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1 **Request IR-01:**

2 Please provide a copy of the scope of work for which Gil Peach & Associates LLC ("Verifier") was
3 retained in relation to its preparation of the 2024 Verification Report.

4
5 **Response IR-01**

6 The scope of work covers on-site visits, review and monitoring of the DSM administrator's
7 database for tracking and measurement of energy and demand savings; review of all the
8 evaluation consultant's studies and reports; including review of all methods and calculations used
9 by the evaluation consultant to estimate energy and demand savings; verification of these, and
10 if appropriate, to adjust savings data and estimates. The scope also includes review and comment
11 on all Efficiency One reports and filings; interim status reports as requested by Board Staff or
12 Board Counsel; the annual Savings Verification report (with an opportunity for E1 to correct
13 factual errors); preparing and filing the final Savings Verification report with the Board; remote
14 participation in the DSMAG meetings that review evaluations and verifications; and remote
15 participation in other meetings, as directed.

1 **Request IR-02:**

2 Please confirm whether the Verifier's scope included planning and/or policy-related work.

3 **Response IR-02:** Yes, the Verifier's scope necessarily encompasses planning and policy-related
4 work. However, it is not within the Verifier's role to make decisions in these areas. Instead, the
5 Verifier is responsible for identifying issues so that they can be brought to the attention of the
6 program administrator, the Nova Scotia Energy Board (NSEB), and other relevant parties for
7 review and potential action. The verification consultant's responsibilities include highlighting
8 factors that could negatively impact the performance of DSM programs and offering
9 recommendations. For instance, similar to the evaluation consultant recommending adjustments
10 to savings as estimated by the DSM administrator, the verification consultant may recommend
11 adjustments to DSM savings as determined by the evaluator.

12
13 To avoid conflicts of interest, both the evaluation consultant and savings verification consultant
14 work independently of the program administrator. The verification consultant reports directly to
15 the NSEB for additional oversight on measurement, evaluation, and performance issues that the
16 evaluator might overlook.

17
18 The roles of the independent evaluator and verification consultant include providing feedback
19 that shapes policy and planning, aiming to improve efficiency and effectiveness. We support
20 evidence-based decision making by offering numerical results and insights for informed
21 decisions, identifying positive outcomes and potential issues early, recommending
22 improvements, and aiding continuous learning. Our input helps in strategic planning by
23 highlighting strengths, weaknesses, opportunities, and threats (SWOT) related to program
24 implementation. This information supports long-term strategies aligned with mission and
25 objectives. Overall, we aim to enhance program effectiveness.

1 **Request IR-03:**

2 At page 2 of the 2024 Verification Report, the following statement is made:

3 *"For this report we call attention to only two steps in the cycle: Independent*
4 *Evaluation and Verify Savings & Review."*
5

6 The other three centres of focus are noted as "Plan", "Implement", and "Policy". On page
7 3, the scope of the Verify Savings & Review centre of focus is described to include
8 *"[suggested] modifications in the Evaluation data, methods, and reported results, and in*
9 *future Implementation."* The scope of the Independent Evaluation centre of focus is also
10 described.
11

12 **Request IR-03 a:**

13 Please identify, and provide reference to source materials, establishing the five "centres of
14 focus" related to the DSM cycle, as set out in the Report.
15

16 **Response IR-03 a:**

17 The diagram in the Savings Verification report has numerous sources and has been developed
18 and revised by our team over the past fifty years. This work is based on applied and participatory
19 research conducted across various US and Canadian utilities, participation in DSM collaboratives,
20 efforts to promote DSM, and contributions from DSM initiatives in Sweden and Norway.
21 Additionally, we have tracked advancements through the European Council for an Energy
22 Efficiency Economy (ECEEE) and the American Council for an Energy Efficiency Economy (ACEEE).
23 Since 1980, our team members have been involved in numerous DSM collaboratives and projects,
24 for utility and government energy efficiency, primarily in the US and Canada, as well as other
25 countries. The diagram we use for NSEB today comes from that varied and direct experience.
26

27 The diagrams are "living documents" that change over time, since policy and planning, as well as
28 understandings of statistics and methods of evaluation are continually changing. The early DSM

1 diagrams we use were created by Clark Gellings at the Electric Power Research Institute. Clark
2 and I met in Paris and discussed the future of DSM in 1988 during Clark's collaboration with OECD,
3 where Gil presented innovations in DSM from the Hood River Conservation Project, a major
4 demonstration project on residential energy conservation.¹

