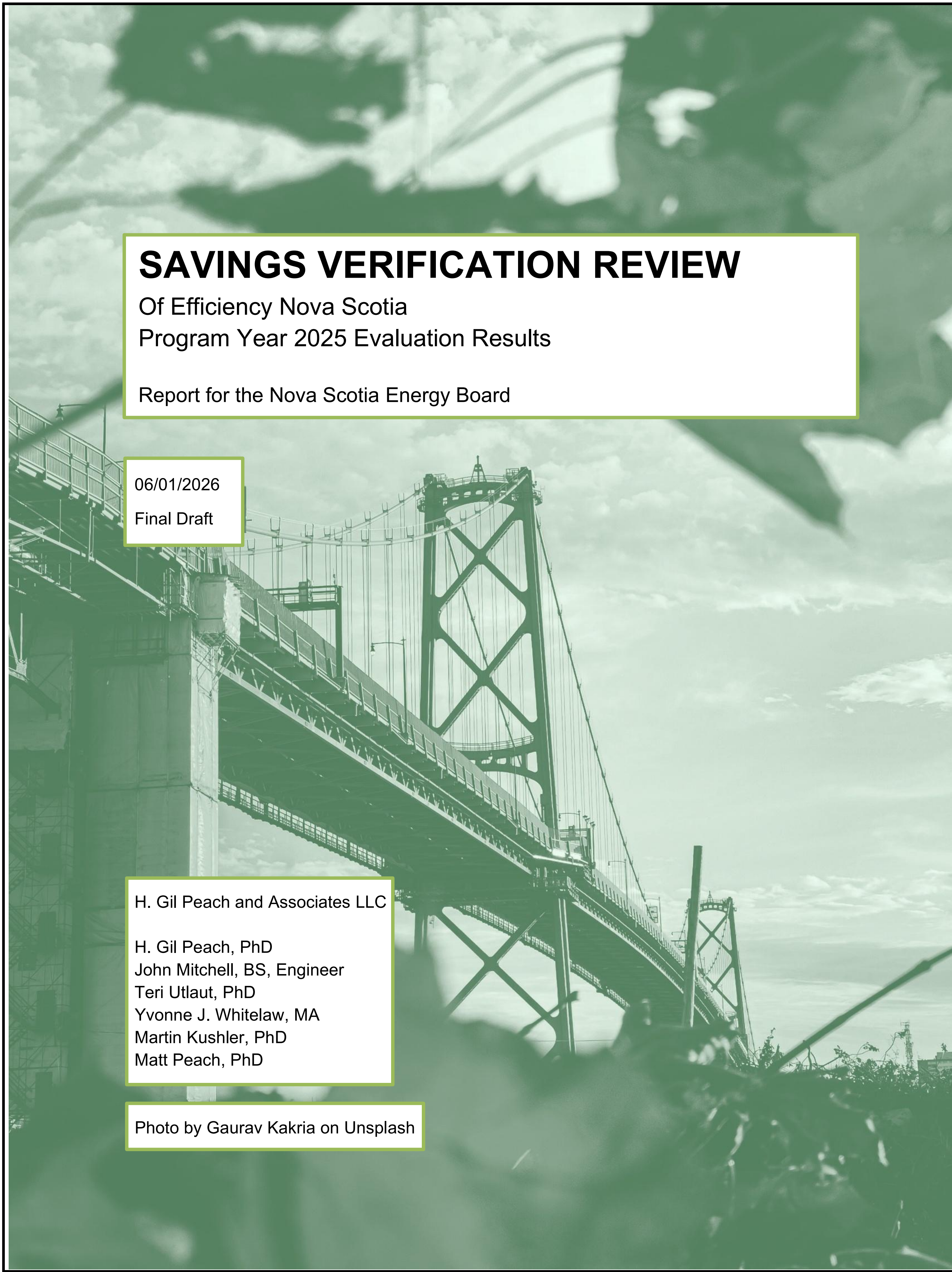

# SAVINGS VERIFICATION REVIEW

Of Efficiency Nova Scotia
Program Year 2025 Evaluation Results

Report for the Nova Scotia Energy Board

06/01/2026

Final Draft


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Photo by Gaurav Kakria on Unsplash

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# Verification Review: Program Year 2025

*Towards practical and contextually sound measurement, analysis, and reporting…*

# Executive Summary

**Savings Verification Review of Efficiency Nova Scotia DSM Programs**
**Program Year 2025 Evaluation Results**

This report presents an independent savings verification review of Efficiency Nova Scotia's Demand-Side Management (DSM) program evaluations for Program Year 2025, as conducted by Econoler. The purpose of this review is to assess the reasonableness, methodological integrity, and regulatory suitability of reported energy savings (GWh) and peak demand reductions (MW), and to provide recommendations regarding the acceptance and interpretation of evaluation results.

**Summary of Findings**

Based on detailed review of program-level evaluations, calculation methods, and supporting documentation, the verification finds that the evaluation framework, methodologies, and reporting practices are generally sound and consistent with established evaluation protocols. The evaluations largely conform to accepted standards, including those reflected in the Uniform Methods Project and related industry guidance.

The Evaluator demonstrates:

- Use of recognized and appropriate analytic methods for program impact estimation
- Consistency in evaluation structure and documentation across program components
- Adequate application of site verification, surveys, and data analysis
- A high level of competence in current evaluation practice and regulatory expectations

**Verified Portfolio Results**

The Econoler evaluation reports the following portfolio-level results for Program Year 2025:

- Net peak demand reduction (installed measures): 23.556 MW
- Available demand response capacity: 6.795 MW
- Net first-year energy savings: 129.444 GWh
- Net lifetime energy savings: 1,476.864 GWh

Savings contributions are distributed across sectors as follows:

- **Business, Non-Profit, and Institutional (BNI):** approximately 63% First-Year, 54% Lifetime.
- **Residential:** approximately 36% First-Year, 45% Lifetime.

The largest contributors to portfolio impacts include the Home Energy Assessment (HEA) program and major BNI programs, including Business Energy Rebates and Custom Incentives.

**Determinations Regarding Evaluation Results**

The verification team finds that evaluation results are generally suitable for acceptance for regulatory purposes, subject to specific cautions noted below. We recommend acceptance of evaluation results. However, the following program components require caution.

- **Residential Behavioural Program**:
  Econoler's analysis correctly followed the relevant protocol, however a cybersecurity attack on the Nova Scotia Power utility paused data availability for most of 2025. Since the Evaluator's analysis is in conformance with the appropriate Universal Methods Project protocol we recommend full acceptance to the calculated energy savings value, but caution that is a partial year result due to the need to pause the program for the remainder of the year, and not a negative reflection on the capability or performance of the program. Should the program continue, we recommend the Evaluator more fully develop and test the counterfactual alternatives in the analysis.
- **Demand Response programs:**
  While evaluation methods are consistent with protocol, we caution that the resulting savings and demand reductions are small in magnitude and may lack practical significance currently. However, the current measure mix and the innovation of use of electricians in program delivery are an important new approach at the forefront of energy efficiency programs in this area, and the programs should continue to be developed for at least five to seven years to see if both participation levels and demand response results can be meaningfully increased.
- **BNI Custom Incentives Program (compressed air component):**
  The relevant protocol was followed except for the measurement method. However, there is regulatory approval for the method. Since Econoler followed regulatory direction correctly, the savings results should be accepted. However, we caution that there is a protocol-level recognition of a problem with the measurement method (the method is recommended for locating leaks, but not for evaluation in the sense of savings verification). At a minimum, the Evaluator should fully discuss this measurement problem if it recurs in future evaluations and should consider alternative measurement.

**Cross-Cutting Issues Identified**
The review identifies several cross-cutting issues relevant to ongoing evaluation practice:

- **Practical Significance:**
  Current evaluation protocols emphasize statistical significance; however, in cases involving large sample sizes, statistically significant results may not translate into meaningful or actionable savings outcomes.
- **Transparency and Documentation**:
  Additional documentation is warranted for:
  - Statistical testing parameters (e.g., p-values, power, test structure)
  - Identification of data limitations or restrictions.
  - Clear disclosure of any departures from standard evaluation protocols.
- **Programs that Close:**
  When a program is put offline for part of a year, or closed, the evaluator should provide an analysis explaining the change, and discuss its likely effects on customers.

## Recommendations
The verification recommends that:

1. Evaluation results be accepted.
2. Evaluators explicitly identify programs with negligible practical savings, regardless of statistical significance.
3. Evaluation reports include enhanced transparency in statistical methods and, in particular, provide more focus on explanation of data limitations similar to that required for California NMEC evaluations.

# Conclusion
The Program Year 2025 DSM evaluation portfolio reflects a high level of methodological rigor and general compliance with accepted evaluation standards. The reported savings are reasonable and appropriate for regulatory consideration.

However, targeted adjustments in evaluation practice and program review are warranted to ensure that reported impacts reflect not only statistically valid results, but also practically meaningful and policy-relevant outcomes.

H. Gil Peach
& Associates LLC
IMPROVE THE QUALITY OF LIFE DURING THE ERA OF CLIMATE CHANGE

# Table of Contents

## Figures

## Tables

# I. Introduction

This report, conducted by H. Gil Peach & Associates LLC for the Nova Scotia Energy Board, verifies electricity energy savings and demand reduction for 2025. It reviews measurements, models, and estimates provided by Econoler, the Independent Evaluator for Efficiency Nova Scotia's Demand Side Management (DSM) programs.[1] The Econoler evaluations estimate first year energy savings (kWh) and model demand reduction (kW) for each Efficiency Nova Scotia energy conservation program.

This report reviews, verifies, and, where appropriate, recommends adjustments to the savings and demand data and estimates. While we primarily focus on impact evaluation, we will also provide limited comments on other aspects of the evaluation.

Examination is based on careful review of the evaluation for each program component or initiative in the DSM portfolio, including each evaluation's explicit or implicit design, evaluation methods and standards, and/or evaluation protocols.

We have reviewed calculating methods, checked the math of some evaluations, conducted due diligence site visits to check installation counts and quality of work. In these site visits, we checked installed measures and discussed program experience with customers.

# II. How Savings Verification fits into the Policy, Planning, and Program Cycle

It can be useful in approaching evaluation to review how the Policy, Planning and Program cycle works and where evaluation and savings verification fit in, particularly to new readers unfamiliar with the context. Demand Side Management (DSM) is a *cycle of*

[1] Efficiency Nova Scotia is Nova Scotia's conservation utility; it is currently operated under contract by E1 as the program implementer. Nova Scotia Power, Inc. served as the DSM Administrator for calendar years 2008 and 2009. Responsibility transferred to Efficiency Nova Scotia Corporation in October 2010. Calendar year 2011 represented the first full program cycle with Efficiency Nova Scotia as the DSM Administrator. The year 2025 is the eighteenth program year, including the start in 2008 and the fifteenth year with full administration by Efficiency Nova Scotia. Almost all programs can be considered as mature programs, though each year there are improvements or variations.

*repeated activities with the goal of continuous process improvement*.[2] The cycle has five centres of focus (Figure 1).[3] The arrows show the (clockwise) direction of the primary flow of effort. within a single Policy, Planning and Program cycle. Each step in the Demand-Side Management Cycle feeds information forward. For this report, we will focus on two steps in the cycle: Independent Evaluation and Verify Savings.

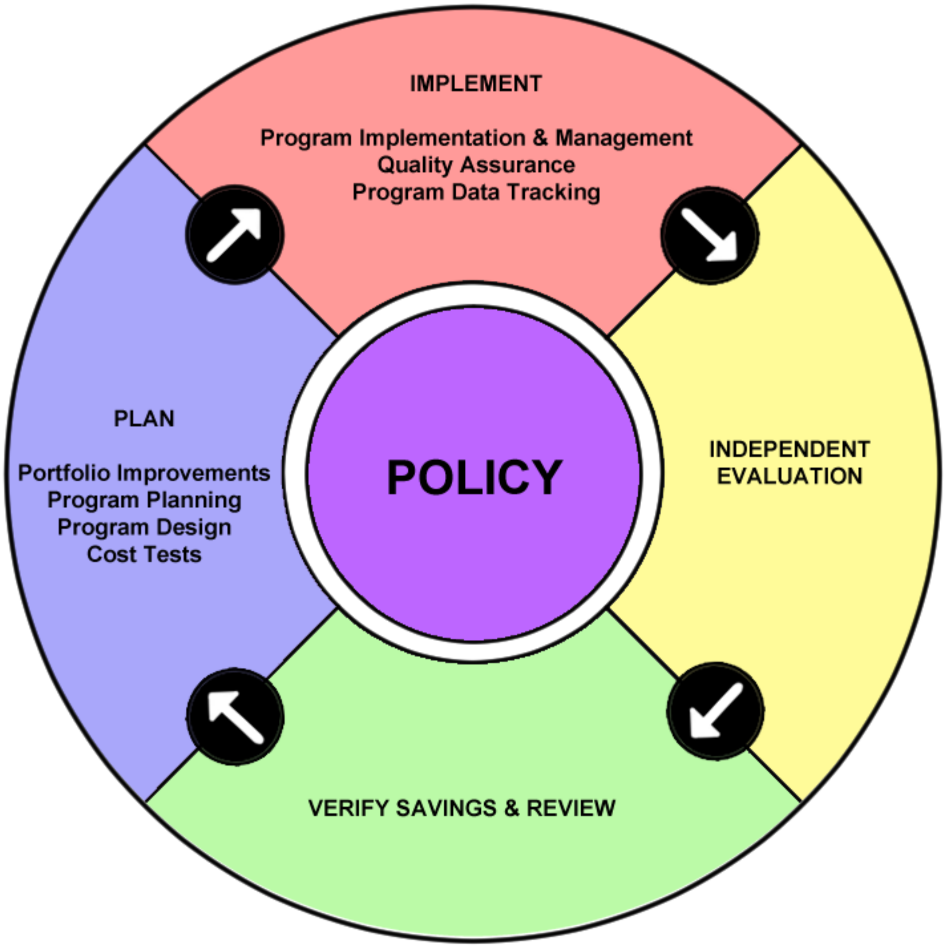


*Figure 1: Savings Verification in DSM Cycle.*

Savings verification follows independent evaluation and feeds into program planning.

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[2] Morse, William L. & H. Gil Peach, "Control Concepts in Conservation Supply," *Energy,* Vol. 14, No. 11, Pp. 727-735, 1989; Gellings, Clark W. & John H. Chamberlin, *Demand-Side Management Planning Concepts & Methods*, Second Edition, Liburn Georgia: The Fairmont Press, 1992; Gellings, Clark W. & John H. Chamberlin, *Demand-Side Management Planning*, Liburn, Georgia: The Fairmont Press, 1993.

[3] There are other steps not shown, including periodic potential studies, other special technical studies (such as socket studies), development and adoption of measurement protocols, development and updating of the Technical Reference Manual (including determination of effective useful life (EUL), structuring of benefit-cost testing options, and benefit/cost testing.

**Independent Evaluation** - The Evaluator for Efficiency Nova Scotia programs is Econoler (https://econoler.com/en/), a respected international Canadian firm based in Quebec.[4] Econoler's evaluation team includes Equilibrium Engineering, Bouthillette Parizeau, Narrative Research, Richard Patterson of CDM Energy Solutions, and Akonovia. Econoler is the team leader. In the Savings Verification study, this team, led by Econoler, is referred to as the Evaluator. The evaluation provides independent results for energy savings and demand reduction plus limited market evaluation, process evaluation, and supportive research.[5]

**Verify Savings and Review** - Both the Implementation step and the Evaluation step feed information forward to Savings Verification. This information includes program experience, selection of methods, analysis plans, program documents, tracking records, electrical measurements, math checks, and evaluation results. Savings Verification confirms and, when necessary, questions the results and suggests modifications to the Evaluation data, methods, and reported results, as well as future Implementation.

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[4] Econoler was founded in 1981 by Hydro Quebec and an engineering company, and has been independently owned since the early 2000's. While originally an ESCO, Econoler has developed as an international consulting firm. A major focus is evaluation, as well as "the design, implementation, and financing of energy efficiency and renewable energy projects." Source: Econoler website: https://econoler.com/en/about-econoler/.

[5] For DSM, there are three primary types of evaluation: impact evaluation, process evaluation, and market evaluation. For regulated utility DSM/DER programs and provincial and state DSM and Weatherization Assistance programs, all of these have a strong regulatory compliance dimension.

# III. Evaluation Frameworks

From the beginning of Demand-Side Management in the late 1970s, we have relied on a resource acquisition framework to evaluate it.[6] While this is appropriate, other frameworks can offer useful additions. In total, this report will draw upon the seven outlined in this section.

### 1. Resource Acquisition Framework

In the Resource Acquisition framework, Demand-Side Management (energy efficiency and demand response) and Distributed Energy Resources (storage, distributed generation, electrification, etc.) are evaluated based on cost and ability to deliver energy savings, capacity reductions, and/or load-shape value alongside supply-side options. For resource acquisition, the primary focus is on cost-effectiveness screening (each program should be cost-effective or should be revised to become cost-effective). An early synthesis of this evaluation approach was released in 1991 by Oak Ridge National Laboratory that is still useful as a conceptual overview, although individual methods and supportive technologies have been improved.[7]

Efficiency Nova Scotia programs are almost entirely resource acquisition programs that treat saved energy as equivalent to generated energy. This is the original framework for the energy efficiency (EE) subgroup of distributed energy resources (DERs) programs. *Efficiency Nova Scotia EE programs are appropriately evaluated within a resource acquisition evaluation framework,* the approach followed by Econoler.

However, evaluation frameworks continue to evolve. Each of these additional evaluation approaches provides some key evaluation questions that could be added to the resource acquisition approach.

### 2. Market Transformation Framework

The first variant on the resource acquisition model was the market transformation approach. Initially, most work in market transformation linked marketing plans,

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[6] Why the resource acquisition framework? Because originally there was serious opposition to moving from energy conservation concepts to treating energy efficiency as an equal to generation in meeting customer load. A key part of resource acquisition is the benefit-cost test to ensure that a conservation kWh costs less than a generated kWh. In the beginning the equivalency of conserved energy and generated energy was not clear and both cost-effectiveness and reliability had to be demonstrated. The other evaluation frameworks are variations that were developed later.

[7] Hirst, Eric & John Reed, eds, *Handbook of Evaluation of Utility DSM Programs*, Sponsored by the New York State Energy Research and Development Authority and the Office of Conservation and Renewable Energy, US Department of Energy. Oak Ridge National Laboratory, December 1991, ORNL-CON 336

contractor training, resource acquisition, project timing, and codes and standards.[8] The pioneers in this development in the late 1980s and early 1990s were Canada's BC Hydro and Sweden's NUTEK, coupling EE with development of codes.

The basic concept in this first approach is to combine an effective marketing plan with training for building workers to become comfortable with installing more energy-efficient equipment and materials, while removing inferior alternatives from the market.

This is a process with repeated steps, requiring utility/government cooperation in raising building science practice and codes in a process of continual improvement. The goal is to push the market transformation curve.

Market transformation has resulted in programs that successfully transform the practices, equipment, and materials used in new construction and renovation. Typically, these programs end with building code or regulatory bans on inferior practices and products and/or market collapse of inferior products. When a program works from a market transformation perspective, the evaluator should credit energy savings from the change in market flows to the program *to the extent they were caused by the program*.

For programs that aim to improve codes & standards and/or have other market transformation goals, this evaluation framework normally requires an extended time perspective and an understanding of market transformation curves. Some Efficiency Nova Scotia programs have a market transformation dimension, and some have climate relevance. In addition to the first-year energy savings concerns for resource acquisition and the concern for average measure life, they also improve energy efficiency and the building stock for the entire province. Currently the evaluator does treat market dimensions of programs when they are present, but the primary evaluation approach is resource acquisition.[9]

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[8] The classic text on market transformation is Rogers, Everett M., *Diffusion of Innovations*, Fifth Edition. New York: Free Press, 2003. First published in 1962.

[9] The market transformation described here is the earliest form. There has been substantial research and development work on market transformation and market transformation evaluation since. A useful current reference for market transformation program evaluation is Harnar, Michael A., *Assessment of NEEA's Approach to the Evaluation of Market Transformation*. Portland, Oregon: Northwest Energy Efficiency Alliance, July 6, 2023, Report E-23 468. "NEEA, in collaboration with third party consultants, conducts research and tests hypotheses to identify the barriers that are preventing the adoption of emerging energy efficiency products and practices. NEEA's program teams then work with an array of market partners, including the region's utilities and energy efficiency organizations, but also, manufacturers, distributors, end-users, and other market actors, to develop and implement market intervention strategies. Such strategies are intended to remove barriers and exploit market opportunities that accelerate the adoption of cost-effective energy efficiency. The goal of these market intervention strategies is to create lasting market change, or to transform the market" (P. 1).

