
An Assessment of Prince Edward Island Energy Corporations' 2018-2021 Energy Efficiency and Conservation Plan

Prepared for Carr, Stevenson, and MacKay as Counsel to
the Island Regulatory and Appeals Commission

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1. INTRODUCTION

On 29 June 2018, Prince Edward Island Energy Corporation (PEIEC)¹ filed an application (the Application) for approval of its 2018-2021 Energy Efficiency and Conservation Plan (EE&C Plan or Plan) with the Prince Edward Island Regulatory and Appeals Commission (the Commission or IRAC). Carr, Stevenson, and MacKay hired Synapse Energy Economics, Inc. (Synapse) to assess the Plan, in particular whether the Plan is likely to satisfy legislative requirements. To this end, Synapse reviewed the Application, issued information requests, and reviewed responses to these requests from both PEIEC and Maritime Electric Company (MECL).

This report describes the results of our review and analysis of the Application and EE&C Plan. First, we describe the requirements of the Electric Power Act. Second, we provide an overview of the EE&C Plan. We then discuss our findings on whether the EE&C Plan meets the requirements of the legislation, including whether the plan is consistent with industry standards and the reasonableness of the savings and cost projections in the plan. Finally, we describe issues that are important for developing and maintaining robust, successful programs, even if these recommendations are not specifically required by legislation.

2. LEGISLATIVE REQUIREMENTS

The Electric Power Act requires that an energy efficiency and demand-side resources plan satisfy a number of conditions, including the following:

1. Its term must be consistent with industry standards.
2. Its particular energy efficiency and demand-side resource measures must be deemed by the Commission to be reasonably likely, on implementation, to achieve the results forecast in the plan.
3. It must contain a reasonable estimate of the financial costs and benefits to each public utility named in the plan and its customers.
4. It must contain a plan for apportioning those costs and benefits.²

¹ PEIEC proposes to delegate its energy efficiency responsibilities to efficiencyPEI, which already provides energy efficiency services for Prince Edward Island. EfficiencyPEI developed the EE&C Plan with the help of its external consultant, EfficiencyOne, the owner of the demand-side management franchise in Nova Scotia. EfficiencyPEI will serve as the administrator of the EE&C programs proposed in the Application (Application, p. 5).

² Section 16.1 (5.1).

The Commission’s decision whether or not to approve the EE&C Plan must consider the extent to which the Plan has met these requirements. Thus, all of the sections of this report after the Overview section are organized around these four legislative requirements.

3. OVERVIEW OF THE PLAN

The proposed EE&C Plan has a three-year term, from 2018/19 to 2020/21. It targets only electricity savings. Customers of MECL, a public utility regulated by IRAC, and of Summerside, a municipal utility not under the jurisdiction of IRAC, are eligible to participate.

The Plan forecasts energy savings, capacity savings, budget, and participation by program for each year. PEIEC projects the Plan will achieve a total of 29,346 megawatt hours (MWh) of annual electricity savings and 6.89 megawatts (MW) of electric demand savings over the three-year period. These savings are broken out by program for each year in the three-year term in Table 1. Table 2 shows the proposed budget by program for the three-year term.

The Plan has savings initiatives in two sectors: residential programs and business programs. Residential programs include Energy Efficient Equipment Rebates, Home Insulation Rebates, Winter Warming, New Home Construction, and Instant Energy Savings. These programs specifically target energy use within the home. PEIEC notes in the Application that additional programs may be added to the residential sector beyond the timeline of this Plan to address gaps in program offerings, such as appliance retirement and changing behavior.³ Business programs include Business Energy Rebates, Business Energy Solutions, and Customer Energy Solutions. The business programs take a diversified approach to energy savings, incentivizing measures that could lead to small or large savings opportunities.⁴

Table 1 – Planned savings by program

Program	Planned Net MWh				Planned Capacity (MW)			
	2018/19	2019/20	2020/21	Total	2018/19	2019/20	2020/21	Total
Energy Efficient Equipment Rebates	2,054	2,841	3,126	8,022	0.71	0.99	1.10	2.80
Home Insulation Rebates	525	1,300	1,843	3,668	0.15	0.37	0.53	1.05
Winter Warming	348	348	348	1,044	0.08	0.08	0.08	0.24
New Home Construction	139	164	287	590	0.04	0.05	0.08	0.17
Instant Energy Savings	1,104	3,744	2,399	7,247	0.24	0.81	0.47	1.52
Business Energy Rebates	874	1,114	1,507	3,495	0.12	0.15	0.21	0.48
Business Energy Solutions	392	534	722	1,648	0.05	0.07	0.10	0.23
Custom Energy Solutions	-	726	2,905	3,632	n/a	0.08	0.32	0.40
Total	5,437	10,770	13,138	29,346	1.39	2.61	2.89	6.89

Source – SYN IR-01 Attachment 1, Summary Programs tab (Table: 2018 – 2020 Programs for ePEI).

³ Application, p. 45.

⁴ Application, p. 50.

