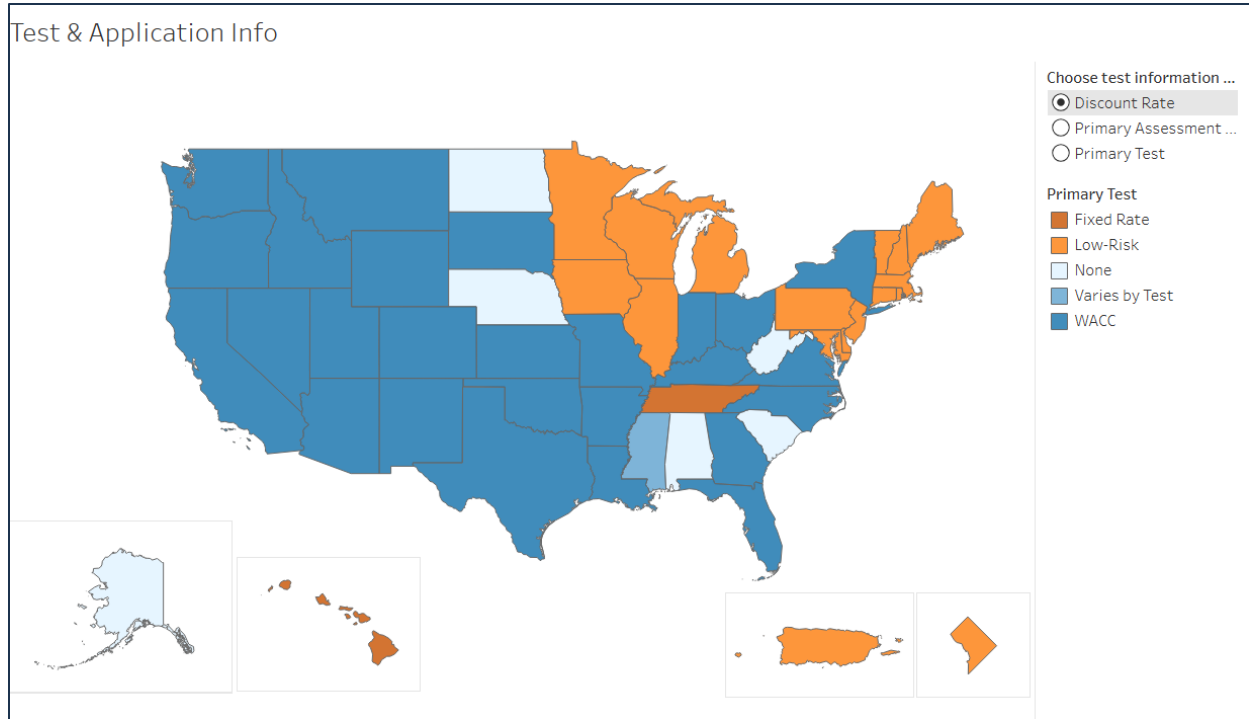
¹ <https://www.aceee.org/database-state-efficiency-screening-practices> "Maps" "Test & Application Info, Discount Rate"

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Request IR-03:

Refer to Exhibit E-1, the Development of a Jurisdictional Benefit Cost Analysis Framework for Nova Scotia (the “Report”), Appendix B, Table 14, pages 45-46 of 68. For the “host customer” impact of the NEB category, provide an analysis of the proxy adder approach:

(a) Provide justification, such as literature or stakeholder impact for each percentage level, for the measures shown in the table.

(b) A sensitivity analysis showing how the portfolio BCA ratio would change if those adders were ± 50 percent.

Response IR-03:

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

(a) Please see Host Customer Impacts Section on pages 41 through 48 of the EFG Report for information on the process and approach to quantifying the host customer non-energy benefits via the proxy adder approach.¹ This section includes citations to host customer NEBs from other jurisdictions and recap of discussions from the fourth through sixth workshops, which focused on the quantification of these benefits and alternative approaches. Please refer to EfficiencyOne’s (E1) response to NSEB IR-15.

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 41-48 of 68.

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1 (b) The results for the illustrative example of 1,000 heat pumps are presented in Table 5.² The
2 total present value of the host customer non-energy benefits, estimated using the
3 recommended proxy approach and the appropriate adders identified in Table 14,³ are \$0.8
4 million for all three cases. A 50%+/- sensitivity analysis would result in this value being
5 increased to \$1.2 million, or being reduced to \$0.4 million respectively. Neither of these
6 sensitivities would change the overall benefit cost results. As noted in the Report, overall
7 the host customer non-energy benefits, while recommended for inclusion in the
8 framework, particularly because host customer costs are counted, are not of a scale that
9 can be expected to have large overall impact on the final results.