### 3. Climate Change Framework

When DSM started, climate change was not yet a major focus of public or government attention. As awareness grew, climate change came to present a set of constraints that could affect program designs and evaluation methods.[10] The evaluation paradigm is evolving to include climate change, because there is no other option – climate is planetary physics and it proceeds in one direction with or without human effort to reduce it or to modify the built infrastructure to be able to live with it.

Currently, the practice areas of energy (and water) conservation and climate change (with a focus on resilience and adaptation) are not yet well integrated from either policy or operational perspectives. A few jurisdictions have enacted legislative authorizations that more closely coordinate energy and climate policy,[11] but authority for energy savings and authority for climate work are almost entirely separate structures of authorization and direction within governmental organizations.[12]

Of course, those within the energy industry are aware of the climate emergency. Energy efficiency conferences often include climate issues. Missions of energy efficiency staff, including evaluators, are being increasingly expressed within climate change framework, but they are currently not identical with climate missions.

It is likely that disaster preparedness and climate resiliency will eventually be authorized

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[10] One of the almost universal adaptations to climate change by utilities is calculation of weather adjustment for utility purposes of evaluation of weatherization programs and for adjusting bills under revenue decoupling plans. Up until the 1980s, utilities used a standard method for projecting the amount of energy use due to changes in weather that assumed the future was a simple projection of the past. It worked as a “good enough” approximation. As climate has shifted in the direction of hotter and hotter years, since the 1980s the method fails since each next year’s weather is not longer a simple projection of an average of the last 30 or 20 years of weather. On average, it will be hotter and hotter, introducing a wide variety of climate problems.

[11] For example, New York, Massachusetts, Minnesota, California, Oregon, Washington, Colorado, and British Columbia.

[12] Currently in the US, the national administration is severely defunding climate work, terminating key federal climate staff, withdrawing from international climate cooperation, and has instructed remaining federal employees to avoid conferences for which terms such as “climate”, “emissions”, “underserved”, “decarbonization”, “electrification”, “clean buildings initiatives”, and the like are used to indicate conference content. Similarly, in 2025, the administration attempted to undermine regulations for energy efficient appliances, while protections for land and forests are being removed to facilitate “energy dominance”, and universities are being legally attacked in some cases to gain federal control of what is taught, while federal education support for all level of education is undermined. Of course, politics does not change physics. Climate change continues, regardless of whether the centres for study of climate change and the federal agency that aids in disasters are being crippled and disbanded. Yet, human and environmental survival depend on careful planning and coordination of effort. And, a strong administrative state is necessary to enable and ensure preparedness and effective recovery from climate disasters, strengthen climate science, and preserve civil society as the planet continues into increased temperature. In any case, only the US is taking this road, and Canada, along with China, and the EU will continue the necessary work in the climate area.

as explicit goals for energy savings and demand reduction projects out of necessity. At that point, we can expect that policy for the evaluation area will be adjusted to fit integrated goals.

For now, in the absence of systematic authorization, there is a climate “duty of anticipation”. This has been developed by UNESCO and is expressed in the UNESCO Declaration of Obligations to Future Generations.[13]

**4. Energy Sufficiency Framework**

The energy sufficiency evaluation framework is different in that it incorporates a socialist perspective. Social identity increasingly is separate for a top group (for example, the tech billionaires) vs. society as we know it historically and sociologically with upper, middle, and lower classes. Wages are not keeping up with inflation. Students in many areas are having trouble finding jobs. The energy sector is expected to support an accelerated competition of data centres and the development and consolidation of AI without any discussion of guaranteed income and quality of life for the massive numbers of workers and families to be displaced. Yet, energy companies are designed to serve everyone. To promote more effective service for all households, over the past 25 years, EE practice in China, and policy development advanced by the European Council for an Energy Efficient Economy (ECEEE) has moved increasingly towards energy sufficiency, and with it and energy efficiency evaluation framework.

The energy sufficiency concept differs from a Bonbright[14] or similar business model of energy production and supply by prioritizing customer needs *regardless of income* within a strong focus to reduce energy waste.

It is in this way a return to the early goals of energy conservation (prior to Demand-Side Management), driven by an understanding of resource limits and the concept of meeting human needs within those limits. The energy sufficiency framework includes principles of social responsibility and the program tool of rationing to try to eliminate energy waste while promoting enough energy for each household. It is a way to centre low-income energy programs within the EE context. *The central idea is that there is enough energy to use, but not enough to waste.* This approach incorporates low-income energy needs directly within an energy conservation framework. The energy sufficiency framework

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[13] UNESCO Declaration of Obligations to Future Generations, https://www.unesco.org/en/legal-affairs/declaration-responsibilities-present-generations-towards-future-generations. On anticipation, see Bruce Tonn, *Anticipation, Sustainability, Futures, and Human Extinction*. London and New York: Routledge, 2021, Pp. 3-4, and P. 55.
[14] Bonbright, James C., Albert L. Danielsen & David R. Kamerschen, *Principles of Public Utility Rates*. Arlington, Virginia: Public Utility Reports, Inc., Second Edition, 1988.

follows as one model for evaluation within a climate change focus.[15]

The next two evaluation models are part of resource acquisition and simply modify the EE program objective (Deep Retrofit) or the way control is introduced in energy measurement (Load Research).

### 5. Deep Retrofit Framework

This evaluation framework supports deep retrofit, a process that includes air sealing, insulation, heat pumps, electrical upgrades, controls and commissioning for households. Usually, deep retrofits shift most performance risk to the program provider, transferring financial risk away from households.

In this model, evaluation is the same as in the resource acquisition approach except that it is focused on achieving large, durable reductions in energy bills. Deep retrofit projects pass evaluation by providing reduction in energy use on the order of 40%-50% or more,[16] absolute dollar bill reduction that customers view as meaningful bill relief, and by providing stability of low bills once retrofit work is completed. This approach is often associated with specific feeder studies to reduce load.[17]

### 6. Load Research Evaluation Framework

This framework differs from resource acquisition in its method. Rather than using an experimental or quasi-experimental design reliant on a comparison group, it uses high-frequency utility meter data to estimate load impacts directly (at a customer level). It does not apply *ex ante* deemed savings for specific measures or participant-level engineering estimates. It is wholly reliant on advanced metering data, concentrating on

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[15] "Energy sufficiency is a state in which people's basic needs for energy service are met equitably and ecological limits are respected." Darby, Sarah & Tina Fawcett, "Energy Sufficiency: An Introduction." European Council for an Energy Efficient Economy, 2018. (energysufficiency.org). The energy sufficiency approach is championed by ECEEE and reflects the underlying framework of study developed by Thomas Princen (*The Logic of Sufficiency*, Cambridge, Massachusetts & London, England: MIT Press, 2005; *Treading Softly, Paths to Ecological Order*, Cambridge, Massachusetts & London, England: MIT Press, 2010.

[16] For example, in a whole-house program installing rooftop solar plus heat pumps, a water heater heat pump, and a car charger.

[17] The champion for deep retrofit work is Sealed, Inc. The approach is oriented towards public-interest perspective favouring very effective programs. Deep retrofit is part of resource acquisition evaluation, but is focused on whole-building, billing-analysis based savings with the savings measured at the meter. It involves measurement of results of integrated measure packages rather than single measures. This approach to evaluation is included in Schiller, Steven R., *Model Energy Efficiency Program Impact Evaluation Guide,* SEE Action, 2007. Deep retrofit costs more per building than conventional weatherization work but returns substantially more energy savings per building. The approach fits within current whole-building energy efficiency perspectives.

whole building energy savings results.

Since impacts are estimated at the individual meter level, results can easily be spatially and temporally disaggregated (*e.g.,* by feeder, substation, or geographic zone). From load research and system planning perspectives, this feature enables excellent support for the system planning function and permits program impacts to be mapped directly to infrastructure planning, distribution constraints, and localized peak conditions.[18]

### 7. Normalized Metered Energy Consumption Evaluation Framework

The Normalized Metered Energy Consumption (California NMEC) Evaluation Framework is a preferred evaluation framework of the California Public Utilities Commission (CPUC) that combines elements of the Deep Retrofit Framework and the Load Research Evaluation Framework.

The CPUC has championed NMEC and developed it through four key documents. The CPUC NMEC Rulebook (Version 2.1)[19] establishes the primary statewide framework for NMEC and defines two approaches: population-level NMEC, such as for all households eligible for a residential energy efficiency program, and site-level NMEC, such as for customized projects serving large institutional or industrial customers. The rulebook also outlines CPUC reporting requirements and helps guide the design of compliant programs and regulatory filings.

Southern California Edison's NMEC Savings Procedures Manual[20] provides practical guidance on building NMEC models and selecting appropriate baseline and post-installation periods, with emphasis on statistical logic and model development. Pacific Gas and Electric's Site-Level NMEC M&V Requirements Manual[21] addresses baseline and installation periods, periodic reporting, data requirements, model validation criteria, and treatment of non-routine events. A fourth document, NMEC Evaluation

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[18] The champion for the load research framework is Recurve, Inc. The strength of this evaluation method is that evaluation results are easily organized for reporting at any level (customer site, feeder, system level, since control operates at the customer (facility) level rather than at the control group level as in a conventional experimental or quasi-experimental evaluation. See: *How it Works: Meter-Based Measurement*, https:/docs.recurve.com/measurement/how-it-works/index.html. For an independent evaluation of the Recurve approach by the California ISO, see Demand Response Advanced Methodology (FLEXmeter) – CASIO, February 2022 (https:www.casio.com/Documents/Demand-Response_Advanced_Measurement_Methodology_updated_Feb_2022.pdf).

[19] **California Public Utilities Commission.** *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption*, Version 2.1. September 10, 2025.

[20] **Southern California Edison.** *Normalized Metered Energy Consumption Savings Procedures Manual*, Version 1.01. December 2017.

[21] **Pacific Gas and Electric Company.** *PG&E M&V Requirements for Site-Level NMEC*. Revised June 2021.

Workplans[22], aligns NMEC with traditional impact evaluation standards by addressing gross and net savings, model validation, and replication, and is useful for structuring formal evaluations.

NMEC is a whole-building, meter-based approach that uses regression to normalize energy use (primarily for weather). For NMEC, energy savings is the difference between normalized baseline and normalized post-period energy consumption. It is like the IPMVP Option C (whole facility) approach but takes advantage of advances in metering technology (AMI data) and additional analytics. The evaluation logic of IVMVP is included in NMEC but having population or near-population data transforms analytic steps that follow IVMVP evaluation logic.

Since essentially full population data is now available and as easy to use as sample data was previously (prior to AMI and greatly increased computer capabilities) NMEC shifts away from sampling and statistical significance testing. NMEC introduces a more highly developed on formalizing data quality reporting and creating tiered classification for data quality groups. The focus is on practical significance rather than statistical significance. Generally, there is a minimal requirement for 12 months of baseline metered data. Data frequency may be monthly, daily, or hourly. Model limitations are acknowledged and documented, and non-routine events (NREs) are identified and addressed. All adjustments to data are to be transparent, quantified, and justified. There is a concern to avoid double-counting energy savings and to account for interaction effects.

Since the CPUC has adopted and then expanded the application of NMEC for utility energy efficiency projects, there is good current experience with the approach. An image for this approach to program evaluation is continuous monitoring with continuous feedback. It relies on an evaluation model rather than control groups, though as in traditional evaluation it is based on comparison with one or more counterfactuals. Once established as a process, it can provide essentially continuous feedback and so avoids or meaningfully reduces the typical wait of a few years for evaluation results in traditional evaluations using quasi-experimental and experimental designs.

[22] **California Public Utilities Commission.** *GROUP D Site-level Normalized Metered Energy Consumption (NMEC) Evaluation, Measurement, & Verification Workplan, Program Year 2023*. December 12, 2024.

**Integrating Evaluation Frameworks**
What is not in place is the explicit authorization of policy to formally connect other evaluation frameworks to Efficiency Nova Scotia's DSM program. The Resource Acquisition approach is the primary regulatory model in Canada and the US. *For now, DSM evaluation is appropriately completed within a resource acquisition perspective.* Market effects are considered by the Evaluator, but evaluation is focused on resource acquisition and first year energy savings and demand reduction. Climate change is not in the evaluation. Yet an energy-efficient building can still be unliveable during a heat wave, and climate change-sensitive envelope weaknesses can amplify public safety and health risks. Thermal resilience (thermal lag provided by walls and roofs, rate of indoor temperature rise and fall, duration of habitable indoor temperature during outages) is, arguably, a reasonable evaluation dimension. Adding an energy sufficiency dimension to the evaluation would improve focus on attainment of universal service coupled with systemwide curtailment of energy waste. A deep retrofit evaluation framework would prioritize deep energy savings for households and question programs that produce low energy savings, even if they might be technically cost-effective. Adding a load research evaluation framework would enable deeper understanding of program effects and would more closely correspond to system planning needs. Finally, the California NMEC framework would incorporate current metering (AMI) technology, current computer capability, while AI could assist in a modelling approach to evaluation.

What will integration of climate into program goals and evaluation methods look like? What is clear now is that the time perspective for programs and for evaluation will have to be adjusted to the size and the time scale of climate change. This means that in program planning we will need to look ahead for a few years,[23] as we do now; and we will need to extend our system plan into longer timeframes.

Climate change goes in one direction, and its scale is much larger than that of the individual or household. To be practical, it is prudent to train ourselves to think in the near term, 50-year medium term, and 200-year long-term planning as a starting point. We are likely to make poor investments in the short term if we are not aware of what is likely to follow in the medium and long term. Efficiency Nova Scotia published an extensive whitepaper in 2021[24] on the comprehensive integration strategies needed to achieve net-zero carbon by 2050 (though the whitepaper does not discuss economic impacts or resiliency issues that may be anticipated to arise and increase due to climate

[23] We often do 20-year or 30-year resource plans, but these plans are only relevant for the next few years; then they are replaced by another 20 or 30-year plan. So, the operative part a resource plan is typically only 3-5 years.
[24] EfficiencyOne. *2050: Net-Zero Carbon Nova Scotia White Paper.* September 2021.

change). These factors should also be considered in developing a response to the climate crisis.

The principle of least-cost planning will have to be modified to incorporate the knowledge that *the future will not, in most respects, be better than the present* – that the difficulties of the present time both are and are not an exception. While they represent a break with past trends, they are not temporary, and will continue to impose ever-greater costs on future projects.[25] The context will be many competing climate needs and intensifying climate problems which, in addition to local climate disasters will affect planetary food supply, availability of medicines, a substantial decrease in productivity, a speed-up in evolutionary biological competition and disease vectors, and increased migration and war. The method of economic discounting of the future will need to be reversed (not a new method; just the same mathematical method but inverted to privilege the future without unrealistic assumptions).[26]

The hard reality that a climate perspective brings is that we must work to extend measure life to match a much longer planning horizon, and that if we want the electric system to be functional and fully adequate in 2050, 2100, and 2150 we need to be working on some higher cost components now and save some of the least-cost components for later.[27] And, to provide universal service in the context of growing disparity between the top group and society will require socialist (or social justice) principles to be effective.

New methods of analysis have been developed, primarily in relation to water utilities, to accommodate climate change.[28] These approaches can be expected to develop for application across utilities (electric, gas, and water) with evolving knowledge of climate change. From a macro view it looks like the overall paradigm will be disaster preparedness and resilience, with the electricity and energy conservation goals

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[25] As Ackerman points out, "The challenge of climate change makes a traditional vision of perfect markets even less appropriate…[b]usiness as usual threatens to cause disaster in less than a century…." [P. 12] and "…the discount rate is the most important single number in climate economics." [P. 18] Ackerman, Frank, *Can We Afford the Future?* London & New York: Zed Books, 2009.

[26] Conventional economics assumes the future is better than the past, with more wealth. But "…if future generations turned out to be poorer than we are, as a result of climate catastrophes or other losses, they would need more help from us…." [Ackerman, Frank, *Can We Afford the Future*, P. 25.]

[27] Costs escalate due to expected inflation, worldwide crop failures, increasing and overlapping climate disaster events, and the problem of scarce resources, toleration of dementia among political leaders, the technical regret embodied in offshoring production through globalization, and the breakdown of supply chains as many countries need the same electrical components at the same time.

[28] See Popper, Steven W., Warren E. Walker, Pieter J.T.M. Bloemen, and Vincent A.W.J. Marchau, eds., *Decision Making under Deep Uncertainty*, *From Theory to Practice*. Open Access edition, Saint Phillip Street Press, October 9, 2020, originally published in Cham, Switzerland: Springer Nature, 2019.

proceeding within that planning context.[29] It is likely that elements of market transformation evaluation, climate change evaluation, energy sufficiency evaluation, deep retrofit evaluation, and load research evaluation more consistent with system planning will gradually strengthen evaluation work going forward.

In summary for this section, although there is substantial overlap, each evaluation framework emphasizes different kinds of research questions. One key question for each of the six frameworks introduced is shown in Table 1. *Currently, we only ask the Resource Acquisition questions. Other kinds of questions could be added from other evaluation frameworks.*

*Table 1: Evaluation Frameworks Ask Different Questions.*

| **Evaluation Frameworks: Common Questions** | | |
|---|---|---|
| Framework | Goals | Typical Evaluation Questions |
| **1. Resource Acquisition** | Fill out all cost-effective opportunities. | First year energy savings. Measure life for each measure plus average measure life. Participant and customer perceptions. Short-run cost effectiveness. (Is the program cost-effective in relation to generation energy?) |
| **2. Market Transformation** | Engineer a series of repeated market transformations across programs. | What is the progress in shifting specific markets? Market transformation curves? What is the ongoing credit or multiplier for the transformed part of the market? When is the project complete? |
| **3. Climate Change** | Reduce harm, plan for real resilience, strengthen disaster preparedness. | Will the program yield healthful living under difficult conditions? How is harm reduction accomplished? Is harm avoided during extreme events? How to deal with increasing costs? |
| **4. Energy Sufficiency** | Leave no customers out of energy services and EE. Social engineering to rule out the possibility of energy waste. | Is the need of each household met, regardless of income? How is energy waste prevented/curtailed? |
| **5. Deep Retrofit** | Reduce harm, plan for real resilience and survivability. Service in deep projects to small groups, with meaningful practical results. Justification from risk reduction. Different cost-effectiveness calculation. | Does each program achieve 40% or better energy savings? Are major energy upgrades and large envelope upgrades emphasized? As costs increase, how to deal with affordability? Can we achieve passive survivability? Should retrofits be budget-oriented or capital-intensive? |
| **6. Load Research** | Carry out resource acquisition that supports utility planning and investment decision-making. | Confirm usefulness for planning and investment decisions. Are measurement and control initially introduced at the customer or facility level, using advanced metering? Is there statistical control using control groups or comparison groups? |
| **7. Net Metered Energy Savings** | Inclusion/Exclusion rules and audit trail; model governance (validation, stability, drift monitoring. | Full audits, eligibility tiers, counterfactual modelling. |

[29] A practical general approach, called experimentalist governance has been put forward by Charles Sable and David Victor. This approach calls for joint work of parties, many local projects of different scales, listening to all points of view, minimizing and, to the extent reasonable, avoiding the ideology of either the right or left, proceeding as in science on the basis of joint and coordinated planning, demonstration projects, and sound measurement, keeping what works and moving beyond what does not work. This approach is quite similar to methods long used in sociotechnical development by energy and water utilities, so will likely appeal to utility organizations. Sabel, Charles F. & David G. Victor, *Fixing the Climate, Strategies for an Uncertain World*. Princeton, New Jersey: Princeton University Press, 2022.

*Table 2: Evaluation Frameworks: Strengths and Weaknesses.*

| Evaluation Frameworks: Strengths and Weaknesses | | |
|---|---|---|
| Framework | Strengths | Weaknesses |
| **1. Resource Acquisition** | Cost-effective, maximizes regulatory conformance. | Cost tests may not be sufficient. |
| **2. Market Transformation** | Maximizes structural change in markets. | May require some shift in authority and related regulation. |
| **3. Climate Change** | Maximizes practical survival probabilities. | Climate and utility authorizations are not aligned. |
| **4. Energy Sufficiency** | Maximizes social justice. Uses energy intelligently. Minimizes waste. | Challenges widespread values; difficulty of building political will. |
| **5. Deep Retrofit** | Maximizes effectiveness at a building and facility level. Program success easily understood by all parties. | Funding concentration covers treated buildings/facilities well but may exclude others from EE services. |
| **6. Load Research** | Maximizes coordination with utility planning. Value of EE work for utility is kept clear. | Non-utility parties may not understand advantages for system planning. |
| **7. Net Metered Energy Savings** | Clear inclusion/exclusion, continuous feedback, rooted in practical outcomes. | Challenge of adopting new standards. |

# IV. Evaluation Standards

In this section we highlight three standards for evaluation: independence, transparency, and familiarity with current evaluation guidelines.

