

WHENEVER. WHEREVER.
We'll be there.



April 2, 2020

Board of Commissioners
of Public Utilities
P.O. Box 21040
120 Torbay Road
St. John's, NL A1A 5B2

Attention: G. Cheryl Blundon
Director of Corporate Services
and Board Secretary

Ladies & Gentlemen:

In accordance with the Board's March 17, 2020 notice regarding the activation of its Business Continuity Plan to address the COVID-19 pandemic, Newfoundland Power is providing its *2019 Conservation and Demand Management Report* in electronic format only.

In Order No. P.U. 7 (1996-97), the Board ordered, in effect, that Newfoundland Power file annual progress reports on its demand side management activities, including conservation. This report is filed in compliance with Order No. P.U. 7 (1996-97).

If you have any questions, please do not hesitate to call me at the number listed below.

Yours very truly,

A handwritten signature in blue ink, appearing to read "Gerard M. Hayes".

Gerard M. Hayes
Senior Counsel

Enclosures

cc. Shirley Walsh
Newfoundland and Labrador Hydro

Dennis Browne, QC
Browne Fitzgerald Morgan & Avis

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2019 Conservation and Demand Management Report

April 2, 2020

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1.0 Introduction

In Order No. P.U. 7 (1996-97), the Newfoundland and Labrador Board of Commissioners of Public Utilities (the “Board”) ordered, in effect, that Newfoundland Power Inc. (“Newfoundland Power” or the “Company”) file annual progress reports on its demand side management activities, including conservation.

The report provides an update on the Company’s ongoing conservation and demand management (“CDM”) activities, and addresses the process for review of those activities.

Newfoundland Power and Newfoundland and Labrador Hydro (“Hydro”) offer a variety of information and financial supports to customers to help them manage their energy usage. Since 2009, the Company and Hydro (the “Utilities”) have offered customer energy conservation programs on a joint and coordinated basis under the takeCHARGE brand.

In 2015, the Utilities finalized the joint *Five-Year Conservation Plan: 2016-2020* (the “2016 Plan”), which builds on the Utilities’ experience and continues to reflect the principles underlying previous joint conservation plans.

In 2019, the Utilities continued to implement the 2016 Plan. Activities completed in 2019 included: (i) developing new educational resources for businesses; (ii) extending the takeCHARGE Insulation and Thermostat Rebate Programs to oil heat customers in partnership with the Government of Newfoundland and Labrador and the Government of Canada; (iii) continuing delivery of the Instant Rebates program; and (iv) launching a heat pump load research study.

The Utilities also commissioned an updated Conservation Potential Study (“CPS”) for Newfoundland and Labrador in 2019.¹ The CPS identified cost-effective energy and demand reduction measures and quantified achievable energy savings potential by sector and end-use. Opportunities for beneficial electrification, including fuel switching in areas such as transportation and heating, were also explored.

While joint utility conservation initiatives under the takeCHARGE brand are available throughout the province, this report focuses on Newfoundland Power’s programs and activities.

2.0 CDM Programs

Newfoundland Power’s CDM program portfolio provides residential and commercial customers with incentives that result in quantifiable energy and demand savings. In 2019, the Company’s customer energy conservation programs achieved 43.6 GWh in energy savings.

¹ The 2019 CPS was conducted by Dunsky Energy Consulting. Dunsky Energy Consulting is a Canadian based consultancy with extensive experience conducting conservation potential studies in Canada. The results of the 2019 CPS were submitted to the Board on August 12, 2019 in response to Information Request PUB-NP-104 as part of the Rate Mitigation Options and Impacts Reference. They have been reviewed by the Board’s consultant on energy efficiency and electrification, Synapse Energy Economics, Inc.

Appendix A provides a detailed description of the individual residential and commercial takeCHARGE programs.

2.1 Conservation Programs

Programs Offered

In 2019, Newfoundland Power offered five residential customer energy conservation programs. The residential customer energy conservation programs promote: (i) insulation; (ii) high performance thermostats; (iii) heat recovery ventilators (“HRVs”); (iv) various small technologies; and (v) low-cost behavioural changes through the Benchmarking Program.² While these programs focus on reducing electrical energy consumption, they also provide reductions in peak demand.