² Ibid., page 19 of 68.

³ Ibid., page 45 of 68.

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Request IR-04:

Refer to Exhibit E-1, the Report, page 20 of 68. Describe the safeguards built into the BCA Test methodology to prevent the double counting of benefits such as where avoided GHG benefits and avoided fuel cost benefits could overlap.

Response IR-04:

The cost of other fuels in the benefit cost analysis (BCA) test removes any federal price of carbon from the other fuel projected future costs. The avoided environmental and economic damages from greenhouse gas emissions are estimated using the social cost of carbon, in alignment with guidance from the Government of Canada¹. Removing any federal price of carbon from the other fuel price projections avoids the potential for double counting the greenhouse gas impacts under other fuels.

¹ Interim Updated Guidance for the Government of Canada issued in December 2022

<https://www.canada.ca/en/environment-climate-change/services/climate-change/science-research-data/social-cost-ghg.html>

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Request IR-05:

Refer to Exhibit E-1, the Application, E1 Evidence, Table 11, page 35 of 38. Beyond the heat pump test case, provide at least two additional test runs, other than energy efficiency lighting, demonstrating the new BCA's operation, including intermediate outputs.

Response IR-05:

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

Two additional illustrative examples beyond the heat pump example have been provided, a solar photovoltaic (PV) and storage example, as well as a weatherization and heat pump example. Please refer to EfficiencyOne's (E1) response to NSEB IR-26, specifically Attachment 1, worksheets 'Solar + Storage' and 'WX + HP'.

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Request IR-06:

Please provide a list of each potential benefit being proposed to be included in the new BCA test and note for each benefit whether the BCA Test will be assuming that the numerical value of the benefit is the same throughout the life of a measure, especially for long-lived measures. For example, there is an expectation that NSPI will have a supply mix that is eventually fully decarbonized, suggesting that any carbon savings will at that time be zero. How will that be addressed?

Response IR-06:

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

The impacts, both benefits and costs for each measure are associated with projected changes in the future values. With respect to the example cited in the question, the proposed methodology and the calculation for the illustrative example account for projected changes in the NS Power generation mix, and decarbonization of the grid. Please refer to EfficiencyOne's (E1) response to NSEB IR-26, specifically the 'GHG Impact Summary' and the 'Electric Emissions Intensity' worksheets in Attachment 1 for an example of how the decarbonization of the grid and the related change in emissions intensity are proposed to be incorporated into the benefit cost analysis (BCA) framework.

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Request IR-07:

Refer to Exhibit E-1, the Application, Table 2, page 4 of 38. For each listed state:

(a) Please provide the specific state's stated policy objectives, legislation, or publicly adopted goals that align with Nova Scotia legislation, with a specific reference point within the legislation.

(b) Please provide e a list of costs or benefit types that are proposed for the BCA in Nova Scotia that are not included in the specific state's cost-effectiveness testing.

Response IR-07:

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

(a) Please refer to EfficiencyOne's response to NSEB IR-03 part (b).

(b) EFG's research did not include a detailed comparison of the impact categories and benefits for the states cited in Table 2 of the Application.¹ The focus of EFG's work with the Demand Side Management Advisory Group (DSMAG) and in EFG's Report was to develop and recommend an optimal jurisdictional test that is aligned with Nova Scotia's policy objectives. The development of a Nova Scotia-specific benefit cost analysis (BCA) must reflect the province's own legislative, regulatory and policy context. As such, a jurisdictional scan of similar policy objectives in other regions is not considered relevant or instructive to the development of a Nova Scotia-specific BCA. The information provided in Table 2 was

¹ M12282, E1 BCA Test Application, May 16, 2025, E1 Evidence, page 4 of 38.

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1 readily available and known to EFG, was provided for limited context, and was not a focus
2 of the BCA development process led by EFG with the Demand Side Management Advisory
3 Group (DSMAG). The cross-jurisdictional comparison of policy objectives and associated
4 benefit cost tests is not included in the recommended National Standard Practice Manual
5 (NSPM) process for the development of a jurisdictional specific test and was not
6 undertaken in the development of the BCA.

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Request IR-08:

Refer to Exhibit E-1, the Application, page 18 of 38, line 5. Regarding the creation of green jobs and stimulating economic growth, please provide the results of econometric modeling that EOne has performed or commissioned that show the net jobs created and other measures of economic growth specifically attributable to the adoption of the proposed BCA Test as compared to using the current cost-effectiveness testing methodology.