5
6 Clark's "DSM Planning and Implementation Steps" diagram, developed at EPRI and published in
7 1993,² is one of the earliest illustrations of the DSM process. Although all functions are
8 performed, in this early diagram the five NSEB areas (Planning, Implementation, Evaluation,
9 Verification, and Policy) are not shown separately because DSM practice was in its early stages.
10 In Clark's second diagram, also published in 1993,³ In this diagram "Planning" is called DSM
11 Evaluation and Selection" and includes projected customer acceptance/market analysis, utility
12 considerations and the benefit-cost analysis. "Implementation" includes pilots and full-scale
13 implementation. Evaluation" includes monitoring, evaluation planning, evaluation design,
14 evaluation, evaluation, and program feedback. "Policy is covered in DSM Objectives which
15 includes broad utility objectives, operational objectives, and load-shape objectives. Verification
16 is not shown because, initially, commissions only required that utilities start doing DSM with a
17 requirement to report energy savings. Commission concern for independent evaluation emerged
18 as DSM moved out of the pilot and demonstration phase. Verification is not required if the
19 independent evaluator reports to the regulator rather than the utility. By the mid-1990s,
20 regulatory commissions had created what they considered to be a necessary firewall between all
21 program management functions and all program evaluation function.⁴ This reform, to deal with
22 "the problem of interest" is typical for evaluation work where public trust is essential, and
23 evolution brought about reliance on independent evaluation consultants. The policy reforms to

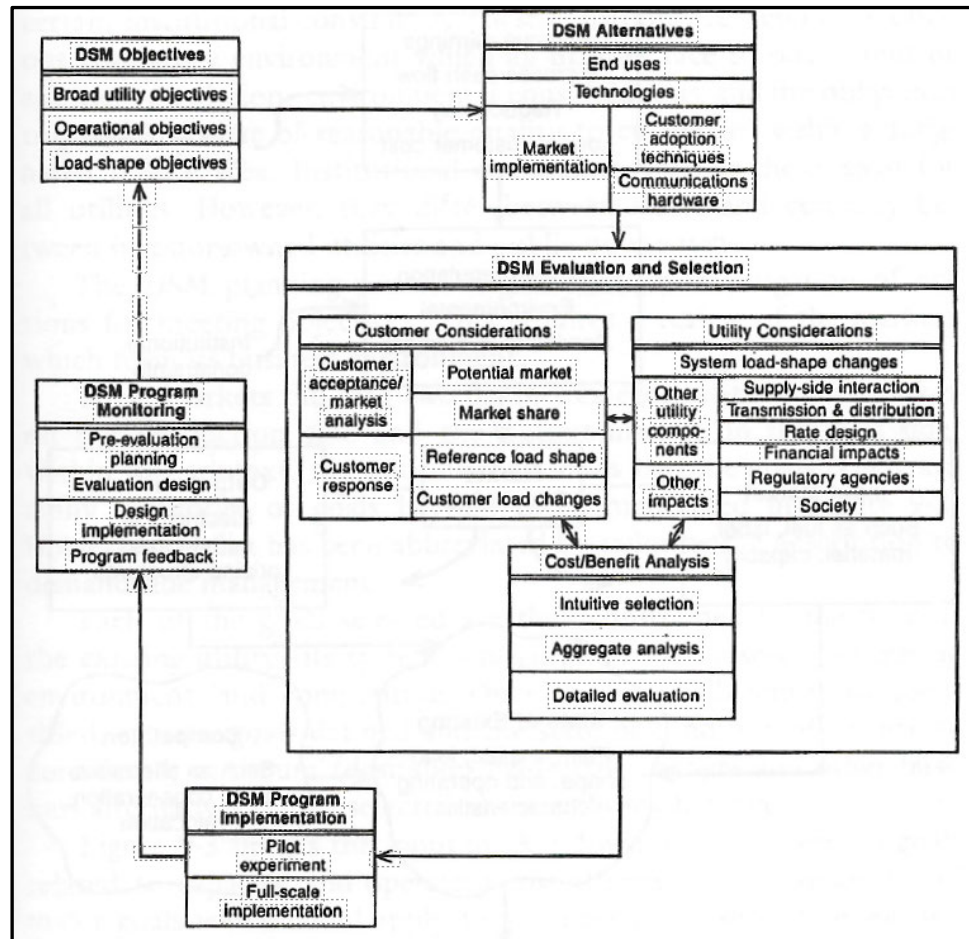
¹ Initial IEA OECD DSM conference, 1988.

² Gellings, Clark and John H. Chamberlin, *Demand-Side Management Planning*. Liburn, Georgia: Fairmont Press, 1993, P.37.

³ Gellings, Clark and John H. Chamberlin, *Demand-Side Management: Concepts and Methods*, Second Edition. Liburn, Georgia: The Fairmont Press 1993, P. 233.

⁴ In California, the fire wall is also between Planning and Evaluation.

avoid conflicts of interest vary by location. In some jurisdictions, the evaluation consultant reports to the utility, while in others, like California, the independent evaluator reports directly to the regulatory commission.



We drew from Clark's work and other work over the years in developing understandings of the DSM processes and the DSM cycle as our practice extended from the US to Canada and to other countries.

