ELECTRICITY EFFICIENCY AND CONSERVATION (EE&C) PROGRAM EVALUATION

EFFICIENCYPEI

Evaluation Plan

October 30, 2019

ECONOLER

ACRONYMS

EE&C	Electricity Efficiency and Conservation
EM&V	Evaluation, measurement and verification
PAC	Program Administrator Cost (test)
TRC	Total Resource Cost (test)
UMP	Uniform Methods Project

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INTRODUCTION

Econoler was hired by efficiencyPEI to evaluate its Electricity Efficiency and Conservation (EE&C) programs. This evaluation plan was prepared ahead of the evaluation to accomplish the following goals:

- To provide guidance for efficiencyPEI's evaluation planning and implementation;
- To provide evaluation guidelines and introduce industry-accepted evaluation definitions and best practices regarding evaluation, measurement and verification (EM&V) methods and activities;
- To identify the specific evaluation methods and activities that will be carried out as part of the evaluation.

This evaluation plan describes the methodology planned for each program to be evaluated. It also provides background information related to the main objectives and principles of evaluation and the types of evaluation that exist.

1 EVALUATION OBJECTIVES AND PRINCIPLES

1.1 Evaluation Objectives

Evaluation is the process of determining the impacts of energy efficiency and renewable energy initiatives and identifying opportunities for improvement.

Evaluation is meant to achieve the following key objectives:[1]

- To estimate the impacts of a program and determine whether the program (or a portfolio of programs) has met its goals.
- To provide information and analyses to identify ways to improve current and future programs.
- To support energy demand forecasting and resource planning by understanding the effects of energy efficiency in comparison to other supply-side resources.

1.2 Guiding Principles

Evaluation should be carried out according to the following five guiding principles of evaluation:

1. Results-focused: Evaluation should be an integral part of the continual process of program design, implementation and management. Over time, the evaluation results should be used to improve program offerings and delivery.
2. Independent: Evaluation should provide independent, non-biased results.
3. Transparent: Key assumptions, methodologies and calculations used in the evaluation should be clearly and thoroughly documented to ensure the transparency of the results and findings.
4. Appropriately rigorous: The evaluation activities should apply an appropriate level of rigour based on best practices and evaluation priorities.
5. Efficient: The evaluation activities should be carefully planned and prioritized to maximize the value for money.

Each of these principles is discussed in greater detail below.

Principle 1: Evaluation results should be used to improve program offerings and delivery

As illustrated in Figure 1 below, the evaluation results and recommendations should be used to modify program implementation in a cycle of continuous improvement. Also, evaluation planning ensures that any evaluation feedback affecting program planning is collected and processed.

[1] Energy Efficiency Program Impact Evaluation Guide, SEE Action, December 2012, https://www4.eere.energy.gov/seeaction/system/files/documents/emv_ee_program_impact_guide_0.pdf

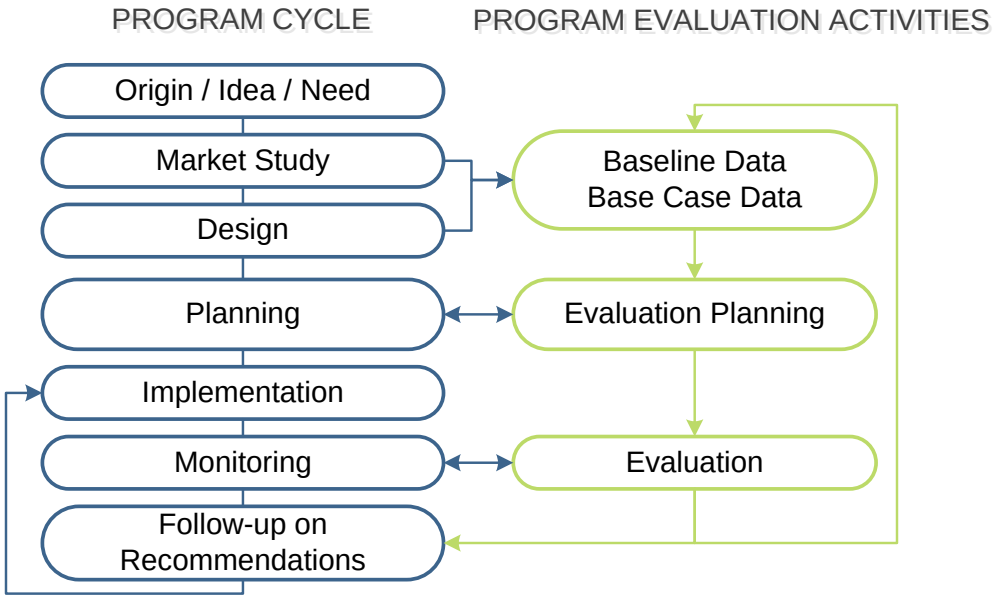

Figure 1: The Program Planning Cycle

Principle 2: Evaluation should provide independent, non-biased results

The evaluator should be non-biased and not have any stake or personal interest linked to the evaluation outcomes.