(a) Please provide work papers including spreadsheets in working form with formulas intact that are part of the analysis.

Response IR-08:

(a) EfficiencyOne (E1) has not performed or commissioned econometric modelling to assess net jobs created or other measures of economic growth attributable to the adoption of the proposed benefit cost analysis (BCA) test or the current approved screening test (i.e., Total Resource Cost test). E1 notes that the Energy Futures Group (EFG) Report recommends that economic and job impacts are best assessed in a separate analysis and are not recommended for inclusion in the proposed BCA. 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, page 12 & 33 of 68.

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Request IR-09:

**Refer to Exhibit E-1, the Application, page 18 of 38, line 21-25, specifically where it states
“...ensuring the design of the cost-effectiveness test adhered to the National Standard
Performance Manual (NSPM) where possible...”.**

**(a) Please describe in detail where the current cost-effectiveness testing methodology does
not adhere to the NSPM.**

**(b) Please describe how each element of the different benefits is incorporated into the
proposed BCA so that it comports with the NSPM.**

Response IR-09:

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

(a) It is assumed that reference to “current” means the Board approved Total Resource Cost (TRC) test. The current TRC test in Nova Scotia does not adhere to the National Standard Practice Manual (NSPM)’s Principle 1: Treat Distributed Energy Resources (DERs) as a Utility System Resource, as it is not able to assess the cost effectiveness of all DERs using a consistent method (e.g., strategic electrification), Principle 2: Align with Policy Goals, as it is not aligned with policy goals for Nova Scotia and the Nova Scotia Energy Board’s need to consider sustainable development and sustainable prosperity in decision making, and Principle 3: Ensure Symmetry and Principle 4: Account of Relevant, Material Impacts (including those that are difficult to quantify or monetize) as it includes host customer costs

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but not host customer benefits.¹ Please refer to Table 4 of Appendix A (reproduced below)² and the associated discussion.

Table 4: Impact Category Comparison of Recommended Nova Scotia and Prior Tests

Impact Category	Cost Effectiveness Test		
	New Nova Scotia Test	Total Resource Cost Test (Nova Scotia 2023-2025)	Program Administrator Cost Test
Utility Impacts	☒	☒	☒
Other Fuels	☒		
Greenhouse Gases	☒	☒	
Criteria Air Pollutants	☒		
Host Customer Costs	☒	☒	
Host Customer Non-Energy Benefits	☒		

(b) The Nova Scotia proposed Benefit Cost Analysis test (BCA) was explicitly designed to align with the principles and methodological guidance of the NSPM. The NSPM stresses that BCA tests must be tailored to each jurisdiction's policy objectives. The Nova Scotia test was developed through a collaborative process with the Demand Side Management Advisory Group (DSMAG) and reflects recent legislative changes, including the *Energy Reform Act* and amendments to the *Public Utilities Act*. These changes expanded the Board's mandate to include sustainable development, prosperity, and GHG reductions—all of which are captured in the proposed BCA test. The rationale and recommended approach for including the additional impact categories, which are other fuels³, criteria air pollutants⁴ and host customer non-energy impacts⁵ are further discussed in the relevant sections of the EFG Report.

¹ M12282, E1 BCA Test Application, May 16, 2025, Appendix A, Attachment 2: National Standard Practice Manual, page 16 of 302.

² M12282, E1 BCA Test Application, May 16, 2025, Appendix A, Evidence of David Hill Energy Futures Group, Inc., page 12 of 18.

³ 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 40 of 68.

⁴ Ibid, under Other Air Pollutants page 51-53 of 68.

⁵ Ibid, page 42-48 of 68.

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Request IR-10:

Refer to Exhibit E-1, the Application, page 23 of 38, lines 25-26.

(a) Please provide the criteria used to categorize each impact category as reliable.

(b) Please note for each category's impact how it was measured for Nova Scotia, as compared with adopting something used in other provinces or in a US State.

Response IR-10:

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

(a) The question appears to refer to the data sources, as opposed to the impact category. In preparing their report and recommending the new benefit cost analysis (BCA) test, EFG did not review or classify data sources as reliable or unreliable. Generally speaking, reliable data would be sourced from established private or public organizations, and be updated with an appropriate level of frequency. Examples include data from NS Power, the Provincial or Federal Governments and the U.S. Energy Information Administration. EFG considers data sources it has referenced in the EFG Report to be reliable. Please also refer to EfficiencyOne's (E1) response to SBA IR-15.