1 **Request IR-03 b:**

2 Please describe the scopes of the other three centres of focus in the DSM cycle, which are
3 described in Figure 1 as "Policy", "Plan", and "Implement."

4
5 **Response IR-03 b:**

6 This response describes scopes associated with "**Policy**", "**Plan**", and "**Implement**".
7

8 **Policy.** Operational policies direct actions. For example, we might consider the interpretations of
9 benefit-cost tests in the program screening step. These tests are a form of policy employed to
10 screen programs and determine whether to proceed according to current designs, cancel or
11 discontinue the programs, or alternatively, focus on iteratively refining designs and re-running
12 the tests until a superior performance is achieved. Formally, decisions in setting policy belong to
13 the national government, then to the provincial government, then NSEB, and under NSEB to
14 Efficiency Nova Scotia as a regulated utility. Informally, and at the level of practice, everyone can
15 participate in the discussion at every level, and good policy happens when all perspectives are
16 put forward and can be considered by Efficiency Nova Scotia, participating parties, and the NSEB.
17 The evaluation consultant has a particular role to play in this area: to propose changes that will
18 make the overall effort more productive (effective) and efficient and to spot problems that could
19 interfere with policy goals. The verification consultant is like the evaluator, though with more
20 structural independence, and can sometimes catch problems the evaluator might miss.⁵
21

22 **Plan** refers to DSM planning and the planning process. The DSM plan follows policy guidance
23 from NSEB. Policy establishes a structure of accountability, and in the standard version of the
24 cost test, compliance with least cost planning principles is primary. However, depending on the

⁵ Peach, H. Gil & Eric Hirst, "Factors in the Practice, Organization, and Theory of Evaluations," Pp. 163-170 in
Evaluation and Program Planning, Vol 12, 1989.

1 jurisdiction, other factors may also influence decisions in the composition of a program portfolio
2 and the activities and results of program evaluation. At a formal level, the plan functions
3 separately, with specific staff managing the main aspects of the plan. In practice, contributions
4 to the plan can come from everyone, and a plan that includes a variety of perspectives tends to
5 be effective.

6
7 **Implement** refers to program implementation, generally following the DSM plan, but allowing
8 for discretion and innovation. Evaluators can question any potential drawbacks or inefficiencies
9 in program designs and in the practice of implementation. The savings verification consultant can
10 also report implementation issues to management and include them in the Savings Verification
11 study for NSEB, the parties, and Efficiency Nova Scotia.

12
13
14 **Request IR-03 c:**

15 Please explain why “[suggested] *modifications in the Evaluation data, methods, and reported*
16 *results*” falls under the “Verify Savings & Review” centre of focus in the DSM cycle.

17
18 **Response IR3 c:**

19 Modifications in the Evaluation data, methods, and reported results fits in the “Verify Savings &
20 Review” centre of focus in the DSM cycle since the verification consultant is directed to “*Review*
21 *all methods and calculations used by the Evaluation Consultant to estimate energy and demand*
22 *savings; verify, and, if appropriate, adjust savings data and estimates.*” We do a lot of checking,
23 and we follow developments in methods both within DSM and outside DSM, particularly in two
24 areas: the discipline of statistics and the area of evaluation methods. When we find an error or
25 a problem, we report it and also are required to suggest an adjustment in energy savings, if
26 appropriate. If we see any kind of problem in the calculations or in the data, or in methods, or
27 interpretation of results that affects the programs either in our site visits (where we gather a lot

1 of customer insights and perceptions as we check the work and discuss program experience
2 directly with customers), or in our focused study of the evaluations (we also consider relationship
3 of what we see with our knowledge of problems that have happened elsewhere), we will make
4 the Evaluation Manager at Efficiency Nova Scotia aware. We will also make NSEB aware, as
5 necessary. This happens during and after field visits and through the annual Savings Verification
6 report.

7
8 We are, like the evaluator, trying to find out whether or not, or to what degree, each program is
9 working. Evaluation results may incorporate a mistake in method or in calculation. We catch
10 these. Some of the problems are caught in calculation checks. Some problems are caught in
11 review of methods used by the evaluator; some show up in discussion with customers. For
12 example, not using an accepted evaluation protocol flags a possibly very serious problem with an
13 evaluation, while observing the relevant protocols is generally a confirmation of good practice.

14
15 To summarize, we check data, methods, and reported results as essential elements of work, in
16 order to verify savings and review. Modifications in the Evaluation data, methods, and reported
17 results fall exactly into the "Verify Savings & Review" centre of focus in the DSM cycle. Of course,
18 these modifications are also the responsibility of the evaluation consultant, and of the Efficiency
19 Nova Scotia evaluation manager. Our experience is that the programs work better, the more
20 observations from different perspectives contribute together to create better DSM processes and
21 outcomes, including the evaluation data, methods, and results parts.

