Request IR-01:

Reference: E-1, Application, page 5, para 26 (pdf page 6 of 450).

> **E1 submits that the proposed BCA test is appropriate, reasonable, is in the best interest of ratepayers, and should replace the existing TRC test on a go-forward basis.**

(a) Please explain E1's position regarding how the proposed BCA test is in the "best interest of ratepayers", specifically compared to the existing TRC test for evaluating DSM plans.

(b) Does E1's assertion that its proposed BCA test is in the "best interest of ratepayers" indicate that electricity rates will be less impacted than with the existing TRC test? Please explain why or why not.

(c) Does E1's assertion that its proposed BCA test is in the "best interest of ratepayers" indicate that there will be a broader diversity of DSM programs and participation than with the existing TRC test? Please explain why or why not.

(d) Does E1s assertion that its proposed BCA test is in the "best interest of ratepayers" indicate that the new cost effectiveness test will continue to determine whether its Plan is affordable and result in the lowest long-term cost of electricity? Please explain why or why not.

Response IR-01:

(a) The current Board approved cost effectiveness test for demand side management (DSM) in Nova Scotia is the **Total Resource Cost (TRC) test.** The TRC evaluates DSM plans by comparing the included benefits (avoided energy, carbon, capacity, transmission and distribution costs) to the included costs (host customer costs and DSM program administrator costs). By including host customer costs but not cost customer benefits, the TRC design in Nova Scotia is biased and unbalanced. In their Evidence on EfficiencyOne's (E1) 2023-2025 DSM Plan, Synapse Energy Economics Inc. notes "*A TRC that includes participant costs but does not include participant benefits is inherently unbalanced.*"[1] Their Evidence further recommends that *"The Board should put more emphasis on the* [Program Administrator Cost] *PAC, which should not account for participant costs or participant benefits, and hence is more balanced; or it should launch a process to develop a jurisdiction-specific cost-effectiveness test that reflects the province's policy priorities. Development of a jurisdiction-specific test is laid out in the National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources, including energy efficiency and demand response."*[2]

Recent legislative changes and evolving energy priorities—especially related to electrification and decarbonization—have further prompted a re-evaluation of this framework. The Nova Scotia Utility and Review Board (now Nova Scotia Energy Board) has acknowledged the need for a revised cost-effectiveness framework and directed E1 to work with the Demand Side Management Advisory Group (DSMAG) to develop a jurisdiction-specific test. This directive underscores the regulatory consensus that the new test is a necessary evolution to protect and advance ratepayer interests.

[1] M10473, E1 2023-2025 DSM Plan, Exhibit 25, Evidence of Synapse, page 17
[2] Ibid.

The proposed BCA test is proposed to be in the best interests of ratepayers for several reasons:

- By using updated avoided cost data and including a wider range of impact categories the test ensures that DSM investments are evaluated more holistically. This helps prioritize programs that deliver the greatest net value to ratepayers

- The test is designed to be responsive to Nova Scotia's evolving energy landscape, including recent legislative changes promoting greenhouse gas reductions policy and environmental sustainability.

- The test framework was developed through consultation with the DSMAG and reflects guidance from the National Standard Practice Manual. This collaborative approach helps ensure that the test is fair, transparent, and tailored to Nova Scotia's unique needs.

(b) E1's assertion that the BCA test is in the "best interest of ratepayers" does not directly equate to lower electricity rates. Rather, it reflects a broader valuation framework that includes societal and customer benefits not captured under the TRC test. The rate impact may not necessarily be lower, but the overall value proposition to ratepayers—considering environmental, health, and resilience benefits—is argued to be stronger under the BCA framework.

(c) E1's assertion that the BCA test is in the "best interest of ratepayers" does imply a broader diversity of DSM programs and participation. This is due to the test's expanded valuation of benefits, its alignment with equity and accessibility goals, and incorporation of recently adopted Nova Scotia environmental and sustainability legislation.

(d) E1's assertion that the BCA test is in the "best interest of ratepayers" does indicate that the test is intended to continue serving as a key tool for evaluating affordability and long-term cost-effectiveness. The proposed BCA supports a more comprehensive and policy-aligned definition of value—one that balances cost, equity, resilience, and environmental outcomes.

Request IR-02:

Reference: E-1, Evidence, page 2 of 38.

> **Including non-utility impacts reflects both best practice in benefit cost analysis test design, as well as recently enacted provincial legislation. While the relative weight of specific utility and non-utility impacts may change over time, the appropriate question for determining whether to include an impact category in the cost-effectiveness framework is whether it is relevant to DSM activities in Nova Scotia, based on policy priorities and objectives established under legislation.**

And References: E-1, Evidence, Section 4.2 – 2026 DSM Plan Extension, page 8; and Section 11, pages 35 – 36

(a) To compare the new BCA test with the existing approved TRC test, for the entirety of the 2026 DSM Plan, at the portfolio level, please compare the new BCA test against the TRC test and provide supporting calculations.

i) In the calculation provided, do the "non-energy impacts" outweigh the "energy-related" impacts. Please explain.

(b) Please compare the new BCA test against the current TRC test for the three examples provided in section 11 of E1's Evidence.

i) In the calculation provided, do the "non-energy impacts" outweigh the "energy-related" impacts. Please explain.

(c) How much does the "relative weight" between specific utility and non-utility impacts change as a result of E1's new BCA test compared to current cost effectiveness testing?