(b) The utility system impact categories are based on information from NS Power (related to avoided costs) and from E1 (related to incentives and program administrative costs). Other fuels are based on recent data from Nova Scotia on fuel prices (government and fuel provider data), and projected escalation of fuel prices based on the U.S. Energy Information Administration. For societal impacts social cost of carbon is based on updated guidance

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- 1 from the Government of Canada, and host customer impacts are based on proxy adder
2 methods. Other environmental impacts (other air pollutants) are based on the regional
3 values for New England from the U.S. Environmental Protection Agency. Please see
4 Appendix B of the EFG Report¹ for additional detail and citations for each impact category.

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.

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Request IR-11:

Regarding Exhibit E-1, the Application, page 26 of 38, table 5, please define in detail and provide examples for Host Benefits, Resilience, and Public Health.

Response IR-11:

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

For Host Benefits, please see the EFG Report section on Host Customer Impacts for definitions and discussion.¹ Resilience is assumed to be embedded in utility system impacts and is not recommended for separate quantification in the new BCA test. Please refer to EfficiencyOne's (E1) response to NSEB IR-18, NSEB IR-39, and SBA IR-13. Public health benefits are embedded in the greenhouse gas and other air pollutant impact categories.² Please refer to E1's response to NSEB IR-18, and SBA IR-12.

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 41-47 of 68.

² Ibid., pages 50-54, sections on greenhouse gas and other air pollutants.

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Request IR-12:

Refer to Exhibit E-1, the Application, page 29 of 38, line 7, and the phase “...improved comfort, and health.”

(a) Please provide a definition for ‘improved comfort’, including practical examples of how energy efficiency measures improve comfort and how that comfort was monetized into a benefit for the BCA Test.

(b) Please provide a definition for ‘health’ in this context, including practical examples of how energy efficiency measures improve health and how this was monetized into a benefit for the BCA Test.

(c) Please also note which province and US states currently incorporate the monetization of these benefits.

Response IR-12:

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

(a) Please refer to EfficiencyOne’s (E1) response to NSEB IR-16.

(b) Please refer to E1’s response to NSEB IR-18.

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- 1 (c) Please see Appendix F of the EFG Report¹ for a summary table from the National Energy
2 Screening Database for information on jurisdictions that include comfort and health and
3 safety impacts in their cost effectiveness tests. States that include these impacts include
4 Colorado, Delaware, District of Columbia, Iowa, Louisiana, Maryland, Massachusetts,
5 Nevada, New Hampshire, New York, Puerto Rico, Rhode Island, Vermont and Washington.

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, Section VII (Appendix F), page 67 of 68.

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Request IR-13:

Refer to Exhibit E-1, the Application, pages 32-33 of 38.

(a) Please provide detailed definitions and practical examples of:

- i) Tax Impacts (specifically explain how any tax impacts are not actually transfer payments among residents, institutions or businesses in Nova Scotia)**
- ii) Productivity (be sure to address how this is determined and whether some more efficient equipment can reduce productivity)**
- iii) Economic Well Being**
- iv) Comfort**
- v) Amenity**

(b) Regarding Resilience and Reliability

- (i) Please explain how an efficient end-use improves either resiliency or reliability. Particularly note whether new non-efficient equipment would have similar impacts.**
- (ii) Please define and contrast resiliency and reliability, noting similarities and differences with how NSPI has defined those terms.**

Response IR-13:

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

(a)

- i) From a host customer/participant perspective a tax incentive lowers the measure cost. The recommended BCA test from a regulatory perspective would treat a tax**

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- 1 impact as a transfer payment. Tax impacts are not recommended and have not been
2 included in the illustrative examples provided.
- 3 ii) Improvements in productivity are very project and site specific. Please refer to
4 EfficiencyOne's (E1) response to NSEB IR-16.
- 5 iii) Please refer to E1's response to NSEB IR-16. Energy efficiency improves energy
6 affordability for residential and commercial host customers, and this in turn
7 contributes to their overall economic well-being. Savings from energy efficiency can
8 be re-invested in other activities and providing indirect and induced economic
9 benefits.
- 10 iv) Please refer to E1's response to SBA IR-12 and NSEB IR-16 for definition and examples
11 of how efficiency can improve comfort.
- 12 v) Please refer to E1's response to NSEB IR-16 for discussion of how energy efficiency
13 can provide amenity.
- 14
- 15 (b)
- 16 i) Please refer to E1's response to NSEB IR-18, NSEB IR-39 and SBA IR-11 for discussions
17 of resilience and reliability impacts. Efficiency and distributed energy resources can
18 improve reliability by reducing stress on the system in times of peak demand or
19 extreme events. Resilience for the system can be enhanced by providing better ability
20 for customers to ride through outages.
- 21 ii) Please see the EFG Report page 9¹ definition of key terms for resilience and reliability
22 definitions.