1 **Request IR-03 d:**

2 Please explain why "[suggested] *modifications....in 'future [i]mplementation'*" falls under the
3 Verify Savings & Review centre of focus in the DSM cycle.

4
5 **Response IR3 d:**

6 Suggestions for modification future implementation fall under the Verify Savings & Review centre
7 of focus in the DSM cycle because the verification consultant is verifying the work with a full
8 overview of all the parts of the DSM effort. The point of it is to catch errors and to make
9 recommendations for improving future implementation. When a problem is caught and traced it
10 will usually call for modification of future implementation to ensure program integrity and to
11 make programs and evaluation more efficient and effective.

1 **Request IR-04:**

2 From pages 3 to 6 of the 2024 Verification Report the Report makes certain recommendations in
3 relation to "Market Transformation", "Climate Change", and "Energy Sufficiency". Please detail
4 how these recommendations fall within the existing scope of work in relation to the 2024
5 Verification Report.

6
7 **Response IR-04:**

8 The focus of the report is within the scope of the original Resource Acquisition model of DSM,
9 and when Market Transformation, Climate Change and Energy Sufficiency are discussed, the
10 report notes that policy authorization for the kinds of evaluation and program design concepts
11 that would be central to modifying practice to deal with program evaluation within these
12 frameworks is either missing (climate change and energy insufficiency) or incomplete (market
13 transformation). These three frameworks are described to build awareness of our existential
14 context and to indicate three likely directions for the future of DSM.

15
16 **Climate Change:** By 2024, it became obvious we need to focus more on disaster preparedness
17 due to the failure of initial global climate efforts. While we may lack the authorization now, it is
18 important to systematically consider how to adapt DSM programs and evaluation methods for
19 future authorization. Regulated utilities are particularly well suited to participate in the disaster
20 preparedness dimensions of climate change and should be doing their part.

21
22 **Energy Sufficiency:** Energy sufficiency, as a model for Demand-Side Management (DSM)
23 programs and DSM evaluation, represents an essential orientation that includes low-income
24 DSM, though it is not our current focus in North America. It is a key area of interest for the
25 European Council for an Energy Efficient Economy (ECEEE) and is being developed in several
26 countries, including China.

1 **Market Transformation:** The evaluation consultant is skilled in market transformation analysis,
2 and Efficiency Nova Scotia recognizes ongoing transformations in some markets. The consultant
3 occasionally includes market transformation data in reports. Authorization and focus are needed
4 to enhance this approach in programs and evaluations. Market transformation can yield
5 significant returns, and a more coherent understanding of markets so it warrants increased
6 attention to get more traction from program dollars.

7

Request IR-05:

Please confirm that Figure 3, page 11 of the 2024 Verification Report, demonstrates that all program components achieve net lifetime energy savings.

Response IR-05:

Figure 3, from Page 11 of the 2024 Verification Report is reproduced below. The purpose of the figure is to show the contrast in effective for the programs. Each of the programs shown in the figure has a lifetime of energy savings, ranging from twenty to twenty-seven years for programs at the top of the figure to one year for the program at the bottom. Not all program components achieve net lifetime energy savings. (Two programs are not shown in the figure. These are the two DR programs and since they are designed to reduce KW demand but are not designed to save energy, the energy savings measure would not be relevant for these programs.)