The Company continues to offer the Business Efficiency Program (“BEP”) for commercial customers. There are three components of the BEP: (i) prescriptive rebates; (ii) custom energy rebates; and (iii) custom demand rebates. Prescriptive rebates provide money back when customers purchase and install eligible products. This component operates similarly to some of the residential takeCHARGE programs. Custom energy rebates involve takeCHARGE consulting with the customer on an energy saving project that is customized to individual customer circumstances. Incentives are provided on an individualized basis for projects that are cost-effective from both the customer and utility perspectives. Rebates are paid on the energy savings the customer achieves in the first year of the project. The custom demand rebate operates similarly to the custom energy rebate component, except the rebate is determined based on the peak demand reduction the customer achieves after completing the project.

² Benchmarking involves using social norms to encourage friendly competition to reduce electricity consumption by comparing customers’ energy usage with homes having similar attributes.

Program Results

Table 1 shows customer participation in the takeCHARGE programs for 2019, as well as the estimated energy and peak demand savings achieved by new participants.³

Table 1
takeCHARGE Program Participation and Savings
(2019)

	Customer Participation	Estimated Annual Energy Savings (MWh)	Estimated Peak Demand Savings (kW)
<u>Residential Programs</u>			
Insulation Rebate Program	1,742	5,325	2,183
Thermostat Rebate Program	2,921	3,157	116 ⁴
HRV Rebate Program	430	244	76
Instant Rebates Program	N/A ⁵	10,428	1,947
Benchmarking Program	59,017	16,025	3,237
<u>Commercial Programs</u>			
Business Efficiency Program	330	8,375	961
<u>Total All Programs</u>	64,440	43,554	8,520

The Thermostat Rebate Program had the highest number of bill credit rebate program participants in 2019, representing approximately 54% of total participation for bill credit rebate programs.

The Benchmarking Program resulted in the highest contribution to energy savings in 2019, comprising approximately 37% of total energy savings.

Appendix A provides the details of customer participation, and energy and demand savings results for each of the takeCHARGE programs for 2019 and over the life of the programs.

³ Unless otherwise noted, estimated savings indicated in this report are provided on an annualized basis. Actual savings during the year of participation will be less, since this depends on the actual timing of installation. Due to the nature of customer behavioural changes, benchmarking savings are assumed for one year only.

⁴ The Company stopped claiming demand savings for programmable thermostats in 2017, as many programmed thermostats are set to come on during peak periods. Because non-programmable electronic thermostats do provide peak demand savings, the Company has reconsidered this approach. Accordingly, such savings are reported for 2019 and will continue to be reported in future.

⁵ The Instant Rebates Program resulted in 391,216 units purchased in 2019; however, the number of customer participants is not available.

2.2 Demand Management

Newfoundland Power's continued focus on demand management is reflected in the Curtailable Service Option (the "CSO") and the custom demand rebates offered as part of the BEP.

Curtailable Service Option

Twenty-three General Service customers participated in the CSO during the 2018-2019 winter season, providing average aggregate load reduction of approximately 10.3 MW. This load reduction is exercised to reduce demand on the electrical system when generation reserves fall below normal operating levels.⁶

Business Efficiency Program

A demand incentive is available to commercial customers who implement individualized demand reduction measures that are economically viable and provide measurable demand reduction during peak times.⁷

2.3 Program Development, Evaluation and Planning

Program Development

takeCHARGE continuously reviews its programs to ensure they provide relevant energy conservation initiatives for customers. Upon review, the Instant Rebates Program was extended into 2019.

Instant Rebates Program

The Instant Rebates Program was originally scheduled to conclude in 2018. However, market research commissioned in 2018 showed significant room for growth in the residential LED market, with approximately 3.5 million sockets that could be converted to more efficient lighting.

Spring and fall campaigns completed in 2019 provided instant, at-the-cash rebates on a number of energy-saving technologies, including LED light bulbs and weatherstripping.

⁶ Detailed results for the 2018-2019 winter season were submitted to the Board in the 2019 Curtailable Service Option Report dated April 25, 2019.

⁷ Under the BEP, customers can receive incentives for demand reduction based on the amount of demand they are able to reduce during peak times. Incentives are based on project demand savings at \$100 per kW per month over the December to March period. Demand savings projects require a minimum of 50 kW savings and must be sustainable over 5 years.

