2025 **M12282**

NOVA SCOTIA ENERGY BOARD

IN THE MATTER OF: **The *Public Utilities Act***

IN THE MATTER OF: **An Application by EfficiencyOne for approval of a New Benefit-Cost Analysis Test for Evaluating Demand Side Management Plans**

RESPONSES TO INFORMATION REQUESTS

To: Nova Scotia Energy Board

From: Bowman Economic Consulting Inc.
The Industrial Group

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Request IR-1:

Please provide specific references to the "typical definitions and principles" applied to "sustainable development" and "sustainable prosperity" by the United Nations or IISD.

Response:

The broadly accepted definition of Sustainable Development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” which comes from the UN Report of the World Commission on Environment and Development: Our Common Future (the “Brundtland Report”)[1]. This has been enshrined in

[1] http://www.un-documents.net/our-common-future.pdf paragraph 27.

legislation in various forms in Canada, such as the Nova Scotia *Environment Act*[2] and the Manitoba *Sustainable Development Act* (now repealed).

As a principle, the idea has seen widespread adoption in many fora including utilities (e.g., see the Quebec Loi Sur la Regie de L'energie s.5; the Global Reporting Initiative (GRI) standards, which have been adopted by such parties as Canadian Utilities Inc (owner of ATCO)[3], etc.), however implementation has usually required more specific tangible tests and measurable results as opposed to sweeping concepts. This has been the root of the UN Sustainable Development Goals (SDGs) with detailed annual reporting on measurable progress towards specific agenda items.[4] This includes measurable targets of relevance to utilities, such as targets for increased renewable generating capacity (SDG7) and climate action (SDG13).

[2] Environment Act, SNS 1994-95, c 1, s. 3(aw).

[3] https://www.canadianutilities.com/content/dam/web/canadian-utilities/our-commitment/sustainability/2023-canadian-utilities-limited-esg-datasheet.pdf

[4] https://unstats.un.org/sdgs/report/2025/

Request IR-2:

Please provide versions of the two tables on page 14 that also include a column for the total resource cost test, adjusted to include non-energy benefits, as contemplated in "Option 1" described on page 12.

Response:

See attached. The fundamental difference is that the TRC focuses on the utility, its customers, and the program participants, not the full scope of all effects on society broadly. For clarity, the table below has been adjusted to clarify differences in the way taxes are treated, and the difference between GHG global "costs" (i.e., societal impacts) versus any GHG "charges" (i.e., monetary costs to a given party due to emitting).

For conversion of electric resistance heating to heat pumps (energy efficiency):

Proposed BCA (societal perspective)	**TRC including Non-Energy Benefits (utility and its customers + participant perspective)**	**PAC (utility and its customers perspective)**
Benefits = NPV of avoided electric generation and capacity costs, avoided transmission and distribution costs, beneficial health impacts from reduced electric generation, avoided GHG global social costs, and other non-energy benefits for the host customer (via proxy) Costs = NPV of full costs to install heat pump, program administration All costs and benefits exclude taxes	Benefits = NPV of avoided electric generation and capacity costs (including GHG emission charges), avoided transmission and distribution costs, and other non-energy benefits for the host customer (via proxy) Costs = NPV of full costs to install heat pump, program administration All costs and benefits include taxes	Benefits: NPV of avoided electric generation and capacity costs (including any GHG charges), avoided transmission and distribution costs Costs = NPV of costs to incent customer to install heat pump, program administration All costs and benefits include taxes

For conversion of fuel oil heating to heat pumps (beneficial electrification):

Proposed BCA (societal perspective)	**TRC including Non-Energy Benefits (utility and its customers + participant perspective)**	**PAC (utility and its customers perspective, including revenue)**
Benefits = NPV of avoided fuel oil purchase, avoided GHG global social costs, and other non-energy benefits for the host customer (via proxy) Costs = NPV of added electric generation and capacity costs, added transmission and distribution costs, adverse health impacts from increased electric generation, costs to install heat pump, and program administration All costs and benefits exclude taxes	Benefits = NPV of avoided fuel oil purchase (including any GHG charges), and other non-energy benefits for the host customer (via proxy) Costs = NPV of added electric generation and capacity costs (including any GHG charges), added transmission and distribution costs, costs to install heat pump, and program administration All costs and benefits include taxes	Benefits: NPV of added utility revenue Costs = NPV of added electric generation and capacity costs (including any GHG charges), added transmission and distribution costs, costs to incent host customer to install heat pump, program administration All costs and benefits include taxes

Request IR-3:

On pages 13-15, Mr. Bowman discussed why a focus on the program administrator test as the primary test would be preferred to the "Proposed BCA". Please explain why a focus on the program administrator test as the primary test would be preferred to the total resource cost test, adjusted to include non-energy benefits, as contemplated in "Option 1" described on page 12.