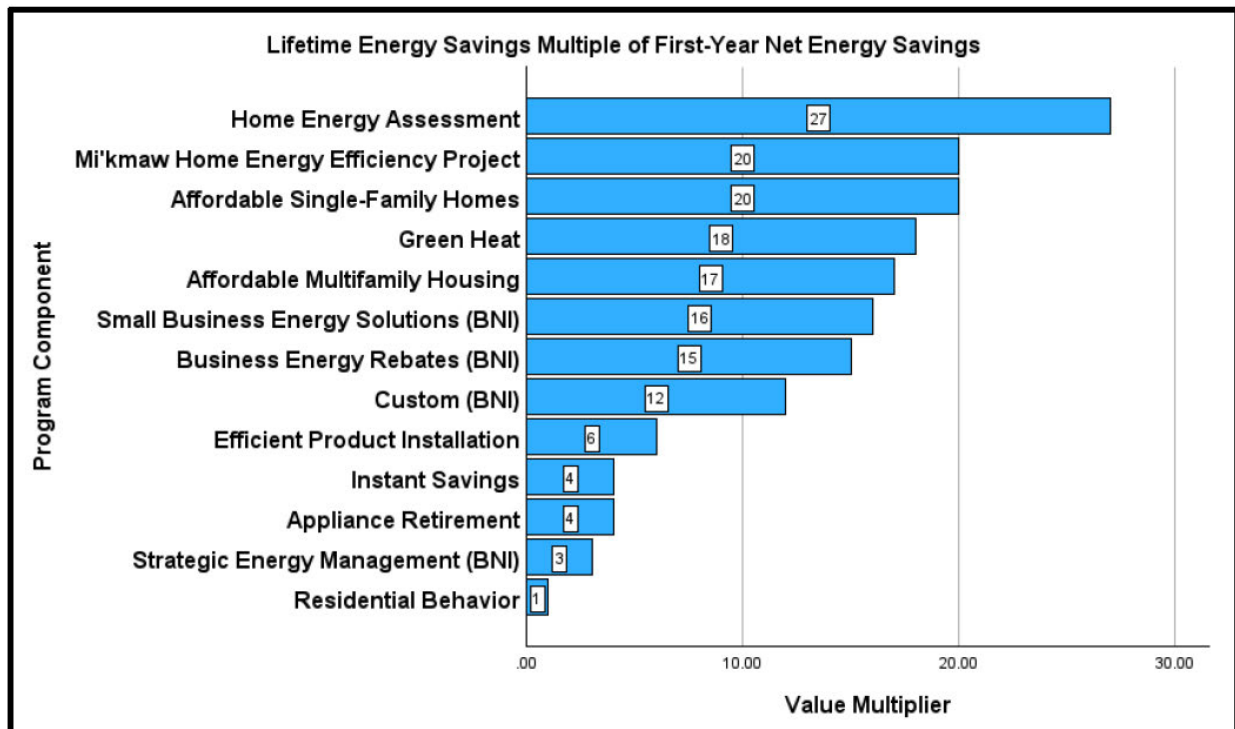


Figure 3: Rank Order for Evaluated Lifetime Net Energy Savings as a Multiple of Net First Year.

1 **Request IR-06:**

2 Please confirm whether the methodology used in quantifying net lifetime energy savings was
3 consistent with current methodological guidance for evaluating energy efficiency programs.

5 **Response IR-06:**

6 The method for quantifying net lifetime energy savings was selected by the evaluation consultant
7 and the numbers used in Verification report are provided in Table 5 on Page 16 of the evaluator's
8 Overall Executive Summary. The figures presented in the white boxes within the blue bars of
9 Figure 3 are the evaluator's numbers, rounded to the nearest whole number. The methodology
10 followed by the evaluator is detailed in the text box below.

“As part of the DSM MA update in 2024, the Evaluator reviewed the EUL values for existing and new measures to ensure they were valid and revised them where appropriate. The EUL update was based on a literature review of the most recent technical reference manuals from other jurisdictions. The resulting EUL values were included in the 2024-2025 DSM MA. In addition, for some measures, the Evaluator considered not only the measure life, but also the evolution of the baseline over the lifetime of the measure. Lifetime electrical energy savings were calculated based on the existing baseline until the end of the period when the equipment would have been replaced and then based on the new standard baseline for the remaining EUL of the measure. The adjusted EUL of a given project was then calculated as the lifetime electrical energy savings divided by first-year electrical energy savings.”
Econoler, Overall Executive Summary, Overall Effective Life Review, P. 11.

11
12 The method used by the evaluator is consistent with guidance currently provided by the
13 American Council for an Energy Efficient Economy (ACEEE).⁶

⁶ Gold, Rachel & Seth Nowak, *Energy Efficiency Over Time: Measuring and Valuing Lifetime Energy Savings in Policy and Planning*. Washington, DC: American Council for an Energy Efficient Economy, Report U1902, February 2019.

1 **Request IR-07:**

2 Please confirm what is meant by the terms, "*meaningful energy savings*" and "*tiny savings*", from
3 both a qualitative and quantitative perspective, and explain how the use of these terms are
4 consistent with current methodological guidance for evaluating energy efficiency programs.

5
6 **Response IR-07:**

7 This definition is based on the magnitude of savings or the magnitude of demand reduction and
8 not on statistical significance or the (positive or negative) direction of the results.

9
10 At the customer level, when we use the term "*meaningful energy savings*" we are talking about
11 a reliable amount of energy savings that would make a difference to a household, a small
12 business, or to an industrial firm. The actual size of savings that would be perceived by the
13 customer as really providing value, for example by lowering the cost of energy for the home or
14 business (meaningful monetary savings), or for industry that could actually lower the cost of
15 production. The actual quantitative sizes to use could best be determined by discussing the
16 question with customers.

17
18 We can also look at the programs at the utility level. The practical question at this level is to ask
19 if the program magnitude of results actually makes a difference to the utility, which usually comes
20 down to decision making about infrastructure and the resource plan. System planning engineers
21 and executive management will have a sound perspective on what makes sense and what does
22 not.

1 **Request IR-08:**

2 Please confirm what is meant by the term "*practical energy savings or demand reduction*", from
3 both a qualitative and quantitative perspective, and explain how the use of this term is consistent
4 with current methodological guidance for evaluating energy efficiency and demand response
5 programs.