Principle 3: Key assumptions, methodologies and reports should be transparently documented

Although evaluations typically involve using confidential information and presenting aggregate data, the evaluation results and calculations should be clearly presented and documented so that any questions about them can be easily and reliably answered. Transparent evaluation reporting should:

- Describe the approaches and methodologies used and their intended outcomes;
- Present the results using a structure that enables the reader to easily match the approaches and methodologies used with the analyses done and the results obtained;
- Identify key variables and assumptions used to calculate the savings values;
- Mention any uncertainty about the results, confidence levels and margins of error.

Principle 4: The evaluation activities should apply an appropriate level of rigour

Evaluation should be conducted with levels of rigour consistent with professional standards and best practices such as the California and Uniform Methods Project (UMP) protocols. Also, the evaluation of a specific program or initiative should be conducted with an appropriate level of effort based on a balance of several factors, such as savings targets and the level of uncertainty regarding savings calculations.

Principle 5: Evaluation activities should be carefully planned to maximize the value for money

An adequate budget and enough resources should be provided and used to ensure that an evaluation's scope and objectives are properly covered as planned. Nevertheless, to maximize the value for money, evaluation planning and implementation should aim to achieve the highest cost-effectiveness, where possible, by doing the following:

- Optimizing the use of resources based on the evaluation priorities established to obtain the most value for the budget;
- Looking for relevant secondary research literature, data and findings, where appropriate and possible;
- Grouping evaluation activities to optimize the use of resources;
- Making the best use of the data-collection activities to simultaneously achieve multiple research objectives.

2 TYPES OF EVALUATIONS

A program evaluation involves carrying out various assessments, studies and activities to determine a program's effects. There are three broad categories of evaluations: the impact evaluation, the process evaluation, and the market evaluation. The cost-effectiveness analysis is an extension of the evaluation because such an analysis relies on the evaluation results.

This section provides a more detailed description of these three types of evaluation and the cost-effectiveness analysis.

2.1 Impact Evaluation

The objective of an impact evaluation is to reliably establish the energy savings, peak demand savings and non-energy benefits that result from a program.

A program's savings results are reported in both gross savings and net savings. The following definitions are taken from the UMP.[2]

- **Gross savings:** The difference in energy consumption with the energy-efficiency measures promoted by the program in place versus what consumption would have been without those measures in place.
- **Net savings**: The difference in energy consumption with the program in place versus what consumption would have been without the program in place.

In other words, the gross savings are calculated without considering program influence, whereas the net savings are the portion of the gross savings realized due to program influence.

To establish the net savings of a program, effects such as **free-ridership**, **spillover** and **market effects** are taken into consideration, where applicable and appropriate.

- Free-ridership is the percentage of the gross savings attributable to those participants who would have implemented the same or similar energy efficiency measures with no change in timing in the absence of the program.
- Spillover is the percentage of the gross savings attributable to those participants who, encouraged by their previous participation in a program, implement additional energy efficiency measures without receiving any additional incentive from the program. Spillover can be measured among participants and non-participants.
- Market effects represent the impacts of a program on the market (such as increased product availability and awareness of energy efficiency) that extend beyond changing the program participants' behaviours. These include spillover among non-participants.

[2] Violette, Daniel M. and Rathbun, Pamela. (2017). *Chapter 21: Estimating Net Savings – Common Practices: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68578. http://www.nrel.gov/docs/fy17osti/68578.pdf

These effects are used to determine a net-to-gross ratio. Free-ridership is a negative effect while spillover and market effects are positive effects.

Interactive effects are applied to both gross and net energy savings to consider the implemented energy-efficiency measures' impact on other energy-consuming systems used in the same building.

A program's savings are primarily reported in terms of **first-year savings**.

Lifetime energy savings are calculated by taking into consideration both a measure's life (the period of time over which this measure is expected to persist) and any increase in the baseline energy consumption over this measure's life. The **effective useful life** is used to express the persistence of a measure's or a program's savings; the effective useful life is obtained by dividing the lifetime energy savings value by the first-year energy savings value.