Response IR-02:

(a) EfficiencyOne (E1) has not implemented the proposed benefit cost analysis (BCA) test for the 2026 DSM Extension Application. As provided in the 2026 DSM Extension Application the portfolio level Total Resource Cost (TRC) test results are 1.6 and the Program Administrator Cost (PAC) test results are 2.2. Prior to the legislative amendments in the winter of 2025 which extended the 2023-2025 DSM Plan by one year to include 2026 at a prescribed investment amount $63.75 million, E1 had initiated the development of the 2026-2030 DSM Plan through engagement with the Demand Side Management Advisory Group. Through that development process E1 explored the implementation of the proposed BCA and at that time the proposed BCA results for energy efficiency and demand response were closely aligned with the PAC results.

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

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

i) Please refer to E1's response to Synapse IR-03. In both the proposed Nova Scotia jurisdictional test, and the prior Total Resource Cost test, the energy impacts outweigh the non-energy impacts. As an example in the proposed NSJST, for replacement of fuel oil the energy benefits are $26.08 million in electric system impacts and $42.4 million of other fuel impacts. The total energy impacts (absolute values including increased electric system costs, and avoided fuel savings) are $68.48 million. The absolute value of non-energy impacts consisting of greenhouse gas, other air pollutant, and host customer costs and non-energy benefits is $20.28 million. The energy impacts therefore represent 77% of totals in the recommended BCA test.

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

Under the proposed Nova Scotia jurisdictional test, energy impacts will continue to be the most important contributors to cost effectiveness results. In the new test, non-energy impacts that were not included in the prior TRC will be included and their impact will vary according to measure type and market segment. That said, the trend represented in the illustrative example workbook, whereby energy impacts outweigh non-energy impacts is expected to continue.

Request IR-03:

(a) Approximately how much additional work does E1 anticipate will be required to accomplish its new BCA test compared to the existing TRC for both forecasting and reporting results?

(b) Please provide detail of the work products that will be required to support the new BCA test, including where work will be done internally and where external consultants will be required.

(c) What supporting files does E1 intend to file with its applications in the future to ensure the forecast benefits and costs that make up its proposed BCA test are both transparent and testable by intervenors and the Board?

Response IR-03:

(a) The proposed jurisdiction specific benefit cost analysis (BCA) test is a planning tool used to assess the cost effectiveness of demand side management (DSM) Plans to inform investment decisions. In regard to the work required to implement the new BCA test versus the current Total Resource Cost (TRC) test, EfficiencyOne (E1) does expect some incremental work in quantifying the new impact streams (other fuels, customer benefits, and societal impacts). Some level of incremental work is to be expected in viewing the Board's directive for E1 to develop a new optimal cost effectiveness test in acknowledgment of the current TRC's deficiencies. The incremental work expected in quantifying the new impacts streams has been initiated by EFG through engagement with the Demand Side Management Advisory Group (DSMAG) on the development of the proposed BCA. E1 believes the proposed BCA strikes a thoughtful balance between

analytical rigor and practical feasibility by quantifying relevant impacts using available data for Nova Scotia, available data for comparable jurisdictions, and proxy adders. It grounds the BCA analysis in real-world data while respecting practical considerations, ensuring the analysis generates meaningful insights without over-investing beyond the point of diminishing returns.

(b) To implement the proposed BCA test, E1 will require quantification of all included impacts as outlined in the table below.

Impact Category	Impact Type	Impact	Work Products
Utility System Impact	Generation	Energy Generation	Avoided costs of energy & capacity are currently developed and provided by NS Power; in the future these are expected to come from the Nova Scotia Independent Energy System Operator (NSIESO)
		Capacity	
		Environmental Compliance	
		Renewable Portfolio Standards/Clean Energy	
		Ancillary Services	
	Transmission	Transmission Capacity	Avoided costs of transmission are currently developed and provided by NS Power; in the future these are expected to come from the NSIESO. Marginal system losses should be considered (rather than average annual).
		Transmission System Losses	
	Distribution	Distribution Capacity	Avoided costs of distribution are currently developed and provided by NS Power; in the future these are expected to come from the NSIESO. Marginal system losses should be considered (rather than average annual).
		Distribution System Losses	
		Distribution O&M	Should be reflected in distribution avoided costs.
		Distribution Voltage	Not Material. No action required.
	General	Financial Incentives	E1 expects incentive estimates to continue to be developed by E1 (with potential support from external consultants).

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Impact Category	Impact Type	Impact	Work Products
		Utility Direct Investment in DERs	E1 expects the quantification of these impacts to come from NS Power and/or the NSIESO
		Program Administration	E1 expects program administration estimates to continue to be developed by E1
		Credit and Collection	E1 expects the quantification of these impacts to come from NS Power and/or the NSIESO
		Risk	E1 expects the quantification of these impacts to come from NS Power and/or the NSIESO
		Reliability	Assumed to be part of the existing avoided costs for capacity and energy. E1 expects the quantification of these impacts to come from NS Power and/or the NSIESO
		Resilience	Assumed to be not material.
	Other	Compliance with Regulatory Requirements	E1 expects the quantification of these impacts to come from NS Power and/or the NSIESO
	Gas System Impacts	Commodity Costs	Embedded in 'Other Fuels'
Non-Utility System Impacts	Other Fuels	Commodity	E1 expects to propose quantification to the DSMAG (with potential support from external consultants)
		Environmental Compliance	Any compliance costs are embedded in commodity price.
		Market Price Effects	Assumed to be not material.
		Other Utility System Impacts	Assumed to be not applicable.
			Assumed to be not material.
	Host Customer Impacts	DER Measure Costs	E1 expects DER measure costs to continue to be developed by E1 (with potential support from external consultants)
		Interconnection Fees	E1 expects interconnection fees to be proposed by E1 (with potential support from external consultants)
		Tax Incentives	E1 expects tax incentives to be proposed by E1 (with potential support from external consultants)
		Water cost impacts	E1 expects water cost impacts to continue to be developed by E1 (with potential support from external consultants)
		Reliability	Not applicable. Either captured under utility system reliability or host customer resilience.
		Risk	