6
7 **Response IR-08:**

8 **Practical energy savings** means a magnitude result that would be perceived as providing
9 meaningful value to a customer, or to the utility, or both. Generally, in a business context, we
10 think of that as a cost reduction.

11
12 **Practical demand reduction** means a magnitude result that would be perceived as providing
13 meaningful value to a customer, or to the utility, or both. Generally, in a business context, we
14 think of that as a cost reduction.

15
16 From a utility perspective, for demand reduction we would divide the magnitude of the Gigawatt
17 reduction by the magnitude of the total system load in Gigawatts. This will give a percentage.
18 The value to use as cut off will vary depending on the load situation of the utility, and the
19 perception of where the cutoff would be might differ by entity - the power utility (NSP), the
20 conservation utility (Efficiency Nova Scotia), the regulator (NSEB), and the parties. However, a
21 cutoff value exists – there is some return from investment in a program that is too low to support
22 continuation of the program "as is." Usually, we would look to the system planning department
23 at NSP for engineers or to NSP executive management, who would know how to value a
24 magnitude result in the current load management and system planning context.

25
26 Similarly, from a customer perspective, there is some magnitude of energy savings, likely
27 expressed in dollars or percentage bill reduction, that is too low to justify continuation of the

1 program "as is". We are flagging three programs (residential behavior and the two DR programs)
2 because it looks like the magnitude results of these programs are too small to be of practical
3 value from a customer perspective. The purpose of flagging them is to initiate a discussion of
4 whether or not to continue the programs "as is", or to cancel the program, or to focus on
5 improving the effectiveness of the program.

6

Request IR-09:

Please confirm what is meant by the term "*practical value*", from both a qualitative and quantitative perspective, and explain how the use of this term is consistent with current methodological guidance for evaluating energy efficiency programs.

Response IR-9:

"**Practical value**" is used to indicate a test of the magnitude of program results (energy savings or demand reduction), which is separate from statistical significance. For any test of the magnitude of program results (energy savings or demand reduction) there exists some minimum value below which the program is not useful. This is determined not by statistical analysis but by knowledge of the real world. In each instance this value is determined by the context. For example, with regard to demand reduction, a reduction of a certain amount on a feeder might permit a delay in upgrading the feeder. System engineers can calculate this kind of "cutoff" value, below which the program is not justified, but above which the program is of practical value.

The second part of the question, regarding how use of the term "practical value" is consistent with current methodological guidance for evaluating energy efficiency programs is that in 2016 the American Statistical Association changed the understanding of statistical significance, to de-emphasize statistical significance in favor of practical significance. For the residential behavior program, there is a special problem with statistical significance testing that occurs because the size of the sample tested is large and the power of the test is approximately 100%, while the energy savings per household is exceedingly small. When this occurs, nearly every test comes out as statistically significant, because the size of the sample drives statistical significance. The methodological guidance in this situation is to disregard statistical significance and assess results in terms of practical significance.

1 **Request IR-10:**

2 Reference: page 52 of the 2024 Verification Report: (Section I. Residential Behavioral Program
3 (Efficiency Insights):

4 *Because significance and confidence are driven by number of cases and the cases*
5 *are joined physically by environmental and weather conditions, and so are not*
6 *really independent, statisticians may question reliance on the use of statistical*
7 *significance testing for very large samples. This is particularly true when the*
8 *values of individual household energy savings are too small to be meaningful to*
9 *the individual household, as they are in the current study, but the level of*
10 *significance is high as an artifact of sample size.*
11

12 (a) Please confirm what methodology the Verifier relies upon in reaching the determination
13 that system-level savings of 6.27 GWh is *"likely meaningless at the system level."*
14

15 **Response IR-10:**

16 Please refer to pages 52, 53, and 54 of the Savings Verification report. In particular:

17
18 **"Effect Size at the System Level.** However, at the system level we are not interested in energy
19 savings per household, but in the aggregate effect of the program at the level of the utility
20 system. According to the evaluator's analysis, this is approximately 6.27 GWh for an eight-month
21 period, defined as a year.⁷ "
22

23 "At the utility system level, the effect size for the first year is 6.27 GWh. Unless NSP demonstrates
24 otherwise, this is not a meaningful effect size at the system level. For comparison, the NSP system
25 requirement was 11,326.3 GWh for 2024,⁸ so this is about 0.06% (six one-hundredths of one
26 percent)."

⁷ Table 86, Evaluated 2024 Residential Behavior Net Electrical Energy Savings, Econoler Residential Behavior Evaluation, Existing Programs, P. 195.

⁸ Nova Scotia Power, Total System Requirements, 2024, Non-Confidential Annual FAM Reporting, NSPI (FAM), A8. This includes self-generation, interprovincial supply, and supply from US.