Peak demand savings are the savings associated with the reduction of power consumption over the peak demand period identified by the program administrator.

Sometimes, to achieve statistically significant results, impact evaluation activities involve sampling while remaining cost-effective. According to the UMP *Chapter 11: Sample Design Cross-Cutting Protocol* [3]: "Often the confidence and precision requirements are imposed through a regulatory process or forward capacity market standard. These values are most commonly set at 90% confidence and 10% precision at the portfolio or sector level, but requirements vary.'' The evaluator should determine the level at which the confidence and precision requirements should be calculated and ensure that this approach aligns with the UMP as well as regulatory and program administrator requirements. The sampling methods must be carefully selected according to the program population's characteristics and these characteristics' expected impacts on the evaluation results. For all the results obtained through sampling, their margins of error should be calculated and explained in the evaluation reports.

2.2 Process Evaluation

A process evaluation assesses a program's effectiveness in achieving its objectives and whether its implementation is proceeding as planned. Therefore, such an evaluation assesses the performance of the program activities and internal and external processes, and identifies those areas of the program that have not achieved the desired outcomes and should thus be improved. A process evaluation also usually looks at a program's ability to reach the right customers, participation levels and satisfaction among the participants and partners.

[3] Khawaja, M.S., Rushton, J. and Keeling, J. (2017). "Chapter 11: Sample Design Cross-Cutting Protocol", *The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/ SR-7A40-68567. http://www.nrel.gov/docs/fy17osti/68567.pdf

Typical process evaluation activities include:

- A program documentation review that involves reviewing documents such as the program logic model and theory, the program forms, guides and manuals, the marketing materials, and the data tracking to understand the program processes and components, inform data-collection activities and identify improvement opportunities.
- A jurisdictional scan or a benchmarking study to collect information about similar ongoing successful programs, the lessons learned from other utilities, best practices, etc.
- Surveys, in-depth interviews or focus groups to collect information about participants', partners', stakeholders' and program staff's perspectives and feedback about the program.
- On-site assessments of the program delivery processes: for example, conducting mystery shopper visits to evaluate an in-store instant rebates program or ride-along visits to evaluate delivery agents' on-site work for a home energy assessment program.

2.3 Market Evaluation

A market evaluation assesses a program's influence on a market or sector by examining the market evolution of energy efficiency products. More specifically, market evaluations involve assessing and monitoring market transformation indicators, such as product market shares and prices, program participant and non-participant behaviours, trade ally capacity and knowledge of energy efficiency, and barriers to product implementation and uptake, to understand the impacts of the program on the market.

As illustrated in Figure 1, on page 3, a market evaluation can also be carried out before a program is launched to understand the market before any program actions are taken and to inform the program design. The market evaluation data can also be used to contribute to the impact evaluation efforts, for example, by providing data about the baseline.[4]

Market evaluation activities include:

- Participant surveys and interviews with program partners to assess the program's influence on decisions and market barriers and gather feedback on how to increase the program's impact on the market.
- General population surveys and trade ally in-depth interviews or focus groups to collect information about energy efficiency behaviours, market trends and trade ally capacity.
- A potential study or penetration study to collect data about technology uptake and implementation.
- Secondary research data to gather information about product sales, shipments and market shares.
- Technology diffusion curves that illustrate product market adoption phases.

[4] The market evaluation activities outlined in Section 3 of this evaluation plan focus on participant perspectives and therefore do not meet the definition of a typical or complete market evaluation, as described in Section 2.3.

2.4 Cost-effectiveness Analysis

A cost-effectiveness analysis examines the relationship between the value created by a portfolio's benefits (or a project's, a measure's, a program's, or a bundle's) and the costs incurred to achieve those benefits. The analysis findings can help determine whether to retain, revise or eliminate program elements and provide feedback on whether energy efficiency is an effective investment compared with the energy supply options. The various tests involved in a cost-effectiveness analysis may help answer the following questions:

- Is the initiative effective overall?
- Are some costs or incentives too high or too low?
- What is the effect on energy rates?
- What adjustments need to be made to improve the cost-benefit ratio?

Cost-effectiveness calculations should follow best practices, such as those described in the EPA's cost-effectiveness guide[5] and the National Standard Practice Manual[6].

The Program Administrator Cost (PAC) test is the ratio of the utility benefits of the initiative in terms of the value of energy and demand saved divided by the net program costs (the incentive and non-incentive costs) of the portfolio. The Total Resource Cost (TRC) test is the ratio of the value of energy and demand plus non-energy benefits divided by the total costs of the initiative, including the incremental product cost and the program administrator non-incentive costs. Costs and benefits should be calculated over the evaluated effective useful life of the measures. Typically, the TRC and PAC tests are the tests most commonly used by program administrators to assess program cost-effectiveness. The following table summarizes the components of the TRC and PAC tests.