Impact Category	Impact Type	Impact	Work Products
		Transaction Costs	E1 to propose host customer non-energy impacts proxy adders to the DSMAG (with potential support from external consultants)
		Resilience	
		Asset Value	
		O&M Costs	
		Economic well-being	
		Comfort	
		Amenity	
		Health & Safety	
		Empowerment	
		Pride	
	Societal Impacts	Resilience	Not applicable. Captured under utility system impacts
		GHGs	E1 expects to propose quantification to the DSMAG (with potential support from external consultants)
		Other Environmental	E1 expects to propose quantification to the DSMAG (with potential support from external consultants)
		Public Health	Considered to be captured in the Other Environmental (other air pollutants) impacts

(c) Please refer to E1's response to NSEB IR-35.

Request IR-04:

Reference: E-1, Evidence, Section 2.2, page 4.

The National Standard Practice Manual ("NSPM"), which provides a comprehensive framework for cost-effectiveness assessment of Distributed Energy Resources, identifies symmetry as a core principle for an optimal cost-effectiveness test.

(a) Would E1 consider the principle of "symmetry" to include the timeframe over which costs and benefits are measured? Please explain.

(b) For E1's proposed BCA test, please expand on the length of time that it proposes to measure for each component of the forecast costs and benefits.

Response IR-04:

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

(a) Yes. The time frame over which costs and benefits are assessed should be symmetric. The anticipated impacts (both costs and benefits) should be estimated for the measure's lifetime.

(b) The costs and benefits of a measure should be assessed over the time-period for which they are expected to have impacts. This is typically the measure's useful lifetime. Costs may occur early during the measure lifetime, while benefits (such as energy savings) can be expected to be spread over a measure's lifetime.

Request IR-05:

Reference: E-1, Evidence, page 10 line 18 to page 11 line 2.

In keeping with current practice, E1 also commits to providing Program Administrator Cost (PAC) test results to stakeholders in the course of DSM Plan applications, for information purposes.

(a) Please explain what is meant by "for information purposes", considering the mandate of the regulator, and the approvals that will be sought by E1.

(b) Specifically, what is the utility of PAC test results, for E1 and for regulatory proceedings, once provided?

(c) Does E1 agree that the BCA does not dictate the spending on E1's portfolio of programs but rather sets out the benefits and costs?

(d) Would the PAC be supplemental to the BCA to help in determining the appropriate level of spending?

Response IR-05:

(a) EfficiencyOne's (E1) DSM Plans are required to be cost effective at the portfolio or Plan level by applying the Nova Scotia Energy Board (NSEB), formerly the Nova Scotia Utility and Review Board (NSUARB) approved test, which is currently the Total Resource Cost (TRC) test. E1 has in the past provided the results of the Program Administrator Cost (PAC) test for informational purposes. The PAC test includes only the utility costs and the utility benefits. Historically, the utility only perspective of the PAC has been provided for E1, the

regulator, and stakeholders, to gain insights and knowledge about the cost effectiveness of the DSM Plan. E1 understands the results may be used to inform, guide discussion, and support recommendations as opposed to using them as a binding decision making tool to approve or reject the DSM Plan as is the case with the approved screening test. E1 has always provided the PAC test results as additional information for stakeholders and has committed to continue.

The PAC test results were intended to provide additional insights and information that may be helpful in assessing programs and/or measures that may or may not have been cost effective under the existing TRC test. The PAC test is not intended to determine the level of funding at the Plan or program level or to be considered a supplemental or secondary test.

(b) Please refer to part (a) of this IR Response.

(c) The *Public Utilities Act*, Section 79I (1) clearly defines that Nova Scotia Power Inc. *"shall undertake cost-effective demand-side management that is reasonably available in an effort to reduce costs for its customers."* Additionally, Section 79H (2) also clearly defines that "*The Energy Board, in evaluating a franchise holder's application pursuant to Section 79L, shall evaluate the proposed cost-effective demand side management at the portfolio level that would be the aggregate amount of demand-side management programs*." E1 understands that cost effectiveness for any DSM Plan where the benefits are equal or greater than the costs must first be demonstrated prior to any DSM Plan approval. The BCA's purpose is not to determine the level of the DSM Plan investment. E1 must determine through the DSM Plan development process the appropriate level of investment to propose. This is in consideration of other factors such as the Integrated Resource Plan, E1's historical spending and performance, and the concept of a balanced portfolio which is

supported by design objectives that ensure equitable allocation of investment and savings between residential and business sectors and access to programs by all market sectors and rate classes.

(d) No. Please refer to part (a) of this IR response.

Request IR-06:

Reference: E-1, Evidence, Section 5.2, Jurisdiction to Consider Non-Energy Impacts, pages 11-12.

(a) Is it E1s position that the new legislation to consider non-energy impacts eliminates the Board's conclusion on the meaning of "cost effective" being whether E1's plans are "'affordable' and result in the lowest long-term cost of electricity" (2020 NSUARB 56)? Please explain.