Table 2 – Budget by program

Program	Budget			Total Costs
	2018/19	2019/20	2020/21	
Energy Efficient Equipment Rebates	803,150	1,186,150	1,449,050	3,438,350
Home Insulation Rebates	302,254	687,903	1,001,201	1,991,358
Winter Warming	257,356	257,356	257,356	772,068
New Home Construction	129,529	142,588	180,493	452,610
Instant Energy Savings	373,014	732,353	645,674	1,751,041
Business Energy Rebates	381,326	441,941	552,038	1,375,304
Business Energy Solutions	267,568	392,493	520,726	1,180,787
Custom Energy Solutions	30,000	260,882	641,028	931,910
Enabling Strategies	75,000	334,946	410,000	819,946
Evaluation	150,000	224,173	225,500	599,673
Total	\$2,769,198	\$4,660,785	\$5,883,064	\$13,313,048

Source – SYN IR-01 Attachment 1, Summary Programs tab (Table: 2018 – 2020 Programs for ePEI).

4. CONSISTENCY OF TERM WITH INDUSTRY STANDARDS

The term of the filed EE&C Plan, three years, is reasonably consistent with industry standards (i.e., it appears to meet the first condition). A three-year term is common for EE&C programs. A leader in energy efficiency policy and programs, Massachusetts has its statewide programs operate on a three-year planning cycle. Except for single-year plans in 2015 and 2018, Nova Scotia has used three-year plans.

A multi-year term can foster confidence and continuity in the marketplace. In this way, it may provide a better environment for market transformation than plans with shorter terms. Also, a plan with a longer term can more easily take on large projects or comprehensive measures that require multi-year support.

In PEI, annual reporting on the results of plan implementation is required, per the Act.⁵ Since this is a new portfolio, reporting within the three-year term of the plan will be important. The types and formats of information to be reported should be discussed with stakeholders and established early on, so that consistently defined results can be monitored over time. In Appendix A, we recommend what types of data should be reported and how often, assuming that the currently proposed portfolio is implemented. Appendix B includes sample templates for reporting savings and budgets/expenditures.

If interim reporting reveals that adjustments are needed, there should be an opportunity for making adjustments sooner than the end of the three-year term.⁶

⁵ Application, p. 7.

⁶ This is discussed in the response to Synapse IR-27.

5. REASONABLENESS OF PROJECTED SAVINGS AND PARTICIPATION

5.1. Savings

Our assessment of the reasonableness of the savings estimates depends in part on the soundness of the load forecasts.⁷ However, information on the load forecasts for both companies have not been provided or are not available. PEIEC provided 2018-2022 sales forecasts for Maritime Electric and Summerside Electric in response to an information request.⁸ The workbook does not contain the assumptions and methodologies used by either company to develop the forecasts. Moreover, load projections by rate class for Summerside are missing altogether. We recommend that Summerside, PEIEC, IRAC, and MECL work together to improve the granularity of Summerside’s load forecast and to make it more consistent with that of MECL.

Table 3 shows the savings as a percent of sales for the three program-years based on the sales forecasts and projected savings provided in the workbook. As can be seen, PEIEC plans to attain a large amount of savings as a percent of sales (0.41 percent) in 2018/19, the first year of the plan. In the following year, savings increase by a smaller increment (0.33 percent) to 0.74 percent of sales. From 2019/20 to 2020/21, savings under the Plan level out relative to sales at 0.74 percent. As many jurisdictions have recently achieved savings well above 2 percent of sales, PEIEC should consider increasing savings as a percent of sales in the third year.

Table 3 – Projected savings, projected sales, and savings as a percent of sales

Year	2018/19	2019/20	2020/21
Projected savings (GWh)			
Residential	5.6	10.2	10.3
Business	1.5	2.8	5.9
Total	7.1	13.0	16.2
Projected sales (GWh)			
MECL	1,229	1,236	1,246
Summerside	137	140	142
Total	1,366	1,376	1,388
Projected savings as a percent of sales (%)			
All PEI	0.41%	0.74%	0.74%

Sources: SYN IR-01 Attachment 1, Summary Programs tab (Table: 2018 – 2020 Programs for ePEI), Elec Use, Poten. and Savings tab (Table: Sales Forecast for PEI (GWh)).

⁷ For example, some savings, such as from new construction programs, will not occur if the new load planned for in load forecasts doesn’t materialize.

⁸ Response to Synapse IR-1 Attachment 1, on the “Elec Use, Poten. And Savings” tab.

5.2. Participation

PEIEC’s estimates of participation are based on several factors: participation results for Nova Scotia’s mature programs, the eligible PEI population, ramp-up time needed to develop/expand a program, and potential upcoming appliance/equipment standards.⁹ This approach appears to be reasonable for PEI, depending on the specific methodology and assumptions about ramp rates.

PEIEC provided anticipated participant uptake and the estimated number of eligible customers by program, displayed in Table 4.¹⁰ In Table 5, we show the participation rates for each program. The workbook provided by PEIEC does not specify participation units for every program (i.e., units, customers, dwellings), so Table 5 is based off of the assumption that anticipated uptake is presented in the same units as eligibility, unless otherwise indicated in Table 5. Also note that participation estimates have likely not been adjusted for customers who participate in more than one program. Therefore, participation in these tables is not additive across programs.