(1) **Independent Evaluator** – In energy efficiency evaluation, the *primary* standard is that evaluation must be conducted by an independent evaluator to guarantee the integrity of reported savings and prevent conflict of interest and/or the appearance of a conflict of interest.

(2) **Transparency** - Reports and calculation methods are made public and are open to inspection by any party. Third party review of evaluations helps to ensure the objectivity and credibility of results, and, when necessary, informs their revision. Methods of analysis are clearly shown and discussed. This includes the responsibilities of both Efficiency Nova Scotia and the Evaluator, ensuring that they fit together to provide transparency over evaluation functions. Equations and math applications should be available.

However, there are always areas to improve, such as including full worksheets or computer printout information for all significance tests specifying in the evaluation for each test, whether the comparison is one-tailed or two-tailed, the p-value of the test, the power of the test, and the significance level criterion used in the analysis.

Also, whenever necessary data is not provided to the Evaluator or is provided subject to a restriction against including it in a public report, the Evaluator should flag the problem for readers.

(3) **Evaluation Protocols** – In the energy efficiency evaluation area, there has been a successive development of evaluation protocols. Current protocols are primarily those developed by the Uniform Methods Project[30] and those developed as SEE Action protocols.[31] These provide current generally

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[30] US Department of Energy, Office of Electricity, Uniform Methods Project. See: https://www.energy.gov/oe/uniform-methods-project-methods-determining-energy-efficiency-savings-specific-measures

[31] Schiller, Steve & Tom Eckman, *SEE Action Guide for States: Evaluation, Measurement, and Verification Frameworks—Guidance for Energy Efficiency Portfolios Funded by Utility Customers*. Berkeley, California: Lawrence Berkeley Laboratory, Energy Analysis Division, Energy Markets and

accepted guidelines for evaluation. Of course, following an established evaluation protocol does not always guarantee a good evaluation, but adherence to an accepted protocol is usually a good step and an important indicator of competence and effectiveness to the evaluation team. [32]

Planning Department, 2018. See: https://emp.lbl.gov/publications/see-action-guide-states-evaluation.

[32] Note, however, that the protocols have not been recently updated, which means there is an increasing drift in their full applicability.

# V. Summary of Evaluated Savings Results

Evaluation of demand savings, first year energy savings, and lifetime net energy savings at the generator as reported by the Evaluator are summarized in this section.

## 1. Evaluated Net Peak Demand Reduction at the Generator

In 2025, Efficiency Nova Scotia operated two residential programs (Residential Efficient Product Rebates and Existing Residential) with nine components; three BNI (business, non-profit and institutional) programs (Business Energy Rebates, Custom Incentives, and Direct Installation/Small Business Energy Solutions) with four components; and one demand response program with two components (Residential DR and BNI DR).[33]

*Table 3: Net Peak Savings at the Generator.*

| **2025 DSM Portfolio Net Evaluated Peak Savings (at Generator)** | | | |
|---|---|---|---|
| Residential | | Net Peak Savings (MW) | |
| Rebate Programs | Appliance Retirement | 0.017 | 0.483 |
| | Instant Savings | 0.466 | |
| Existing Residential | Affordable Multifamily Housing | 0.648 | 9.583 |
| | Affordable Single-Family Housing | 2.338 | |
| | Efficient Product Installation | 0.509 | |
| | Green Heat | 1.191 | |
| | Home Energy Assessment | 4.578 | |
| | Mi'kmaw Home Energy Efficiency Project | 0.319 | |
| | Residential Behaviour | 0.000 | |
| | Residential Subtotal | 10.066 | |
| **Business, Nonprofit, Institutional (BNI)** | | **Net Peak Savings (MW)** | |
| Rebates | Business Energy Rebates | 5.332 | 5.332 |
| Custom Incentives | Custom | 6.372 | 6.744 |
| | Strategic Energy Management | 0.372 | |
| Direct Installation | Small Business Energy Solutions | 1.414 | 1.414 |
| | **BNI Subtotal** | **13.490** | |
| | **Overall DSM Portfolio Total** | **23.556** | |
| Source: Data from Table 12: Evaluated Net Peak Demand Savings at the Generator, 2020-2025, P.32 in *2025 DSM Programs Evaluation Reports, Final Report, Overall Executive Summary*, Quebec City: Econoler, March 17, 2026. Numbers may not exactly match evaluation report due to rounding. | | | |

In Table 3, the evaluated values for net peak demand reduction at generator are shown for the programs and program components. Econoler reports a portfolio net peak demand reduction of 23.556 MW[34] (shown in Table 1) plus 6.795 MW in available demand response capacity at the generator (from separate DR programs).

[33] Although Efficiency Nova Scotia does work to support Codes and Standards, direction in this area is seen as coming primarily from the federal or provincial levels, so energy savings from Codes and Standards are treated as outside countable energy savings by Efficiency Nova Scotia and the Evaluator.

Since the demand reductions at peak shown in Table 1 are caused by the installation of physical measures, they will repeat over several years. This type of demand reduction can be contrasted with the demand reduction results from a load shedding cooperative which reduces demand by its members for a short period each time the utility calls an event. It can also be contrasted with public emergency demand reduction, a behavioural approach in which the government calls for people to, for example, not charge their electric cars during certain hours, or not use electrical appliances or equipment except on certain days or at certain times.[35]

In Figure 2, MW values are presented on the X-axis, and programs are listed in rank order from lowest to highest on the Y-axis. Largest peak reductions are from Home Energy Assessment, Business Energy Rebates, and Custom.

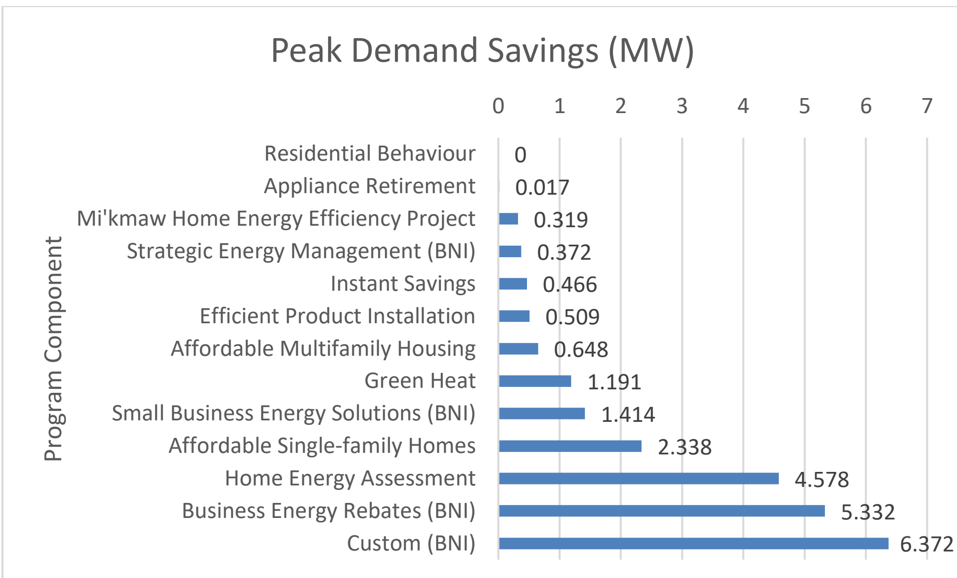


*Figure 2: Program Components in Inverse Rank Order for Demand Reduction.*

Separate from the programs listed in Table , there are also two capacity reduction demand response (DR) programs, Residential Demand Response and BNI Demand Response. Residential Demand Response yields an available capacity reduction of 0.854 MW, and the BNI program yields an available capacity reduction of 5.941 MW; together, they total to 6.795 MW.[36]

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[35] Behaviour reduction of demand can work well in emergency situations (such as ENRON's disastrous fraud in California) when the public is fully attuned to an existential emergency, but these reductions are temporary and situational.

[36] Executive Summary, P. 17, Table 6.

## 2. Evaluated Energy Savings at the Generator

Table 4 presents 2025 and lifetime energy savings from the Econoler evaluations.

*Table 4: 2025 and Lifetime Net Energy Savings at the Generator.*

| 2025 Net Evaluated Energy Savings (at Generator) | | | | | |
|---|---|---|---|---|---|
| Residential | | Annual (GWh) | | Lifetime (GWh) | |
| Rebate Programs | Appliance Retirement | 0.115 | 11.545 | 0.461 | 106.969 |
| | Instant Savings | 11.430 | | 106.508 | |
| Existing Residential | Affordable Multifamily Housing | 1.378 | 35.274 | 23.345 | 563.997 |
| | Affordable Single-Family Housing | 6.135 | | 118.611 | |
| | Efficient Product Installation | 7.300 | | 53.898 | |
| | Green Heat | 0.749 | | 13.488 | |
| | Home Energy Assessment | 13.820 | | 342.195 | |
| | Mi'kmaw Home Energy Efficiency Project | 0.337 | | 6.905 | |
| | Residential Behaviour | 5.55 | | 5.555 | |
| Residential Subtotal | | 46.819 | | 670.966 | |
| Business, Nonprofit, Institutional (BNI) | | Annual | | Lifetime | |
| Rebates | Business Energy Rebates | 40.244 | 40.244 | 294.786 | 294.786 |
| Custom Incentives | Custom | 30.487 | 34.518 | 437.723 | 458.238 |
| | Strategic Energy Management | 4.031 | | 20.515 | |
| Direct Installation | Small Business Energy Solutions | 7.862 | 7.862 | 52.874 | 52.874 |
| BNI Subtotal | | 82.624 | | 805.898 | |
| **Overall DSM Portfolio Total** | | **129.444** | | **1,476.864** | |
| Source: Data from Table 8: Evaluated Net Lifetime Energy Savings at the Generator, 2020-2025, P.27 in *2025 DSM Programs Evaluation Reports, Final Report, Overall Executive Summary*, Quebec City: Econoler, March 17, 2026. Numbers may not exactly match evaluation report due to rounding. | | | | | |

The relation of lifetime energy savings to net first year energy savings is shown in Figure 3. The programs are listed on the vertical axis and the multiplier for each program (rounded to the nearest whole number) is shown on the horizontal axis. The multiplier is the ratio of Lifetime Evaluated Net Savings (GWh) to Annual Evaluated Net Savings (GWh) from Table 2.

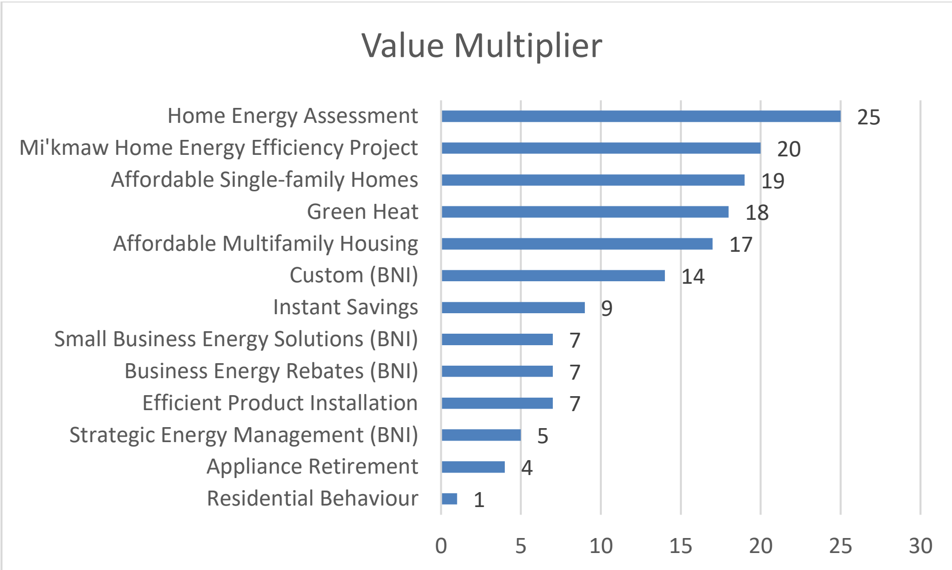


*Figure 3: Rank Order for Evaluated Lifetime Net Energy Savings as a Multiple of Net First Year.*

The multiplier represents the average lifetime of energy savings. The multiplier for Residential programs is fourteen, while the multiplier for BNI programs is ten.

The overall portfolio, taken together, has a multiplier of eleven.

### 3. Sector Contributions

In Figure 4, BNI contributes a net peak demand savings at the generator of about 57%, while the remaining 43% is contributed from the Residential sector.

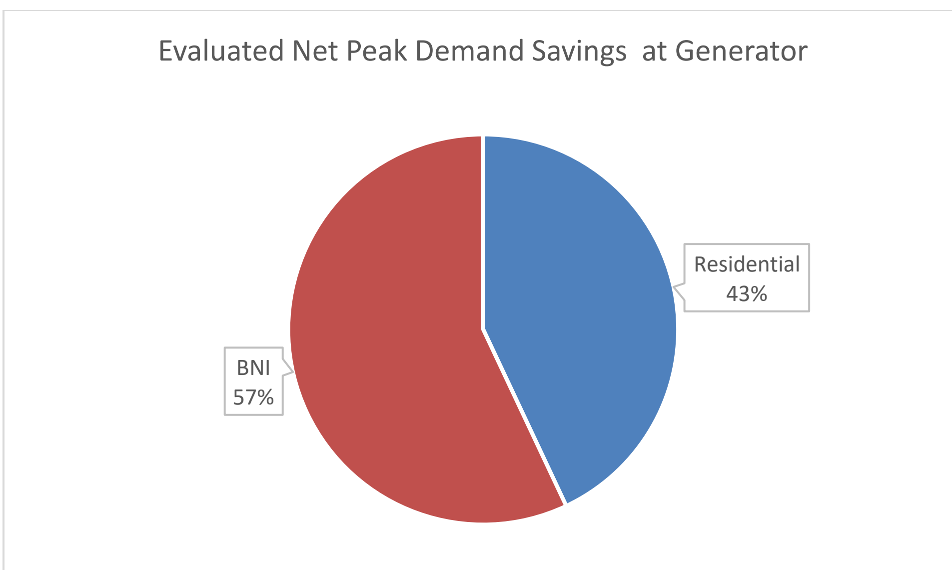


*Figure 4: Percent Contribution to Net Demand Reduction at Generator by Sector.*

In Figure 5, first-year net energy savings evaluated at the generator splits approximately 64%/36%, with about 64% from BNI, and about 36% from the Residential sector.

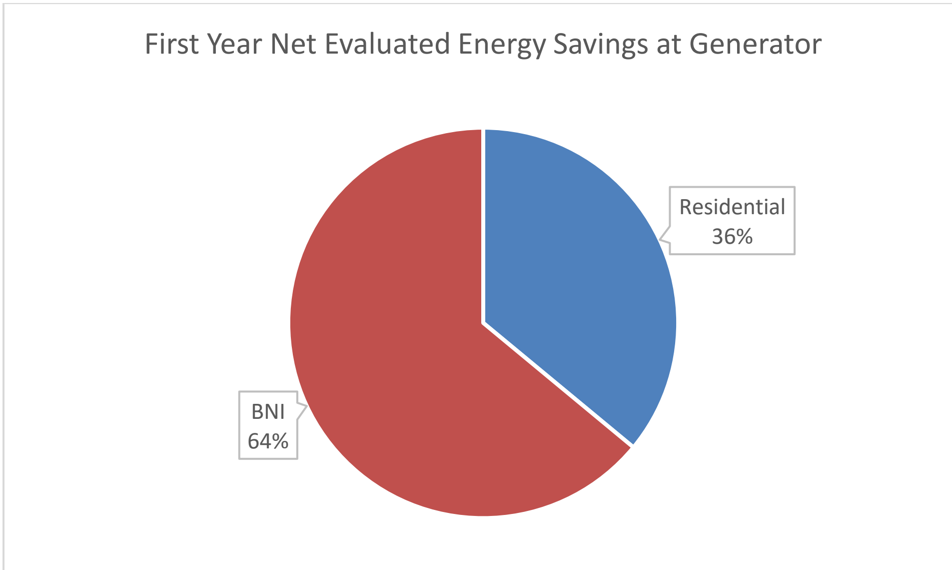


*Figure 5: Percentage of First Year Evaluated Net Energy Savings at Generator.*

In Figure 6, there is an approximate 55%/45% split for the lifetime evaluated net energy savings with 55% from BNI and 45% from the residential sector.

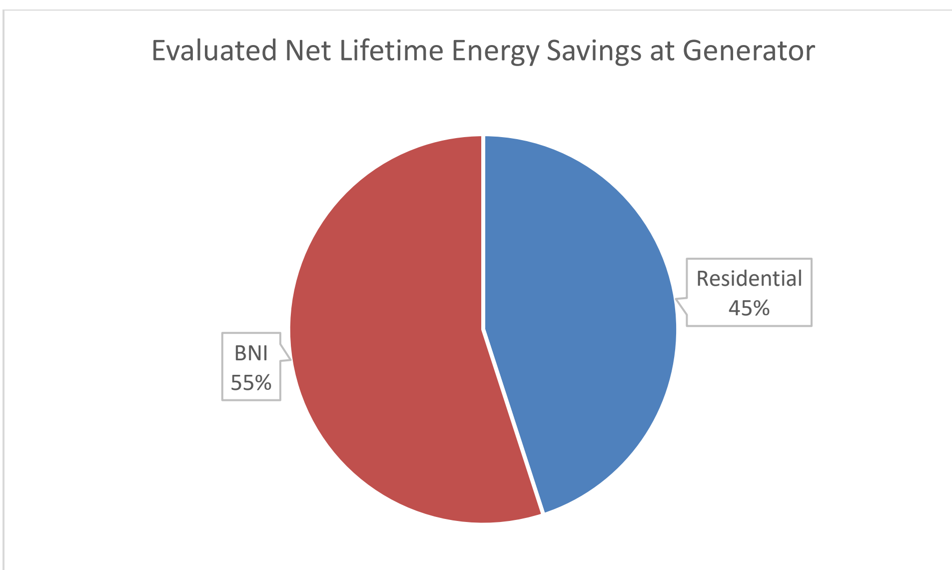


*Figure 6: Percentage of Lifetime Evaluated Net Energy Savings at the Generator.*

# VI. Evaluation Effort for 2025 Programs

As shown in **Error! Reference source not found.**, the Econoler impact evaluation work was substantial, including sixteen impact evaluations. There are nine residential evaluations, of which six are comprehensive and three condensed; five BNI evaluations, of which three are comprehensive and two are condensed; and there are two demand response impact evaluations, one for residential and the other for BNI, both comprehensive evaluations.

A comprehensive evaluation includes baseline definition, savings calculation methodology, analysis of parameter values used to calculate savings, and net-to-gross ratios. The activities supporting comprehensive evaluation include customer data system analysis, surveys, project reviews, site visits, and completing a literature review. Condensed evaluations include new information, but they rely on the foundation of past comprehensive evaluations.

Generally, the evaluator's goal is to conduct a full (comprehensive) evaluation of each program every three years, with condensed evaluations between. However, full evaluations may be assigned to mature programs less frequently, while complex situations may require more frequent full evaluations.[37]

[37] See *2025 DSM Programs Evaluation Report, Final Report*, March 17, 2026, P. 3-4 for a more complete set of considerations and guidelines.

*Table 5: Planned Evaluations for 2025 Programs.*

| Project Component | Impact Evaluation | | Notes and Additional Evaluations |
|---|---|---|---|
| | Comprehensive | Condensed | |
| **Residential** | | | |
| Appliance Retirement | | X | Ended – January 2025 savings only |
| Instant Savings | | X | |
| Affordable Multifamily Housing | | X | |
| Affordable Single-family Homes | | X | |
| Efficient Product Installation | | X | |
| Home Energy Assessment | | X | |
| Mi’kmaw Home Energy Efficiency Project | | X | |
| Residential Behaviour | X | | Cumulative billing analysis for 2025 months where AMI data is available |
| **BNI** | | | |
| Business Energy Rebates - Application | X | | |
| Business Energy Rebates - Instant | | X | Market Evaluation |
| Custom | X | | |
| **Demand Response Program** | | | |
| Residential Demand Response | X | | Process Evaluation |
| BNI Demand Response | X | | |
| Source: Table 1: 2025 Portfolio Evaluation Plan, P. 3 in *2025 DSM Programs Evaluation Reports, Final Report, Overall Executive Summary*, Quebec City: Econoler, March 17, 2026. | | | |

Econoler provides further support by regularly updating the Demand-side Management Measure Assessment (DSM MA) document. This year, the product categories rebated through the Instant Savings program were updated as part of its condensed evaluation.

Additionally, Econoler carried out two special evaluations. The market evaluation of the Business Energy Rebates – Instant Rebates program sought to determine timing for when a baseline for LED fixtures should take effect and identify the implications of baseline changes. Meanwhile, the process evaluation of Residential Demand Response collected feedback from staff, providers, and non-participants to determine how to increase participation and identify opportunities for operational improvement.