(b) Is it E1's position that there should only be one test to exclusively determine the cost effectiveness of E1's DSM plans?

(c) Is it E1's position that regardless of other potential results, if a DSM plan has an overall portfolio value greater than 1 for its new BCA test, the plan will be deemed cost-effective?

(d) Please explain why E1 has not proposed multiple cost-effectiveness tests given the increased number of objectives, which may or may not be contradictory?

Response IR-06:

(a) EfficiencyOne (E1) does not assert that the new legislation eliminates the Board's earlier interpretation of "cost effective." Rather, E1's position is that the legislative amendments have expanded the framework within which cost-effectiveness must now be assessed.

At the time of the Nova Scotia Utility and Review Board's (NSUARB) decision in M08888, section 79L of the Public Utilities Act (PUA), expressly required the Board to consider the "affordability" of proposed electricity efficiency and conservation activities.

> (9) *The Board's assessment of the proposed electricity efficiency and conservation activities for the purpose of the approval* ***must take into account their affordability*** *to Nova Scotia Power Incorporated's customers, along with any other matters considered appropriate by the Board or as may be prescribed.* [Emphasis added]

This section was removed from the PUA through S.N.S, 2022, c 53, s.8[1]:

> *8 Section 79L of Chapter 380 is repealed and the following Section substituted:*
>
> *79L (1) Upon receiving the application of a franchise holder respecting a demand-side management purchase agreement, the Board shall establish a process for the review and approval of the application.*
>
> *(2) The franchise holder shall provide any information or evidence required by the Board for its determination of the application.*
>
> *(3) The franchise holder is responsible for providing information and evidence to the Board to justify the demand-side management that is proposed to be undertaken for Nova Scotia Power Incorporated, and Nova Scotia Power Incorporated may rely upon the expertise of the franchise holder in respect of the delivery of demand-side management.*
>
> *(4) The Board shall approve an application pursuant to this Section if, in addition to any other matters considered appropriate by the Board, it is satisfied that the application, including the proposed demand-side management that is the subject of the application, is in the best interests of Nova Scotia Power Incorporated's customers and satisfies the requirements in Section 79I.*

[1] Bill No. 228, Royal Assent, November 9, 2022

> *(5) The Board's review of the proposed demand-side management for the purpose of the approval must consider any matters deemed appropriate by the Board or as may be prescribed.*
> [Emphasis added]

The cumulative result of the legislative amendments now requires that the Board approve a demand side management (DSM) application, where, in addition to other matters considered appropriate by the Board, it "is in the best interests of Nova Scotia Power Incorporated's customers".[2]

The legislative amendments enacted through the Energy Reform (2024) Act, S.N.S. 2024, c.2, which established the Energy and Regulatory Boards Act and The More Access to Energy Act, have significantly expanded the mandate of the Energy Board. These changes require the Board to duly consider factors such as sustainable development and sustainable prosperity for Nova Scotians, with particular emphasis on supporting energy efficiency and greenhouse gas emission reduction goals as outlined in the Environmental Goals and Climate Change Reduction Act. Consequently, these legislative updates, introduced after the Board's decision in M08888, now mandate that the Board review and approve DSM plans that are cost-effective at the portfolio level and align with the best interests of Nova Scotia Power's customers, having given due consideration to the sustainable development and prosperity of Nova Scotians.

(b) Yes. E1's position is that there should be a single jurisdictionally specific primary test that is used for cost effectiveness testing for all distributed energy resources. This approach ensures consistency in how cost effectiveness is assessed across all resources and DSM filings. Using multiple or secondary tests can lead to conflicting outcomes creating ambiguity in decision making. A single primary test avoids this by providing a unified

[2] Public Utilities Act, R.S., c. 380, s.79L(4)

framework for evaluation. Secondary tests may be used to provide additional insights, and to help understand implications from different perspectives (e.g., utility), but decisions are grounded in the primary test.

(c) Yes.

(d) Please refer to part (b) of this IR response.

Request IR-07:

Reference: E-1, Evidence, Section 6.1, page 13, new definition of DSM under section 79A(b).

(a) For each of the activities defined under the new section 79A(b) for demand-side management, please explain how E1 plans to track actual costs, load, impacts and assign for the purposes of the DSM variance inter-class "true up" calculation.

(b) Please explain how E1 proposes to track, price out, report, and benchmark the actual non-energy benefits and non-utility system impacts achieved by its DSM plans moving forward.

Response IR-07:

(a) EfficiencyOne (E1) files DSM Quarterly and Annual Progress Reports which outline the details of E1's progress towards the DSM Plan approved performance targets. Details are provided at the DSM resource, program and program component level including savings and spending. This includes actual results and forecasts compared to the DSM Plan. Nova Scotia Power Inc.'s (NS Power) is responsible for the DSM Rate Rider Application which includes the Program Cost Recovery and the Balance Adjustment. E1 provides the actual and the planned expenditures by rate class to NS Power as an input into the Balance Adjustment.

(b) E1 has proposed that the BCA test be subject to an 'evergreen' periodic review process through the Demand Side Management Advisory Group (DSMAG) to ensure that the included impacts and quantification of all impact categories are reflective of accurate and

current data, and of any changes to Nova Scotia policy objectives. This 'evergreen' review would be conducted in advance of the development of a new DSM Plan.

E1 is not proposing that the impacts for non-energy benefits or non-utility system impacts be tracked, priced out, reported or benchmarked during implementation. This is consistent with the current approach applied to NS Power's avoided costs.