Program Evaluation

In 2019, several components of the takeCHARGE programs were evaluated. This included evaluation of the process and effectiveness of program delivery and an evaluation of energy savings.

Benchmarking Program

This program promotes customer behavioural changes to improve energy efficiency. Benchmarking involves the use of social norms to encourage friendly competition to reduce electricity consumption. 2019 evaluation results showed high levels of participant engagement with the program. Approximately 93% of users reported that they read their Home Energy Reports and found the most value in the comparison to similar homes and the year-over-year comparison in their energy usage.

Instant Rebates Program

An assessment was performed after the 2019 fall campaign to determine the influence of the Instant Rebates Program on LED sales in the province. An understanding of the extent of free ridership and spillover contributes to the assessment of the value of the program.⁸ The study showed that, while the number of customers who would have purchased an LED bulb without a rebate is growing (38% free ridership), retailers indicate that the campaign and the awareness it brings has had a high influence on overall LED bulb sales in the province (27% spillover).

Research

A 2019 takeCHARGE marketing survey was conducted by MQO Research. This independent research demonstrates the impact of takeCHARGE marketing campaigns on customers' energy usage. Overall, 53% of householders who recalled seeing or hearing something related to the takeCHARGE program made changes to try to reduce their electricity usage.⁹

Respondents to the 2019 takeCHARGE marketing survey were asked about their interest in buying an electric vehicle. Overall, 25% said they were very likely or somewhat likely to consider an electric vehicle in the next five years. This is an increase from 17% in 2018. Of respondents who said they were likely to buy an electric vehicle, 28% would buy an all-electric vehicle, while 58% would buy a plug-in hybrid.

Ductless Mini-Split Heat Pump Research

The number of residential heat pump installations increased by approximately 57% in 2018. As a result, Newfoundland Power began an evaluation of ductless mini-split heat pumps ("MSHP")

⁸ This assessment was conducted by Econoler, an independent program evaluator. Free ridership refers to an estimate of participants who would have chosen the more efficient product without the program, and spillover refers to the estimate of participants who did not participate in the program, but purchased the more efficient product because of the influence of the program.

⁹ 2019 Marketing Survey conducted by MQO Research.

in 2019. The objective of the heat pump load research is to understand the impact that increasing the penetration of heat pumps will have on the Island Interconnected System demand and peak load requirements. The results of this study will inform future CDM program design, customer education and system load forecasts.

Newfoundland Power has partnered with Ecofitt to implement and deliver the study. Econoler will independently evaluate the results. At the end of 2019, all participants for both the experimental group (130 households) and the control group (130 households) had been selected and had the appropriate monitoring in place. The study will run for two heating seasons and one cooling season. The results will be compiled after the 2021 winter heating season has ended.

Program Economic Evaluation

As part of program planning and monitoring, Newfoundland Power regularly performs economic and energy savings evaluations of its programs.¹⁰ Inputs to the economic evaluation include information provided by program participants on rebate applications. This information includes technical data, such as the R-value of installed insulation, the efficiency rating of an HRV, and the type of heating. Analysis of this data allows the Company to estimate a program's energy and peak demand savings results, which are required for industry standard cost-benefit tests.

The Island Interconnected System continues to undergo significant change and future marginal costs of electricity remain uncertain. The province is now connected to the North American grid through the Maritime Link. Although the schedule is currently uncertain, the Labrador Island Link and Muskrat Falls generating station are forecast to be in service in the near term.

Marginal cost estimates from Hydro's *2018 Marginal Cost Update* were used in the completion of the CPS. These estimates are being evaluated by Hydro on an ongoing basis. Continued monitoring of marginal energy and capacity costs will ensure accurate assessment of the Utilities' CDM and electrification efforts into the future.

One measure of cost-effectiveness for conservation programs is the levelized utility cost. The levelized utility cost represents the economic cost to the utility (per kWh) to generate energy savings. For 2019, the levelized utility cost of Newfoundland Power's energy conservation programming was 2.6 ¢/kWh.¹¹ This figure is lower than comparable estimates to supply energy during 2019. The marginal cost of energy during 2019 is estimated to have been 14.9¢/kWh based on production at the Holyrood thermal generating plant.¹² These results indicate the Company's programs have achieved energy savings at a lower cost than alternate supply, effectively reducing overall electricity costs.