Response:

The TRC test, as outlined in IR-2, suffers from a number of issues.

First, the TRC test provides incomplete insight into the impact on a utility and its customers. It only looks at the aggregated impact on those parties, when combined with the participants. A measure which achieves a combined positive impact (TRC > 1.0) could mask a clear adverse impact on the utility and its customers. This is the same conclusion as reached by the Newfoundland and Labrador Board of Commissioners of Public Utilities, as follows:[5]

> The Board accepts that the mTRC test can be a useful tool for the utilities to assess whether a program is likely to be economic for participating customers. However it is not clear to the Board that this test is useful in assessing whether a program is beneficial for customers who do not participate in the program or for the system generally. In the case of the utility EV incentives, a program may pass the mTRC test where there are large non-electric benefits for a small group of customers and the costs are shared by all customers, the majority of whom do not participate. As a result the Board is not satisfied that the use of the mTRC test, on its own, is useful to demonstrate whether the program is consistent with the provision of least-cost reliable service.

The mTRC test referenced above is the same as the traditional TRC test, but with participant non-electrical benefits included.

Second, the TRC test ignores entirely the cost and impacts on the utility and its ratepayers from paying subsidies and incentives to participants. These payments net out in the TRC calculation

[5] Board of Commissioners of Public Utilities of Newfoundland and Labrador Order P.U. 33(2022). Available: http://www.pub.nl.ca/PU/orders/2022/P.U.%2033(2022).PDF at page 13.

as they are a cost to one party, but a benefit to the other. As a result, a positive TRC could still have a near infinite range of possible impacts on the utility and its customers, simply through the decision by E1 as to how much subsidy and incentive it may want to provide to participants. Consider the case of a participant installing a measure that costs them $1, and the measure would save the utility system $2 in future generation costs. All else being equal, this measure would have a TRC of 2.0 ($2 of benefits divided by $1 of costs). This same 2.0 TRC result arises whether the participant receives an incentive payment of $0.01 from the utility, or $10, because incentive payments are ignored. Clearly these two examples lead to different PAC results (a PAC of near 2.0 when the incentive cost is very low, but 0.2 in the case of the large incentive (utility customers pay $10 to achieve a benefit of $2, for a PAC of $2/$10, or 0.2). A TRC is not useful for making this assessment of impacts on the utility and its customers, but a PAC measure is.

For these reasons, the PAC is preferred as a primary test for E1's activities.

Request IR-4:

On page 15, it is stated that, "The use of a primary screening tool can help reach conclusions on the cost-effectiveness of a plan, but is not an absolute requirement nor veto on any given plan component." Given this, please explain why it matters whether the primary test is the program administrator cost test or the "Proposed BCA".

Response:

From the outset, the focus should be on the fundamental E1 transaction, which is spending on subsidies and programs towards energy efficiency and electrification.

Anyone can undertake energy efficiency activities at any time, on their own initiative, and can similarly pursue electrification. Also, other parties (such as municipalities, the provincial government, the federal government, etc.) through such measures as codes and standards and tax incentives, etc. can influence and expand energy efficiency activities.

E1 is not about achieving energy efficiency nor electrification, per se, as those are much broader topics. E1 is a mechanism for sharing information and providing incentives to increase energy efficiency and electrification beyond what would be the case without E1. As a result, E1 invests in incentives, programs, sharing information, etc. to complement the societal movement towards energy efficiency, over and above these other efforts by other parties (or simply the initiative of the participant). The PAC is the best link between measuring E1's own specific spending and investment (of utility customer money), versus its results in exchange for that spending.

The TRC is a more muddled test in this regard as it (1) includes a large focus on what the participant is spending of their own money to achieve their own benefits, and (2) ignores almost entirely many large aspects of E1's actions (the payment of incentives to get participants to act). In terms of E1's cost effectiveness, which is what the Energy Board is measuring, the PAC is a far more focused and meaningful test.