Table 1: Components of the TRC and PAC Tests

	TRC	PAC
Avoided Costs	X	X
Non-energy Benefits	X	
Non-incentive Costs	X	X
Incentive Costs		X
Customer Costs	X	

[5] "Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods and Emerging Issues for Policy Makers", 2008. https://www.epa.gov/sites/production/files/2015-08/documents/cost-effectiveness.pdf
[6] "National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources". National Efficiency Screening Project. Spring, 2017. https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf

The avoided costs should be the marginal value of the net savings, taking into account the timing and duration of the savings. Best practice requires accounting for the costs of generation, transmission and distribution resources in estimating the avoided energy costs.

As for non-energy benefits, all quantifiable non-energy benefits (e.g., water savings) should be included. Those non-energy benefits that are difficult to quantify (e.g., improved comfort and health of the income-qualified participants) may be included by applying an adder.[7]

The non-incentive costs include all the costs related to a program's design, implementation, marketing, evaluation and administration, including any overhead costs.

Customer costs are the incremental capital and operations and maintenance costs incurred by a participant in a program. Whether the incremental cost or the full installed cost of a product is applied as the customer cost should be established based on the definition of the baseline (e.g., early replacement). Therefore, this baseline must be consistent between the energy savings calculations and the customer cost calculations.

The methodologies for determining the costs and benefits applied in the tests should be consistent between the costs and the benefits and estimated for the entire lifetime of energy savings by applying an appropriate effective measure life value.

In addition to the portfolio-level analysis, for information purposes, the evaluation results should also support the cost-effectiveness analysis at the program level.

[7] Recent research conducted by Econoler found that among the six Canadian utilities covered by that research, four accounted for non-energy benefits by applying an adder ranging from 12.5% to 15%.

3 EVALUATION METHODOLOGY

The evaluation of efficiencyPEI's EE&C programs will cover a number of objectives, including:

- Assessing the effectiveness of program design and delivery;
- Determining the extent to which program implementation is proceeding as planned (i.e., that technologies have been installed and are working as expected);
- Determining the gross first-year and lifetime energy savings and demand savings (electricity only);
- Determining the program net-to-gross ratios;
- Determining the net first-year and lifetime energy savings and demand savings (electricity only);
- Determining the evaluated savings based on the utility rate code; and
- Assessing program and portfolio cost-effectiveness using the PAC test as the primary test and the TRC as the secondary test.

3.1 Evaluation Activities

This section describes Econoler's methodology for evaluating each program included in the evaluation. These programs are:

- New Home Construction: Rebates for participant homeowners to include energy-efficient features in their new builds.
- Winter Warming: A free weatherization package including air sealing, energy efficient light bulbs, a low-flow showerhead and a programmable thermostat.
- Energy Efficient Equipment: Rebates to residential customers for heating equipment, such as heat pumps, boilers, biomass heat and hot water heaters.
- Home Insulation (including Home Energy Assessment): Rebates for adding insulation, replacing windows and doors, and improving air leakage after having had an energy advisor perform a low-cost EnerGuide evaluation of a home.
- Instant Savings: Instant rebates offered in store on select energy efficient products, such as light bulbs, thermostats and appliances.
- Business Energy Rebates: Rebates to businesses, non-profits and institutional organizations, as well as industrial and agricultural facilities for installing high-efficiency products.
- Business Energy Solutions (not yet launched).
- Custom Energy Solutions (not yet launched).

The following table lists the evaluation activities proposed for each program, the related types of evaluation and their intended outputs. The evaluation covers two fiscal years: 2018/2019 and 2019/2020. Evaluation activities that require sampling, such as participant surveys and site visits, will be carried out using 2019/2020 program data and participants. The evaluation parameters obtained, including gross savings adjustments, net-to-gross ratios, effective useful life values and incremental product costs, will be used to calculate program savings and cost-effectiveness results for both fiscal years.