¹⁰ The costs and benefits of the takeCHARGE programs are analyzed from the perspective of participants, the utility, non-participants and total resources.

¹¹ The levelized utility cost considers only utility program costs (i.e. program development, marketing, incentives and administrative costs), not customer costs.

¹² The price of fuel at the Holyrood thermal generating plant was \$91.82/bbl in 2019, with 618 kWh produced per barrel. The cost of production at the plant is estimated to be about 14.9 ¢/kWh based on calculated Holyrood energy costs provided by Hydro in February 2020.

The Company measures the Total Resource Cost (“TRC”) and Program Administrator Cost (“PAC”) of its programs based upon available information on the marginal cost of energy and capacity. These tests were conducted using the latest marginal cost update provided by Hydro in April 2019.

Appendix A provides the levelized utility cost for each of the takeCHARGE programs for 2019 and over the life of the program to date, as well as the 2019 TRC and PAC results for each program.

Program Planning

Conservation Potential Study

An updated study of CDM potential in the province was completed in 2019. This CPS identified the potential for electrical energy and demand savings by sector for the 2020-2034 period. It also separately identified energy and demand savings potential for the Island Interconnected, Labrador Interconnected and Isolated Diesel systems.

The CPS essentially provides a framework, consistent with current North American practices, within which to assess conservation programming. The findings enable the Utilities to focus on cost-effective technologies and begin assessment of market characteristics to guide program development. Electrical system marginal costs of supply were used in the CPS to screen the economic viability of more efficient technologies.

The CPS identified opportunities for additional demand management potential, for which further study is required. This work is currently being undertaken by Dunsky Energy Consulting.

In addition, the CPS also identified opportunities for beneficial electrification, including fuel switching for heating and hot water supply, and adoption of electric vehicles.

3.0 Energy Conservation Promotion and Education

Newfoundland Power continued its customer education and conservation awareness activities in 2019. These activities primarily consisted of promotion of takeCHARGE customer rebate programs and energy efficiency education through mass media marketing, community outreach, school programming, trade ally development and partnerships.

3.1 Media

Throughout 2019, broadcast, print, online and social media advertising created awareness for the takeCHARGE residential and business customer rebate programs.

Eleven takeCHARGE newsletters were included with electricity bills throughout the year. These newsletters included energy-saving tips for homeowners and promoted participation in the rebate programs.

New advertising campaigns were launched in 2019, continuing to expand awareness for the Thermostat Rebate Program, Insulation Rebate Program and BEP. The residential program advertisement built upon existing brand recognition of the “energy-wasting Scallywags” to highlight the benefits of insulation and thermostat upgrades. The BEP advertising continued to feature participant testimonials. These testimonials showcase the benefits of completed energy efficiency upgrades, including available incentives.

Newfoundland Power expanded its energy efficiency education for businesses in 2019. Website resources help businesses to better understand how their facilities use electricity and suggest low-cost and no-cost ways to save energy. Energy efficiency advice is provided for all types and sizes of businesses, and includes ideas that specifically appeal to small businesses and renters. Ideas on how to get employees engaged in conservation are also provided.

Customers continued to visit TakeChargeNL.ca for a range of energy efficiency advice and rebate program details. The website received over 375,000 visits in 2019. Customer interest in heat pumps remained high, with the heat pump education page being the second most visited content page on the website in 2019.

3.2 Community Outreach

The takeCHARGE team raises awareness of energy conservation and customer rebate programs through a variety of outreach activities. The Company participated in close to 300 community outreach events in 2019. Energy efficiency information was provided to diverse groups throughout the province, including retailers, senior citizens, associations and trade allies.

During its 11th annual Energy Efficiency Week in October, takeCHARGE held island-wide retailer events to provide customers with the opportunity to ask questions of energy experts and save on energy-efficient products.

The percentage of households with LED lighting continues to grow. However, research shows that customers with lower incomes are less likely to have an LED bulb in their household. Only 61% of households with incomes of less than \$40,000 have an LED bulb. To increase access to LEDs for lower-income households, takeCHARGE continued its *Make the Switch* initiative in 2019. Through a proposal-based process, LED bulbs were supplied to non-profit and community organizations. Approximately 4,500 bulbs were provided to groups such as Habitat for Humanity, Stella’s Circle and the Newfoundland and Labrador 50+ Federation.

