



HAND DELIVERED

March 31, 2014

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

*Newfoundland Power Inc.*

55 Kenmount Road  
P.O. Box 8910  
St. John's, NL A1B 3P6  
Business: (709) 737-5600  
Facsimile: (709) 737-2974  
[www.newfoundlandpower.com](http://www.newfoundlandpower.com)

Ladies & Gentlemen:

Enclosed are the original and 8 copies of Newfoundland Power's *2013 Conservation and Demand Management Report* (the "Report").

In Order No. P.U. 7 (1996-1997), the Board ordered, in effect, that Newfoundland Power file annual progress reports on its demand side management activities, including conservation. The Report is filed in compliance with Order No. P.U. 7 (1996-97).

At the hearing of Newfoundland Power's 2013 General Rate Application, the Board considered Newfoundland Power's conservation programs. In particular, in Order No. P.U. 13 (2013), the Board required Newfoundland Power to file a report prior to April 1, 2014, providing an update on its conservation programs and providing recommendations as to a process for review of the conservation programs. Following a presentation at the hearing, the Board also required Newfoundland Power to include an evaluation of the potential of mini-split heat pumps in its report. The Report complies with the requirements of Order No. P.U. 13 (2013).

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

Yours very truly,

Gerard M. Hayes  
Senior Counsel

Enclosures

- c. Geoffrey Young  
Newfoundland and Labrador Hydro



---

## **2013 Conservation and Demand Management Report**

**March 31, 2014**

---

## Table of Contents

	Page
1.0 Introduction.....	1
2.0 Customer Interest and Awareness.....	1
2.1 Customer Contacts .....	1
2.2 Customer Surveys .....	2
3.0 CDM Programs .....	2
3.1 Residential Energy Conservation.....	2
3.2 Commercial Energy Conservation.....	4
3.3 Demand Management .....	6
4.0 Energy Conservation Promotion and Education.....	7
4.1 Mass Media and Social Media .....	7
4.2 Community Outreach.....	7
4.3 Trade Allies and Partners.....	8
5.0 Planning and Evaluation .....	8
5.1 2013 Residential Program Evaluation .....	9
5.2 Commercial Facility Equipment Inventory .....	10
5.3 Ductless Mini Split Heat Pump Research.....	11
5.4 2014 Planning and Evaluation Process .....	12
6.0 CDM Costs.....	12
7.0 Outlook .....	14

Appendix A: *takeCHARGE* Program Descriptions

Appendix B: *takeCHARGE* Program Participation and Savings Results

Appendix C: *takeCHARGE* Program Cost Effectiveness Results – 2013

Appendix D: *takeCHARGE* Program Cost Effectiveness Results – Life to Date

Appendix E: *takeCHARGE* Program Value of Savings Results – Life to Date

Appendix F: *takeCHARGE* Program Planning and Evaluation Tools

## 1.0 Introduction

In Order No. P.U. 7 (1996-97), 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.

In Order No. P.U. 13 (2013), the Board required Newfoundland Power to file a report prior to April 1, 2014 providing an update on its conservation programs and providing recommendations as to a process for review of the conservation programs. Order No. P.U. (2013) also required Newfoundland Power to include an evaluation of the potential of mini-split heat pumps in its report.

This report is filed in compliance with Order No. P.U. 7 (1996-97) and Order No. P.U. 13 (2013). The report provides an update on the Company’s ongoing conservation and demand management (“CDM”) activities, and also addresses the process for review of the CDM activities. The report also provides an update on the Company’s review of mini-split heat pumps.<sup>1</sup>

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

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

## 2.0 Customer Interest and Awareness

Customers’ interest in energy conservation programs and energy efficiency information remained strong during 2013.

### 2.1 Customer Contacts

Table 1 shows the number of customer-initiated contacts with the Company for energy conservation information from 2008 through 2013.

**Table 1**  
**Customer Contacts for**  
**Energy Conservation Information**

	2008	2009	2010	2011	2012	2013
Contact Centre Inquiries	13,795	14,823	11,704	12,624	9,793	9,593
Website Visits	23,444	49,648	52,013	72,996	49,202	76,278
<b>Total</b>	<b>37,239</b>	<b>64,471</b>	<b>63,717</b>	<b>85,620</b>	<b>58,995</b>	<b>85,871</b>

<sup>1</sup> An update on the review of mini-split heat pumps is provided in Section 5.3 of this report. Section 5.4 recommends a process for involvement of the Board and interested parties in the review of conservation programming.

In 2013, 89% of customers chose electronic means of communication with the Company to obtain information on energy conservation and rebate programs. This is consistent with promotion of the *takeCHARGE* website as the primary resource for customer inquiries and information. Customer visits to the *takeCHARGE* website grew by 55% from 2012 to 2013.

## **2.2 Customer Surveys**

Newfoundland Power's annual survey of customer awareness and conservation practices for 2013 revealed that customer interest in energy conservation remains high, with 61% of respondents indicating they make regular and consistent efforts to conserve. The survey results also confirm that saving money remains customers' primary motivation for conserving electricity, with 94% citing this as their primary motivation.

According to the 2013 survey, customers' awareness of the *takeCHARGE* Energy Savers rebate programs increased to 64% of those surveyed in 2013, from 54% in 2012. Approximately 19% of respondents were motivated to make energy efficient changes to their home after they saw the *takeCHARGE* advertising campaigns. Approximately 20% of those surveyed indicated they would likely take part in one of the rebate programs in the coming year.

In 2013, one in every four customers surveyed (25%) was aware that *takeCHARGE* had a website offering information on energy savings, tips and rebates. This represented an increase over awareness levels in 2012 when 19% of customers were familiar with the site.