# VII. Savings Verification Approach

The savings verification review was conducted as follows:

- We focused on the "installed" annual energy savings and demand reductions. These are the annualized value of savings and demand reductions from the measures installed, regardless of what day of the year they were put into service. They do not represent the "actual" realized savings for that calendar year but are the savings that should be realized when each measure is in place for a full year.

- This year, we checked the evaluator's presentation of method for each program analysis. We reviewed the interaction, free-ridership, spillover, and net-to-gross approaches.

- We conducted 108 site visit inspections for the 2025 program year.

# VIII. General Findings

- The method followed in each program impact evaluation follows a recognized analytic approach generally appropriate for the type of program. All evaluations followed methods developed by the community of evaluators and are consistent with regulatory direction. Some evaluations include variations in one or more elements. The structure and format of each measure-based evaluation are generally consistent with evaluation protocols and/or the range of standard methods. The one non-measure-based evaluation follows the appropriate Universal Methods Project protocol. The structure and format of each measure-based impact evaluation follow a consistent template. *The exception is the Residential Behaviour program, which cannot be evaluated conventionally since no physical measures are installed, however for this evaluation the appropriate UMP protocol is followed.*

- Each evaluation has an Executive Summary. Each provides key definitions of terms and acronyms up-front. Each has a good table of contents. The evaluations usually have a methodological model diagram, followed by specification and discussion of methods employed. Where citations to other studies are included, we find them to be relevant. For each evaluation for which it applies there is an appendix containing clear delineation of calculations, methods, and (when included in the evaluation) surveys.

- The Evaluator has appropriately developed savings-weighted measure life analysis for net energy savings at the generator for all program components reporting energy savings *(except for the behavioural program since energy savings for this program are not based on known physical measures).*

- Carbon emissions offsets are appropriately developed.

- The Evaluator has demonstrated command of the current evaluation guidelines, while taking independent responsibility for evaluation designs, choice of analytic methods and calculations.

- The Evaluator has conducted a single process and market evaluation each (**Error! Reference source not found.**). These evaluations are well-structured and useful for understanding the programs.

- In addition to the process evaluations, several of the program impact evaluations are supported by surveys and selected interviews, along with site visits, so while emphasizing impact evaluation, most evaluations contain some elements usually included in process evaluations. Also, while the primary focus of evaluation is necessarily on impact evaluation, the evaluator has been able to conduct a few process evaluations each year, and continuing to conduct additional process evaluations in the future would be desirable.

# IX. Individual Program Component Review

No programs have been added or removed since Program Year 2024. However, three programs were not continued into 2026: the Appliance Retirement Program, Green Heat, and the Residential Behaviour program. Counting these programs for 2025, there are nine residential programs, four Business, Non-Profit, Institutional (BNI) programs and two Demand Response programs.

## A. Appliance Retirement Program (ARet)

The Appliance Retirement (ARet) program is one of two program components of the

Residential Efficient Product Rebates program. Appliance Retirement advances the retirement of refrigerators and freezers (both full-sized and small), as well as room air conditioners, by providing information on maintenance costs of old and inefficient appliances and offering free appliance removal and rebates for each retired appliance. The Evaluator reported that the program had retired 77,981 appliances from homes and schools since 2012.[38]

To qualify for recycling, appliances must be owned by the participant, in working order, and at least 10 years old. To maintain cost effectiveness, room air conditioners, small refrigerators and freezers are collected only when a full-sized refrigerator or freezer is retired at the same time. ARCA Canada Inc. (ARCA), the delivery agent (DA) for Efficiency Nova Scotia, collects and transports old appliances to a warehouse where about 95% of components are decommissioned and recycled. ARCA schedules collection appointments and provides customer service. The graphic below outlines the Evaluator's program delivery/participation process.[39]

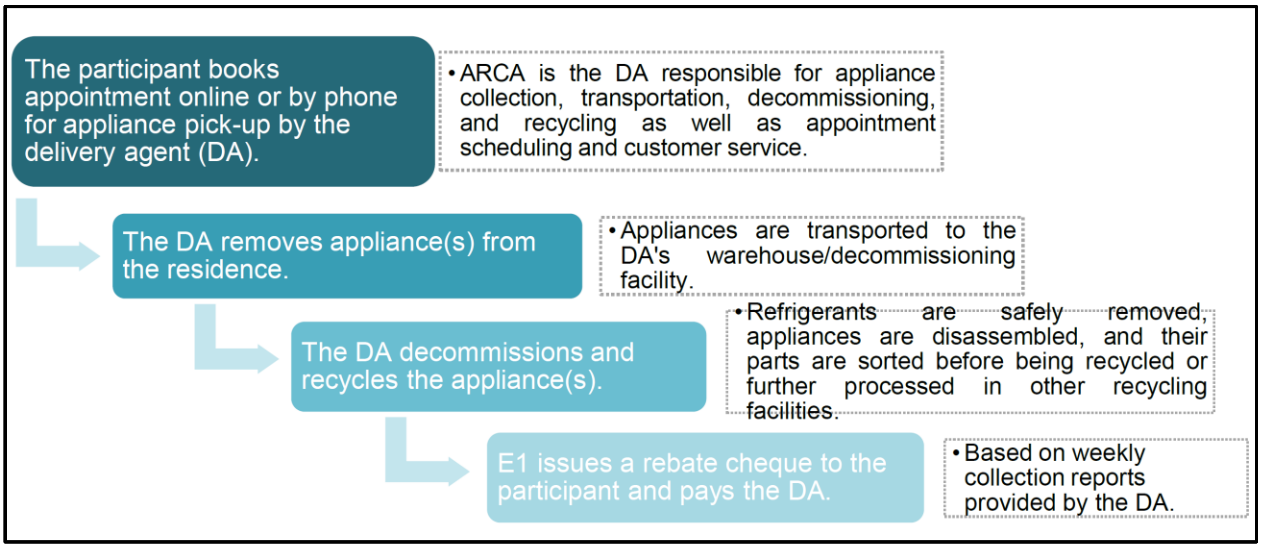


*Figure 7: Appliance Recycling Process.*

**Rebates.** The program offers the following rebate incentives for each retired appliance:

$50 for full-sized refrigerator
$50 for full-sized freezer
$10 for room air conditioner
$10 for small refrigerator
$10 for small freezer

[38] Econoler, in collaboration with Narrative Research, Akonovia, Equilibrium, *Efficiency One 2025 DSM Programs Evaluation, Final Report, Overall Executive Summary*, March 17, 2026, P. 18.
[39] Figure 7 is Figure 1 in the Econoler evaluation for Appliance Recycling.

**Rule Changes.** Since 2016 Efficiency Nova Scotia has adjusted the retirement criteria to increase program participation and maintain cost effectiveness:

- In 2016, appliance age criteria changed from 15 years to 10 years.

- In 2020, full-sized freezer volume criteria were updated from 10-25 cubic feet to 7-25 cubic feet.

- In 2021, rebate criteria changed for retired full-sized refrigerators and freezers from $30 to $50.

- In 2023, appliance retirements were reported under the Affordable Single Family Housing program and the Mi'kmaw Home Energy Efficiency program (MHEEP), rather than the Appliance Retirement program.

**Number of Retirements.** In 2025, 285 appliances were retired. Most savings came from refrigerators and freezers, together generating 96% of 2025 savings, a similar pattern to the 2024 Program Year.

**Energy Savings & Demand Reduction.** The Evaluator found that in 2025 both gross energy and peak demand savings decreased by 95% from 2024. The Evaluator concluded that the decrease was a result of ARet being discontinued as of January 2025, thereby only achieving 9% of 2025 electrical energy and peak demand savings targets. For the 2025 Program Year, see Evaluator Findings, below.

**Evaluation Objectives**. The Evaluator completed a condensed impact evaluation listing the following primary objectives:

- Calculate gross and net savings results: electrical first year and lifetime energy savings, peak and demand savings.
- Calculate avoided GHG emissions.

**Evaluation Components.** To determine the gross and net electrical energy and peak demand savings and avoided annual GHG emissions the condensed impact evaluation approach included the following steps:

- Audit tracking sheet.
- Calculate gross and net energy and peak demand by using evaluation results and 2022 Net-to-Gross Ratio (NTGR) results.

- Calculate the avoided GHG emission reduction.

**Evaluator Findings.** The Evaluator highlighted the following findings:

- As noted, in Program Year 2025, the program did not achieve either the planned net electrical energy or peak demand savings of 1.274 GWh and 0.179 MW, respectively. For 2025 net electrical energy savings were 0.115 GWh and peak demand savings were 0.017 MW at the generator resulting in a 95% decrease for both energy and peak demand below planned targets due to ARet being discontinued as of January 2025.

- Program participation decreased in 2025 by 95% over participation in 2024, totalling 285 appliances, with refrigerators and freezers accounting for 96% of 2025 savings. For 2025, evaluated net energy and peak demand savings were the same as the values tracked by Efficiency Nova Scotia.

- In Program Year 2025, Efficiency Nova Scotia discontinued the program in January. During the period of operation (approximately one month) the ARET program achieved net electrical energy savings of 0.115 GWh and 0.0.017 MW, respectively, at the generator.

- Note that the program achieved 9% of savings target in approximately one month, so would likely have slightly exceeded the target for the year had it been run for the full year (9% X 12 = 108%).

**Evaluation Issues**: There were no issues with the methods employed or calculations performed by the Evaluator, which were appropriate to this program type and within the scope of an experienced independent evaluator. The Evaluator had no recommendations for ARet for Program Year 2025 and raised no problems with the program in either Program Year 2024 or Program Year 2025.

**Issue No. 1**: When a program is terminated, the Evaluator should generally provide a discussion of why,[40] such as a comparison to other programs or analysis of its opportunity cost. However, while the Evaluator has discussed the declining energy

[40] The Evaluator explained that "ARET fell short of its net savings targets, achieving 9% of both its electrical energy and peak demand savings targets." However, this is a result of termination of the program, not a cause. Any program would likely show the same result if it were terminated during the initial month, so it is not an explanation for why the program was terminated. As noted, the program achieved 9% of target in approximately one month, so would likely have slightly exceeded its target had it been run for the full year (9% X 12 = 108%). This should have been highlighted and discussed.

savings from the Appliance Retirement program as energy efficiency of appliances has improved in some prior years, this was not raised as a potential reason. The evaluator could, for example, have presented a graph for year-by-year improvement in refrigerator efficiency, such as Figure 8, and discussed the problem of very successful improvement in refrigerator energy efficiency as resulting in downward sloping program energy savings.[41]

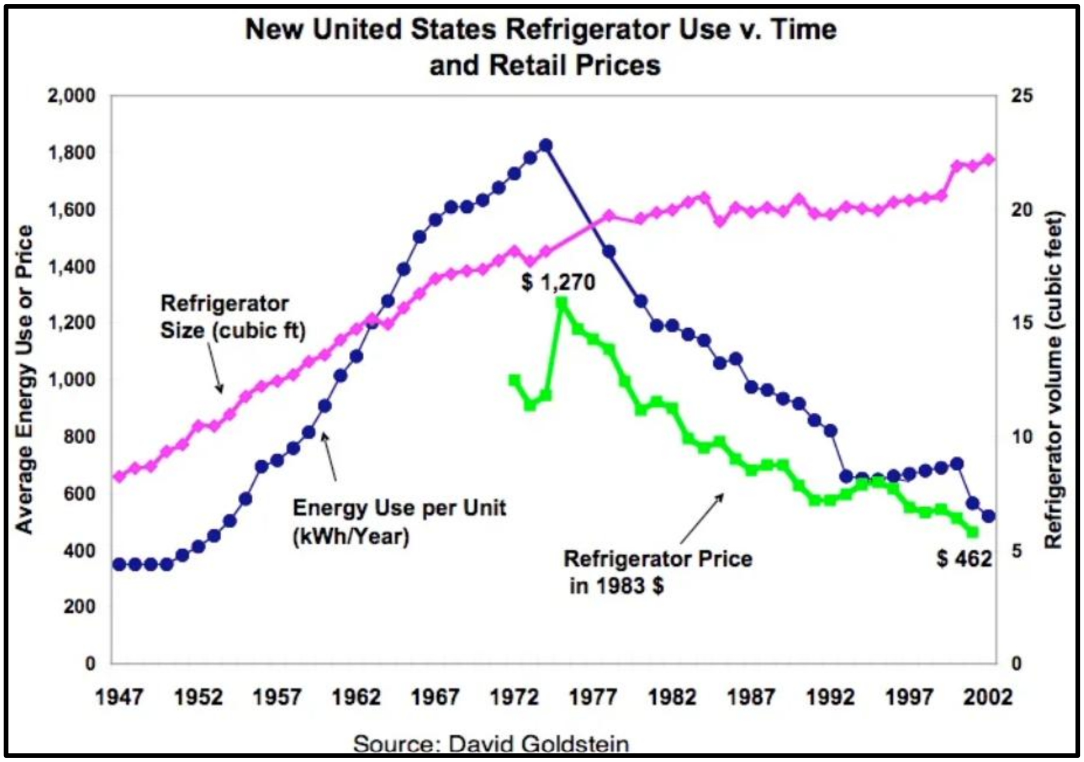


*Figure 8: Energy Use Down; Capacity Up (1947-2002),*

The Evaluator included an indication of declining program savings (**Error! Reference source not found.** and **Error! Reference source not found.**). However, there was no analysis of why the program was terminated.

[41] Figure 8 by Dr. David Goldstein, is copied from a paper on international energy standards: Hartikainen, Teemu, Paul Wade, & Alan Meier, "Are international product energy-efficiency policies becoming endangered species? European Council for an Energy Efficient Economy, *Proceedings of the 2017 Summer Study.*

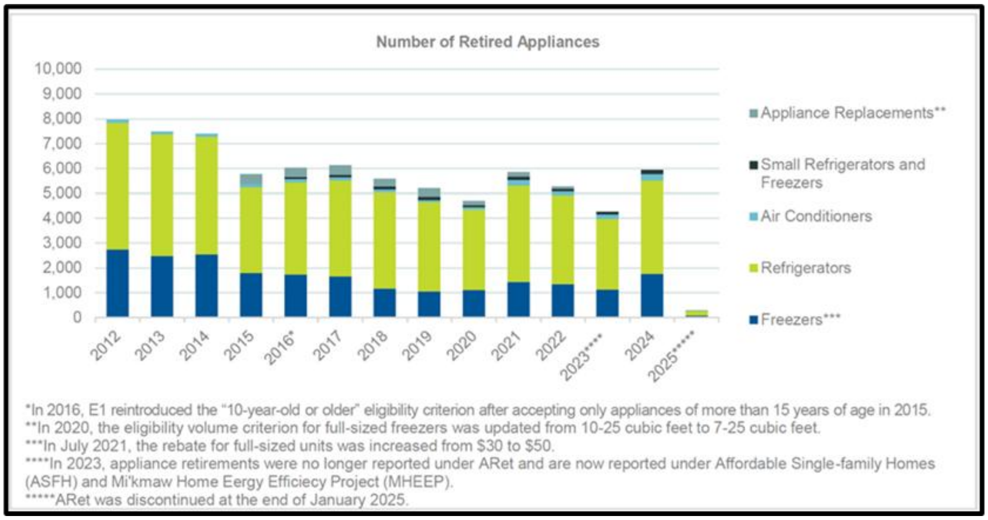


*Figure 9: Retired Appliances by Year.*

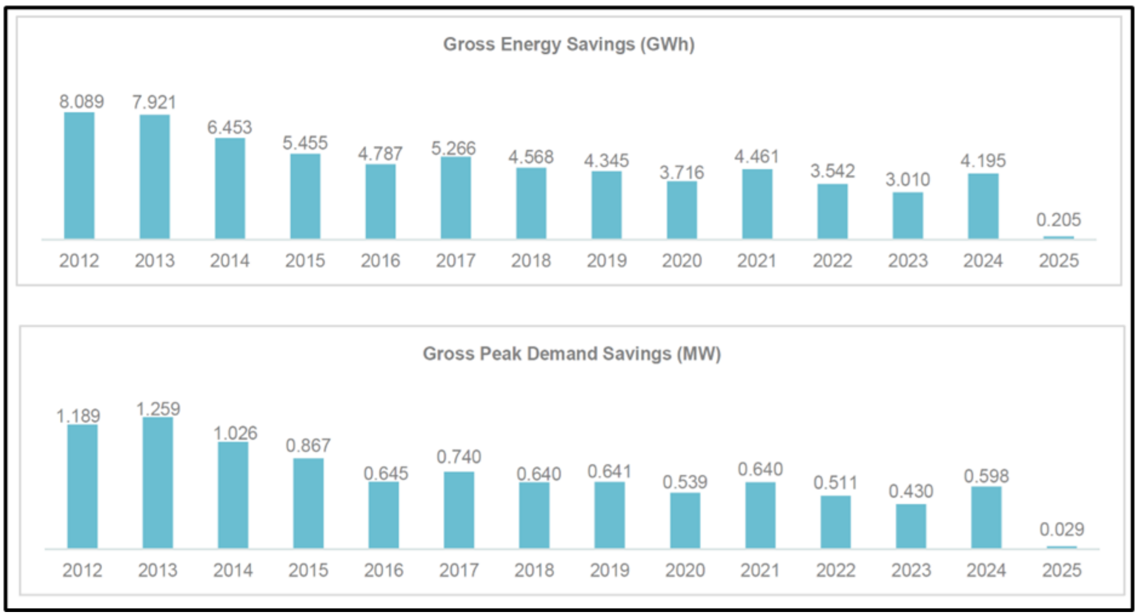


*Figure 10: Yearly GWh Savings & MW Demand Reduction.*

**Recommendation No. 1:** When there is a major change in a program, including ending a program, the Evaluator should discuss the change or provide a reference or link to the document in which the discussion is provided. Our preference is for the Evaluator to analyse the pluses and minuses of the change and explain what is lost and what is gained by the change.

**Issue No. 2:** In site visits for Appliance Retirement in earlier years, we found that low-income households were pleased to receive a small payment and free removal service when an appliance reaches the end of its life, rather than having to pay to have it removed. This is a useful DSM program because:

(1) It is voluntary on the part of each participant household (and so is in line with the spirit of the original conservation movement).

(2) It provides a simple and dependable way for lower- and middle-income households to act in an ecologically correct way and participate socially in real recycling that required disassembly of appliances, preventing diversion of used appliances to secondary markets. It is also a social inclusion program.

(3) It ensures intelligent disposal of almost all machine parts.

**Recommendation No. 2:** The Evaluator should investigate and develop a report on how the market for appliance recycling will function without the program. The report should address the following questions:

- Will profit-making vendors move in to cover the opportunities created by loss of non-profit service by Efficiency One?
- Will intelligent recycling of appliances that would have been run through ARet not occur?
- Will used appliances be diverted to a secondary market?
- Will the environmental benefits of the program will be lost as intelligent recycling is abandoned?
- Will low-income households absorb the cost of appliance pick-ups? (While upper income households will probably secure new appliances from stores that provide pick-ups, lower income households will likely face new fees).

The report should also reference and include a link to the results of the benefit-cost analysis and explain why the closure of this program may appear reasonable.

As regulated public services, utilities should consider values such environmental protection, service to low-income and moderate-income customers, and social inclusion as well as benefit-cost analysis.

## B. Instant Savings (IS)

Instant Savings is the second component of the Residential Efficient Product Rebates program. Instant Savings is an instant cash rebate program offered to purchasers of energy efficient products, delivered by a Delivery Agent (DA), the Summerhill Group, Inc., and national and independent retailers at over 150 locations throughout Nova Scotia. In 2019, Efficiency Nova Scotia added online retailers to their list of retailers and then went on to offer online purchasing from manufactures in 2020.

In 2025, program changes include offering rebates year-round on some products, while other rebated projects were offered from January 1, 2025, to May 31, 2025. The Evaluator reports that Instant Savings program is promoted through point-of-purchase materials and signage, the Efficiency Nova Scotia website, television commercials, social media, print, online, and outdoor advertising. In addition, “consumer engagement” events were presented at partner retail stores promoting Instant Savings and other Efficiency One programs and services.

**Phasing Out LEDs.** In 2025, thanks to the “Lights-Out” campaign, four ENERGY STAR certified LED lamp and fixture offers were removed: 1) non-A series LED lights, 2) LED recessed downlight fixtures 3) LED fixtures without motion sensors, and 4) dehumidifiers.

**Number of Products Sold.** The Evaluator reported that 113,696 energy efficient products were sold throughout Nova Scotia in 2025, a 71% decrease from the 395,472 energy efficient products sold in 2024. Due to the 2024 “Light’s Out” campaign, control products represented the largest number of products sold in 2025, totalling 69,295 or 61% of all rebated products. In 2024, ENERGY STAR Certified LED fixtures were the largest number of products totalling 268,740 compared to the 23,606 sold in 2025. The Evaluator stated that this was the predictable impact of removing LED lamps and fixtures from Instant Savings.