Request IR-08:

Reference: E-1, Evidence, Section 6.3, page 16, lines 21-27.

> ***The legislation mandates the Energy Board to consider:***
> ***• Environmental impacts of DSM programs, including contributions to reducing greenhouse gas emissions and other pollutants***
> ***• Encouraging practices and technologies that reduce overall energy consumption and improve efficiency***
> ***• Other fuel impacts, such as the cost-effectiveness of strategic electrification programs, which can be influenced by the commodity costs of displaced fuels***

Reference: E-1, Evidence, Section 6.3, page 18 lines 1-5.

E1 also notes that the Board is to incorporate "sustainable development" and "sustainable prosperity", including considerations such as:

> ***• environmental impacts of DSM programs generally, including how these programs contribute to reducing greenhouse gas emissions and other pollutants;***
> ***• encouraging practices and technologies that reduce overall energy consumption and improve efficiency; and***
> ***• the potential of DSM programs to create green jobs and stimulate economic growth.***

(a) Please confirm that at this time E1 is not including the consideration of "green jobs and stimulate economic growth" into the BCA, based on EFC's recommendation to have this addressed outside of the BCA framework? If not confirmed, please explain.

(b) Please confirm if it E1's position that all the other above components are included in the proposed BCA test?

(c) Please confirm if is it E1's position that all of the above considerations are effectively considered within one cost-effectiveness test?

(d) Please pinpoint where the Energy Board is given the jurisdiction to review the impact on the job market or growth in the economy when regulating the activities of E1? If not in the legislation, please elaborate on why E1 believes the Board is able to take this into consideration in approving DSM programs.

(e) Please elaborate on whether E1 has taking into consideration whether there is a possibility that the above points could contradict each other within cost-effectiveness testing when combined? For example, where electrification, which increases electricity usage, effectively eliminates fuel benefits from energy efficiency, which reduces electricity usage.

(f) Will E1's new BCA test also include costs of potential increased supply requirements on the utility system (i.e. generation, transmission, distribution, grid resiliency, etc.) and customer connection costs for non-utility system costs as a result of future electrification? Please explain.

Response IR-08:

(a) Confirmed, based on Energy Future Group's (EFG) recommendation.

(b) Confirmed. Please refer to EFG's Report[1], Summary Table 1, page 12.

(c) Yes, with the above noted exception that the proposed Nova Scotia Jurisdictional Test (NSJT) test will not address green jobs creation and stimulation of broader economic growth.

(d) The Energy Board is not explicitly mandated to assess job market or economic growth impacts. It is EfficiencyOne's (E1) position that these considerations are permissible—and even encouraged—under the broader sustainability and innovation objectives set out in the Energy and Regulatory Boards Act. These impacts are reflected indirectly in the benefit cost analysis (BCA) test through host customer and societal benefit categories, aligning with the province's evolving energy policy framework.

Section 6(2) of the Energy and Regulatory Boards Act directs the Board to give appropriate consideration to:[2]

i) Supporting competition and innovation in energy provision
ii) Supporting the development of a competitive electricity market
iii) Ensuring safe, secure, reliable, and economical energy supply
iv) Supporting sustainable development and sustainable prosperity

The term "sustainable prosperity" is defined by the Environmental Goals and Climate Change Reduction Act[3] to mean *"prosperity where economic growth, environmental*

[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 of 68.
[2] Energy Reform Act, April 5, 2024, Schedule A: Energy and Regulatory Boards Act.
[3] Environmental Goals and Climate Change Reduction Act, October 2021, 2(l)

stewardship and social responsibility are integrated and recognized as being interconnected."

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

Yes, utility system impacts as recommended in the Nova Scotia benefit cost analysis (BCA) test include both increases and decreases in fuel and electricity use associated with a given measure. There can be countervailing impacts, such as an increase in electric use for heat pumps combined with a decrease in on-site fossil fuel consumption.

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

Yes, increases in electric consumption and the associated utility system impacts are included. For details, please see Section IV of the EFG Report, starting on page 33 for a discussion of utility system impacts.

Request IR-09:

Reference: E-1, Evidence, pages 20-22.

Preamble: E1 indicates that the new BCA test is grounded in the National Standard Practice Manual ("NSPML") eight principles:

(a) NSPM Principle #1 is outlined in Table 4 as: "DERs are one of many energy resources that can be deployed to meet utility/power system needs. DERs should therefore be compared with other energy resources, including other DERs, using consistent methods and assumptions to avoid bias across resource investment decisions." Please provide a detailed description and comparator of all inputs to the proposed E1 BCA test as compared to the assessment inputs used by NSPI for alternative energy resources (e.g., new wind resources, capacity generators, etc.) and indicate, for each input, whether E1's proposed new test uses consistent methods with new system resources.

(b) Please confirm that the NSPM indicates its purpose is to help "guide" the development of BCA tests, but it does not provide "guidelines" as to acceptability or unacceptability of specific BCA tests. If not confirmed, please explain.

(c) The NSPM notes: "Lost revenues and potential rate impacts are not appropriate to include in cost-effectiveness analyses, and should instead be analyzed separately using rate, bill, and participation analyses." Please provide a detailed analysis of the ways in which E1 proposes to conduct and file these assessments, and their relevance to future approvals by the NSEB.