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 9 of 68.

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Request IR-14:

Refer to Exhibit E-1, the Report, page 17 of 68, Number 6, and the Application, page 23 of 38, Lines 25-27 and the use of the phrase “proxy adder approach.” Please explain how the two approaches are consistent. Specifically explain with examples how one can interpret that using the proxy method to apply “hard to obtain” benefit values as providing benefits derived from “reliable data.”

Response IR-14:

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

The proxy adder approach is recommended for impacts that may be hard to quantify. An impact that is difficult to quantify should not be automatically assigned a value of zero, as excluding them from a benefit-cost analysis implicitly values them at zero, which would be inaccurate. Using reliable data, and approximate approaches such as a proxy adder method are not inconsistent with, and indeed support, the National Standard Practice Manual (NSPM) recommended principle of counting the impacts that are relevant given a jurisdiction’s policy objectives, using approximations of impacts when appropriate. Please also refer to EfficiencyOne’s (E1) response to SBA IR-15.

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Request IR-15:

Referring to Exhibit E-1, the Report, Page 45 of 68, Table 14, please explain how the percentages in columns 2 and 3 are created – what are the data points that are used to create the percentage?

(a) Please explain how the consolidation of opinion that was used to obtain values in this table is consistent with EOne’s own objective to use Reliable Data for estimating benefits.

Response IR-15:

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

The percentages recommended for host customer non-energy benefits in Table 14 of the EFG Report¹ are based on EFG’s expert opinion. They were shared and discussed with Demand Side Management Advisory Group (DSMAG) members in workshops 4 through 6, and on other occasions. The rationale for including them in the benefit cost analysis (BCA) framework, and for the recommended percentage levels in Table 14 are discussed in EFG’s report. Please also refer to EfficiencyOne’s (E1) response to NSEB IR-15. Recommending values for appropriate levels of proxy adder by impact category and customer class using expert opinion and stakeholder review is consistent with the National Standard Practice Manual’s (NSPM) principles and recommended steps for hard to quantify impacts.

(a) Using reliable data where it is available is appropriate. There may be impacts, however, where studies or evaluations have not been conducted (but could be in the future) where

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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- 1 the use of a proxy adder is appropriate and consistent with the principle of using reliable
- 2 data when available. Whether to assess each host customer impact for each measure
- 3 should consider practicality against granularity gains. Using proxy adders where reliable
- 4 data for Nova Scotia is unavailable is appropriate, reasonable, and aligned with the NSPM.

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Request IR-16:

**Regarding The Report – Please provide working spreadsheets and other workpapers used to
derive each table in the report**

Response IR-16:

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

Please refer to EfficiencyOne’s response to NSEB IR-26, specifically Attachment 1.

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Request IR-17:

Please list the programs and potential funding level that are expected to pass the new BCA Test that would not have passed the current cost-benefit testing.

Response IR-17:

EfficiencyOne (E1) expects the new benefit cost analysis (BCA) to be implemented for the first time in the development of the 2027-2031 DSM Plan, subject to the Nova Scotia Energy Board's (NSEB) decision on E1's BCA Application. The 2027-2031 DSM Plan is being developed throughout 2025, with an expected filing date in early 2026. Through the DSM Plan development process, the quantification of the impacts associated with the new BCA, pending NSEB approval, will be undertaken and finalized with the Demand Side Management Advisory Group (DSMAG). While E1 does not have comparison results to share, the proposed BCA is appropriate for the cost effectiveness assessment of all distributed energy resources (DERs) including strategic electrification as opposed to the current Total Resource Cost test which does not provide a basis for evaluating electrification. While this does not provide insight into whether proposed electrification programs will pass or not, it does mean that additional resources can be assessed using the proposed BCA as compared to the TRC. Additionally, all else being equal, E1 would expect that energy efficiency programs where there are additional benefits included under the proposed BCA (example inclusion of non-energy benefits for low-income and equity, greenhouse gas reductions) would have better results than seen under the TRC, however this is not a comment on whether they will pass or fail.

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Request IR-18:

Please list all the factors that EOne will evaluate to decide on program funding in addition to the proposed new BCA test.