Table 2: Proposed Evaluation Activities by Program

Program/Evaluation Activity	Process	Market	Impact	Output
Residential				
New Home Construction				
Data tracking review	✔			› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Savings calculation review			✔	› Review of the different steps completed in the program database to calculate savings, including the formulas, baseline assumptions and heating systems in place. › Assessment of the overestimation ratio based on literature. Overestimation ratios are often used to adjust the modelled energy consumption values generated by HOT2000 because the software tends to overestimate home energy consumption values and the associated savings. These overestimation ratios are typically obtained by comparing participants' energy consumption modelled in HOT2000 with their actual energy consumption obtained from their billing data. In this case, Econoler proposes using a literature review to establish the most appropriate overestimation ratio assumption.
Participant survey (n=20)	✔	✔	✔	› Participant perspectives on market barriers and program influence factors, as well as the effectiveness of the program implementation processes, their experience and satisfaction with the program and any areas for improvement. › The program free-ridership level. Participant spillover is assumed to be nil.
Cost-effectiveness analysis			✔	› Literature review to determine an average effective useful life value for new builds. › Literature review to determine an average incremental product cost for new builds (or an average percentage that could be applied to total project costs if available). › PAC test results to determine whether the program is cost-effective from the perspective of efficiencyPEI. › TRC test results to determine whether the program is cost-effective from the societal perspective.

Program/Evaluation Activity	Process	Market	Impact	Output
Winter Warming				
Data tracking review	✔			› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Paper form review (n=30)	✔		✔	› The number of products installed per home to inform the review of the average savings value per participant. › Identification of tracking improvement opportunities.
Site visits (n=30 – same projects as for the paper form review)	✔	✔	✔	› Assessment of the installation rates for LEDs, low-flow showerheads and programmable thermostats based on on-site verification compared with the number of products recorded by the paper form review. › Participant perspectives on market barriers and program influence factors, as well as the effectiveness of the program implementation processes, their experience and satisfaction with the program and any areas for improvement. › For this type of program, free-ridership and participant spillover are assumed to be nil. So, no question related to these program effects will be asked of participants.
Unitary savings review			✔	› Revised savings values for all eligible product categories. Econoler will conduct a literature review, perform engineering calculations, and use program data to review the unitary savings values used for each product category installed. Technical reference manuals and public evaluation reports from other jurisdictions will be consulted, and the most recent and relevant sources will be selected as the basis of the unitary savings review. › Calculation of the average savings value per participant by applying the revised unitary savings values, the average number of products installed per home and the installation rates collected during the site visits.
Cost-effectiveness analysis			✔	› Literature review to determine an effective useful life value for each eligible product category. › Calculation of an incremental product cost value for each eligible product category using product costs provided by efficiencyPEI. › PAC test results to determine whether the program is cost-effective from the perspective of efficiencyPEI. › TRC test results to determine whether the program is cost-effective from the societal perspective.

Program/Evaluation Activity	Process	Market	Impact	Output
Energy Efficient Equipment				
Data tracking review	✔			› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Application form review (n=30 mini-split heat pump forms)	✔		✔	› Verification of product eligibility and collection of technical data to inform the unitary savings review. › Identification of tracking improvement opportunities.
Unitary savings review			✔	› Revised savings values for key eligible product categories to cover at least 80% of the program savings. Econoler will conduct a literature review, perform engineering calculations, and use program data to review the unitary savings values used in the database for each product category installed. Technical reference manuals and public evaluation reports from other jurisdictions will be consulted, and the most recent and relevant sources will be selected as the basis of the unitary savings review.
Participant survey (n=70 mini-split heat pump participants)	✔	✔	✔	› Mini-split heat pump participant perspectives on market barriers and program influence factors, as well as the effectiveness of the program implementation processes, their experience and satisfaction with the program, any issues with air-source heat pump system and installation, and any areas for program improvement. › The free-ridership level for mini-split heat pumps. Participant spillover is assumed to be nil.
Cost-effectiveness analysis			✔	› Literature review to determine an effective useful life value for the same key product categories identified for the unitary savings review. › Literature review and analysis of the product costs included in the program database to determine an incremental product cost for each key product category. › PAC test results to determine whether the program is cost-effective from the perspective of efficiencyPEI. › TRC test results to determine whether the program is cost-effective from the societal perspective.