Response IR-09:

(a) In order to fairly compare distributed energy resources (DERs) to other energy resources, including other DERs, it is critical that all utility system impacts are quantified. The National Standard Practice Manual (NSPM) states, "[Principle 1] necessitates that the full range of utility system impacts serve as the foundation of a jurisdiction's primary cost-effectiveness test, upon which other (non-utility system) impacts may be added where applicable to relevant policy goals".[1]

The utility avoided costs are produced by comparing a demand side management (DSM) to a No DSM option, (with avoided costs of capacity and energy being derived from NS Power's Integrated Resource Plan [IRP]). The No DSM option removes DSM and replaces it with other energy resources. The avoided costs therefore represent the incremental benefits of DSM compared to all other available energy resources.

If the avoided costs of DSM are fully and appropriately valued, the IRP and benefit cost analysis (BCA) framework can help guide decisions on the economically optimal level of DSM compared to other energy resources. If avoided costs of DSM are not fully quantified, or are undervalued, this may lead to biased conclusions of how DSM competes against other energy resources.

Energy Futures Group (EFG) and EfficiencyOne (E1) have proposed a BCA framework for all DERs so that all DERs can be considered within the same framework with consistent methods and assumptions, consistent with Principle 1 of the NSPM. E1 is unable to speak to NS Power's assessment inputs for energy resources (e.g., new wind resources, capacity generators, etc.) and whether they are aligned with those included in E1's proposed benefit cost analysis (BCA).

[1] M12282, E1 BCA Test Application, May 16, 2025, Appendix A, Attachment 2: National Standard Practice Manual (NSPM), page 49 of 302.

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

Not confirmed. The National Standard Practice Manual (NSPM) provides principles for the development of jurisdictionally specific BCA tests. The principles function as "guidelines" for BCA test development.

(c) Please refer to E1's response to IG IR-11.

Request IR-10:

References: E-1, Evidence, page 26, Table 5; and pages 34-35, Table 9 and 10.

Preamble: E1 has included a number of non-utility system impacts in relation to the new proposed BCA Test, including a "Societal" Sub-category which includes: "Resilience"; "GHG Emissions"; "Other Environmental (air pollutants)"; and "Public Health" that is reportedly embedded in GHG Emissions and Other Environmental categories. At Table 9, E1 elaborates that the consideration of "Public Health" includes "Changes in medical outcomes and costs", and this is included in the new BCA.

(a) Please provide the legislative reference affording the Energy Board jurisdiction to take into consideration "public health" in regulating utilities or E1. If not in the legislation, please elaborate on why E1 believes the Board is able to take public health into consideration.

(b) Please further explain how "medical outcomes and costs" overlap, or are embedded within GHG Emissions and Other Environmental considerations?

Response IR-10:

(a) It is EfficiencyOne's (E1) position that the Nova Scotia Energy Borad (NSEB) can consider public health impacts through the expanded legislative framework provided by the *Energy Reform Act, More Access to Energy Act*, and related statutes. These laws explicitly require the Board to consider broader sustainability objectives, which inherently include public

health impacts. The definitions of "sustainable development"[1] and "sustainable prosperity"[2] encompass environmental stewardship and social responsibility, which are directly related to public health outcomes.

(b) Public health is not proposed as a stand-alone impact category, since public health impacts are included in both the greenhouse gas (GHG) emissions impact, based on social cost of carbon, and the Other environmental (air pollutant) impacts based on the Environmental Protection Agency's benefit per kilowatt hour method. Including a separate public health impact category in the recommended benefit cost framework, would risk double counting the public health impacts already captured in the greenhouse gas and other air pollutant categories.

[1] "sustainable development" means development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Environment Act 3 aw.
[2] "sustainable prosperity" means prosperity where economic growth, environmental stewardship and social responsibility are integrated and recognized as being interconnected. Environmental Goals and Climate Change Reduction Act 2021, c. 20, s. 2.

Request IR-11:

Reference: E-1, Appendix A, Attachment 2, National Standards Practice Manual, at Appendix A pages 230 –236 of 302.

Please provide a detailed explanation of how E1 proposes to address the contents of Appendix A of the NSPM (Rate Impacts) including which tests would be applied, and at which stage of the BCA approval?

Response IR-11:

The National Standard Practice Manual's (NSPM) Rate Impacts section states that "rate impacts are different from cost-effectiveness" and "cost-effectiveness analyses should be conducted separately from rate impacts analyses".[1] While not a part of the BCA framework, EfficiencyOne (E1) recognizes the importance of considering rate, bill and participant impacts. E1 completes a Rate and Bill Impact Analysis (RBIA) that assesses the rate, bill, and participant impacts of all resources and is filed alongside all DSM Plan Applications. The RBIA results can be considered together with cost-effectiveness results and any other relevant factors when assessing any DSM Plan Application. E1's RBIA is a well-established approach to assessing the rate, bill and participant impacts of DSM, and aligns with NSPM recommendations. For reference, the results of the most recent RBIA can be viewed as part of E1's 2026 DSM Extension Application.[2]

[1] M12282, E1 BCA Test Application, May 16, 2025, Appendix A, Attachment 2: National Standard Practice Manual, pages 230-231 of 302.
[2] M12249, E1 2026 DSM Extension Application, April 30, 2025, Appendix B: Rate and Bill Impact Analysis of the 2026 DSM Extension.

Request IR-12:

Reference: E-1, Appendix A, Attachment 2, National Standards Practice Manual, at Appendix E page 262 of 302.

Appendix E of the NSPM (Table E-1) provides a conceptual overview of BCA tests, noting five possible "perspectives" or vantage points that can be emphasized in BCA analysis (e.g., the vantage point of the utility, versus the vantage point of the participating customer, versus the vantage point of the non-participating customer). Please provide a detailed assessment of the proposed BCA (or additional information to be filed with the BCA) to show how the following will be taken into account:

(a) The vantage point of the utility (e.g., traditionally through a Utility Cost or Program Administrator test).