The program with the highest projected participation rate is New Home Construction, which reaches a maximum of 19 percent of eligible participants—i.e. new home starts—in the final year of the program.

Table 4 – Estimated participation by year

Program	Sector	Metric	All Customers (Or units)			Eligible Customers
			2018/19	2019/20	2020/21	
Energy Efficient Equipment Rebates	Residential	Customers	548	815	980	15,663
Home Insulation Rebates	Residential	Customers	75	213	313	15,663
Winter Warming	Residential	Customers	350	350	350	15,663
New Home Construction	Residential	Customers	24	41	46	243
Instant Energy Savings	Residential	Units	28,291	95,901	48,334	Not provided
Business Energy Rebates	Business	Units	4,135	5,272	7,132	7,231
Business Energy Solutions	Business	Units	8,370	10,958	14,825	7,231
Custom Energy Solutions	Business	Customers	0	5	20	Not provided

Table 5 – Estimated participation rates by year

Program	Sector	Percent participation		
		2018/19	2019/20	2020/21
Energy Efficient Equipment Rebates	Residential	3%	5%	6%
Home Insulation Rebates	Residential	0%	1%	2%
Winter Warming	Residential	2%	2%	2%
New Home Construction	Residential	10%	17%	19%
Instant Energy Savings	Residential	N/A*	N/A*	N/A*
Business Energy Rebates	Business	N/A*	N/A*	N/A*
Business Energy Solutions	Business	N/A*	N/A*	N/A*
Custom Energy Solutions	Business	N/A	N/A	N/A

(* Annual participation is measured in units while eligible participation is measured in participants.

⁹ Response to Synapse IR-09.

¹⁰ Response to Synapse IR-1 Attachment 1, on the “Res Programs and Measures” tab and “Business Programs and Measures” tab.

PEI should put in place processes and data collection mechanisms to understand who is participating. To this end, the unit of participation (e.g., a customer, an account, a measure installed, a rebate) should be clearly defined at least at the level of the program, if not more granularly (e.g., by measure). Further, it is important to establish whether participation will be tracked separately by year or over the term of the EE&C Plan. If the number of customers is not tracked for a program, PEI should plan on periodic analysis of participation of the sector to ensure that the portfolio is reaching a significant share of customers across all rate classes and a representative share of customers who are typically are less likely to participate in EE&C—such as low-income and small commercial customers.

5.3. Implementation Issues

Responses to some information requests suggest that some program details have yet to be fleshed out.¹¹ Accordingly, PEIEC has stated that it “plans to establish a permanent stakeholder group that it will engage on an ongoing basis as it moves forward with EE&C planning; expansion of existing programs; introduction of new programs; and program delivery, reporting and evaluation.”¹² We agree that an ongoing advisory group should be established to address issues with implementation, as some issues could impact the ability of PEIEC to attain its savings targets. PEIEC should provide a time table for establishing this stakeholder group to ensure that the stakeholder group will be established in time to address the underdeveloped aspects of the plan.

5.4. Studies Supporting EE&C

PEIEC stated that “[w]hile evaluating and verifying program results are important, it will prove challenging for PEI because of the relatively small scale of program activity and participants. For similar programs, efficiencyPEI [ePEI] may opt to rely on evaluation information from Efficiency Nova Scotia DSM programs for the first year or two...Conducting E&V work over a two- or three-year cycle (rather than annually) may be another way of realizing the important outcomes from evaluation while keeping the cost of evaluation reasonable.”¹³

We agree that comprehensive evaluations may prove difficult for a new program administrator to manage as programs are newly launched in the first year. However, it is important to set up processes and practices early on to shed light on what is working well and what is not, to implement data systems that will support future evaluation, and to lay the foundation for the next EE&C plan. Evaluations completed during the first or second year of the term can provide opportunity and direction to correct course, if it is found that the programs are not on track to meet goals. Where applicable, PEIEC should use data analytics to assess program performance frequently. This should include project-specific energy

¹¹ See, e.g., Synapse IR-35, 36, 37, 38, and 42.

¹² Application, p. 5.

¹³ Application, p. 31.

savings, participants, and any correlation of such performance with specific contractors. There are also ways to reduce the burden of evaluation. For example, PEIEC can conduct a high-level impact evaluation study for all of the programs annually or take a staged approach to implementing impact evaluation studies by first focusing on the programs with the most projected savings. PEIEC should consider whether these approaches would work. Process evaluation should be done over the three-year term.

We agree with PEIEC's proposal to commission a DSM Potential Study in the near future to inform the next EE&C Plan.¹⁴ Evaluation processes, goals, and schedules for different types of evaluations and studies, including the potential study called for in the Application, should be developed and documented as early as possible.¹⁵ The advisory group should be consulted in the development of these elements.