Program/Evaluation Activity	Process	Market	Impact	Output
Home Insulation and Home Energy Assessment				
Data tracking review	✔			› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Savings calculation review			✔	› Review of the different steps completed in the program database to calculate the savings, including the formulas and heating systems in place, while also ensuring that the required savings deductions related to the measures installed under the Energy Efficient Equipment program are applied to avoid double-counting of savings. › Assessment of the overestimation ratio based on literature. Overestimation ratios are often used to adjust the modelled energy consumption values generated by HOT2000 because the software tends to overestimate home energy consumption values and the associated savings. These overestimation ratios are typically obtained by comparing participants' energy consumption modelled in HOT2000 with their actual energy consumption obtained from their billing data. In this case, Econoler proposes using a literature review to establish the best overestimation ratio assumption.
Participant survey (n=30)	✔	✔	✔	› Participant perspectives on market barriers and program influence factors, as well as the effectiveness of the program implementation processes, their experience and satisfaction with the program and any areas for improvement. › The program free-ridership level. Participant spillover is assumed to be nil.
Cost-effectiveness analysis			✔	› Literature review to determine an average effective useful life value for insulation projects. › Literature review and analysis of the project costs included in the program database to determine an average incremental product cost for insulation projects. › PAC test results to determine whether the program is cost-effective from the perspective of efficiencyPEI. › TRC test results to determine whether the program is cost-effective from the societal perspective.

Program/Evaluation Activity	Process	Market	Impact	Output
Instant Savings				
Data tracking review	✔		✔	› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, collect information for the unitary savings review, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Unitary savings review			✔	› Revised savings values for key eligible product categories to cover at least 80% of the program savings. Econoler will conduct a literature review, perform engineering calculations, and use program data to review the unitary savings values used in the database for each product category installed. Technical reference manuals and public evaluation reports from other jurisdictions will be consulted, and the most recent and relevant sources will be selected as the basis of the unitary savings review.
Intercept survey (n=70 LED purchasers)	✔	✔	✔	› LED purchaser feedback on awareness of the program, eligible products and efficiencyPEI. › LED purchaser data on light bulb installation and replacement behaviours to establish the base case. › The free-ridership level for LED light bulbs.
Cost-effectiveness analysis			✔	› Literature review to determine an effective useful life value for the same key product categories identified for the unitary savings review. › Analysis of the product costs based on the retailer sales data reports, website research and literature review to determine an incremental product cost for each key product category. › PAC test results to determine whether the program is cost-effective from the perspective of efficiencyPEI. › TRC test results to determine whether the program is cost-effective from the societal perspective.

Program/Evaluation Activity	Process	Market	Impact	Output
Business				
Business Energy Rebates				
Data tracking review	✔			› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Application form review (n=30 [18 mini-split heat pump forms and 12 lighting forms])	✔		✔	› Verification of product eligibility and collection of technical data to inform the unitary savings review.
Unitary savings review			✔	› Revised savings values for key eligible product categories to cover at least 80% of the program savings. Econoler will conduct a thorough literature review, perform engineering calculations, and use program data to review the unitary savings values used in the database for each product category installed. Technical reference manuals and public evaluation reports from other jurisdictions will be consulted, and the most recent and relevant sources will be selected as the basis of the unitary savings review. › Calculation of the average savings value per participant (one value for heat pump and one value for lighting) by applying the revised and existing unitary savings values and the information collected in each participant form reviewed.
Participant survey (n=30 [18 mini-split heat pump participants and 12 lighting participants])	✔	✔	✔	› Participant perspectives on market barriers and program influence factors, as well as the effectiveness of the program implementation processes, their experience and satisfaction with the program, any issues with air-source heat pump system and installation, and areas for program improvement. › The program free-ridership level. Participant spillover is assumed to be nil.
Cost-effectiveness analysis			✔	› Literature review to determine an effective useful life value for the same key product categories identified for the unitary savings review. › Literature review and analysis of the project costs included in the program database to determine an average incremental product cost per project. › PAC test results to determine whether the program is cost-effective from the perspective of efficiencyPEI. › TRC test results to determine whether the program is cost-effective from the societal perspective.

Program/Evaluation Activity	Process	Market	Impact	Output
Business Energy Solutions				
Data tracking review	✔			› Review of program data tracking to assess overall tracking practices and processes and whether they meet program needs, identify any gaps in tracked data to better inform program savings calculations, management and evaluation and assess the consistency of the tracked data.
Savings verification	✔		✔	› Assessment of and recommendations about the savings calculation methods.
Custom Energy Solutions				
Savings verification	✔		✔	› Assessment of and recommendations about the savings calculation methods.

Once all evaluation activities are completed, the process, market and impact evaluation analyses will be performed. Based on the parameters obtained from the impact evaluation analyses, the gross and net electrical energy and demand savings will be calculated for the 2019/2020 fiscal year as well as for the previous fiscal year (2018/2019). Cost-effectiveness results will also be calculated for both fiscal years with a cost-effectiveness tool developed by Econoler. EfficiencyPEI will be responsible for providing the estimated avoided costs, program costs (incentives and non-incentive costs) and discount rate. Non-energy benefits are not part of this evaluation and will not be included in the cost-effectiveness analyses.