1 "For the aggregate GWh savings claim to have value for energy savings from this project as a
2 meaningful result, we would need to see how NSPI values this size (6.27 GWh per year spread
3 out over all the feeders of the system and all the days of the year and also spread over something
4 like 80% of residential customers). Knowing how the effect is generated from practically
5 meaningless savings per household and without installation of any physical program measures,
6 would this actually have any practical impact on decisions for the next new power plants?"
7

1 **Request IR-11:**

2 Reference: page 54 of the 2024 Verification Report (Section I. Residential Behavioral Program
3 (Efficiency Insights):

4 *Currently, behavioural RCTs, of which the current program is an example, are*
5 *black boxes. There is no coherent specification of mechanism or warrant, either*
6 *of specific behaviors that would save energy or of how much energy would be*
7 *saved through these (unknown) behaviours. A more robust approach to RCTs has*
8 *been specified by Cartwright and Hardie.*
9

10 (a) Please provide examples of jurisdictions where the proposed approach specified by
11 Cartwright and Hardie was used to measure energy savings for a similar program.
12

13 As far as we are aware, there are none, just as when the concept of free riders was introduced,
14 no jurisdictions were testing and adjusting for free ridership. However, reliance on black boxes
15 is inherently questionable. We would say that there is an obligation to understand the
16 mechanism by which energy savings are produced, because otherwise we cannot be sure they
17 are real. So, for example, a process evaluation as suggested by Efficiency Nova Scotia and the
18 evaluation consultant as a next step is a good idea. One technique to use in a process
19 evaluation would be to classify each home by its individual savings amount and sort the homes
20 according to savings. Then investigate the top three hundred homes (or some larger number
21 selected by the evaluator). From experience analyzing behavioral programs, meaningful savings
22 in these homes is caused by physical measures and not by small behavioral changes. If that is
23 confirmed, then the tiny average savings from the program that are demonstrated in the
24 analysis are not behavioral savings.

25 Note that we did not recommend that the program be cancelled at this point, since the objective
26 of referral to other programs has value.⁹ But claiming energy savings from this program seems a

⁹ Although we would note that the data in Table 85 of the evaluation report indicates that the impact in terms of participation in other programs was quite small. A good process evaluation could help identify ways to improve that impact.

- 1 stretch unless a business case can be made that the tiny savings from the behavioral part are
- 2 meaningful to customers or to the utility. We think that they are not, which is why we flagged
- 3 the program for careful review.

1 **Request IR-12:**

2 Reference: page 64-65 of the 2024 Verification Report (Section X.-K., Evaluation Issue 3-a), the
3 following was stated:

4 *"Observations of total claimed savings for the two locations showed that the*
5 *cumulative annual claimed savings over the previous four years were a*
6 *substantial portion of total energy demand for compressed air at the facility.*
7 *This is contrary to observations and evaluations of other sites that often have*
8 *no or little leak detection activity after many years of operation. The leakage*
9 *rate appears far too high. We expect the leakage rate to decrease, and here it*
10 *does not."*
11

12 **Request IR-12-a:**

13 Please provide the source for the referenced customer data supporting the Verifier's findings.
14

15 **Response IR-12-a:**

16 The source for the referenced customer data supporting the Verifier's findings is the evaluation
17 consultant's 2024 final report and E1 tracking sheet ex-ante claim for the two locations.
18

19 **Request IR12-b:**

20 Please provide calculations along with relevant data used to establish the leak rate at these
21 locations, and to support the statement that savings at these locations were a substantial portion
22 of total energy demand for compressed air.
23

24 **Response IR12-b:**

25 Cumulative leak repair energy savings over multiple program years are best expressed in terms
26 of total energy saved as a percentage of total energy demand for a single year. This is an effective
27 proxy for total air leakage repaired, in Cubic Feet per Minute as a percentage of total system
28 compressed air generation, also in Cubic Feet per Minute.

1 The 2024 evaluation report stated that their audit of air-leakage at two large sites, specifically
2 the two sites operated by one company under the Custom program reported 3.7 and 4.0 GWh of
3 tracked savings for the 2024 DSM year.

4
5 The compressed air leak audit measure provided a substantial percentage of total custom retrofit
6 program savings in 2024 (42%), yielding total tracked savings at the generator of 11.967 GWh,
7 with 69.6% of those savings produced at two locations that are owned and operated by the same
8 entity. The savings from compressed air audits in 2024 increased by 522% in 2024 as compared
9 to 2023 with the overwhelming majority of this increased savings produced by these two sites.

10
11 In 2024, the savings associated with the operations of the two large sites produced 364% of the
12 total tracked energy savings for all compressed air audit measures produced in 2023, even
13 though these programs were being implemented at these same locations during that period and
14 program best practices state that as a location establishes a practice of better leak detection and
15 repair that the total system leakage rates decline over time¹⁰.