The *takeCHARGE of Your Town Challenge* received 25 proposals from municipalities for energy-efficient upgrades within their communities. The Town of New-Wes-Valley was awarded \$7,500 to replace the 400-watt metal halide fixtures in their main recreation facility, the Beothic Arena, with LED fixtures.

Newfoundland Power educated students on energy conservation through the *takeCHARGE K-I-C (Kids in Charge) Start* school program. The program offers in-class presentations for Kindergarten to Grade 6 students and contests that promote energy-efficient behaviours for

primary, elementary and high school students. In 2019, over 3,100 students in 37 schools received presentations on energy efficiency.

takeCHARGE continued its outreach to customers in 2019, while strengthening partnerships in the community. Newfoundland Power hosted customer energy forums in St. John's, Mount Pearl and Bonavista. These forums provide customers with an opportunity to ask questions about their energy use and learn about available rebates and programs.

3.3 Trade Allies and Partners

Professional installers, contractors and electricians provide professional services and knowledge to customers that are interested in energy efficient products. takeCHARGE works with these trade allies to influence purchase decisions and drive participation, especially in the retrofit market. Retail partners are also an integral trade ally. Information about takeCHARGE programs and energy-efficient products displayed in their stores and flyers, and various special promotional events throughout the year, serve to enhance customer education.

In addition to three installer newsletters, which keep trade allies and partners up to date on programs, Newfoundland Power also reached out directly to its network of HRV, insulation and heat pump installers to ensure they have the most up-to-date information and tools to best serve their customers.

takeCHARGE participated in several commercial tradeshow and conferences across the island, including the Newfoundland and Labrador Construction Association Trade Show, the Municipalities Newfoundland and Labrador Conference and the Municipal Symposium. takeCHARGE also presented its CPS findings at the Newfoundland and Labrador Environmental Industry Association's New Leaf conference in October 2019.

The Company continued to partner with the Government of Newfoundland and Labrador in delivering the Energy Efficiency Loan Program ("EELP"). Through EELP, reduced rate financing is available for insulation, heat pumps and home energy assessments to assist customers with the financial barriers to making their homes more energy efficient. This program is scheduled to end on March 31, 2020.

The Government of Canada's *Low Carbon Economy Leadership Fund (LCELF)* aims to reduce greenhouse gas emissions. Through the LCELF and provincial funding, takeCHARGE extended its Insulation Rebate Program and Thermostat Rebate Program to oil heat customers.

The second annual takeCHARGE *Luminary Awards* were held in 2019. The awards provide an opportunity to recognize outstanding work in the area of energy efficiency achieved by customers and partners. Individuals, organizations and communities were recognized across seven categories at an event held in October 2019.

4.0 CDM Costs

Table 2 summarizes Newfoundland Power's costs associated with CDM from 2015 to 2019.

Table 2
Conservation and Demand Management Costs
(\$000s)

	2015	2016	2017	2018	2019
General Conservation Costs					
Customer Education and Support ¹³	417	332	516	488	421
Planning ¹⁴	<u>600</u>	<u>102</u>	<u>104</u>	<u>282</u>	<u>1,082</u>
Total General Conservation Costs	1,017	434	620	770	1,503
Conservation Program Costs¹⁵					
<i>Residential</i>					
Insulation Rebate Program	741	771	1,082	1,152	1,379
Thermostat Rebate Program	298	415	538	412	421
Windows Rebate Program ¹⁶	7	-	-	-	-
HRV Rebate Program	109	132	125	209	145
Benchmarking Program	-	474	837	813	793
Small Technologies Rebate Program	2,137	4,110	2,133	1,742	1,448 ¹⁷
<i>Commercial</i>					
Lighting Program ¹⁸	187	-	-	-	-
Business Efficiency Program	<u>822</u>	<u>1,303</u>	<u>2,044</u>	<u>1,716</u>	<u>1,687</u>
Total Conservation Program Costs	4,301	7,205	6,758	6,044	5,873
CDM Capital Expenditures ¹⁹	54	39	51	50	21
Demand Management Program Costs					
Curtable Service Option	<u>364</u>	<u>361</u>	<u>436</u>	<u>388</u>	<u>375</u>
Total	<u>5,736</u>	<u>8,039</u>	<u>7,865</u>	<u>7,252</u> ²⁰	<u>7,772</u> ²¹

¹³ Cost increases for Customer Education and Support in 2017 are a result of support activities, school program and heat pump education initiatives.