6. ESTIMATE OF FINANCIAL COSTS AND BENEFITS TO CUSTOMERS

6.1. Spending

A commonly referenced benchmark for assessing jurisdictions' commitment to energy efficiency is the amount of EE&C spending as a percent of utility revenue. Our assessment of the level of spending in PEI was hampered somewhat by data availability; the Application does not provide forecasted annual revenue from electric sales from MECL and Summerside Electric, and PEIEC appears to have never collected this information.¹⁶ Through the General Rate Application, we were able to obtain forecasted annual revenue from MECL.¹⁷

Table 6 shows our calculation of the proposed EE&C annual budgets as a percent of projected combined MECL and Summerside revenue. We estimated electric revenue for Summerside Electric using linear extrapolation from the historical data provided in PEIEC's response to Synapse IR-21 and have not adjusted for other factors. We find that the total EE&C budget as a percent of revenue starts at 1.2 percent in 2018/19, rises to 2 percent in 2019/20, and reaches 2.4 percent in the final year of the plan. On average, states in the United States spend 1.7 percent of total electric revenue on electric efficiency programs, according to the 2018 ACEEE scorecard analysis.¹⁸ This is in line with our estimation of total EE&C budgets as a percent of revenue, as presented in Table 6.

¹⁴ Application, p. 35.

¹⁵ U.S. Environmental Protection Agency. 2015. National Action Plan for Energy Efficiency. Available at https://www.epa.gov/sites/production/files/2015-08/documents/napee_chap6.pdf.

¹⁶ Response to Synapse IR-23.

¹⁷ MECL, 2018. General Rate Application, p. 155.

¹⁸ ACEEE, 2018 State Energy Efficiency Scorecard. Available at: <https://aceee.org/research-report/u1808>

Table 6 – Spending as a percent of revenue

Forecast	2018/19	2019/20	2020/21
MECL Total Electric Revenue Forecast (\$)	200,498,600	200,498,600	216,643,800
Estimated Summerside Total Electric Revenue Forecast (\$)	22,639,847	23,255,153	23,870,458
Total Electric Revenue (\$)	223,138,447	232,693,753	240,514,258
Planned Utility EE&C Funding (MECL and Summerside)	600,000	970,000	1,200,000
EE&C Budget (\$)	2,769,197	4,660,785	5,883,064
Utility Funding as a % of revenue	0.3%	0.4%	0.3%
EE&C Budget as a % of revenue	1.2%	2.0%	2.4%

Sources: MECL, 2018, “2019 General Rate Application,” p. 155; Synapse IR-21; SYN IR-01 Attachment 1, Summary Programs tab (Table: 2018 – 2020 Programs for ePEI), EE&C Filing p. 33.

Relative to overall EE&C spending, MECL and Summerside ratepayer contributions are much lower than utility spending in other jurisdictions because of financial support from the provincial and federal government. The total proposed utility funding is just 0.3 to 0.4 percent of projected total revenues for all Plan years. This suggests that costs are not the primary constraint on the portfolio for the term of the Plan, and that a more aggressive ramp-up of savings from 2019/20 to 2020/21 could be considered. We suggest that PEI increase this goal (i.e. for the third year) to be more in line with higher achieving states in the United States. In 2017, the top 15 states in the United States averaged a spending as a percent of electric revenue of 3.8 percent, with the top three states spending over 6.5 percent.¹⁹ Also, we recommend that Summerside develop a revenue forecast, preferably by rate class, to inform current and future EE&C efforts.

6.2. Cost-Effectiveness

Avoided costs are foundational to cost-effectiveness analysis of EE&C programs. Assumptions and methodologies for developing avoided costs can have a large impact on the bottom line for EE&C programs.

The Plan directly applies MECL’s avoided costs for cost-effectiveness testing. Yet, no information on MECL’s methodology for developing these avoided costs has been provided. To have confidence in the cost-effectiveness of the proposed portfolio, information on MECL’s assumptions and methodologies for developing its avoided costs must be provided.

Further, we note that Summerside’s avoided costs are not available.²⁰ For the Plan, PEIEC apparently uses the avoided costs provided by MECL as a proxy for Summerside avoided costs. It is unclear whether the application of MECL’s avoided costs to Summerside is reasonable.

If we assume that the MECL avoided costs are reasonable and that it is reasonable to apply them to Summerside, the proposal is cost-effective at the portfolio level. Program level cost-effectiveness is a

¹⁹ 2018 ACEEE Scorecard Report, p. 34.

²⁰ Response to Synapse IR-16.

secondary concern. All programs are cost-effective based on the Program Administrator Cost Test (PAC), which PEIEC recommends as the primary cost-effectiveness test.²¹ The results of the PAC and Total Resource Cost (TRC) tests are displayed in Table 7.²²

Based on the TRC Test, only one program is not cost-effective—the Home Insulation Rebates program—with a TRC ratio of 0.8. Nevertheless, this program is likely to provide benefits that are not reflected in this score. For one, the Home Insulation Rebates program will likely provide significant non-energy benefits (such as reduced arrearages and improved comfort), which have not been included in PEIEC’s analysis. Also, the results of the audit performed through the insulation program can be used to encourage participation in other programs. Thus, it appears to be reasonable to include the insulation program in the portfolio even with its low TRC score.

Table 7 – PAC and TRC results

2018/2019	Program Administrator Cost Test (PAC)	Total Resource Cost Test (TRC)
Residential Programs		
Energy Efficient Equipment Rebates	5.8	3.0
Home Insulation Rebates	4.5	0.8
Winter Warming	2.1	2.2
New Home Construction	3.1	1.2
Instant Energy Savings	4.9	2.4
Business Programs		
Business Energy Rebates	2.6	1.1
Business Energy Solutions	1.7	1.6
Custom Energy Solutions	N/A	N/A
Enabling Strategies		
Total	3.9	1.8

Source: SYN IR-01 Attachment 1, Plan Tables tab.