Response IR-18:

The benefit cost analysis (BCA) test is a critical tool for evaluating the cost-effectiveness of DSM programs. Its primary role is to determine whether a DSM plan is cost-effective, not to directly set the total funding level or the allocation of funding between the individual DSM resources. EfficiencyOne (E1) determines the funding through the DSM Plan development process, where in addition to the cost-effective results of each DSM Resource consideration is also given to other factors such as:

- Design objectives such as equitable allocation across sectors and rate classes which align with the Balanced Plan as approved by the Nova Scotia Utility and Review Board;
- Customer bill impacts;
- Demand Side Management Advisory Group engagement where feedback and written comments are provided;
- System requirements identified in the Integrated Resource Plan (IRP);
- E1's historical spending and past performance to ensure the DSM Plan is achievable;
- Industry capacity including availability of contractors and infrastructure;
- Support for emerging technologies that can become industry standards; and
- An appropriate ramp up period with the introduction of new DSM Resources.

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Request IR-19:

Please provide efficiency program funding per capita in each Canadian province and if the cost-effectiveness test includes all the 'benefits' being proposed in this application.

(a) Please indicate if the programs are 100% financed by the respective utilities or if there is a different financing arrangement.

Response IR-19:

EfficiencyOne (E1) was unable to obtain electric efficiency program funding per capita in each Canadian province. E1 notes that the Efficiency Canada 2024 Scorecard¹ reports per capita spending on efficiency program funding (inclusive of enabling strategies) however this includes both provincial and utility funding.

The approach to cost effectiveness testing for DSM in each of the Canadian provinces and territories varies significantly. Publicly available information related to the tests is provided in the tables below and was obtained from Efficiency Canada's Policy Tracking System.² Determination, on an individual basis, as to whether respective provincial/territorial cost effectiveness tests' benefit inclusions fully align with the proposed BCA, were not available.

(a) Summary Table – Canadian Cost Effectiveness Testing

Province	Primary Test	Additional Tests Used	Non-Energy Benefits
Alberta	Societal Abatement Cost, Program		

¹ Efficiency Canada, 2024 Canadian Energy Efficiency Scorecard: Provinces and Territories.

<https://scorecard.efficiencycanada.org/>

² Efficiency Canada's Policy Tracking System <https://database.efficiencycanada.org/>

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Province	Primary Test	Additional Tests Used	Non-Energy Benefits
	Abatement Cost and Total Resource Cost.		
British Columbia	Utility Cost Test		
Manitoba	Utility Cost Test		
New Brunswick	Program Administrator Cost test, Total Resource Cost test	Participant Cost test	Where TRC is used for information purposes non-energy benefits are included
Newfoundland and Labrador	Total Resource Cost test	Program Administrator Cost test	
Nova Scotia	Total Resource Cost test	Program Administrator Cost test	
Ontario	Program Administrator Cost test		Where TRC is used for information purposes non-energy benefits are included
Prince Edward Island	Program Administrator Cost test	Total Resource Cost test	
Quebec	Total Resource Cost Test and Participant Cost Test	Rate Impact Measures Test (RIM)	
Saskatchewan	Utility Cost Test and Total Resource Cost test	Participant Cost Test	
Yukon	Total Resource Cost test (TRC), Program Administrator Cost test (PAC), Participant Cost Test (PCT), and Rate Impact Measure (RIM)		
Northwest Territories	Unidentified		
Nunavut	Unidentified		

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Detailed Table - Canadian Cost Effectiveness Testing

Province	Cost Effectiveness Testing
Alberta	- Alberta Environment and Protected Areas evaluates all programs (e.g., Strategic Energy Management - now concluded) for cost-effectiveness, return on investment, job creation and support, as well as societal and environmental benefits. - Cost-effectiveness tests used by other departments and program administrations are unknown.