¹⁴ Planning costs in 2015 reflect the SmartPeak Direct Load Control Pilot, the CPS, and 2016 Plan. Planning costs in 2016 reflect the decrease in planning activities to focus on program development and implementation. Planning costs in 2018 reflect commissioning of a Commercial End Use Survey and start of the CPS. Costs for 2019 reflect completion of the CPS, development of the *Five-Year Conservation, Demand Management and Electrification Plan: 2021-2025*, and the first year of the heat pump load research.

¹⁵ Variations in program costs primarily reflect variations in levels of participation, with the exception of the 2017 Insulation increase due to program evaluation, and 2017 Benchmarking to reflect the first full year of program implementation.

¹⁶ The Windows program ended in December 2014; 2015 costs reflect applications processed in January that year.

¹⁷ As the saturation of LED bulbs increases, the number of bulbs purchased and the total incentive paid to customers decreases, causing reductions in the program costs and energy savings.

¹⁸ The Commercial Lighting Program changed in 2016 to fall under the BEP.

¹⁹ Capital expenditures are associated with improvements to the TakeChargeNL.ca website and the Company's systems for program tracking and evaluation. Capital work in 2019 was deferred due to the focus on CDM and electrification planning. In addition, there were no updates to programs requiring capital expenditures.

²⁰ The decrease in overall CDM spending in 2018 primarily reflects variations in program participation that resulted in higher energy savings, but lower incentive payouts.

²¹ The increase in overall CDM spending in 2019 primarily reflects the costs associated with heat pump load research.

5.0 Outlook

The *Five-Year Conservation, Demand Management and Electrification Plan: 2021-2025* (the “2021 Plan”) is currently being developed jointly with Hydro. The 2021 Plan will include a suite of CDM and electrification programs. Electrification programs will provide rate mitigation benefits to customers post Muskrat Falls. CDM programs support electrification through mitigating the effect of electrification during periods of peak demand. The Utilities are consulting with the Government of Newfoundland and Labrador and other key stakeholders to provide a coordinated approach on the development of programs for the province.

Future changes to the province’s electrical system will need to be considered in evaluating the cost-effectiveness of these programs. Any changes to marginal costs will impact the cost-effectiveness of demand side management measures. Programs will be continuously evaluated to ensure they are beneficial to customers and the electricity system.

Newfoundland Power will introduce an electric vehicle (“EV”) educational initiative in 2020 with the help of \$50,000 in funding from Natural Resources Canada. Website resources on TakeChargeNL.ca, such as fuel and greenhouse gas emissions savings calculators, will help customers understand whether an EV is right for them. Outreach and training for car dealerships will help promote awareness and acceptance of EVs.

In 2020, the Company will conclude its implementation of the 2016 Plan. The Instant Rebates Program and Benchmarking Program have been extended into 2020.²² Both programs continue to offer cost-effective energy and demand savings.²³ The Company will continue to partner with the provincial and federal governments to deliver insulation and thermostat rebates to customers with oil-heated homes through the Energy Efficiency in Oil Heated Homes Program.

Community outreach and customer education will continue to be a focus for Newfoundland Power. In 2020, the Company will continue to build upon existing energy conservation resources with a focus on creating accessible educational content such as videos to help overcome literacy barriers. To help close the gap in LED bulb penetration related to income, takeCHARGE will be expanding the *Make the Switch* program.

²² Market research commissioned in 2019 showed significant room for growth in the residential LED market, with approximately 2.7 million sockets that could be converted to more efficient lighting.

²³ In the *Five Year Conservation Plan: 2016-2020*, the Benchmarking program was originally scheduled to conclude at the end of 2019. This was due to uncertainty around marginal costs and whether the program could be offered cost-effectively.