(b) The vantage point of the participating customer (e.g., traditionally provided through a Participant Cost test).

(c) The vantage point of the non-participating customer (e.g., traditionally provided through the Rate Impact Measure, or the Utility Cost test).

Response IR-12:

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

(a) Appendix E of the National Standard Practice Manual (NSPM) provides an overview of the five "traditional" screening tests and a discussion of the perspectives associated with each

test. It notes that a jurisdiction adopting a new jurisdictional test might adopt a primary test that is identical to one of the standard tests, or that differs from the standard tests, to better reflect jurisdictional policy priorities and the regulatory perspective. The proposed new primary test for Nova Scotia includes all material electric utility system impacts, including program administration and incentive costs for E1, and therefore reflects the utilities (both NS Power and E1) perspectives. It also includes host customer costs and benefits and societal impacts, providing a broader regulatory and policy perspective.

(b) Appendix E also notes that the participant cost test and the non-participant cost tests are best used in a supplemental fashion for program design and assessing potential rate impacts respectively but are not appropriate for application as the primary cost effectiveness test. See comments in sections E.5 and E.6 in the NSPM for further discussion on why the Participant Cost Test (PCT) and Rate Impact Measure (RIM) tests are not appropriate as primary BCA tests.[1]

(c) Please refer to part (b) of this IR response.

[1] M12282, E1 BCA Test Application, May 16, 2025, Appendix A, Attachment 2: National Standard Practice Manual, pages 264-265 of 302.

Request IR-13:

References: E-1, Appendix B; and Evidence, page 4 of 38.

(a) Please explain why only American jurisdictions were reviewed in preparation of E1's filing?

(b) Please provide analysis undertaken on DSM cost effectiveness metrics utilized by Canadian jurisdictions.

(c) For each jurisdiction reviewed (including any Canadian jurisdictions not included in the Application), please provide a list of all benefit-cost analysis tests considered to determine cost-effectiveness, and any other DSM tests (including rate payer impact tests) that are also used to evaluate DSM plans.

(d) For each jurisdiction reviewed (including any Canadian jurisdictions not included in the Application), please explain whether or not electrification, solar-PV and storage are evaluated in a combined manner with energy efficiency and demand side management plans.

(e) For the jurisdictions that do include electrification, solar-PV and/or storage within DSM plans, please discuss if these jurisdictions include all of these activities within a single benefit-cost analysis test to determine cost-effectiveness or if they separate any activities for the purposes of BCA testing.

Response IR-13:

The following response has been provided by Energy Futures Group.

(a) Please refer to EfficiencyOne's (E1) response to NSEB IR-03 part (a).

(b) Please refer to E1's response to NSEB IR-03 part (a).

(c) The process and workshops conducted by EFG focused on the development of a jurisdictional test, based on the principles and steps in the National Standard Practice Manual (NSPM). For informational purposes, Appendix F in the EFG report[1] listed a summary table of the impact categories included in BCA tests for states and territories in the United States.

(d) The principles and guidelines from the NSPM are designed to develop a test that can be applied to all distributed energy resources (DERs), including electrification, solar photovoltaic (PV), PV plus storage, and energy efficiency in a consistent manner.

(e) A jurisdictional test for all DER's can be applied at the individual measure, plan or portfolio level. EFG did not conduct a review or analysis of the level at which other jurisdictions apply their BCA tests. Based on direction from the Nova Scotia Utility and Review Board (NSUARB) now the Nova Scotia Energy Board, EFG recommends and E1 plans to apply the primary test at the portfolio level, and that the new primary test be applied to all DER's including efficiency, solar and on-site storage. E1 will continue to provide information on screening at the measure and program level for informational purposes.

[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 67-68 of 68.

Request IR-14:

Reference: E-1, Appendix B.

Does the requested approval of a new BCA include the following as approved values, or are they inputs that would be considered at each future DSM Plan review:

(a) use of a 2% social discount rate?

(b) The NEB proxy adders shown in Table 14?

Response IR-14:

(a) EfficiencyOne (E1) has requested approval of the real discount rate of 2 percent to quantify societal impacts to reflect the regulatory perspective on long-term greenhouse gas and other societal impacts.

(b) E1 has requested approval for the host customer non-energy benefits to be quantified using proxy adders applied as a percentage of net energy benefits or of measure costs (for electrification) depending on the impact category, target market and distributed energy resources (DER) type. The quantification of the host customer non-energy benefits would be subject to the proposed evergreen process along with all other impact categories.

Request IR-15:

Please provide a mathematical representation of the proposed BCA test, including each value that would be summed as part of the "benefit" portion of the calculation, and each that would be summed as part of the "cost" portion of the calculation, and indicate where each of the following will be accounted for:

(a) Incentives paid to customers

(b) Incentives paid to energy efficiency industry participants

(c) Utility administrative costs.

Response IR-15:

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

(a) A mathematical representation of the proposed BCA test is:

Net Benefits = Sum of Present Value Utility System Impacts + Sum of Present Value of Host Customer Impacts + Sum of Present Value of Societal Impacts.

As discussed in the EFG Report and summarized in Table 5 the components of each of these terms are:

Utility system impacts – energy generation, generation transmission and distribution capacity, **financial incentives**, and **program administration**. Incentives paid to customers are accounted for in financial incentives.