**Net Energy Savings & Demand Reduction**. Instant Savings evaluated average net energy savings per household totalled 11.430 GWh in 2025. Evaluated net peak demand savings totalled 0.466 MW at the generator in 2025.

**Evaluation Objectives.** The Evaluator completed a condensed impact evaluation and a literature review to determine NTGR for non-lighting measures. The main evaluation objectives were to:

- Calculate gross and net savings results: electrical first year and lifetime energy savings, peak demand savings.
- Calculate avoided GHG emissions.
- To determine the gross and net electrical energy and peak demand savings and avoided annual GHG emissions the condensed impact evaluation approach included:
- Audit tracking sheet.
- Update 2025 DSM Measure Assessment
- Conduct literature review for NTGR values for non-lighting measures.
- Calculate gross and net energy and peak demand by using evaluation results.
- Calculate avoided GHG emission reduction.

**Evaluator Findings.** The Evaluator reported the following key Instant Savings findings:

- In 2025 Instant Savings achieved net electrical energy and peak demand savings of 11.430 GWh and 0.466 MW, respectively, exceeding planned net electrical energy savings target of 9.690 GWh but fell short of planned net peak demand savings target of 0.965 MW.
- The removal of LED lighting products and dehumidifiers from Instant Savings product offerings resulted in a decrease of the total number of rebated products from 395,472 in 2024 to 113,696 in 2025, representing a 71% reduction in rebated products.
- Saving controls represent the largest number of rebated products totalling 69,295 representing 61% of all rebated products and 68% of all gross electric energy savings. Due to the application of NTGRs for non-lighting products, evaluated net electrical energy and peak demand savings were 28% and 35% lower than values tracked by Efficiency Nova Scotia. The 2025 program NTGR was updated to 0.77 from 0.98.

**Evaluator Recommendations.** The Evaluator provided no new recommendations.

**Evaluation Issues: None**. The methods and calculations performed by the Evaluator are appropriate to this program type and within the scope of an experienced independent evaluator. This is an excellent evaluation.

## C. Home Energy Assessment (HEA)

Home Energy Assessment (HEA) is a component of the Existing Residential Programs. This program encourages homeowners to increase the efficiency and comfort of their homes by providing rebates for qualified energy efficiency products and retrofits. HEA provides rebates for a wide range of equipment and building envelope activities.

**Measurement.** To measure performance, the program incorporates “test-in/test-out” (“D” and “E”) residential audits, which include blower door testing. Delivery agent energy advisors conduct these assessments. Based on the results of the “E” assessment, a final EnerGuide rating and subsequent savings estimate are developed. Rebates are provided by the type of measure installed.

**Evaluation Components.** For 2025 the Evaluator completed a condensed impact evaluation of HEA. This evaluation included audits of program tracking documentation (tracking sheet audit), calculation of gross and net results for electrical first year and lifetime energy savings, peak demand savings, and avoided GHG emissions. Evaluation included use of 2023 NTGR results, 2024 unconverted D assessment savings parameters and a unitary savings review and an effective useful life (EUL) update.

**Participation.** After consistent and significant increases in HEA participation levels from 2022 to 2024, due to the introduction of the Canada Greener Homes (CGH) federal grant program in May 2021, in 2025 HEA participation decreased totalling 3,157 projects compared to 5,367 projects in 2024, a 41% decrease. The Evaluator explains that the decrease could be due to the closing of CGH Grant program in 2024 to new participants, although CGH Grant participants were required to complete their E assessment by November 30, 2025. The final processing and payments of HEA rebates are expected by March 31, 2026.

**Evaluated Average Gross Energy Savings per Household.** In 2025 the average evaluated gross energy savings per participant were 4.68 kWh compared to 7.22 kWh in 2024, a 35% decrease. Since 2022 Solar PV accounted for the increase in the average gross electrical energy savings per participant representing 74% of total gross electrical energy savings in 2024, compared to 56% in 2025. The Evaluator explained that the decrease is mainly due to the closure of the CGH Grant, since solar PV was only incentives though the CGH Grant program, concluding that the closure of the CGH Grant should be more significant in upcoming years.

**Program Net Energy Savings & Demand Reduction at the Generator.** The Evaluator found that in 2025 HEA achieved 13.820 GWh net electrical energy savings, compared to 31.962 in 2024, a 62% decrease. In 2025 HEA achieved 4.578 MW in peak demand savings compared to 8.681 in 2024, a 52% decrease. The evaluated electrical energy and peak demand savings matched Efficiency One’s tracked savings.

**True-Up.** The Home Energy Assessment (HEA) program includes long term federal coordination in the form of the HOT2000 savings software and a “test-in” and “test-out” procedure, plus the use of AMI data for understanding changes in energy use, making it one of the most carefully assessed energy conservation programs administered by Efficiency Nova Scotia. Econoler’s work over several years with the evaluation of this program has included detailed testing and improvements to check and improve their methods while ensuring accuracy and precision of energy savings results.

**Evaluation Issues**: **None.** This is an excellent evaluation in all respects, and the strengths of this evaluation carry over to others using all or parts of this method.

## D. Green Heat

Green Heat, a component of Efficiency Nova Scotia's Existing Residential program, provides financial incentives for the installation of efficient heating systems that use fuel from renewable resources, including high-efficiency heat pumps, biomass heating systems, solar space and water heating systems, and demand reduction measures.

Since July 2018, Green Heat offered non-electrically heated homes mini-split heat pump (MSHP) incentives under the federal Low Carbon Economy Fund (LCEF) through the Province of Nova Scotia. Nova Scotia Power offers on-bill financing for customers purchasing a heat pump system, and cross promotes the on-bill payment option with Efficiency Nova Scotia.

In 2025, Green Heat measures, some with a "buy Canada" provision and incentives, included:

- **Heat Pumps**: Ductless Mini-split Heat Pumps, Centrally Ducted Air-source Heat Pumps, Air to Water Heat Pumps, Ground-source Heat Pumps.
- **Biomass**: Wood/Pellet Stoves, Wood/Pellet Boilers, Centrally Ducted Forced Air Furnaces
- **Solar**: Solar Thermal Air Heating, Solar Domestic Hot Water (DHW)
- **Demand Reduction**: Electric Thermal Storage, and Domestic Hot Water (DHW) Heater Timers

Wood and pellet fireplace insert, solar thermal air heating, and solar water heating measures were discontinued from Green Heat as of May 1, 2025. Efficiency Nova Scotia report in the 2025 DSM Annual Progress Report that their decision to discontinue these measures was based on: 1) the consistent low participation and 2) the Evaluator's 2024 findings of minimal energy savings for biomass inserts.

The Evaluator reported that Green Heat's installations continued a declining trend in 2025: a decrease of 33% compared to 2024, which had decreased by 21% over 2023, which decreased by 21% over 2022. The Evaluator found that this persistent decrease in Green Heat installations and energy savings over four years resulted in Efficiency Nova Scotia's decision to discontinue the Green Heat program component as of December 31, 2025, and transition to more comprehensive rebate offerings.

As reported by the Evaluator, Green Heat's closure was due to two major factors:

1. Starting in May 2021, participants increasingly chose to enrol in Efficiency Nova Scotia's Home Energy Assessment (HEA) program component and the Canada Greener Homes Grant (CGH), which offer higher federal incentive levels than Green Heat. When the CGH Grant was closed February 5, 2024, it was assumed that Green Heat participation would increase, but this did not occur.
2. The Evaluator's billing analysis results conducted as part of the 2024 DSM evaluation found a reduction in energy savings.

In 2025 Green Heat installed 944 measures, a 14% decrease over the 2024 total of 1,408 measures, resulting in the lowest level of measures installed since 2016, and the lowest gross energy savings level in over 10 years.

Green Heat 2025 gross energy savings were 1.414 GWh compared to 1.651 GWh in 2024 and total gross peak demand reduction in 2025 was 2.176 MW compared to 2.748 MW in 2024.

The Evaluator conducted a condensed impact evaluation. The main evaluation objectives were:

- Calculate gross and net electrical first year and lifetime energy saving and peak demand savings.
- Calculate avoided GHG emissions.

The Evaluator found that Green Heat:

- Achieved net electrical energy savings of 0.749 GWh, and 1.191 MW in net peak demand reduction at the generator in 2025, less than the plan targets of 3.571 GWh and 2.717 MW, resulting in decreased net saving targets: 21% and 44% of electrical energy and peak demand targets, respectively.

- 2025 participation decreased by 33% compared to 2024, while MSHPs decreased by 30% and demand reduction measures decreased by 56%. The total number of installed measures decreased to 944 in 2025 from 1,408 installed measures in 2024. The Evaluator projected an increased participation in 2025 because participants not having the choice to enrol in HEA with the Canada Greener Homes Grant program, which offered higher incentive levels, but the opposite occurred in 2025 with a decrease in participation in Green Heat. The Evaluator reports that this decrease in participation might be due to the reduction of rebates in 2025.

- The Evaluator found that gross and net electrical energy savings and peak demand savings were the same as tracked by Efficiency Nova Scotia.

**Evaluation Issues**: **None.** A good evaluation. Methods choices were reasonable and within scope for an independent Evaluator.

## E. Residential Efficient Product Installation (EPI)

**Efficient Product Installation (EPI)**
Since 2027, the Efficient Product Installation program (EPI) has been transformative in the residential lighting market, providing free direct installation of energy-efficient products to homeowners and renters, through contractors, while promoting other Efficiency Nova Scotia residential program components.

In June of 2025, the lighting measures were phased out, changing program emphasis towards electrician-installed energy efficiency measures. The Evaluator reported that electrician-installed measures will be key in Efficiency Nova Scotia's providing residential demand response program activities.

From April to June 2023, EPI offered smart thermostats for electric baseboards as a pilot measure to accommodate demand for domestic hot water heater load controllers, which are offered through the Efficiency Nova Scotia's Residential Demand Response program. Starting in 2024, Efficiency Nova Scotia offered eight (8) new electrician-installed measures, including lighting products and learning thermostats (both advanced and smart.) In 2025 advanced learning thermostats selected for central electric heating were replaced by smart thermostats due to cost.

Listed below are 2025 EPI eligible products:

1. Lighting Products
    1. LED Lamps (A-type, reflectors, and chandeliers)
    2. LED Nightlights
    3. Solor Security Fixtures
    4. Motion Sensors
    5. Dimmer Switchers

2. Domestic Hot Water Products
    1. Faucet Aerators
    2. Low-Flow Showerheads
    3. Thermostatic Shower Valves
    4. Pipe Insulation
    5. Hot Water Tank Wraps

3. Smart and Advanced Learning Thermostats
    1. Smart Thermostats (For non-electrically heated homes)
    2. Smart Thermostats (For Mini-Split Heat Pumps (MSHPs)
    3. Smart Thermostats (For Electric Baseboards or In-floor Systems)
    4. Smart Thermostats (For Central Electric Heating)

4. Air Sealing Products
    1. Foam Gaskets
    2. Door Sweeps
    3. Window Air Sealing
    4. Door Weather Stripping
    5. Window Film Kits

5. Other Products
    1. Domestic Hot Water Heater Load Controllers
    2. Humidity Sensors

The Evaluator reported that in 2025 Efficiency Nova Scotia completed implementation of their 2024 EPI improvement recommendations to improve the smart thermostat installation rate and explore and implement strategies to reduce customer program dissatisfaction.

Efficiency Nova Scotia responded by:

- installing an automated educational email sent to customers who received smart thermostat,
- implementing refresher training in July 2025 for EPI service providers,
- requiring smart thermostat installations mandatory for program participants,
- establishing communication protocols to provide participants with timely updates regarding their enrolment status, troubleshooting support and incentive distribution issues,
- confirming participant satisfaction of device(s) installation and their understanding of its functionality and benefits, and
- establishing a new quality assurance process for post installation verifications.

EPI's two funding sources are:

1. Electricity ratepayers to fund upgrades to reduce electricity consumption.
2. Government of Nova Scotia and the federal Low Carbon Economy Fund funds upgrades that reduce the use of other fuels.

The Evaluator reports results for electricity ratepayer portion of EPI only. In 2025 EPI's total number of participants was 9,245, representing a 7.5% decrease compared to the 2024 total of 9,993. A total of 90,666 efficient products were installed in 2025, a -40% decrease compared to the 2024 total of 153,775. This represents an average of 9.8 products installed per household, compared to 15.1 in 2024, a 35% decrease.

The Evaluator found that the average savings per participant decreased by 12% in 2025 compared to 6.3% in 2024. LED lamps continue to be the most prevalent product type choice in 2025, representing 21% in 2025 compared to 74% of all products installed. Smart thermostats represent 11% of products installed, accounting for 51% of gross electrical savings. Gross energy savings totalled 7.405 GWh in 2025, compared to 9.093 GWh in 2024. Gross peak demand savings totalled 0.518 MW in 2025, compared to 0.898 MW in 2024.

The Evaluator's 2025 condensed impact evaluation's main objectives were to:

- Calculate gross and net EPI results, specifically first-year and lifetime electrical energy savings, and peak demand savings.
- Calculate avoided GHG emissions.

The Evaluator highlighted the following 2025 EPI impacts:

- Achieved 7.300 GWh in net electrical energy savings (less than the target of 13.426 GWh).

- Achieved 0.509 MW in net peak demand savings at the generator (less than the target of 1.581 MW).

- Enrolled 9,245 program participants in 2025, a 7.5% decrease over 2024 due to the phasing out of lighting measures; in 2025, average electrical energy savings per participant decreased by 12% compared to 6.3% in 2024.

- The Evaluator reported that evaluated net electrical energy savings and peak demand savings were identical to the tracked net electrical energy savings and tracked net peak demand savings due to the 2025 update of overall NTGR levels based on the proportions of savings associated with each participant type for each product category, resulting in a minor realization rates of 99% and 100% respectively.

**Evaluation Issues**: None. Good impact evaluation.

### F. Mi’kmaw Home Energy Efficiency Program (MHEEP)

MHEEP, a component of the Existing Residential Programs, was introduced as a pilot in June 2018, as the First Nations Home Energy Efficiency Pilot, and began operations in 2019 as the Mi’Kmaw Home Energy Efficiency Program (MHEEP). MHEEP is a residential energy efficiency upgrade program and an appliance replacement program providing home energy efficiency upgrades to band-owned homes in the thirteen (13) Mi’kmaw communities in Nova Scotia, at no cost to the participant or to First Nation communities. In 2024, privately owned homes in First Nation communities also became eligible.

Energy efficiency upgrades are installed in collaboration withE1 Program Staff, community housing managers (HMs),, and two delivery agents (DAs). See below the Evaluator’s reported program delivery design process.

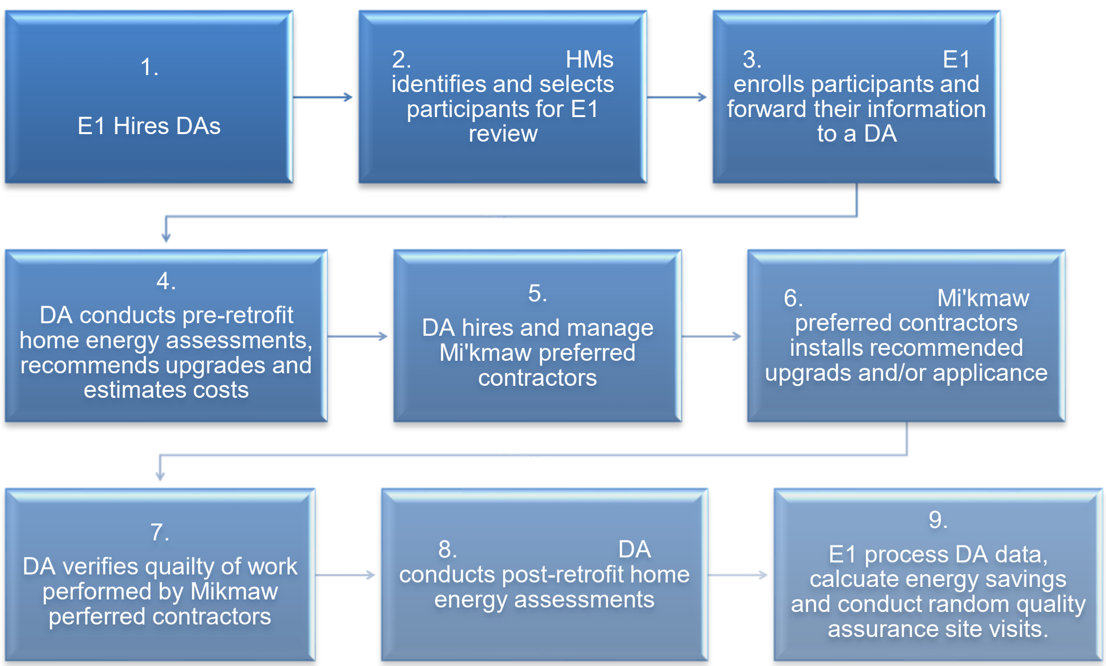


*Figure 11: MHEEP Participation Process.*

The EnerGuide audit (test-in, test-out) is used to conduct home energy assessments resulting in each home receiving an EnerGuide rating.

**Measures Included in Program**. MHEEP provides the following measures:

- Building Envelope upgrades
- Space Heating Equipment
- Programmable Thermostats
- Smart Thermostats with Electric Resistance Baseline

- Smart Thermostats with Heat Pump Baseline
- Drain Water Heat Recovery Systems
- Moisture Management; bathroom fans and heat recovery ventilators
- Heat Pump Water Heaters and Electric Resistance Baseline
- Heat Pump Water Heaters with Heat Pump Baseline
- Appliance Replacement: Refrigerators, Freezers, Dehumidifiers, Clothes Dryers
- Carbon monoxide detectors

**Funding.** MHEEP's electrical and non-electrical upgrades are funded by two sources:
1) Electricity ratepayers fund standard upgrades that reduce electricity consumption.
2) Province of Nova Scotia fund upgrades that reduce non-electrical fuel consumption and may also contribute to some upgrades that reduce electricity consumption.

**Participation:** The Evaluator reported a decrease in MHEEP participation in 2025 by 18% over 2024.[42] In 2025 157 compared to 192 in 2024 Mi'kmaw participants achieved electrical energy savings from completed home retrofit projects.

**Household Energy Savings.** There were 2.145 MWh gross energy savings per participant in 2025, a slight increase in average energy savings per participant from 2024, which saw 2.087 MWh in savings.

**Condensed Evaluation:** In 2025 the Evaluator conducted a condensed impact evaluation to calculate:

- Gross and net MHEEP results, specifically first-year and lifetime electrical energy savings,
- Peak demand savings, and
- Avoided greenhouse gas emissions.

To determine the gross and net electrical energy and peak demand savings and avoided annual GHG emissions the condensed impact evaluation approach included:

- An audit of tracking sheet,
- Calculations using evaluation results, NTGR ratio of 1, and
- Calculations of avoided greenhouse gas emissions.

**Evaluator's Findings:** The Evaluator's 2025 MHEEP key evaluation findings:

- Net electrical energy savings did not meet targets although peak demand savings at the generator surpassed targets.
- Achieved 0.337 GWh in net electrical energy savings, a decrease in 2025 planned net electrical savings of 0.548.

[42] Evaluator reports that the 2024 number of participants is the highest since MHEEP began in 2019.

- Achieved 0.319 MW in net peak demand savings at the generator, an increase in 2025 planned net peak demand savings of 0.156 MW.
- Participation decreased by 18%, from 192 participants in 2024 to 157 in 2025.
- Achieved stability in the average gross electrical energy savings per participant in 2025.
- Achieved 0.337 GWh gross energy savings in 2025 compared to 0.401 GWh in 2024, a 16% decrease in gross energy savings.
- Achieved 0.319 MW gross peak demand savings in 2025, compared to 0.481 in 2024, a 34% decrease in peak demand savings from 2024.
- Evaluated net electrical energy savings computed by the Evaluator was the same as the values tracked by Efficiency One; the evaluated peak demand savings defined by the Evaluator were 24% lower than net savings tracked by Efficiency One due to revised methodology to align with 2024 Green Heat billing analysis findings and other program component methodologies.

**Evaluation Issues:** None. The methods used and calculations performed by the evaluator are appropriate to this program type and within the scope of an experienced independent evaluator.

## G. Affordable Multifamily Housing (AMH)

The Affordable Multifamily Housing (AMH) program provides incentives for building-wide energy retrofit projects that reduce electrical and non-electrical energy consumption to affordable-housing owners and nonprofit organizations, including rehabilitation and transition housing. Project participants follow a prescriptive path by installing specific measures, or a comprehensive path performing project-specific parameters, wherein a complementary energy audit is performed by one of five AMH approved energy auditors (EAs) at the beginning of the participation process to identify eligible energy efficiency measures.