Appendix A
takeCHARGE Program Descriptions, Participation and Savings Results

1.0 takeCHARGE Program Descriptions, Participation and Savings Results

The following tables provide details of customer participation levels, savings results achieved and the levelized utility cost (“LUC”) for each of the existing programs for 2019 and since implementation.²⁴ Results of the TRC and PAC for 2019 for each program based upon estimated future marginal costs of energy and capacity are also included.²⁵

The estimated annual energy and peak demand savings in each year represent the savings resulting from participants in that year. The estimated life to date energy and peak demand savings reflect the energy savings measures installed by all participants in the program. These savings will continue to occur each year for the life of the installed measures.

2.0 Residential takeCHARGE Programs

With the exception of the Instant Rebates and Benchmarking Programs, residential program incentives are processed primarily through customer applications. The programs are promoted in partnership with trade allies in retail, home building and renovation industries.

2.1 Insulation Rebate Program

The objective of this program is to provide incentives to increase the insulation R-value in residential basements, crawl spaces and attics, thereby increasing the efficiency of the homes’ building envelope. Eligibility for the program is limited to electrically heated homes, determined on the basis of annual energy usage. Home retrofit projects are eligible. Customers can receive an incentive of 75% of basement wall or ceiling insulation material costs up to \$1,000, and 50% of attic insulation material costs up to \$1,000.

²⁴ The levelized utility cost represents the economic cost to the utility (per kWh) to save energy considering only utility program costs (i.e. program development, marketing, incentives and administration costs), not customer costs.

²⁵ The TRC accounts for customer costs and benefits, whereas the PAC accounts for costs and benefits incurred by the utility only.

Table A-1 shows the customer participation levels, savings results achieved, and the LUC for the Insulation Program for 2019 and since implementation.

Table A-1
Insulation Rebate Program
Program Participation, Savings and Levelized Utility Cost

	Participation	Energy Savings (MWh)	Peak Demand Savings (kW)	LUC (¢/kWh)
2019	1,742	5,325	2,183	2.6
Life to Date²⁶	14,199	40,477	14,061	2.8

2019 TRC Result: 8.1

2019 PAC Result: 8.9

2.2 Thermostat Rebate Program

This program encourages installation of programmable and electronic thermostats to allow customers better control of the temperature in their home and to save energy. High performance programmable thermostats allow customers to set back the temperature during the night or when they are away. Eligibility for the program is limited to electrically heated homes, determined on the basis of annual energy usage. Home retrofit projects and new home developments are eligible. Incentives of \$10 per programmable thermostat and \$5 per electronic high-performance thermostat are offered.

Table A-2 shows the customer participation levels, savings results achieved, and the LUC for the Thermostat Program for 2019 and since implementation.

Table A-2
Thermostat Rebate Program
Program Participation, Savings and Levelized Utility Cost

	Participation	Energy Savings (MWh)	Peak Demand Savings (kW)²⁷	LUC (¢/kWh)
2019	2,921	3,157	116	1.5
Life to Date	23,800	21,653	2,918	1.8

2019 TRC Result: 2.1

2019 PAC Result: 3.2

²⁶ “Life to Date” represents the program results since the launch of the program.

²⁷ The Company stopped claiming demand savings for programmable thermostats in 2017, as many programmed thermostats are set to come on during peak periods. Because non-programmable electronic thermostats do provide peak demand savings, the Company has reconsidered this approach. Accordingly, such savings are reported for 2019 and will continue to be reported in future.

2.3 *HRV Rebate Program*

This program encourages customers to purchase a high efficiency HRV to improve the efficiency of their home. Eligible measures in this program include HRV models that have a Sensible Recovery Efficiency of 70% or more. Customers who purchase a high efficiency HRV can receive a rebate of \$175. All customers are eligible for this program regardless of age of home or heat source.

Table A-3 shows the customer participation levels, savings results achieved, and the LUC for the HRV Program for 2019 and since implementation.

**Table A-3
HRV Rebate Program
Program Participation, Savings and Levelized Utility Cost**

	Participation	Energy Savings (MWh)	Peak Demand Savings (kW)	LUC (¢/kWh)
2019	430	244	76	6.4
Life to Date	2,366	1,327	414	7.1

2019 TRC Result: 2.5

2019 PAC Result: 2.6

2.4 *Benchmarking Program*

This program encourages customers to adopt energy efficient behavioural changes. Participants receive home energy reports that provide insight into their home's electricity use. The reports help customers understand changes in their usage over time, as well as how they compare to similar homes. They also include practical tips on how to save energy moving forward. The program includes an online portal component that allows customers to engage even further through weekly challenges and personalized savings plans.