7. PLAN FOR APPORTIONING COSTS AND BENEFITS

7.1. Funding and Cost Recovery

The Plan calls for tapping into a mix of funding sources, including ratepayers (via the utilities), provincial funding, and federal funding. As shown in Table 8, the vast majority of funding (79 percent) would come from the provincial and federal governments. Ratepayers’ contribution toward EE&C costs is about 21 percent.

²¹ Application, p. 21.

²² Response to Synapse IR-1 Attachment 1, on the “Plan Tables” tab.

Table 8 – EE&C funding sources

Funding source	Year 1	Year 2	Year 3	Total	Percent of Total
Maritime and Summerside	\$600,000	\$970,000	\$1,200,000	\$2,770,000	21%
Province of PEI	\$1,149,500	\$1,916,000	\$2,431,500	\$5,497,000	41%
Federal Government	\$1,019,500	\$1,774,000	\$2,251,500	\$5,045,000	38%
Total Funding	\$2,769,000	\$4,660,000	\$5,883,000	\$13,312,000	100%

Source: Application, p. 33.

According to responses to discovery, there appears to be adequate assurance that the federal funding will continue throughout the term of the Plan, and beyond. Federal funding is available through March 31, 2022.²³ Provincial funding is required to obtain the federal funding. Provincial funding is included in PEI's operating budget.²⁴ Because cutting provincial funding would jeopardize federal funding, it is unlikely that the province would cut funding for the program. We note that the long-term viability of the programs will depend on ongoing funding sources. An abrupt shift to a greater percentage of expenses being recovered from ratepayers at the end of the Plan term could lead to a noticeable increase in rates.

To recover the ratepayers' portion of costs of the EE&C programs, PEIEC recommends recovery through a separate line item on electricity bills.²⁵ We recommend against this approach. Energy efficiency is an electricity resource, just as generation, transmission, and distribution facilities are electricity resources. There is no need to separately present the costs for energy efficiency resources to customers, any more than there is a need to break out all the costs necessary to pay for generation, transmission, or distribution. Further, presenting the energy efficiency charge separately on customers' bills can be misleading. This is because the charge would include the costs of the efficiency resources but it would provide no indication of the benefits that they offer in terms of reduced generation, transmission, and distribution costs.

PEIEC recommends that program costs be expensed as incurred (rather than amortized over several years).²⁶ We agree with this proposal, especially since the ratepayer contribution is relatively small over the term of the Plan. Over the term of the Plan, maximum rate impacts for the residential sector are roughly \$0.0007 per kilowatt hour (kWh) and \$0.0005 per kWh for the commercial and industrial sectors.^{27,28} That equates to 0.5 percent and 0.4 percent of 2018 residential and commercial energy

²³ Response to Synapse IR-20.

²⁴ Response to Synapse IR-20.

²⁵ Application, p. 23.

²⁶ Application, p. 23.

²⁷ Response to IRAC IR-08.

²⁸ This estimate does not account for the effect that avoided costs have on rates, and therefore overstates the long-term rate impacts.

rates.²⁹ Over the lifetime of the measures, impacts on both residential and commercial bills are favorable compared to a scenario without EE&C. On average, residential bills are reduced on an annual basis with the EE&C Plan. For the commercial sector, higher average bills are projected for only one year—2018/19.³⁰

PEIEC also recommends tracking expenditures and electricity savings separately by company and by rate class. As noted in the Application, allocating and recovering costs by rate class may lead to significant variations in the charge from year-to-year.³¹ Thus, PEIEC recommends that riders be set and held for the three-year term and that there be a true-up by rate class at the reset of the EE&C rate rider. This appears to be a cumbersome process, which would increase administrative costs. However, in the interest of increasing transparency, we do not object to this proposal.

Whether the allocation of costs between MECL and Summerside ratepayers is reasonable is not totally clear. PEIEC calls for the City of Summerside to contribute approximately 10 percent of the recoverable costs and for MECL to contribute 90 percent. This allocation of costs is based on sales of the respective utilities.³² However, as noted previously, the load forecasts are not well documented. Further, PEIEC does not appear to have a plan for monitoring savings and costs by utility to ensure that customers get benefits commensurate with their contributions. The legislation requires that the EE&C Plan contain a plan for apportioning costs and benefits between the public utilities and their customers, and thus appears to require an accounting of costs and benefits by utility. We recommend that PEIEC track these.

8. OTHER ISSUES

The issues described below are not specifically required based on our reading of the Act; however, they are important considerations for developing effective, sustainable EE&C programs.

8.1. Other Fuels

Non-electric fuels are not included in the EE&C Plan. Within the Plan, there are no programs targeting non-electric fuels and any incidental fuel savings from the electric programs will not be tracked. In response to discovery, PEIEC states that ePEI has other conservation sources for non-electric fuel, but they are not considered to be part of this Plan.³³

²⁹ Response to Synapse IR-4.