(b) Incentives paid to energy efficiency industry participants would also be accounted for in financial incentives.

(c) Utility administration costs – would be accounted for under program administration. This would include administration costs for E1, as well as for NS Power (as appropriate).

See Table 5 from the EFG Report, reproduced below, as an illustrative example of the accounting.[1]

Table 5: Illustrative Example of Recommended Nova Scotia Test

	Nova Scotia Test ($Million), 2% Social Discount Rate, Using 2023-2025 Avoided Costs: Example based on 1,000 Heat Pump Replacements in Program Year 2026					
	Category	**Impact**	**Basis for Estimation**	**HP- Fuel Oil**	**HP- Ngas**	**HP- Elec. Resist**
Utility System Impacts	Generation	Energy Generation	Updated NSP Avoided Costs (time and seasonal dependent)	($8.56)	($8.56)	12.84
		Capacity	Updated NSP Avoided Costs (time and seasonal dependent)	($8.70)	($8.70)	8.70
		Environmental Compliance	Should be reflected in Avoided Costs	0	0	0
		RPS/CES Compliance	Should be reflected in Avoided Costs	0	0	0
		Market Price Effects	NA	0	0	0
		Ancillary Services	Should be reflected in Avoided Costs	0	0	0
	Transmission	Transmission Capacity	Updated NSP Avoided Costs, Example Split 50/50	($1.86)	($1.86)	1.86
		Transmission System Losses	Should reflect marginal losses from generator			
	Distribution	Distribution Capacity	Updated NSP Avoided Costs, Not based on historic	($1.86)	($1.86)	1.86
		Distribution System Losses	Should reflect marginal losses from generator			
		Distribution O&M	Should be reflected in Avoided Costs	0	0	0
		Distribution Voltage	NM	NM	NM	NM
	General	Financial Incentives	EOne Incentives	($3.20)	($3.20)	($3.20)
		Utility Direct Investments in DERs	NSP investment for enabling DERs	0	0	0
		Program Administration	EOne program Admin	($1.90)	($1.90)	($1.90)
		Utility Performance Incentives	NA	0	0	0
		Credit and Collection	Need to be developed			
		Risk	Need to be developed			
		Reliability	Should be reflected in Avoided Costs	0	0	0
		Resilience	NM	NM	NM	NM
			Sub Total Electric Impacts	**($26.08)**	**($26.08)**	**$20.16**
Non Utility Impacts	Other Fuels	Avoided Heating Oil/Natural Gas	Fuel cost projection minus embedded carbon price	$42.40	$6.20	0
	Other Environmental	Health Impacts from Increase/Decrease in Electric Generation	US EPA Benefit per kWh for New England	($0.78)	($0.78)	$ 1.17
	Greenhouse Gas Impacts	Avoided Social Costs for CO2	Social cost of carbon & electric and avoided fuel	$13.90	$7.30	$14.02
Host Customer Impacts	Direct	Direct measure costs	Host customer measure costs net of incentives	($4.80)	($4.80)	($4.80)
	Proxy	Proxy host customer benefits	Percent estimate for host customer non-energy net benefits	$0.80	$0.80	$0.80
			Sub Total Non Utility and Host Customer Impacts	**$51.52**	**$8.72**	**$11.19**
			Total Net Benefits	**$25.44**	**($17.36)**	**$31.36**

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

Request IR-16:

Please indicate if, or how, the proposed BCA test can help inform the appropriate level of incentives or subsidies for participation in efficiency initiatives and provide an example.

Response IR-16:

One of the factors that is considered in EfficiencyOne's (E1) current incentive setting methodology is the measure's overall cost effectiveness. The proposed benefit cost analysis (BCA) includes the total cost of a measure consistent with the existing Total Resource Cost (TRC) test. Total costs include both the customer and the applicable incentive costs. The level of incentive does not change the total cost. If the incentive increases, the customer cost would decrease and vice versa. Subject to the Nova Scotia Energy Board's approval, the proposed BCA will replace the current TRC, acknowledged to be unbalanced and biased, to assess a measure's overall cost effectiveness.

Energy Futures Group provided an illustrative example of the recommended BCA test in Table 5 of Appendix B to the Application.[1] The proposed BCA Ratio is calculated by dividing the Total Electric, Non-Electric and Host Proxy Benefits ($) by the Total Electric, Non-Electric and Host Proxy Costs.

The example includes the following benefits:

Energy Generation ($12.84)

Generation Capacity ($8.70)

[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 19 of 68.

Transmission Capacity ($1.86)

Distribution Capacity ($1.86)

Health Impacts ($1.17)

Avoided Social Costs for CO2 ($14.02)

Proxy Host Customer Benefits ($0.8)

Total Benefits: ($41.26)

This example includes the following costs:

E1 Incentives: ($3.20)

Program Administration ($1.90)

Host Customer Measure Costs Net of Incentives ($4.80)

Total Costs: $9.9

As set out in Table 6,[2] the Benefit Cost Ratio for this example is = 4.17 (Total Benefits $41.26 / Total Costs $9.9).

If the Incentive amount in this example was increased from $3.20 to $4.20, the Host Customer Measure Costs Net of Incentives would conversely decrease from $4.80 to $3.80, and the Benefit Cost Ratio would remain 4.17. Similarly, if the incentive amount was decreased from $3.20 to $2.20, the Host Customer Measure Costs Net of Incentives would increase from $4.80 to $5.80, and the Benefit Cost Ratio would remain unchanged at 4.17.

[2] Ibid., page 22 of 68.