Customers were randomly selected as participants in this program. Program participants broadly reflect the composition of Newfoundland Power's customer base in heating type and geographic distribution. No financial incentive is offered for this program.

Table A-4 shows the customer participation levels, savings results achieved, and the LUC for the Benchmarking Program for 2019 and since implementation. Due to the nature of customer behavioural changes, benchmarking savings are assumed for one year only.

Table A-4
Benchmarking Program
Program Participation, Savings and Levelized Utility Cost

	Participation	Energy Savings (MWh)	Peak Demand Savings (kW)	LUC (¢/kWh)
2019	59,017	16,025	3,237	5.0
Life to Date	59,017	16,025	3,237	7.1 ²⁸

2019 TRC Result: 3.6

2019 PAC Result: 3.6

2.5 *Small Technologies Program*

This program promotes a variety of smaller technologies, such as LED lighting, and smart power bars, through instant rebates available at the cash register of participating retailers. All customers are eligible for this program regardless of age of home or heat source.

Table A-5 shows the customer participation levels, savings results achieved, and the LUC for the Small Technologies Program for 2019 and since implementation.

Table A-5
Small Technologies Rebate Program
Program Participation, Savings and Levelized Utility Cost

	Participation ²⁹	At-the-Cash Rebates	Energy Savings (MWh)	Peak Demand Savings (kW)	LUC (¢/kWh)
2019	0	391,216	10,428	1,947	2.4
Life to Date	7,288	3,232,939	62,107	15,061	3.0

2019 TRC Result: 3.6

2019 PAC Result: 4.4

²⁸ Benchmarking savings are claimed for one year, however LUC for life of program is derived considering the sum of savings and program costs in all years the program has been offered.

²⁹ Bill credit rebates were for the Appliance and Electronics rebate component of the Small Technologies Program which ended in 2017.

3.0 Commercial takeCHARGE Programs

3.1 Business Efficiency Program

The objective of this program is to improve electrical energy efficiency in a variety of commercial facilities and equipment types. The program components include financial incentives based on energy savings, and other financial and educational supports to enable commercial facility owners to identify and implement energy efficiency and demand reduction projects. This program is available for existing commercial facilities that can save energy or reduce demand by installing more efficient equipment and systems. The program includes custom project incentives and rebates for specific measures on a per unit basis.

Table A-6 shows the customer participation levels, savings results achieved, and the LUC for the Business Efficiency Program for 2019 and since implementation.

Table A-6
Business Efficiency Program
Program Participation, Savings and Levelized Utility Cost

	Participation	Energy Savings (MWh)	Peak Demand Savings (kW)	LUC (¢/kWh)
2019	330	8,375	961	2.5
Life to Date	2,480	35,233	6,020	2.9

2019 TRC Result: 2.0

2019 PAC Result: 3.5

4.0 Total Results of takeCHARGE Programs

Table A-7 shows the participation levels, savings results achieved, and the LUC for all of the programs for 2019 and since implementation.

Table A-7
takeCHARGE Programs
Program Participation, Savings and Levelized Utility Cost

	Participation	At-the-Cash Rebates	Energy Savings (MWh)	Peak Demand Savings (kW)	LUC (¢/kWh)	Provincial LUC (¢/kWh)³⁰
2019	64,440 ³¹	391,216	43,554	8,520	2.6	2.8
Life to Date	109,150 ³²	3,232,939	186,560	44,715	3.1	3.5

Table A-8 shows the TRC and PAC results for Newfoundland Power's residential and commercial portfolios, along with the provincial portfolio, which includes Hydro's Island Interconnected System costs and energy savings.

Table A-8
takeCHARGE Programs
2019 TRC and PAC Results

	TRC	PAC
Residential Portfolio	4.8	5.6
Commercial Portfolio	2.0	3.5
Provincial Portfolio	3.6	4.7

³⁰ "Provincial LUC" represents the combined cost and energy savings of Newfoundland Power and Newfoundland and Labrador Hydro's Island Interconnected conservation program offerings.

³¹ Figure consists of 59,017 participants in the 2019 Benchmarking program, and 5,423 participants in bill credit rebate programs.

³² Prior years participants in Benchmarking program not included in this number.