The graphic below outlines the Evaluator’s program delivery/participation process.

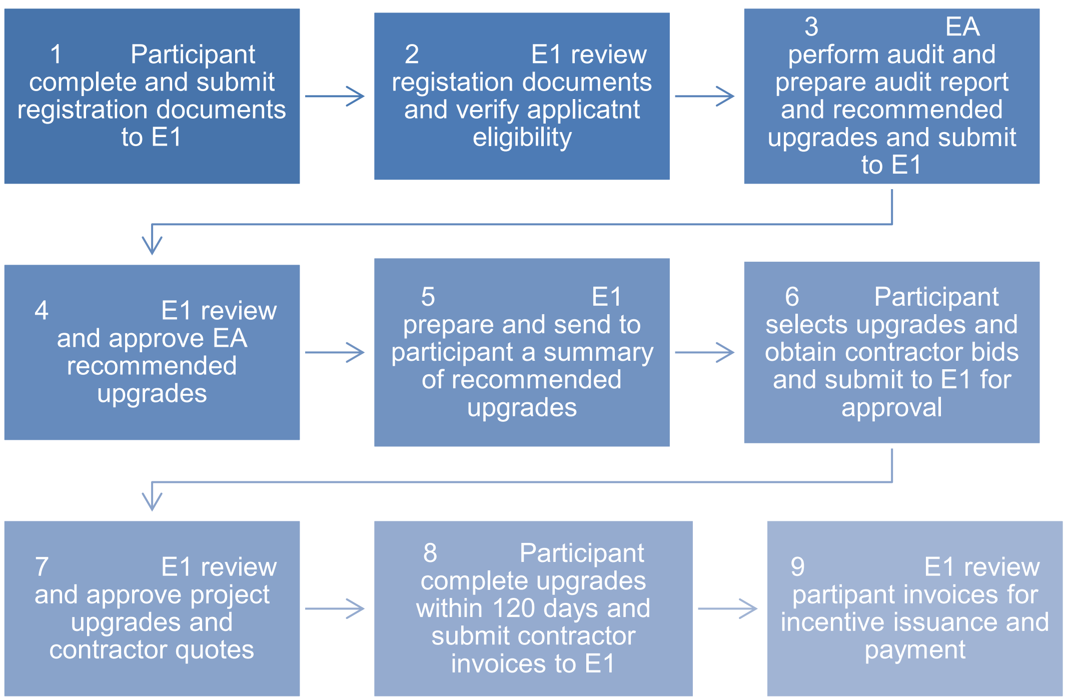


*Figure 12: AMH Process Summary.*

Affordable Multifamily Housing has two funding streams:

1) Electric ratepayers fund measures that reduce electric consumption.
2) The Province of Nova Scotia funds measures that reduce non-electrical fuel consumption and upgrades that can reduce electricity consumption.

Since April 2021, the Province of Nova Scotia’s Green Fund has provided additional incentives, allowing up to 80% of costs for electrical projects in residences and up to 100% in shelters and transitional houses to be offered.

Launched as a pilot in 2018, in 2025 AMH continues to increase its number of projects, resulting in 18% more projects in 2025 than 2024. Participation increased from 83 projects in 2024 to 98 in 2025. The Evaluator reported that, in 2025, the number of projects increased by 18% compared to 2024.

The Evaluator found that comprehensive projects increased by about 68% from 19 in 2024 to 32 in 2025, while prescriptive projects became constant with 66 projects in 2025, compared to 64 projects in 2024, generating 1.376 GWh in gross energy savings and 0.648 MW in peak demand savings, an increase over 2024 by 19% and 14% respectively.

The Evaluator stated that the large increases in participation from 2022 to 2023 was due to the addition of prescriptive heat pump projects and believes that this trend has stabilized.

Observing that energy savings per project have varied since 2018 (due in part to the various building types), the Evaluator noted that in 2025 prescriptive projects generated 67% more electrical energy savings, and 79% more peak demand savings than comprehensive projects.

2025 AMH maximum rebates did not change from 2024:

- $17,254 is the maximum rebate per unit in a multi-unit residential building or cooperative.
- $5,751 is the maximum per affordable room.
- $300,000 is the maximum incentive for all building types.

The Evaluator completed a condensed impact evaluation stating two major evaluation objectives:

- Calculate gross and net savings results: electrical first year and lifetime energy savings, peak and demand savings, and
- Calculate avoided GHG emissions.

To determine the gross and net electrical energy and peak demand savings and avoided annual GHG emissions the condensed impact evaluation approach included:

- Audit tracking sheet,
- Conduct desk reviews and participant interviews.
- Update EUL
- Calculate gross and net energy and peak demand by using evaluation results and using NTGR 1,
- Calculate avoided GHG emission reduction calculations.

The Evaluator highlighted the following 2024 recommendations agreed to by Efficiency One for AMH:

1. Provide examples of past projects to participants to demonstrate pre-tax costs and how incentives change based on supplier quotes and installed equipment.
2. Update resources and links to assist participants in navigating AMH program component and finding contractors; redesign quote document; provide detailed preapproval and recommendation reports.
3. Create new audit reporting template for EAs to improve time efficiencies.
4. Ensure in the early stages that participants are aware co-financing options by installing program changes including: 1) new application form; 2) direct contact through with applicant via welcome letter, email and telephone calls discussing applicant program choices and options; 3) status updates provided on new customer online portal.

**Evaluator's Findings:** The Evaluator's 2025 AMH key evaluation findings:

- Although in 2025 AMH achieved 1.378 GWh in net electrical energy savings and 0.648 MW in net peak demand savings at the generator, AMH did not meet planned net electrical energy target of 1.880 GWh by 27% but exceeded net peak demand savings of 0.572 MW by 13%.
- In 2025 AMH reached its highest participation rate since its start in 2022 totalling 98 completed projects representing an 18% increase compared to 2024 total of 83 completed projects.
- Of the 98 completed projects 66 were prescriptive and 32 were comprehensive projects, and combined generated 19% and 14% more electrical energy and peak demand savings respectively as compared to 2024.
- In 2025 electrical energy savings per project were about the same for both paths: 14.0 MWh per prescriptive and 14.2 MWh per comprehensive project.
- The Evaluator confirmed through desk reviews that equivalent full load hour (EFLH) had been applied correctly to prescriptive heat pump projects.

**Evaluation Issues:** None. The methods and calculations performed by the Evaluator are appropriate to this program type and within the scope of an experienced independent evaluator. This is a good evaluation.

## H. Affordable Single-Family Homes (ASFH)

Beginning in 2023, the Affordable Single-Family Housing (ASFH) program provides energy efficiency retrofits and heat pump installations at no cost to income qualified homeowners, serving both electric and non-electric heated homes under the HomeWarming brand. ASFH works collaboratively with Efficiency Nova Scotia's Appliance Retirement and Efficient Product Installation programs.

Qualified participants are self-referred or referred to the program by Housing Nova Scotia. Income is verified by one of seven delivery agents (DA's). Energy advisors (EA's) conduct pre-post audits, produce home energy assessment reports that identifies and recommends energy efficient treatments for installation, verify implemented treatments, and their costs, and provide inputs to the EnerGuide savings report.

Thirty-eight (38) heat pump contractors initiate home visits, make heat pump recommendations, manage heat pump installations and electrical upgrades.

In 2025, the program's third year of operation, 1,920 homes participated in ASFH, a 59% increase from the 1,210 homes that participated in 2024. The total number of homes with installed ASFH building envelope measures was 1,283 homes in 2025, of which 729 were also heat pump installations.

The evaluator reported that the 2025 ASFH gross energy savings were 6.135 GWh, a 65% increase compared to 3.719 GWh in 2024. Total gross peak demand savings in 2025 were 2.338, a 12% increase compared to 2.089 in 2024.

In 2025 the Evaluator completed a condensed impact evaluation stating the major evaluation objectives were to:

- Calculate gross and net savings results: electrical first year and lifetime energy savings, peak and demand savings.
- Calculate avoided GHG emissions.

To determine the gross and net electrical energy and peak demand savings and avoided annual GHG emissions the condensed impact evaluation approach included:

- Audit tracking sheet.
- Calculation of gross and net energy and peak demand by using evaluation results and using a Net-to-Gross Ration of 1.
- Calculation of avoided GHG emission reduction calculations.

The evaluator highlighted the following ASFH key findings and recommendations:

- In 2025 the program achieved 6.135 GWh in net electrical energy savings, a 114% increase over the planned target of 2.863 GWh, and 2.338 MW in net peak demand reduction at the generator, a 183% increase over planned target of 0.825 MW.

- The program achieved a total of 1,920 homes participation level, installing 1,283 building envelope measures, of which 729 were installed heat pumps. This is a 59% increase from 1,210 participants in 2024.

- Average savings per participant increased resulting in gross electrical energy and peak demand savings increased from 2024 by 65% and 12% respectively, due to increased participation.

- The Evaluator reported that tracked and evaluated peak demand savings were about the same, while net electrical energy evaluated was 1% higher than tracked due to the addition of 2024 unclaimed savings from non-modelled heat pump measures.

In 2025, the following Evaluator 2024 recommendations were agreed upon and implemented by Efficiency One:

1. Assess and adjust program delivery concerning participant wait times.
2. Update and provide equipment operation and maintenance information.
3. Provide more program and product information and handouts to increase participant program delivery and process understanding.
4. Update DA and contractor record keeping and reporting processes.
5. Update DA and contractor training guides.

**Evaluation Issues:** None. The methods and calculations performed by the Evaluator are appropriate to this program type and within the scope of an experienced independent evaluator. This is an excellent evaluation.

## I. Residential Behavioural Program (Efficiency Insights)

The Residential Behaviour program, “Efficiency Insights”, was new for Program Year 2024, and follows a similar previous residential behaviour program administered by Efficiency Nova Scotia.[43]

Efficiency Insights provides recurrent information in the form of Home Energy Reports to households in the treatment group, but not to households in the control group.[44] Participant households receive updated reports every two months on their energy consumption, a comparison with energy consumption for similar homes, energy-saving behaviour tips, and recommendations to participate in other Efficiency Nova Scotia (ENS) programs. Website information supplements the Home Energy Reports.

The goal of Energy Insights is to promote energy-saving habits and practices, and to market and promote participation in the Administrator’s measure-based energy efficiency programs. It includes no physical energy-efficiency measures.

> *This program differs from all other DSM Administrator’s programs in that it is a standalone behavioural program. It markets, promotes, motivates, and encourages energy efficient behaviours and participation in the Administrator’s measure-based energy efficiency programs. If not for the energy savings claim, the same activity would be classed as marketing and promotional support for the measure-based programs, rather than as a residential behaviour program.*

*Figure 13: Efficiency Insights as a Residential Behaviour Program.*

The contractor for Energy Insights, Bidgely, uses proprietary algorithms to create tailored Home Energy Reports (HERs). Efficiency Nova Scotia places Efficiency Insights content into Nova Scotia Power’s customer-facing “MyEnergy Insights” (MEI) platform. Customers are requested to complete a household survey on the MEI platform. This survey information is used to semi-customize the system for each household completing a survey.

In addition, Efficiency Nova Scotia Energy Efficiency Advisors (ESAs) assist customers

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[43] For the previous program, 2013 and 2014 energy savings were reported in the evaluation for 2014, completed in 2015.

[44] Energy Insights was introduced in May 2024. There were four Home Energy Reports for each participating household (paper and electronic), keyed to the every-two-month (bimestrial) bill received from Nova Scotia Power. The plan is that for a full year of operation there will be “up to” six Home Energy Reports per household.

in understanding the information they receive in the Home Energy Reports and from the MEI platform.[45] They also provide guidance to customers to ensure fitness between the household and Efficiency Nova Scotia measure-based energy efficiency programs.

**Program & Evaluation Design.** The program contractor provided the Home Energy Reports, while the evaluator (Econoler) implemented key program design elements necessary to support the evaluation and conducted the evaluation. The target population is residential customers (rate codes 02B and 03B). The evaluator identified the target customers, ensuring that each household had an active account with bills over the prior year (2023) baseline period. The design is for an opt-out program, where the evaluator selects the participant households instead of the households choosing to join the residential behaviour program.[46]

The evaluator split Nova Scotia Power Inc. (NSPI) residential customers into a treatment group and a control group using the method of random assignment (Figure 1).[47,48] In this design, the treatment and control group should be essentially equivalent in the pre-program period, but the control group is expected to use more energy than the treatment group once the program is implemented, as shown by the difference in the height of the green and blue bars in Figure 14. Estimated Program Savings is constructed as a difference in differences. For 2024, for each group (treatment and control) this was computed as we compute the difference in kWh between the pre-program year (2023) and the program year (May through December 2024). The difference of these differences (DiD) is the estimated program energy savings (here the cumulative estimate of energy savings, prior to taking effects of savings from other program into account and assigned to those programs in order to avoid double-counting).[49] The 2025 evaluation is consistent with this method, but is data limited.

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[45] The ESAs assist both participants assigned to the Efficiency Insights program and non-participants.

[46] Households assigned to the program by the evaluator could opt-out by Internet or by contacting Efficiency Nova Scotia and requesting to opt-out. Opt-out designs have two advantages over opt-in designs. First, opt-out programs generally capture more participants than opt-in programs, since effort is required to opt-out; second, if comparisons are planned, programs designed as opt-out more closely resemble the typical mix of customers, while opt-in customer groups are usually different from the typical customer mix, and so results of program are more difficult to compare to the regular customer mix over time.

[47] Econoler does not provide a description of the procedure, or a textual reference or computer program reference to indicate how the random assignment process was carried out.

[48] Figure 14 is modified from Figure 7 in State and Local Energy Action Network, *Evaluation, Measurement, and Verification (EM&V) of Residential Behaviour-Based Energy Efficiency Programs: Issues and Recommendations, 2012.* Prepared by A. Todd, E. Stuart, S. Schiller, and C. Goldman, Lawrence Berkely National Laboratory (http://behaviouranalytics.lbl.gov), hereinafter SEE Action, Figure 7, Page 11.

[49] The method is sometimes called a “Difference in Differences” (DiD) approach (SEE Action, P. 26) or a

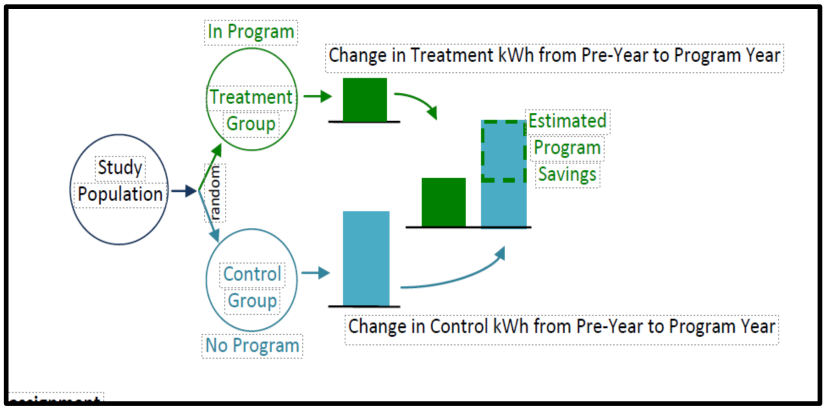


*Figure 14: Random Assignment Diagram (Modified from SEE Action Report).*

Customers were partitioned into three energy use subgroups based on energy consumption (Table 6).[50] Then each energy use group was split into Treatment group and Control group using random assignment of cases resulting in six subgroups.

*Table 6: Energy Use Ranges for Subgroups*

| Energy Use Range by Subgroup (kWh/Year) | | |
|---|---|---|
| **Energy Use Subgroup** | **From** | **To** |
| **High** | 11,200 | 36,000 |
| **Medium** | 6,000 | 11,200 |
| **Low** | 730 | 6,000 |

"Separate Sample Pretest-Posttest Design" (Campbell, Donald T. & Julian C. Stanley, *Experimental and Quasi-Experimental Designs for Research*. Houghton, Mifflin and Company, 1963. Pp. 53-54. The "other programs" referred to are the measure-based programs for which Efficiency Insights encourages participation. Savings from participation in the measure-based programs is partitioned away and accounted to those programs (and not accounted as residential behaviour program savings).

[50] Energy use ranges for the treatment and control subgroups were uniform and were set as follows: High users: "…the upper limit was set at 36,500 kWh per year, which corresponds to 100 kWh per day on average. It was observed that only 0.5% of customers have an annual consumption over that limit. Thus, the upper limit allows to keep most customers inside the analysis, while limiting the risk of having unusual residential usage which would increase the variability in the consumption profiles." Medium users: "…the intermediate limits were set at 6,000 kWh per year and 11,200 kWh per year to split the three (usage groups) relatively equally, with a small decrease in the number of customers in the medium and low (usage groups) to have more homogeneity and more chance to detect savings which are assumed to be lower in these (groups). Low users: "…the lower limit was set at 730 kWh per year, corresponding to an average daily consumption of 2 kWh per day, which is considered low. The distribution showed that only 0.5% of customers have annual consumption under that limit. Numbers in Table 1 and description of ranges from Pénélope Lévesque, Econoler, Email.

The full 2024 Econoler evaluation of this program and the 2024 Savings Verification provide additional detail.

**History.** There was a serious cybersecurity incident affecting AMI data that required the program to pause in May 2025. This restricted the 2025 program evaluation to January-April 2025 data. Evaluation for 2025 was confined to AMI billing analysis, using a treatment vs. control comparison and a Difference in Difference (DiD) approach. For this evaluation, net savings is used. The net savings for the partial-year, data constrained evaluation was 5,555 GWh. This is a special case due to disrupted data and program operation. However, the method and calculation for the 2025 evaluation is consistent with the 2024 evaluation.

**Inclusion in Portfolio Calculations.** Although there was some discussion of exclusion of results from the portfolio realization rate calculation, the result following regulatory review is to include results in portfolio energy savings for the year.

**Recommendation No. 3:** The 2025 Residential Behaviour results should be interpreted as partial-year findings based on limited data availability (as with the recorded energy savings for the Appliance Retirement program). As the program was paused in May due to a cybersecurity incident, the evaluation should not be understood as reflecting full-year program performance. Reported savings are correctly calculated and valid for the observed period.

**Evaluation Issues:** None. The methods and calculations performed by the Evaluator are consistent with the relevant evaluation protocol.

## J. BNI Efficient Products Rebates (BER)

**Program Overview**

The Efficient Product Rebates Program is administered by EfficiencyOne (E1) and comprises the Business Energy Rebates (BER) component, delivered through two services: Application Rebates (BER-AR) and Instant Rebates (BER-IR). The program provides prescriptive rebates and financing to business, non-profit, and institutional (BNI) participants in Nova Scotia to reduce electricity consumption and peak demand. The 2025 evaluation was the third and final year of the 2023–2025 DSM cycle and reports gross and net results, including first-year and lifetime electrical energy savings, peak demand savings, and avoided greenhouse gas (GHG) emissions.

**2025 Program Performance**

BER targeted 38.451 GWh in net electrical energy savings and 7.241 MW in net peak demand savings at the generator. The program exceeded the energy savings target by 5% but fell 26% short of the peak demand target. Instant Rebates was the largest contributor to both energy and demand savings.

*Table 7: BER Program Performance*

| Metric | Application Rebates | Instant Rebates | Total BER |
|---|---|---|---|
| **Participation** | 143 projects | 317,312 products sold | — |
| **Net Electrical Energy Savings** | 8.586 GWh | 31.658 GWh | 40.244 GWh |
| **Lifetime Net Energy Savings** | 137.476 GWh | 157.309 GWh | 294.786 GWh |
| **Net Peak Demand Savings** | 0.737 MW | 4.595 MW | 5.332 MW |
| **Avoided GHG (tonnes $CO_2e$/yr)** | 4,029 | 14,857 | 18,886 |
| **NTGR (avg.)[51]** | 0.93 | 0.88 | 0.89 |
| **Effective Useful Life** | 16.0 yrs | 5.0 yrs | 7.3 yrs |

Compared with E1's tracked results, evaluated net energy savings were 6% higher (realization rate 106%) and evaluated net peak demand savings were essentially identical (realization rate 100%). Application Rebates participation dropped 36% year-over-year while Instant Rebates participation rose 79%, driven largely by a Q1 2025 promotion on T8 LED linear lamps.

[51] The average NTGR here is for energy savings.