³⁰ Response to IRAC IR-08.

³¹ Application, p. 24.

³² Response to Synapse IR-20.

³³ PEIEC's response to Synapse IR-14.

We disagree with this approach. As stated in the Application, the government of PEI set forth a 10-Year Energy Strategy which includes a goal of achieving 2 percent of electrical and non-electrical energy savings by 2020.³⁴ PEIEC has claimed responsibility for achieving this metric with the help of ePEI through programs separate from the EE&C Plan.³⁵ Separating these conservation efforts may result in administrative and marketing redundancies, increased customer confusion, untracked savings, and even lost opportunities for cost-effective savings, especially if the programs targeting different fuels are poorly coordinated. Non-electric conservation measures often produce electric savings, and vice versa, and a combined tracking system would help PEIEC work toward the singular goal presented in the Energy Strategy. Further, given that PEIEC has reported the results of the TRC benefit-cost test, other fuel savings should be included in this analysis.

Fuel-neutral programs would be particularly beneficial in PEI, where winter energy use is highly burdened by inefficient electric and non-electric heating systems. Presenting customers with the option to switch from a non-electric fuel to efficient products like cold climate air-source heat pumps would allow more customers to take advantage of conservation initiatives.

The stipulation that the EE&C Plan only allows electric conservation measures limits the potential of the proposed programs.

8.2. Peak Demand

Peak demand reductions are not targeted by the Plan, even though peak load is projected to grow for both MECL and Summerside. According to MECL’s 2017 Integrated Resource Plan (IRP), peak load has grown in recent years and is projected to continue to increase over the term of the EE&C Plan.³⁶

Table 9. MECL capacity requirement (MW)

	Actual		Forecast					
	2015	2016	2017	2018	2019	2020	2021	2022
- MECL peak load	234	237	241	244	246	249	251	254
- less interruptible load	9	6	14	14	14	14	14	14
- plus 15% planning reserve	34	35	34	34	35	35	36	36
Total	259	266	261	264	267	270	273	276

Source: MECL IRP, p. 29.

³⁴ Application, p. 8.

³⁵ Response to Synapse IR-36.

³⁶ IRP p. 29, provided in the Response to Synapse IR-02.

Recent and anticipated load growth may stem from the high rate (50 percent) of electric heating installations in new residential construction and the significant numbers of conversions from oil to electric for existing buildings (5 percent in 2012).³⁷ MECL notes that “[a]necdotal evidence from local electrical and plumbing contractors suggests this trend is continuing. Maritime Electric expects high year-over-year energy and peak growth to continue at higher than average rates in both short- and long-term.”³⁸

In its Plan, PEIEC states that “[m]ore demand response measures would be a valuable addition to programming by ePEI when time of use rates are implemented, and this may be pursued through avenues separate from this EE&C Plan.”³⁹ However, there is no guarantee that time-of-use rates will be implemented, no less by both utilities. Nor is there a guarantee that these rates would be designed to effectively reduce the growth in peak electricity use. The MECL General Rate Application (GRA) does not have an active proposal for time-varying rates, nor does such a proposal appear to be imminent. Further, demand response measures do not need to be combined with time-of-use rates to benefit the system. For example, direct load control measures have been used without time-of-use rates in numerous jurisdictions for many years in North America. In short, we recommend that PEIEC place a much higher priority on programs targeting measures that reduce peak load growth.

8.3. Distribution of Benefits

PEIEC’s proposed Plan recommends an initial focus on residential programs. The reasoning for this focus is described as follows:

While the focus of efficiencyPEI’s programs to date has been on the residential sector, this Plan incorporates programs that also target the business sector. Recent electricity use forecasts from MECL indicate that residential electricity use is expected to grow at a pace slightly faster than that of business customers. A recent MECL load forecast provided in October 2017 indicates that by 2022, residential use will account for 48 percent of electricity sales. Business use will account for just under 52 percent, and an estimated 0.5 percent will come from street lighting and unmetered accounts. Similar trends were indicated in the Provincial Energy Strategy 2016/17, which projected that by 2026, 48 percent of PEI’s electricity will be used by residential customers, 45 percent by businesses, and 7 percent by “other”... The EE&C Plan considers these forecasts and includes programs that help both sectors achieve significant energy savings. Recognizing that new programs for businesses will take time to ramp up, annual targets are higher

³⁷ MECL’s PEI Transmission Plan, provided in the Response to Synapse IR-02.

³⁸ MECL’s PEI Transmission Plan, provided in the Response to Synapse IR-02.

³⁹ Application, p. 6.

for the residential sector at the beginning of the 3-year Plan, with energy savings from participating businesses increasing by year 3.⁴⁰

While it may be easier to achieve higher savings from the residential programs in the beginning of the Plan, we note that residential sales are about half of MECL load but would achieve a significantly higher portion of benefits than businesses under the proposed Plan. This may increase the cost of the programs, in that the cost of savings from residential programs is generally higher than for business savings. More importantly, this allocation is not equitable. The energy efficiency budgets should be allocated proportionately across the residential and business sectors based on sales from each sector, as soon as possible. That is, as the business programs ramp up, the budget allocation should be shifted toward the business programs to a greater extent than PEIEC has proposed. PEIEC should seek to create a balanced portfolio that provides benefits to all ratepayers, so that the programs are sustainable and robust in the face of potential future changes in external funding.