One evaluation report will be prepared for each program to present and discuss the following:

- Evaluation objectives and methods;
- Process and market evaluation results, including data tracking review findings and program participant perspectives;
- Findings from the impact evaluation, including gross savings adjustments and free-ridership levels;
- Savings and cost-effectiveness results for the 2018/2019 and 2019/2020 fiscal years; and
- Clear, actionable and prioritized recommendations for improving data quality, program processes, evaluation techniques and other areas deemed relevant.

3.2 Evaluation Schedule

Figure 2 outlines the main milestones and deliverables of the evaluation, and when they will be performed.

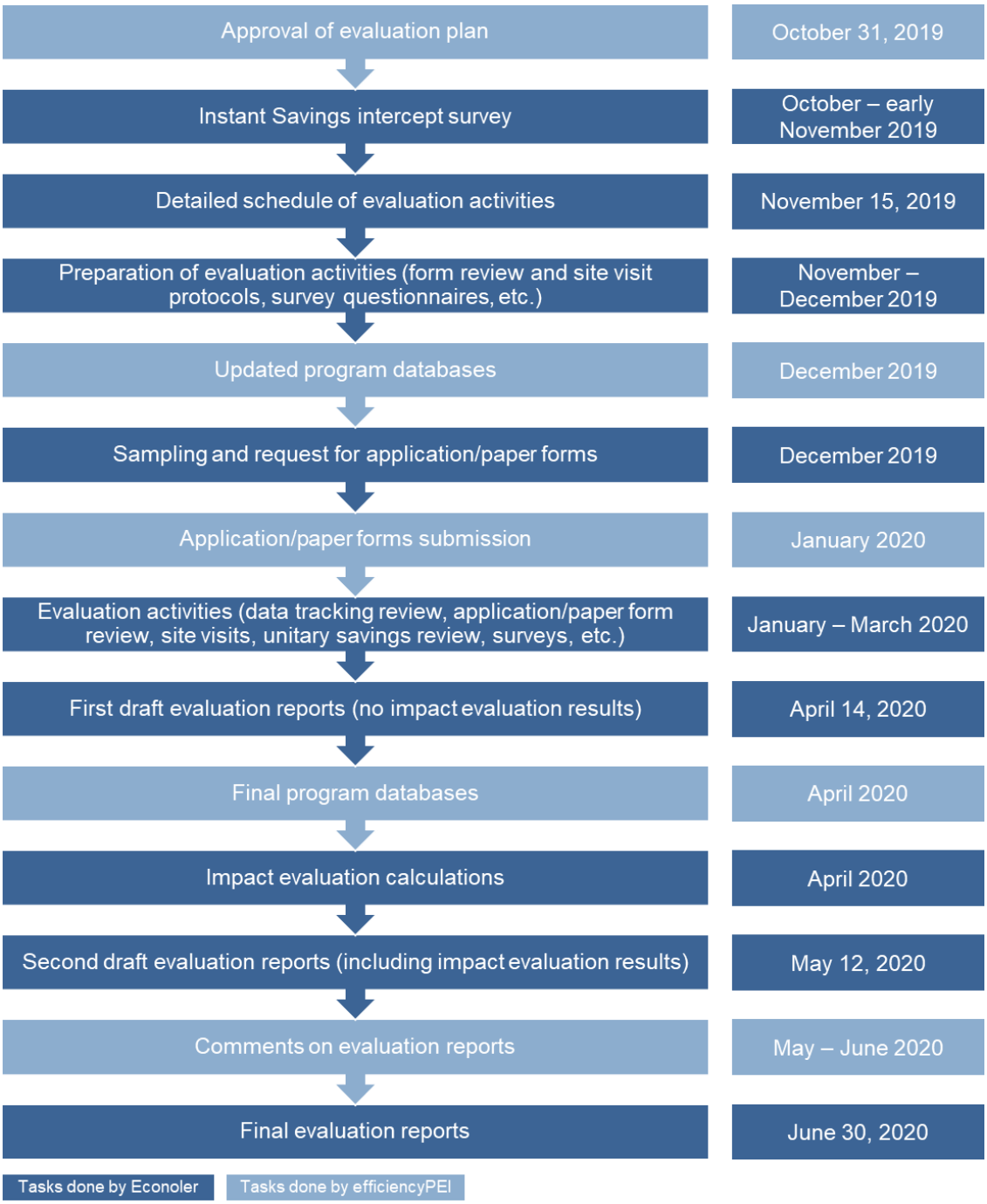

Figure 2: Evaluation Milestones and Timeline

Once the evaluation plan has been finalized and approved, a detailed evaluation schedule will be provided to efficiencyPEI. It will include the evaluation activities and their subtasks, along with the expected completion dates to ensure that the final evaluation reports are submitted to efficiencyPEI by June 30, 2020. This schedule will also outline those tasks that require efficiencyPEI to take actions or provide approval. Econoler will regularly update this schedule to show progress on the evaluation work.