**Key Findings**

- BER surpassed its net energy savings target by 5% (40.244 GWh achieved vs. 38.451 GWh planned) but undershot its net peak demand target by 26% (5.332 MW vs. 7.241 MW).
- Application Rebates free-ridership levels declined relative to 2021, lifting NTGRs to 0.83 (HVAC), 0.94 (lighting), and 0.91 (other measures), versus the prior overall 0.74.
- Updated adjustment ratios applicable for 2025 range from 1.117 (lighting energy) to 0.514 (peak demand for non-lighting/non-HVAC). The latter carries a higher-than-expected margin of error and is not considered reliable for ongoing use without additional supporting data.
- The commercial fixture market in Atlantic Canada has effectively transformed to LED (99%+ of outdoor, high-bay, and linear fixture inventory), and DLC certification is now standard. A rebound effect from discontinuing LED-fixture rebates under BER-IR is unlikely.
- Lamps lag fixtures: LEDs represent roughly 76–78% of regional distributor lamp stock and are expected to reach 80–89% by 2027. Non-LED lamps continue to be stocked for laggard customers (small non-profits, institutions, and small businesses replacing one-off items).
- Peer DSM administrators across North America are repositioning BNI lighting offerings as the LED market matures — some exiting BNI lighting, others adopting dual or blended baselines.

**Recommendations**

- Adopt the updated adjustment ratios for tracking purposes, except the 0.514 peak demand ratio for non-lighting/non-HVAC measures and reassess that group in 2026.
- Apply the new measure-level NTGRs (0.83 HVAC / 0.94 lighting / 0.91 other) to convert gross savings to net for reporting and evaluation.
- Record adjustment factors in dedicated tracking-sheet fields rather than embedding them in gross savings values, to improve transparency and reduce error risk.
- Continue using DLC wattages as the efficient baseline for multi-wattage fixtures and run periodic confirmation checks on large applications.
- Update the BER-IR LED fixture baseline in 2026 to reflect a LED-only stocking market, set at DLC standard efficiency. Explore continued rebates for DLC Premium fixtures and lighting controls under a midstream model with revised savings assumptions.
- Maintain the current non-LED baseline for BER-IR lamps through 2027 and prepare for a baseline change starting 2028 to align with anticipated 80–89% LED lamp market share.

- Focus future LED fixture rebates on application-based and direct-install channels targeting laggard segments (small businesses, institutions, non-profits).
- Implement a dual-baseline approach for SBES LED fixtures (existing baseline for one-third of the existing measure's life; LED baseline for the remainder).
- For BER-AR, either restrict eligibility to early-replacement projects under a dual baseline or adopt a market-blend baseline weighted by the share of end-of-life projects.
- Plan for full lighting market transformation by 2028–2029; assume no further BER-AR or SBES early-replacement lighting opportunities thereafter.

*Table 8: Planned Lighting Baseline Transition*

| Program / Measure | Early-Replacement Baseline Effective | Full LED Baseline Effective |
|---|---|---|
| **BER-IR Fixtures** | N/A (midstream) | June 30, 2026 |
| **BER-IR Lamps** | N/A (midstream) | January 1, 2028* |
| **SBES Fixtures** | June 30, 2026 | January 1, 2029 |
| **SBES Lamps** | January 1, 2028* | January 1, 2029 |
| **BER-AR Fixtures** | June 30, 2026 | January 1, 2029 |
| **BER-AR Lamps** | January 1, 2028* | January 1, 2029 |
| **New Construction (all lighting)** | June 15, 2025 | — |

* Subject to reassessment in 2026.

**Conclusion**

The Efficient Product Rebates Program delivered energy savings above target and demonstrated the value of updated free-ridership and adjustment data. However, the 26% shortfall against the peak demand target — together with rapid LED market transformation — points to a critical transition for the program. The 2025 results provide a clear roadmap: refresh NTGRs and adjustment ratios, modernize baselines on a phased schedule, and reorient rebates toward laggard market segments. Acting on these directions during the 2026 cycle will preserve cost-effectiveness as the underlying market continues to evolve.

BER continues to be a benchmark delivery program with widespread normalization of contractors seeking the most up-to-date efficient products for installation. This program continues to exemplify the forward-looking nature of E1 program activity where multiple-year activities continue to change the look and feel of the province, as well as achieving significant and continued energy and demand reduction.

**Evaluation Issues:** None. The methods and calculations performed by the evaluator are consistent with industry practice and evaluation guides.

## K. BNI Custom Incentives Program and Strategic Energy Management

### Program Overview

The Custom Incentives Program is administered by EfficiencyOne (E1) and serves commercial, industrial, and institutional participants across Nova Scotia. It comprises two program components: Custom - itself made up of four distinct services (Retrofit, Pay-for-Performance, New Construction, and Building Optimization) - and Strategic Energy Management (SEM). Together, the program helps participants identify, prioritize, and implement energy efficiency projects, processes, and policies through technical support, training, project financing, and financial incentives.

Business Development Managers (BDMs) provide front-line participant engagement, helping move projects forward and connecting participants with consultants. Throughout this document, the term 'the Evaluator' refers to the independent third party retained to produce the 2025 DSM evaluation.

### Sub-Programs Within Custom Incentives

Each Custom Incentives sub-program is designed around a distinct participant profile, project scale, and intervention model. The table and sections below describe each sub-program's target group and operational design.

*Table 9: Sub-Programs in Custom Incentives.*

| Sub-Program | Eligibility / Target Group | Core Intervention |
|---|---|---|
| **Retrofit** | Large BNI organizations consuming 350,000 kWh/yr or more | Scoping, feasibility and project implementation incentives |
| **Pay-for-Performance (P4P)** | Organizations consuming 1,000,000 kWh/yr or more | Performance-based incentives for verified consumption reduction of 10% or more |
| **New Construction** | New buildings or major renovations 15,000 sq. ft or larger | Design-stage modelling and implementation incentives |
| **Building Optimization (BOpt)** | Facilities with BAS, 350,000 kWh/yr or more, not recently commissioned | Investigation and recommissioning of operational measures |
| **Strategic Energy Management (SEM)** | Industrial and institutional facilities committed to energy management | 12-month structured energy management engagement |

**Retrofit**
Retrofit is the largest and most established Custom service. It provides large BNI participants with a flexible, customized package combining technical assistance, financial incentives, and project financing aimed at reducing electricity consumption and peak demand in existing facilities.

*Target Group*
Organizations with annual electrical consumption of 350,000 kWh or more are eligible, provided the proposed project has not yet begun at the time of application. This threshold positions Retrofit as the primary efficiency channel for mid-sized to large commercial, industrial, and institutional facilities in Nova Scotia.

*Operation*
Participants begin with a BDM-led consultation. E1 then provides technical and financial support for two phases: (1) scoping and feasibility studies, and (2) implementation of energy efficiency projects using a customized and flexible incentive structure. Retrofit also accommodates two semi-prescriptive sub-categories with standardized savings calculation approaches: solar photovoltaic (PV) installations and compressed air leak audits. In 2025, the three largest measure types by tracked electrical energy savings were refrigeration, solar PV, and compressed air upgrades.

*Pay-for-Performance (P4P)*
P4P pays for verified results rather than upfront equipment specifications. Eligible participants receive financial support proportional to actual measured reductions in facility electricity consumption.

*Target Group*
Organizations with annual electrical consumption of 1,000,000 kWh or more are eligible, provided their proposed project package will reduce facility electricity consumption by at least 10%. Eligibility is therefore restricted to large customers willing to commit to material, verifiable consumption changes.

*Operation*
Incentive sizes are based on verified facility energy performance over the reporting period. Eligible interventions span both capital upgrades (equipment retrofits, controls) and behavioural / operational changes. Because incentives are tied to measured performance, P4P shifts implementation risk from the utility ratepayer to the participant and aligns participant return on investment with realized savings. One P4P project was completed in 2025.

**New Construction**
New Construction supports energy efficiency in new buildings and major renovations of existing buildings, engaging design teams before construction decisions are locked in.

*Target Group*
Eligible facilities must be 15,000 square feet or larger. Each project must achieve at least a 25% reduction in total building energy consumption compared to code baseline and save at least 100,000 kWh of electricity. Lighting savings are excluded from incentive calculations to avoid double-counting against other E1 lighting offerings.

*Operation*
Participation begins at the preliminary design stage so energy modelling can influence envelope, mechanical, and control decisions. E1 supports the engagement of qualified energy modellers and tiers incentives based on whole-building efficiency relative to code. Nova Scotia adopted NECB 2020 Tier 1 on April 1, 2025, which will reshape baseline definitions for all future New Construction projects. E1 expects to update the New Construction Program Guide to align with NECB 2020 (including incentive alignment to Tiers 1-3) by the end of March 2026.

**Building Optimization (BOpt)**
BOpt targets operational savings in existing buildings - wins available from tuning the building rather than replacing equipment. Most savings come from recommissioning measures and operating-schedule changes.

*Target Group*
Eligible facilities must (i) not have been commissioned in the previous two years, (ii) operate a building automation system (BAS) capable of supporting trend logging and control sequence changes, and (iii) consume 350,000 kWh or more annually. These criteria ensure that recommissioning opportunities are likely to exist and that a controls platform is available to implement them.

*Operation*
The sub-program funds two phases. The first is to an investigation study to characterize current operations, identify recommissioning opportunities, and develop a measure list. The second consists of the implementation of the no-cost and low-cost measures identified - typically operating-schedule adjustments, setpoint optimization, and control sequence corrections - with E1 providing technical and financial support throughout. Participation in BOpt has grown year-over-year, reflecting both its low cost-per-kWh and shorter implementation cycle compared to capital retrofits.

**Strategic Energy Management (SEM)**
SEM is delivered as a distinct program component within Custom Incentives. It funds the implementation of structured energy management practices - not specific equipment purchases - and produces continuous, organization-wide savings over multi-year engagements.

*Target Group*
SEM is offered to industrial and institutional participants who can demonstrate the resources, commitment, and dedicated personnel necessary to operate an energy management system over time. Participants commit to a minimum 12-month engagement, with renewal options for those wishing to continue. Larger participants may also enrol in the Large Industrial initiative, which supplies a dedicated industrial energy manager (IEM) to fill in-house capacity gaps.

*Operation*
SEM is delivered through a third-party Service Provider under E1 oversight. The participation journey typically includes: an eligibility check and memorandum of understanding; a kick-off meeting; data collection and the development of an energy profile and key performance indicators; formation of an internal energy team and an energy management policy; energy improvement events (energy Kaizens and treasure hunts) to identify opportunities; the creation of an energy management plan; and ongoing savings verification, including weekly support calls and monthly M&V updates against an approved measurement and verification plan. Participants may also receive funding for energy management information systems (EMIS), including configuration, training, and implementation support.

Performance-based incentives have been offered to SEM participants since 2021. Standard participants receive $0.04 per verified kWh, while Large Industrial initiative participants receive $0.06 per verified kWh in recognition of the more intensive engagement involved.

**Spotlight: Compressed (High-Pressure) Air Leak Surveys**
Compressed air systems - commonly referred to as high-pressure air systems - are among the most energy-intensive utilities in industrial facilities. Even small, sustained leaks waste large quantities of electricity over a year because the air compressor must continually replace lost system pressure. Within Custom Incentives, compressed air leak surveys appear in two places: as a semi-prescriptive sub-category of Retrofit, and as a frequently implemented measure within SEM.

*Compressed Air Leak Surveys in Retrofit*

Within Retrofit, compressed air leak audits use a semi-prescriptive savings approach: facility-specific inputs feed into a standardized calculation method, with savings established by direct verification. Solar PV uses a similar semi-prescriptive treatment. Within SEM, compressed air leak repair is a leading measure category. In 2025, six of the eighteen measures implemented by SEM participants were compressed air leak repairs, and together they accounted for 54% of total SEM electrical energy savings - the largest share of any SEM measure category.

*Conducting a Leak Survey*

The standard approach to a compressed air leak survey relies on ultrasonic leak detection. Trained technicians sweep accessible portions of the distribution system (piping, fittings, drops, dryers, filters, regulators, and end-use connections) with an ultrasonic detector and log each detected leak. For each leak, the technician estimates the leak rate in cubic feet per minute (CFM) and the associated annual electrical losses in kWh, based on system pressure, compressor efficiency, and operating hours. Repairs follow - typically replacement of failed fittings, hose reels, quick-disconnects, valves, or pipe sections - and a post-repair sweep confirms that the leak is no longer detectable.

Where permanent or temporary submetering is available, airflow meters at the compressor or distribution headers provide an alternative measurement basis for leak quantification and post-repair confirmation. Where it is not, ultrasonic detection has been accepted by the Evaluator as a valid methodology for both identifying leaks and quantifying the associated electrical losses. When facility-specific compressor efficiency data are not available, savings are calculated using a conservative compressor efficiency assumption.

*2025 Evaluation Treatment of Compressed Air Leak Surveys*

- Free ridership for Retrofit compressed air leak audit projects was established at 8%, reflecting strong program influence over participant decisions to act.
- Spillover for compressed air leak audit projects was nil.
- The effective useful life (EUL) of compressed air leak audit projects was reduced from four years to two years, consistent with the updated 2025 DSM Measure Assessment. The shorter EUL reflects the propensity of compressed air systems to develop new leaks over time absent continuous maintenance.
- For SEM, six compressed air leak repair measures were reviewed in 2025. One measure received a downward adjustment to both electrical energy and peak demand savings, reflecting that a bin analysis using metered data produced a more conservative estimate than the original mix of measured and nameplate compressor efficiency data.

The Uniform Methods Project (UMP)[52] identifies leak-down testing as the preferred approach for quantifying compressed air leakage, while noting that ultrasonic leak detectors are suitable for leak detection.

| |
|---|
| Ultrasonic leak detectors are an effective tool for identifying and locating leaks in a compressed air system but should not be relied upon for quantifying the rate of leakage. The accuracy of these devices is dependent on operator experience and proximity to source; they are inherently inaccurate as leakage rates are not directly measured and instead are correlated based on the amount of sound produced by a given leak in decibels. The best practice for quantifying rate of leakage is to conduct leak-down tests prior to and immediately following leak repairs to determine the actual system impact. (Section 5.2 UMP Compressed Air Evaluation Protocol) |

*Figure 15: UMP for Compressed Air, Section 5.2*

The UMP protocol provides "the current standard for implementation and evaluation of compressed air leak detection and management activities" in DSM evaluations. The UMP protocols overall are developed to ensure **consistent, credible estimation of energy savings** across utility programs.

The directives in Section 5.2 are:

- **Ultrasonic detection limitations**
  - Ultrasonic leak detectors are *"effective for identifying and locating leaks"* but are **"inherently inaccurate" for quantifying leakage rates**.
- **Measurement principle limitation**
  - Ultrasonic methods rely on **correlation with sound (decibels)** rather than direct measurement of airflow.
- **Prohibition in practice (implied by protocol guidance)**
  - Ultrasonic methods **should not be relied upon for quantifying leakage rates or estimating savings**.
- **Best-practice quantification method**
  - The protocol identifies **leak-down testing (pre/post repair)** as the appropriate method for determining actual system leakage and savings.

[52] **Benton, Nathanael; Burns, Patrick; Zahlan, Joel,** *Chapter 22: Compressed Air Evaluation Protocol*. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures. National Renewable Energy Laboratory (NREL), NREL/SR-7A40-77820, 2021.

Hand-held ultrasonic detectors and their use to determine leak rates have a lack of adequate benchmark testing, and lack of calibration protocols which precludes their use to determine savings verification paid for by ratepayer funding. The drawback of leakdown tests is that they require interruptions to production lines and so facility management might usually prefer to claim a savings value from an ultrasonic device. However the task of production management is to find and fix leaks, and the estimate of energy savings is secondary. For savings verification, the primary task is accurate measurement to in order to verify savings. These are two different primary objectives.

Section 5.2 makes clear that while ultrasonic detectors are suitable for leak detection, they are not appropriate for quantifying leakage rates and therefore do not provide an acceptable basis for savings estimation. The protocol instead identifies direct measurement approaches (e.g., leak-down testing) as the appropriate method for verification.

Because ultrasonic methods do not directly measure leakage and are identified by the UMP protocol as inherently inaccurate for quantification, reliance on such methods for estimating savings is not consistent with the protocol's measurement and verification requirements.

| Function | Allowed method | Protocol stance |
|---|---|---|
| **Leak identification / targeting** | Ultrasonic detection | ✅ Appropriate / recommended |
| **Leak quantification (savings calculation)** | Ultrasonic detection | ❌ Not appropriate |
| **Leak quantification (savings calculation)** | Leak-down or system-level measurement | ✅ Preferred / required best practice |

*Share of Total Custom Incentives Savings*

Compressed air leak surveys contribute meaningfully to total program savings, even though they appear as a discrete sub-category within Retrofit and as a single measure type within SEM. The table below presents the share of each component's 2025 electrical energy savings attributable to compressed-air leak activity, and the combined share of total Custom Incentives Program savings.

*Table 10: Custom Incentives Program Shares by Component*

| Component | Activity | Component-level Share | Approx. Share of Total Custom Incentives Savings |
|---|---|---|---|
| **Custom - Retrofit** | Compressed air leak audits (semi-prescriptive) | ~5% of Retrofit electrical energy savings at the meter | ~2% of program (Custom + SEM) |
| **Custom - Retrofit (related, separate)** | Compressed air upgrades | ~9% of Retrofit electrical energy savings at the meter | ~4% of program |
| **SEM** | Compressed air leak repair measures | 54% of SEM electrical energy savings | ~5% of program |
| **Combined: compressed air leak audits + leak repairs** | Both channels | Approx. 2.97 GWh of 40.239 GWh program gross savings | ~7% of program |

Notes: Retrofit measure-type shares (Refrigeration 44%, Solar PV 28%, Compressed Air Upgrades 9%, Motors 8%, Compressed Air Leak Audit 5%, Industrial Processes 4%, HVAC 2%, Other 1%) are reported at the meter for projects completed in 2025. Component totals (Custom 36.208 GWh; SEM 4.031 GWh; Custom Incentives Program total 40.239 GWh) are gross savings at the generator. Percentages are therefore approximate but directionally robust.

*Incentive Budget Allocated to Leak Surveys*

The 2025 evaluation report does not disaggregate the Custom Incentives Program incentive budget by measure type, so no precise figure is available for the share of incentive dollars spent specifically on compressed air leak surveys. Two anchor points are reported and allow an indicative estimate for the SEM component:

- SEM participants receive performance-based incentives of $0.04 per verified kWh (standard participants) or $0.06 per verified kWh (Large Industrial initiative participants, who also receive a dedicated industrial energy manager).
- Compressed air leak repair measures accounted for 2.177 GWh (54%) of the 4.031 GWh in 2025 SEM electrical energy savings.

Custom Retrofit incentives for compressed air leak audits are paid through implementation incentives sized at the project level rather than at a published per-kWh rate.

**2025 Program Performance**

Custom Incentives surpassed both its net energy and peak demand savings targets. Custom alone exceeded the planned 24.160 GWh in net energy by 26% and the 4.824 MW in net peak demand savings by 32%. SEM exceeded its 2.657 GWh net energy target by 52% and its 0.289 MW peak demand target by 29%.

*Table 11: Custom Incentives Program Performance.*

| Metric | Custom | SEM | Total |
|---|---|---|---|
| **Participation** | 80 projects | 11 projects | 91 projects |
| **Net Electrical Energy Savings** | 30.487 GWh | 4.031 GWh | 34.519 GWh |
| **Lifetime Net Energy Savings** | 437.723 GWh | 20.515 GWh | 458.238 GWh |
| **Net Peak Demand Savings** | 6.372 MW | 0.372 MW | 6.744 MW |
| **Avoided GHG (tonnes CO2e/yr)** | 14,308 | 1,892 | 16,200 |
| **NTGR (avg.)** | 0.84 | 1.00 | 0.86 |
| **Effective Useful Life** | 14.4 yrs | 5.1 yrs | 13.3 yrs |

Realization rates were strong: 108% for Custom net energy and demand, 95% for SEM net energy, and 88% for SEM peak demand. Evaluated Custom net savings exceeded tracked figures by 8% for both energy and demand, while SEM results were slightly below tracked values reflecting modest adjustments to first-year claims.

**Key Findings - Custom**

- Custom delivered 30.487 GWh in net energy savings and 6.372 MW in net peak demand savings, exceeding plan by 26% and 32% respectively.
- Participation patterns shifted: Retrofit volumes declined, BOpt and New Construction grew, and a single P4P project was completed in 2025. Overall Custom participation was lower than 2024.
- Service-specific adjustment ratios applied to 2025 results were 0.993 / 1.011 (energy / demand) for Retrofit, 1.000 / 0.528 for P4P, and 0.949 / 0.937 for New Construction.
- Free-ridership for regular Retrofit fell from 15% to 8%; compressed air leak audits were set at 8%; solar PV remained at 38%; and New Construction declined from 28% to

18%. Free-ridership for P4P was 8%; BOpt retained its prior 9%. Spillover was nil for Retrofit and compressed air leak audits, and remained at 1% (solar PV) and nil (BOpt) where not re-measured.