16
17
18 **Request IR-12-c:**

19 Please provide an explanation to support the statement that the leakage rate at the two
20 facilities appears far too high (e.g., reference points from similar facilities and a range of
21 expected leak rates for such facilities). Please provide the source for referenced data.

22
23

¹⁰ Benton, N.; Burns, P. (2017). *Chapter 22: Compressed Air Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68577. <http://www.nrel.gov/docs/fy18osti/68577.pdf> pp. 14

1 **Response IR-12-c:**

2 The understanding of the Verifier team's analysis of the total claimed savings as a percentage of
3 total site-wide compressed energy demand was flavored during conversation on the matter with
4 E1 staff during a group interview conducted on Aug. 20th and Sept. 4th, 2024, where terms of
5 savings as a percentage of total demand were expressed in general terms as being a substantial
6 part of total system demand.

7
8 Within the framework of the Uniform Methods Protocol for these program operations, a rough
9 upper bound of 10% of total system demand is considered a high-end of a well-maintained
10 system. Further inspection of tracking sheet calculations for similar site operations shows that
11 these claimed savings values fall within this boundary and so the leak rates claimed are not
12 excessive for these sites.

13
14 **Request IR-12-d:**

15 Please provide an explanation to support the expectation that the leakage rate should
16 decrease.

17
18 **Response IR-12-d:**

19 Program best-practices for maintenance-assistance activities shows that upon project initiation
20 after years (or decades) of poorly maintained systems, an observed decline in total quarterly
21 claimed savings should be produced as the overall system performance improves over time.
22 According to the Uniform Method Protocols, in a well-maintained system, total system leakage
23 should be below 10%, and for poorly maintained systems this leak rate can be up to 30%.¹¹

24

¹¹ *ibid*

1 Since these sites have been receiving excellent air-leak management, the total energy savings for
2 the third year of the program should have declined over time and should be no greater than 10%
3 of the total system energy demand for air compression.
4

5 **Request IR-12-e:**

6 In reference to the above statement – what constitutes “substantial”, and upon what
7 methodological basis does the Verifier base its understanding of this term?
8

9 **Response IR-12-e:**

10 In terms of this discussion the total claimed savings of 10% or greater for a well-maintained
11 system as the upper bound.
12

1 **Request IR-13:**

2 Reference: page 65 (Evaluation Issue 3-b), the following was stated:

3 *"Leakage rate has increased. There has been an unexplained recent surge in*
4 *claimed savings at these two locations, as compared to prior years."*
5

6 (a) Please provide leakage rates and claimed savings for the relevant years to support this
7 statement.
8

9 **Response-IR-13:**

10 The observation of increased leakage rates of the sites for air compression were derived from
11 the 2024 and 2023 evaluator reports.
12

13 In 2024 the Evaluator reported that total claimed savings from the two sites yielded 7.7 GWh of
14 savings at the generator.
15

16 In the previous Evaluator report,¹² total claimed savings for the entire Custom retrofit program,
17 of which compressed air leak audits is a component, produced 10% of the total claimed savings
18 at the generator for the program. The total claimed savings that year was 21.178 GWh, hence
19 the total claimed energy savings for all compressed air leak audits in 2023 was approximately
20 2.1 GWh of total savings or 27% of the savings claimed in 2024 from the two sites.
21

¹² Econoler LLC, The 2023 DSM Programs Evaluator Reports, March 28, 2024

1 **Request IR-14:**

2 Reference: page 65-66 2024 Verification Report: **SVR2024-Compressed Air-12**

3 ***"Proprietary data issue.** It is not unusual for some organizations to try to keep*
4 *operational data proprietary and confidential, as a strategic policy. This is*
5 *customary for some organizations. However, in contrast, evaluation requires*
6 *both site access for direct measurement and access to usage data, and records*
7 *of interventions to improve energy efficiency. If an organization will not permit*
8 *the Evaluator to conduct an independent evaluation by restricting access to the*
9 *site or by withholding necessary data, or by providing data but not permitting its*
10 *use in public reports, the Evaluator should report this in its evaluation.*
11

- 12 (a) Please provide details and identification of client(s) that did not permit "access to the
13 independent Evaluator for direct on-site measurement and/or [did] not permit access to
14 necessary energy usage data - in relation to the 2024 independent evaluation.
15

16 **Response IR-14:**

17 The verification team specifically requested an on-site verification effort be conducted at the
18 [REDACTED] site, at the original request for site visits this explicit request was bolded to
19 highlight it as the highest priority. The request was made on December 6, 2024. Response by E1
20 staff on January 7, 2025, was that this request was denied by the Customer as they had already
21 accommodated a site visit by the evaluation team.
22

23 E1 tracking sheet data and evaluator reports were used to determine the total system cumulative
24 savings.
25
26