4 COSTS

Table 3 summarizes the evaluation costs. Econoler's 2019/2020 fiscal year evaluation proposal included a total budget of $249,455. The budget associated to the additional tasks added to the evaluation after Econoler delivered the proposal (i.e. 2018/2019 impact calculation and cost-effectiveness analysis) is $51,025, for a total evaluation budget of $300,480.

The allocated evaluation resources and levels of effort between programs were based on the following main criteria: savings achieved, participation levels, and number of eligible products.

Table 3: Evaluation Costs

Program	Initial Proposal Tasks							Additional Tasks				TOTAL
	Preparation	Data Collection Tools Development	Data Collection and Treatment	Data Collection Analysis and 2019-2020 Impact Calculation	Reporting	Project Management	Total (Initial Proposal Tasks)	2018-2019 Impact Calculation	Cost-Effectiveness Analysis - PAC	Cost-Effectiveness Analysis - TRC	Total (Additional Tasks)	
New Home Construction	$1 965	$3 950	$6 300	$3 525	$7 300	$800	**$23 840**	$1 750	$3 106	$1 950	**$6 806**	**$30 646**
Winter Warming	$3 545	$4 950	$14 365	$3 525	$14 225	$2 400	**$43 010**	$1 750	$5 175	$1 425	**$8 350**	**$51 360**
Energy Efficient Equipment	$3 940	$7 350	$15 125	$4 750	$14 225	$2 400	**$47 790**	$2 125	$5 175	$2 475	**$9 775**	**$57 565**
Home Insulation and Home Energy Assessment	$2 030	$3 950	$7 050	$3 525	$7 300	$800	**$24 655**	$1 750	$3 106	$1 950	**$6 806**	**$31 461**
Instant Savings	$3 800	$4 900	$15 600	$5 175	$14 225	$2 400	**$46 100**	$2 563	$5 375	$2 475	**$10 413**	**$56 513**
Business Energy Rebates	$4 025	$7 200	$15 725	$5 500	$14 025	$2 400	**$48 875**	$2 338	$4 588	$1 950	**$8 875**	**$57 750**
Business Energy Solutions	$480	$0	$2 060	$975	$2 325	$0	**$5 840**	$0	$0	$0	**$0**	**$5 840**
Custom Energy Solutions	$260	$0	$1 310	$0	$1 575	$0	**$3 145**	$0	$0	$0	**$0**	**$3 145**
Total Costs	**$20 045**	**$32 300**	**$77 535**	**$26 975**	**$75 200**	**$11 200**	**$243 255**	**$12 275**	**$26 525**	**$12 225**	**$51 025**	**$294 280**
Local Travel Expenses (Hotels, meals, etc.)	*$1 600*	*$0*	*$100*	*$0*	*$700*	*$0*	***$2 400***	*$0*	*$0*	*$0*	**$0**	**$2 400**
Other Travel Expenses (Flights, car rentals, etc.)	*$2 000*	*$0*	*$0*	*$0*	*$900*	*$0*	***$2 900***	*$0*	*$0*	*$0*	**$0**	**$2 900**
Administrative Expenses	*$100*	*$50*	*$50*	*$0*	*$50*	*$0*	***$250***	*$0*	*$0*	*$0*	**$0**	**$250**
Intercept Survey Incentives and Printing	*$0*	*$0*	*$650*	*$0*	*$0*	*$0*	***$650***	*$0*	*$0*	*$0*	**$0**	**$650**
Total Expenses	***$3 700***	***$50***	***$800***	***$0***	***$1 650***	***$0***	***$6 200***	***$0***	***$0***	***$0***	**$0**	**$6 200**
Total	**$23 745**	**$32 350**	**$78 335**	**$26 975**	**$76 850**	**$11 200**	***$249 455***	**$12 275**	**$26 525**	**$12 225**	**$51 025**	**$300 480**

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160 Saint-Paul St., Suite 200, Quebec City, QC G1K 3W1 CANADA | Tel.: +1 418 692-2592 Fax: +1 418 692-4899
www.econoler.com