**Key Findings - SEM**

- SEM net energy savings exceeded the 2.657 GWh target by 52%; net peak demand savings exceeded the 0.289 MW target by 29%.
- 2025 SEM participation reached its highest level since 2018, although electrical energy savings per participant were lower than in the previous three years. There were 12 active SEM participants in 2025 (nine continuing, three new), with 11 generating savings.
- Compressed air leak repair was the single largest SEM measure category in 2025, contributing 54% of SEM electrical energy savings.
- The measurement and verification (M&V) methodologies used to quantify SEM savings were generally appropriate and accurate.

**Recommendations**

No formal recommendations were issued for Custom or SEM in 2025. Both components performed in line with - or above - expectations and the underlying evaluation methods functioned as designed. Continued monitoring of service-mix shifts (declining Retrofit, growing BOpt and New Construction), per-participant SEM productivity, and the sustainability of compressed air savings over the shortened 2-year EUL is warranted in the 2026 cycle.

**Conclusion**

Custom Incentives performed the strongest of 2025 BNI programs, exceeding both energy and demand targets and producing realization rates above 100% for Custom services. The five sub-programs - Retrofit, P4P, New Construction, BOpt, and SEM - together cover the full spectrum of BNI customer needs, from large capital projects to ongoing operational management. Compressed (high-pressure) air leak surveys remain a uniquely cost-effective industrial measure: together with leak repairs in SEM, they account for roughly 7% of total program gross savings, with the SEM share of that activity tied to per-kWh performance incentives in the $0.04-$0.06 range.

**Evaluation Issues:** None. With one exception, the methods and calculations performed by the evaluator are consistent with industry practice and evaluation guides. The exception applies only to compressed air measurement, where the tool recommended by the relevant protocol for identifying compressed air leaks is also used to measure effect size. While the protocol recommends the tool for spotting leaks, it explicitly does not permit its use for assessing energy savings. However, this inconsistency has been subject to regulatory review, and the current measurement tool is permitted. We note that the protocol has not been updated for several years, and USDOE staff responsible for coordinating regular reviews and updates are no longer in place following downsizing of science and technology capabilities across the U.S. government.

## L. BNI Small Business Energy Solutions Program (SBES)

**Program Overview**
Business Energy Solutions (SBES) provides incentives and resources to encourage Nova Scotia small businesses to implement energy efficiency upgrades. The 2025 evaluation produced gross and net first-year and lifetime electrical energy savings, peak demand savings, effective useful life (EUL) values, and avoided GHG emissions for the SBES portfolio.

**2025 Program Performance**
SBES fell short of both its net energy and peak demand savings targets — by 38% and 46% respectively — even though participation by unit rebates rose modestly year over year.

*Table 12: SBES Program Performance.*

| Metric | Value |
|---|---|
| **Participation** | 62,011 units rebated (513 Audit; 61,498 DIY) |
| **Net Electrical Energy Savings** | 7.862 GWh (target 12.616 GWh; -38%) |
| **Lifetime Net Energy Savings** | 52.874 GWh |
| **Net Peak Demand Savings** | 1.414 MW (target 2.621 MW; -46%) |
| **Avoided GHG (tonnes CO2e/yr)** | 3,689 |
| **NTGR (avg.)** | 0.80 |
| **Effective Useful Life** | 6.7 years |
| **Realization Rate — Energy / Demand** | 100% / 101% |

**Key Findings**

- SBES did not meet its net energy or peak demand savings targets, falling short by 38% and 46% respectively — the largest gap to plan among the four 2025 BNI / small-business program elements.
- Total participation (units rebated) grew 1% year-over-year, with the DIY pathway dominating: 61,498 of 62,011 units rebated (99%) flowed through DIY rather than the Audit pathway.
- Evaluated net energy savings were essentially identical to tracked values (0.3% lower) and evaluated net peak demand was 1.0% higher than tracked — confirming the integrity of E1's tracking process, with the shortfall driven by participation/uptake rather than measurement error.
- Updates to lighting EUL values and interactive-effects factors had only minor impact on overall evaluated savings, given the condensed 2025 results re-used established parameters elsewhere.

**Recommendations**
No new formal recommendations were issued specifically for SBES in 2025; established parameters remain valid. However, the magnitude of the shortfall against target — combined with the program's near-total dependence on the DIY pathway — indicates that program-design questions should be addressed in the next comprehensive evaluation cycle.

- Examine why the Audit pathway accounts for less than 1% of units rebated and whether it remains a cost-effective channel given DIY dominance.
- Investigate the gap between strong unit participation (+1% YoY) and missed savings targets; likely candidates include measure-mix shifts, declining unitary savings as the LED market matures, and reduced lighting opportunity in laggard small-business segments.
- Coordinate baseline transition planning with the EPR / BER-AR roadmap — SBES is the most exposed small-business channel to the planned lighting baseline shift (early-replacement approach effective June 30, 2026; full LED baseline January 1, 2029).

**Conclusion**
Small Business Energy Solutions (SBES) preserved measurement and tracking integrity in 2025 (near-100% realization on both energy and demand) but missed its planned savings by significant margins. The growing maturity of the LED market and the program's heavy reliance on the DIY pathway suggest that design refresh, not measurement refinement, should be a greater priority. Planning for the 2026 comprehensive evaluation cycle should centre on right-sizing targets, modernizing measure mix, and aligning with the cycle-wide baseline transition timeline.

**Evaluation Issues:** None

## M. Demand Response (DR)

**Program Overview**

The Demand Response (DR) Program supports Nova Scotia Power (NS Power) in reducing peak system load by providing financial incentives to participants for the DR capacity made available during called events. The program comprises two components: Residential DR, delivered through the Eco Shift pathway and including smart thermostats, EV telematics/chargers, home batteries, and domestic hot water controllers, and BNI DR, delivered through the Smart Synergy pathway. The 2025 evaluation, conducted by Econoler, applied a comprehensive impact methodology to both components and added a comprehensive process evaluation for Residential DR.

**Evaluation Approach**

Residential DR evaluation combined a non-participant survey, interviews with E1 program staff and service providers/technical partners, a jurisdictional scan of comparable North American programs (with interviews of selected jurisdictions), a tracking-sheet audit, and metering-data analysis by measure type. BNI DR evaluation comprised a tracking-sheet audit, project-level reviews using a stratified meter sample, and calculations using evaluation results.

**2025 Program Performance**

The Demand Response Program targeted 17.861 MW of available DR capacity at the generator. Total evaluated available capacity was 6.795 MW, with both components missing target. BNI DR remained the larger contributor at 5.941 MW (vs. 10.726 MW target). Residential DR delivered 0.854 MW (vs. 7.135 MW target), despite a 907% year-over-year increase in participation.

*Table 13: Demand Response Program Performance.*

| Metric | Residential DR (Eco Shift) | BNI DR (Smart Synergy) | Total |
|---|---|---|---|
| **Participants** | 3,676 | 143 | — |
| **Devices Enrolled** | 11,405 (thermostats, DHW, EV, battery) | — | — |
| **Evaluated Available DR Capacity** | 0.854 MW | 5.941 MW | 6.795 MW |
| **Planned (Target) Capacity** | 7.135 MW | 10.726 MW | 17.861 MW |
| **Realization Rate vs. Tracked** | 158% | 89% | — |

Residential DR's evaluated capacity exceeded E1's tracked value by 58%, driven primarily by higher unitary capacity values for smart thermostats. BNI DR's evaluated capacity was 11% lower than tracked, reflecting downward adjustments where participant response was not evident in event load profiles.

**Key Findings — Residential DR (Eco Shift)**

- Participation increased 907% over the 2023/24 season to 3,676 participants and 11,405 enrolled devices — yet the program delivered only 0.854 MW of available capacity, well below the 7.135 MW target.
- Eco Shift now offers one of the most comprehensive eligible-device mixes in North America (smart thermostats, EV chargers, home batteries, DHW controllers), exceeding the breadth of most peer programs in the jurisdictional scan.
- Device-level event participation rates vary widely: DHW controllers 22.5% (mostly connectivity issues), batteries 63.2% (connectivity in event 1 and opt-outs thereafter), and EV devices just 2.9% (vehicles must be actively charging during event windows).
- Service-provider retention is reported at over 90% long-term, indicating durable participant engagement once enrolled.
- Program documentation has not kept pace with rapid program changes; Residential and BNI DR information is currently interleaved in a single program manual.
- Non-participant survey results identify discomfort with external control of heating systems, privacy concerns, enrolment complexity, and limited program awareness as the main barriers to participation.

**Key Findings — BNI DR (Smart Synergy)**

- BNI DR delivered 5.941 MW vs. a 10.726 MW target — a 45% shortfall, driven primarily by lower in-event participation rather than enrolment.
- Participation grew 88% year-over-year (76 → 143 participants), but available capacity per participant fell from 106 kW to 42 kW. Reviewed-event non-participation rose from 31% in 2023/24 to 60% in 2024/25.
- Morning events outperform evening events: average available capacity of 6.774 MW vs. 4.928 MW.
- E1's BNI DR capacity-calculation guidelines were generally followed and reflect changes recommended in the 2024 evaluation; adjustment ratios in 2025 differed from 2024, indicating that ratios should not be assumed stable year-over-year.

**Recommendations**

Verification teams encountered some confusion surrounding the use and function of DR automation for the Residential DR (Eco Shift) operations. It is recommended that E1 provide more detailed information about power interruption events and how the installed equipment provides this benefit to the customer.

*Residential DR (Eco Shift)*

- Restructure the program manual into two distinct, continuous sections for residential and BNI; include all pilot and program changes with dates, descriptions, and rationale; clearly define eligibility criteria by pathway.
- Link the Eco Shift tracking sheet to the Efficient Product Installation (EPI) tracking sheet via a unique participant identifier and ensure EPI installers consistently capture device information needed for downstream DR enrolment.
- Leverage key awareness channels to grow participation inside and outside the existing EPI participant base. Focus messaging on incentives, grid benefits, and the privacy and control participants retain over their devices.
- Encourage maximum device enrolment per household and increase smart-thermostat coverage of regularly used contiguous living areas.
- Investigate strategies to raise EV-device DR participation, including bidirectional chargers that allow EVs to be used as event-time energy sources.
- Monitor the impact of the new 50% event-participation threshold (introduced for the 2025/26 season) on ongoing participation incentives. If event participation does not improve, review the enrolment vs. ongoing incentive balance.
- Re-conduct metering analyses for each pathway in the next evaluation to ensure unitary available DR capacity values remain stable year over year — particularly for the EV and battery pathways evaluated for the first time in 2025.

*BNI DR (Smart Synergy)*

- Conduct a process evaluation in 2026 focused on strategies to raise the in-event participation rate among enrolled BNI participants, the principal driver of the 2025 shortfall.
- Repeat project-level reviews in 2026 to establish evaluated savings, recognizing that adjustment ratios are not stable year over year.

**Conclusion**

The Demand Response Program substantially expanded its addressable footprint in 2025 — Residential DR participation grew nearly tenfold and BNI DR enrolment nearly doubled — but in-event participation, not enrolment, remained the binding constraint on delivered capacity. The combined 17.861 MW target was met at only 38%. The 2025 evaluation provides a clear operational agenda: improve participant communication and event design, strengthen the EPI / Eco Shift enrolment handoff, address connectivity and EV-availability barriers, and conduct a focused 2026 BNI process evaluation. With these adjustments, both components have a credible path to closer alignment of delivered with targeted DR capacity in the next planning cycle.

**Evaluation Issues:** None.

# X. Summary of Recommendations

## A. General Recommendations

**SVR25-G-1:** We recommend that evaluation results be accepted,

**SVR25-G-2:** Evaluators should explicitly identify programs with negligible practical savings, regardless of statistical significance.

**SVR25-G-3:** Evaluation reports include enhanced transparency in statistical methods and, in particular, provide more focus on explanation of data limitations similar to that required for California NMEC evaluations.

**SVR25-G-4 (SVR25-AR-4):** When there is a major change in a program, including ending a program, the Evaluator should discuss the change or provide a reference or link to the document in which the discussion is provided. Our preference is for the Evaluator to analyse the pluses and minuses of the change and explain what is lost and what is gained by the change.

## B. Program Specific Recommendations

### 1. Appliance Retirement Program (ARet)

**SVR25-AR-4:** When there is a major change in a program, including ending a program, the Evaluator should discuss the change or provide a reference or link to the document in which the discussion is provided. Our preference is for the Evaluator to analyse the pluses and minuses of the change and explain what is lost and what is gained by the change.

**SVR25-AR-5:** The Evaluator should investigate and develop a report on how the market for appliance recycling will function without the program. The report should address the following questions:

- Will profit-making vendors move in to cover the opportunities created by loss of non-profit service by Efficiency One?
- Will intelligent recycling of appliances that would have been run through ARet not occur?

- Will used appliances be diverted to a secondary market?
- Will the environmental benefits of the program will be lost as intelligent recycling is abandoned?
- Will low-income households absorb the cost of appliance pick-ups? (While upper income households will probably secure new appliances from stores that provide pick-ups, lower income households will likely face new fees).

The report should also reference and include a link to the results of the benefit-cost analysis and explain why the closure of this program may appear reasonable.

**2. Residential Behavioural Program (Efficiency Insights)**

**SVR25-EI-6:** The 2025 Residential Behaviour results should be interpreted as partial-year findings based on limited data availability (as with the recorded energy savings for the Appliance Retirement program). As the program was paused in May due to a cybersecurity incident, the evaluation should not be understood as reflecting full-year program performance. Reported savings are correctly calculated and valid for the observed period.

**3. BNI Efficient Products Rebates (BER)**

**SVR25-BER-7:** Adopt the updated adjustment ratios for tracking purposes, except the 0.514 peak demand ratio for non-lighting/non-HVAC measures and reassess that group in 2026.

**SVR25-BER-8:** Apply the new measure-level NTGRs (0.83 HVAC / 0.94 lighting / 0.91 other) to convert gross savings to net for reporting and evaluation.

**SVR25-BER-9:** Record adjustment factors in dedicated tracking-sheet fields rather than embedding them in gross savings values, to improve transparency and reduce error risk.

**SVR25-BER-10:** Continue using DLC wattages as the efficient baseline for multi-wattage fixtures and run periodic confirmation checks on large applications.

**SVR25-BER-11:** Update the BER-IR LED fixture baseline in 2026 to reflect a LED-only stocking market, set at DLC standard efficiency. Explore continued rebates for DLC

Premium fixtures and lighting controls under a midstream model with revised savings assumptions.

**SVR25-BER-12:** Maintain the current non-LED baseline for BER-IR lamps through 2027 and prepare for a baseline change starting 2028 to align with anticipated 80–89% LED lamp market share.

**SVR25-BER-13:** Focus future LED fixture rebates on application-based and direct-install channels targeting laggard segments (small businesses, institutions, non-profits).

**SVR25-BER-14:** Implement a dual-baseline approach for SBES LED fixtures (existing baseline for one-third of the existing measure's life; LED baseline for the remainder).

**SVR25-BER-15:** For BER-AR, either restrict eligibility to early-replacement projects under a dual baseline or adopt a market-blend baseline weighted by the share of end-of-life projects.

**SVR25-BER-16:** Plan for full lighting market transformation by 2028–2029; assume no further BER-AR or SBES early-replacement lighting opportunities thereafter.

### 4. BNI Small Business Energy Solutions Program (SBES)

**SVR25-SBES-17:** Examine why the Audit pathway accounts for less than 1% of units rebated and whether it remains a cost-effective channel given DIY dominance.

**SVR25-SBES-18:** Investigate the gap between strong unit participation (+1% YoY) and missed savings targets; likely candidates include measure-mix shifts, declining unitary savings as the LED market matures, and reduced lighting opportunity in laggard small-business segments.

**SVR25-SBES-19:** Coordinate baseline transition planning with the EPR / BER-AR roadmap — SBES is the most exposed small-business channel to the planned lighting baseline shift (early-replacement approach effective June 30, 2026; full LED baseline January 1, 2029).

### 5. Demand Response (DR)

**SVR25-DR-20:** Verification teams encountered some confusion surrounding the use and function of DR automation for the Residential DR (Eco Shift) operations. It is recommended that E1 provide more detailed information about power interruption events and how the installed equipment provides this benefit to the customer.

*Residential DR (Eco Shift)*
**SVR25-ESHIFT-21:** Restructure the program manual into two distinct, continuous sections for residential and BNI; include all pilot and program changes with dates, descriptions, and rationale; clearly define eligibility criteria by pathway.

**SVR25-ESHIFT-22:** Link the Eco Shift tracking sheet to the Efficient Product Installation (EPI) tracking sheet via a unique participant identifier and ensure EPI installers consistently capture device information needed for downstream DR enrolment.

**SVR25-ESHIFT-23:** Leverage key awareness channels to grow participation inside and outside the existing EPI participant base. Focus messaging on incentives, grid benefits, and the privacy and control participants retain over their devices.

**SVR25-ESHIFT-24:** Encourage maximum device enrolment per household and increase smart-thermostat coverage of regularly used contiguous living areas.

**SVR25-ESHIFT-25:** Investigate strategies to raise EV-device DR participation, including bidirectional chargers that allow EVs to be used as event-time energy sources.

**SVR25-ESHIFT-26:** Monitor the impact of the new 50% event-participation threshold (introduced for the 2025/26 season) on ongoing participation incentives. If event participation does not improve, review the enrolment vs. ongoing incentive balance.

**SVR25-ESHIFT-27:** Re-conduct metering analyses for each pathway in the next evaluation to ensure unitary available DR capacity values remain stable year over year — particularly for the EV and battery pathways evaluated for the first time in 2025.

*BNI DR (Smart Synergy)*
**SVR25-SMARTS-28:** Conduct a process evaluation in 2026 focused on strategies to raise the in-event participation rate among enrolled BNI participants, the principal driver of the 2025 shortfall.

**SVR-25-SMARTS-29:** Repeat project-level reviews in 2026 to establish evaluated savings, recognizing that adjustment ratios are not stable year over year.

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# XII. Additional Questions to Ask in DSM Evaluations

Overall, the evaluation is excellent. However, there are some areas that could be worked on. Here is an overall summary.

*Table 14: Summary – Asked and Answered*

| Asked and Answered for Program Year 2025: General Questions to Ask of Energy Efficiency Program Evaluations | | |
|---|---|---|
| **1** | **Does the independent evaluator have control over methods and measurement approaches?** | Yes |
| **2** | **Is the evaluation oriented to the goal of truth in measurement?** | Yes |
| **3** | **Is the evaluation open, well-documented, and transparent?** | Yes |
| **4** | **If the evaluator uses a Technical Resource Manual, are values and calculation methods critically reviewed?** | Yes, overall |
| **5** | **Are appropriate evaluation guidelines or protocols cited and used?** | Yes, but the problem with the Compressed Air protocol should be fully discussed by the Evaluator in the report. |
| **6** | **Is impact evaluation supported by process and market evaluation?** | Yes, there is one market evaluation and one process evaluation. Also, the impact evaluations are supported by some additional surveys. |
| **7** | **Is impact evaluation critically developed and well-reported?** | Not every year, but the focus is supposed to be on impact evaluation, and the evaluator does in some years fully discuss market evolution. |
| **8** | **Does the evaluator engage with program administration and program technical staff in the design of the evaluation?** | Yes |
| **9** | **Does the evaluator make use of literature reviews and/or consultation with experts, where appropriate?** | Yes |
| **10** | **Are problems identified by the evaluator during fieldwork reported to program managers on a timely basis?** | Yes, there is good communication with program managers |

| Asked and Answered for Program Year 2025: General Questions to Ask of Energy Efficiency Program Evaluations | | |
|---|---|---|
| **11** | **Does the evaluator follow up to check implementation of recommendations in the next program cycle and include follow-up in the next evaluation report?** | Yes |
| **12** | **In complex evaluation, does the evaluator include a list of abbreviations and definitions?** | Yes |
| **13** | **In complex evaluation, is method and measurement approach explained?** | Yes, but could be further developed |
| **14** | **For surveys, are the survey questions presented in an appendix to the evaluation?** | Yes |
| **15** | **Are statistical confidence and statistical precision reported for surveys or interview sets?** | Yes |
| **16** | **For programs that require on-site visits, are there enough?** | Adequate, but there could be more |
| **17** | **Are there careful project file reviews?** | Yes |
| **18** | **Are there critical unitary savings reviews?** | Yes |
| **19** | **Is analysis of metered energy data conducted correctly and used when relevant?** | Yes |
| **20** | **Are there critical reviews of simulation models when simulation models are used in programs and/or evaluation?** | Yes |
| **21** | **When metering is done, are potential problems with the accuracy and/or precision of metered results explored and reported?** | Adequate; but there could be more |
| **22** | **Is effective useful life (EUL) well estimated?** | Yes, with periodic reviews to keep current |
| **23** | **Are avoided GHG emissions calculations conducted correctly?** | Yes |
| **24** | **Is the method of calculating free-ridership and spillover carefully reported and clarified?** | Yes |

***Verification Review of Program Year 2025 Evaluation Results***

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