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

E1 Responses to Small Business Advocate (SBA) Information Requests
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Province	Cost Effectiveness Testing
	Prior to its closure, Energy Efficiency Alberta used a variety of cost-effectiveness tests, including Societal Abatement Cost, Program Abatement Cost and Total Resource Cost. The tests were used at all levels (portfolio, program and measure).
British Columbia	- The “Demand-Side Measures Regulation” (BC Reg 117/2017) under the Utilities Commission Act establishes rules for cost-effectiveness testing for all utilities. Cost-effectiveness can be assessed at the level of an individual measure, a portfolio of measures, or the portfolio as a whole (S.4(1)). - In June 2023, amendments were made to the Demand-Side Measures Regulation which changed the way demand-side management plans are evaluated for adequacy and cost-effectiveness. - The amendments replaced the previous cost testing methods. Rather than the Total Resource Cost test (TRC) (and associated adders) and the modified TRC, the Utility Cost Test (UCT) must now be used to test cost-effectiveness of natural gas and electricity DSM (S. 4(1.1)(a)(b)). The avoided cost of electricity continues to be based on the long-run marginal cost of clean electricity while the amendments specified renewable natural gas as the avoided cost for natural gas DSM (S.4(1.1)(a)(i)). - The amendments increased the income threshold for low-income programs from 1.3x to 1.6x the low-income cut-off (LICO) (S.1(“low-income household”)(a)), moved the cost effectiveness evaluation of low-income and Indigenous energy efficiency programs to the portfolio level (S.4(4)), and require Indigenous programs within DSM portfolios (S.3(1)(g)).
Manitoba	- Efficiency Manitoba’s first 3-year plan used the program administrator cost test to measure cost-effectiveness of the plan, as prescribed by regulation. The lifecycle revenue impact metric is used as a simplified indicator of the rate impacts of the plan, and the plan provides both a rate and bill impact assessment. Both tests were completed at the portfolio level. Overall cost-effectiveness of the Efficiency Manitoba electric and natural gas portfolios were demonstrated within the approved 2020-23 Efficiency Plan to have a Program Administrator Cost Test greater than 1.0. - In 2023/2024, Efficiency Manitoba voluntarily modified their DSM planning and specifically the cost-effectiveness approach to include measure, sub-program, program, customer segment/sector and portfolio cost-effectiveness. Analysis has incorporated both PAC and Total Resource Cost capabilities on a go-forward basis. While the cost effectiveness is calculated at these levels, measures are not necessarily screened out based on these assessments, particularly for the low-income/hard-to-reach and Indigenous markets. The cost-effectiveness is calculated for information/transparency purposes.
New Brunswick	- NB Power uses the Program Administrator Cost Test as its primary screening test, applied at the program level. The Participant Cost Test is used as a secondary test. - The Total Resource Cost test (TRC) and Rate Impact Measure (RIM) test are also calculated, for information purposes only. Non-energy impacts (in this case benefits) are estimated for the Total Resource Cost test using a 12.5% adder without any specific non-energy benefits defined. No non-energy impacts are included in the Program Administrator Costs Test nor in the Participant Cost Test.

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Province	Cost Effectiveness Testing
	A Societal Cost Test (SCT) has been framed, however a final equation has yet to be developed.
Newfoundland and Labrador	Newfoundland Power and Newfoundland and Labrador Hydro combined 2021-2025 Electrification, Conservation and Demand Management Plan screened programs based on the Total Resource Cost Test (primary) and the Program Administrator Cost Test (secondary). Rate impacts are validated through a rate impact analysis. Both were conducted at the program level and portfolio level and non-energy benefits are not currently included.
Nova Scotia	- The Total Resource Cost Test (TRC), at the portfolio level (this changed from the program level to the portfolio level as a result of Bill 228 in 2022), is the principal screening tool for cost-effectiveness, and the Program Administrator Cost test (PAC) is reported for informational purposes in DSM plans. Non-energy benefits are not included in the TRC. The Nova Scotia Utility and Review Board (NSUARB) has ruled (M08888, Letter 80859) that it does not possess the jurisdiction to allow inclusion of non-energy benefits in the TRC. - Nova Scotia does not yet exempt low-income program components from passing the TRC test; therefore there are certain low-income program components which did not pass the TRC test in the 2023-2025 DSM resource plan. Efficiency Nova Scotia added carbon market effects (market price of carbon) as an additional avoided cost within cost-effectiveness testing as part of the development of the 2023-2025 DSM resource plan. - As part of the Order associated with the 2023-2025 DSM Resource Plan, E1 was ordered by the NSUARB to "To work with NS Power and the DSM Advisory Group (DSMAG) to discuss potential updates to avoided costs before the 2026-2028 DSM Resource Plan application" (Order - M10473, Nov 8, 2022). They were also directed to assess and develop an optimal DSM cost-effectiveness testing methodology, as a response to recommendations by Synapse (cost-effectiveness consultant) to either place greater focus on the PAC or shift to a jurisdiction-specific cost-effectiveness test.
Ontario	- In accordance with the IESO's Cost-Effectiveness Guide, the IESO only implements Conservation and Demand Management (CDM) programs (now called eDSM) that demonstrate positive cost benefit benchmarks when jointly considered as a portfolio. The Energy Affordability program and on-reserve First Nation programs are not required to meet cost-benefit benchmarks and are excluded from the portfolio of CDM programs required to meet such benchmarks. 2021-2024: The primary cost effectiveness test used for the 2021-2024 CDM Framework is the Program Administrator Cost (PAC) test. The Levelized Unit Energy (\$/kWh) and Demand (\$/kW) Costs are also being used as a cost effectiveness metric. PAC and LUEC are both applied at a program and portfolio levels. The Total Resource Cost (TRC) test is also calculated and leveraged for internal reporting purposes only. The 15% benefit adder to the TRC has been replaced by actual non-energy benefits valuation on a sector level (e.g. low-income, commercial, industrial) resulting from a 2021 Non-Energy Benefits study. 2019-2020: Under the 2019-2020 Interim Framework, the Total Resource Cost Test (TRC) was the principal test for electricity conservation and demand management, applied at the program level. The Program Administrator Cost test