8.4. Ratemaking and Utility Disincentives

When electricity rates are designed to recover utility costs in proportion to the amount of electricity sales, utilities have an incentive to ensure that sales increase. This incentive is called the throughput incentive. Energy efficiency programs reduce retail electricity sales, thereby also reducing the revenues earned by utilities. The reduction in revenue creates a disincentive for utilities to support energy efficiency.

There are a number of ways that the utility can undermine such programs. For example, utilities collect and maintain data that can greatly facilitate targeting, administration, and assessment of EE&C programs. In cases where programs are administered by a third party, the extent to which the utility shares these data with the program administrator can greatly affect the success of the EE&C programs.

To address these problems, many jurisdictions introduce some form of decoupling. Decoupling allows a utility to recover fixed revenue requirements through an annual rate adjustment mechanism and breaks the link between revenue and sales, thereby insulating the utility from changes in sales due to factors such as improvements in energy efficiency, changes in weather, and economic development. Decoupling is typically achieved with adjustments to ratemaking, where the primary element is that actual revenues are reconciled with forecast/allowed revenues.

PEIEC is recommending that Maritime Electric submit multi-year revenue requirement plans using forecast annual loads that have been adjusted for reductions resulting from energy efficiency. The language from the Plan is as follows:

EE&C will result in lost sales for Maritime Electric compared to what they would have realized absent EE&C activity. If electricity savings from EE&C are not factored into MECL's projections for load and energy sales, MECL will have a shortfall from their

⁴⁰ Application, p. 37.

forecast revenue. While EE&C avoids the costs associated with purchased fuel or electricity imports to the MECL system for the electricity saved, MECL will also lose the contribution to its fixed costs that this saved electricity would otherwise make. This may not be material for a single year, but could matter with multi-year rate making where rates are fixed until a new revenue requirement case is adjudicated.

Furthermore, MECL is likely to have a very different attitude towards EE&C if they can recover their lost contribution to fixed costs, rather than become a partial driver for a future rate case. The fact that the Program Administrator is independent from MECL is another factor to consider in managing lost contribution to fixed costs.

Alternatively, even with a rate case covering multiple years, if MECL can include the projected yearly effects of EE&C in its forecast for annual electricity kilowatt-hour (kWh) sales, annual rates can be set keeping MECL's annual revenue whole, with no loss of contribution to fixed costs. This is a likely scenario considering the practices with recent MECL multi-year filings and the Commission approvals. As such, **efficiencyPEI recommends that Maritime Electric continue to submit for regulatory approval multi-year revenue requirement plans based on forecast annual loads, but with MECL's annual loads adjusted for reductions resulting from EE&C.** With these adjustments in forecast annual electricity kWh sales resulting from EE&C, there will be no loss of fixed costs; these will already be accounted for with the adjusted loads in the annual rates proposed by the electric utility.⁴¹

As clarified in response to discovery, PEIEC is not recommending that MECL's revenue requirements be reconciled based on actual sales.⁴² Under this approach, an increase in sales produces an increase in revenue at the rate set during the rate case based on forecasted sales. Thus, the utility still has an incentive to increase sales, at least until the next rate case. Said another way, the utility has an interest in limiting programs and developments that may decrease sales, such as EE&C.

In PEI, ePEI acts as an independent third-party administrator of EE&C. Under this model, an independent entity, rather than the utility, has direct control and responsibility for implementation and administration of the programs. This model helps to address the throughput incentive problem by removing the programs from the utility's direct control. However, the utility still has a disincentive to support EE&C and, importantly, still has the means to undermine such programs—for example, by withholding information that would prove helpful for the administration and implementation of the programs.

The throughput issue could be remedied by modifying the current approach by reconciling forecast and actual revenues at the end of each year. We recommend reconciling MECL's forecast revenues with actual revenues on an annual basis. While utility ratemaking is likely outside of the scope of the EE&C

⁴¹ Application, pp. 25-26.

⁴² Response to Synapse IR-48.

proceeding, this is an important issue for consideration in a relevant proceeding (e.g., the ongoing MECL rate case).

We note that annual revenue reconciliation will be even more important for other distributed energy resources (DERs) such as rooftop solar PV, which are not covered by this Plan.⁴³ As with EE&C, there are many ways a utility could deter implementation of DERs (e.g., through onerous interconnection requirements, long interconnection queues, and unfavorable net metering rates). And although EE&C has the benefit of an independent, third-party program administrator in PEI, other DERs do not. While uptake in DERs has been low to date, annual reconciliation will become even more important over time as DERs become more prevalent.⁴⁴

9. FINDINGS AND RECOMMENDATIONS

9.1. Findings

Based on our review, we make the following findings.

Consistency of Term with Industry Standards

- The term of the filed EE&C Plan, three years, is reasonably consistent with industry standards.

Reasonableness of Projected Savings and Participation

- Information on the load forecasts for both companies has not been provided or is not available.
- Relative to sales, savings under the Plan are expected to increase substantially in the first year but level out by the third year.
- The units, assumptions, and methodology for projecting and tracking participation have not been clearly defined. This prohibits assessment of participation rates for a customer class.

⁴³ To the extent that a reduction in sales only limits imports from New Brunswick, as noted in MECL's response to Synapse IR-49, this incentive may be small over the short run. However, over the long term (the timeframe within which import contracts are renegotiated), the incentive to increase sales could come more into play.

⁴⁴ MECL forecasts a 0.25 gigawatt hour annual increase in energy received from net metered customers. MECL considers the change in customer load due to direct use of energy from new solar PV installations to be small enough that it did not make adjustments to the load forecast for DERs (MECL Response to Synapse IR-49).

- Some program details (e.g., operational procedures for tracking costs and savings) have yet to be determined.
- While comprehensive evaluations may prove difficult for a new program administrator to manage as programs are newly launched, it is important to (a) set up processes and practices early on to shed light on what is working well and what is not, (b) implement data systems that will support future evaluation, and (c) lay the foundation for the next EE&C plan.

Estimate of Financial Costs and Benefits to Customers

- The total proposed EE&C budget as a percent of electric revenue is in line with average spending in the United States.
- Because of the financial support from the provincial and federal governments, total MECL and Summerside ratepayer contributions as a percent of revenue (0.3 to 0.4 percent) is much lower than utility spending in other jurisdictions.
- Information on the methodology for developing MECL's avoided costs has not been provided, and no avoided costs are available for Summerside.
- If we assume that the MECL avoided costs are reasonable and that it is reasonable to apply them to Summerside, the proposal is cost-effective at the portfolio level. The insulation program is not cost-effective based on the TRC test. But given that this type of program tends to have a substantial non-energy benefits, it is reasonable to approve the program.
- All programs are cost-effective based on the PAC, which PEIEC recommends as the primary cost-effectiveness test.

Plan for Apportioning Costs and Benefits

- Separate tracking of EE&C expenditures and savings by rate class would be cumbersome but would provide transparency.
- Ratepayer contribution and rate impacts are relatively small over the term of the Plan, while government sources provide a large share of the funds. An abrupt shift to a greater percentage of expenses being recovered from ratepayers after the end of the current Plan could lead to a noticeable increase in rates.

Other Findings

- The proposed Plan provides more savings from residential programs than business programs, especially in the first year. This contrasts to sales, which are evenly split between the residential and business sectors.
- The portfolio was not designed to target peak load, even though peak is projected to grow.

- Non-electric fuels are not included in the EE&C Plan, despite the province’s goal for non-electric fuel savings.
- Without annual reconciliation of forecast revenues to actual, the proposed treatment of forecast savings in MECL’s ratemaking would disincentivize the utility to support EE&C.

9.2. Recommendations

Our recommendations are as follows.

Consistency of Term with Industry Standards

- PEIEC should proceed with the three-year plan term. However, as discussed below, we recommend that PEIEC should make modifications to the second and third plan-years.
- The types and formats of information to be reported should be discussed with stakeholders and established early on, so that consistently defined results can be monitored over time.

Reasonableness of Projected Savings and Participation

- PEIEC should consider increasing savings as a percent of sales in the third year.
- PEIEC should put in place processes and data collection mechanisms to measure, track, and analyze participation.
- An ongoing advisory group should be established to address issues with implementation. PEIEC should provide a time table for establishing this stakeholder group.
- Evaluation processes and practices should be established early on.
- Where applicable, PEIC should consider ways to obtain and examine program performance on a frequent schedule (e.g., quarterly or monthly) in order to identify areas for improvement in mid-course.
- PEIEC should consider ways to reduce the burden of evaluation and present options to the stakeholder group. These options should include conducting a high-level impact evaluation study for all of the programs annually or taking a staged approach to implementing impact evaluation studies by first focusing on the programs with the most projected savings.
- Process evaluation should be done over the three-year term.
- The DSM Potential Study should be conducted in the near future to lay the foundation for the next EE&C Plan.

Estimate of Financial Costs and Benefits to Customers

- PEIEC should consider increasing its goal for the third year to be more in line with higher achieving jurisdictions elsewhere.
- Summerside should provide avoided costs, and MECL should provide a description of its avoided cost data, assumptions, and methodologies.
- Summerside should develop a revenue forecast, preferably by rate class.

Plan for Apportioning Costs and Benefits

- We do not recommend recovering the ratepayer portion of EE&C costs through a separate line item on electricity bills.
- We recommend expensing EE&C costs as incurred as proposed by PEIEC, rather than amortizing them, considering the relatively small ratepayer contribution and rate impacts.
- A plan for tracking costs and benefits by utility and sector should be developed.

Other Recommendations

- The portfolio should place a much higher priority on programs targeting measures that reduce peak load growth, and PEIEC should consider offering programs that target more than one fuel. PEIEC should revise the EE&C plan for the second and third years to better incorporate peak load and other fuel considerations.
- The energy efficiency budgets should be allocated proportionately across residential and business sectors based on sales from each sector, as soon as possible over the term of the Plan.
- We recommend reconciling MECL's forecast revenues with actual revenues on an annual basis.