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Province	Cost Effectiveness Testing
	(PAC) was also reported, as well as the Levelized Unit Energy Cost. There was a 15 per cent benefit adder on the TRC accounts for non-energy benefits.
Prince Edward Island	- The Prince Edward Island Provincial Energy Strategy 2016/2017 called for a cost-effectiveness screening framework that considers a societal perspective, including non-energy benefits of energy efficiency. - efficiencyPEI used Program Administrator Cost Test (PAC), at the portfolio level, in its 2018-2021 DSM Resource Plan. Total Resource Cost test (TRC) is used at the measure level as a secondary test. efficiencyPEI continues to use PAC and TRC tests in all program evaluations and will use the PAC, at the portfolio level, in its 2023-2026 DSM Resource Plan.
Quebec	- Hydro Québec uses the Total Resource Cost Test (TRC) and Participant Cost Test (PCT), applied at the program level. They use the Rate Impact Measures Test (RIM) as a secondary test. A report is made at the program portfolio level, however the tests are conducted at both program and measure levels, depending on the measure or program being considered. For large programs, cost-effectiveness testing is conducted at the program level. When costly, innovative, or specific measures are analyzed they are evaluated at the measure-level. Non-energy benefits are not considered in the analyses. - Historically, programs targeting low-income households (LIH) have been accepted despite negative results from this test.
Saskatchewan	SaskPower prioritizes Utility Cost Test (UCT) and Total Resource Cost Test (TRC), and Participant Cost Test (PCT) is considered a secondary test. SaskPower conducts testing at the program level to guide decision-making and tests are reported internally at the portfolio level. Prior to 2023, SaskPower had reported no cost-effectiveness test was in use for externally administered energy efficiency programs.
Yukon	- Yukon Energy continues to use the cost-effectiveness tests established by the first Yukon DSM plan to evaluate DSM programs in its General Rate Applications (2023/24 and 2017/18) to the Yukon Utility Board (YUB). The original Yukon Five Year Demand Side Management Plan (2013), developed by Yukon Energy, Yukon Electrical, and the Yukon government, screened each program using the Total Resource Cost test (TRC), Program Administrator Cost test (PAC), Participant Cost Test (PCT), and Rate Impact Measure (RIM). - However, Yukon Energy commissioned a report by the ICF Canada in 2021 “Demand Side Management Design for the Yukon: Strategic Regulatory Support” that recommended the UCT be used as the primary test for Yukon, with TRC, RIM and PCT calculated for information. They also recommended the tests be evaluated at the program level, and that low-income programs that do not pass the UCT but have other policy justifications be considered.
Northwest Territories	No cost-effectiveness testing information identified.
Nunavut	No cost-effectiveness testing information identified.

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Request IR-20:

Please comment on whether a test similar to the proposed BCA Test should be used by the following:

(a) Natural Gas Utilities for customer programs and resource planning.

(b) Water Utilities for customer programs and resource planning.

(c) Province of Nova Scotia budget setting to reduce energy usage and other equipment or construction decisions at facilities with significant provincial workers.

(d) NSPI in conducting resource planning, including IRP, and being incorporated into the NSPI Capital Expenditure Justification Criteria (CEJC).

Response IR-20:

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

Yes, with exceptions noted below, in general, a new jurisdictional Benefit Costs Analysis (BCA) test approved by the Nova Scotia Energy Board (NSEB), and maintained in an evergreen fashion, should be used to provide insights on cost effectiveness across all utility system investments.

(a) Yes, with specific considerations for gas utility system impacts that are not addressed in the current application.

E1 Responses to Small Business Advocate (SBA) Information Requests
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- 1 (b) Yes, with specific considerations for water system impacts that are not addressed in the
2 current application.
3
- 4 (c) Capital budgeting for the Province and other public/private actors can be informed by the
5 recommended jurisdictional benefit cost test, but it is likely best considered as a distinct
6 analysis, informed by the entities balance sheet, cash flow, infrastructure assets and
7 conditions, access to credit and labor and other obligations.
8
- 9 (d) Yes.