The supply issues and power outages in early January 2014 highlighted the issue of customer interest in conservation. According to a customer survey commissioned by Newfoundland Power following the January outages, 87% of customers surveyed practiced conservation measures during the January 2<sup>nd</sup> -8<sup>th</sup>, 2014 period.<sup>2</sup> Of the survey respondents who didn't engage in additional conservation measures, 38% said it was because they always conserve. Many customers who responded to conservation requests during the January outages continued to conserve thereafter, with 45% of respondents turning off lights and 24% turning down their heat for conservation purposes.

## **3.0 CDM Programs**

Newfoundland Power's CDM program portfolio provides residential and commercial customers with conservation and demand management incentives that result in quantifiable energy and demand savings. Appendix A provides a detailed description of the individual residential and commercial *takeCHARGE* rebate programs.

### **3.1 Residential Energy Conservation**

In 2013, the Company offered four residential customer energy conservation programs. Those customer energy conservation programs for (i) ENERGY STAR windows, (ii) insulation, (iii) high performance thermostats, and (iv) heat recovery ventilators ("HRVs") are bundled together for marketing purposes as the *takeCHARGE* Energy Savers. The primary objectives of these

---

<sup>2</sup> This survey was conducted by MQO Research. The survey included communities in the eastern areas which were primarily affected by the outages January 2-8<sup>th</sup> 2014.

programs are to reduce space heating energy consumption and provide reductions in peak demand.

The new *takeCHARGE* Energy Savers HRV rebate program was launched in September 2013. Newfoundland Power held eight HRV program launch events across the island, with 44 installers and other stakeholders attending. These events provided a forum to educate installers about the program, and to obtain HRV market research and additional feedback about the program. Meetings with individual installers were held following the launch of the program.

In 2013, *takeCHARGE* worked closely with window retailers to offer an ENERGY STAR Windows incentive pilot program. The pilot program addresses three known participation barriers: (i) educating customers about the relative benefits of ENERGY STAR windows; (ii) helping customers complete the application form; and (iii) eliminating the need customers to mail in the application. Eleven window retailers participated in the pilot, and 412 customers were assisted in-store with the completion of applications. The pilot primarily impacted the retrofit market, with 80% of the participating customers completing projects in existing homes.

#### *Residential Program Results*

Table 2 shows customer participation in the *takeCHARGE* residential programs since they were implemented in 2009, as well as the estimated energy and peak demand savings that have resulted from new participants each year.<sup>3</sup>

**Table 2**  
**Residential Portfolio Participation and Savings**  
**2009 through 2013**

	2009	2010	2011	2012	2013
Customer Participation	2,000	3,098	6,303	4,851	5,158
Estimated Annual Energy Savings (MWh)	2,463	4,352	10,836	7,643	7,615
Estimated Peak Demand Savings (kW)	758	1,345	3,343	2,358	2,350

In 2013, the residential *takeCHARGE* Energy Savers rebate programs saw a 6% increase in program participation over 2012, while energy savings remained relatively consistent.

<sup>3</sup> Unless otherwise noted, estimated savings provided in this report are those that will accrue to participants on an annualized basis. Actual savings during the year of participation will be less, based on when customers complete installation of energy saving measures during the year.

Table 3 provides a breakdown of the 2013 results for the 4 residential programs.

**Table 3**  
**Residential Program Participation and Savings**  
**2013**

<b>Program</b>	<b>Customer Participation</b>	<b>Estimated Annual Energy Savings (MWh)</b>	<b>Estimated Peak Demand Savings (kW)</b>
Insulation	1,254	3,931	1,213
Thermostat	1,641	1,302	402
ENERGY STAR Window	2,234	2,365	730
HRV	29	17	5
<b>Total</b>	<b>5,158</b>	<b>7,615</b>	<b>2,350</b>

The ENERGY STAR Windows rebate program had the highest number of participants in 2013, representing 43% of the total residential program participation. This reflects a shift in the provincial market for windows toward more energy efficient products and updates to the National Building Code that require installation of ENERGY STAR Windows in all new homes.<sup>4</sup> The ENERGY STAR Windows incentive pilot was also a factor in increasing customer participation.

Appendix B provides the details of customer participation, and energy and demand savings results for each of the *takeCHARGE* programs from 2009 through 2013.

The results of cost effectiveness testing of the conservation programs for 2013, and cumulative results for the five years since program implementation, are provided in Appendices C and D, respectively. The results indicate the Newfoundland Power residential portfolio has a positive economic impact.

The value to the end of 2013 of electrical system savings from the *takeCHARGE* residential programs is approximately \$10 million. The estimated value of savings related to each program is provided in Appendix E.

### **3.2 Commercial Energy Conservation**

In 2013, Newfoundland Power continued to offer a commercial lighting incentive program and expanded the types of lighting technologies eligible for rebate. The Company also launched the new business efficiency program (“BEP”) in November. These programs focus on reducing electrical energy consumption, while also providing reductions in peak demand.

<sup>4</sup> In January 2014, Newfoundland Power modified its existing residential programs to reflect the changes to the National Building Code of Canada, Part 9 that were announced December 21, 2012. These regulation changes mandate that all new homes install basement insulation and energy efficient windows.

### Commercial Program Results

Table 4 shows customer participation in the commercial lighting incentive program annually since its implementation in 2009, as well as the estimated energy and demand savings resulting from new participants in each year.

**Table 4**  
**Commercial Program Participation and Savings**  
**2009 through 2013**

	2009	2010	2011	2012	2013
Customer Participation	168	232	227	132	88
Estimated Annual Energy Savings (MWh)	170	707	1,292	778	496
Estimated Peak Demand Savings (kW)	69	296	464	262	163

Approximately 496 MWh of energy savings and 163 kW of demand savings resulted from the commercial lighting program in 2013.

The number of customers participating in the commercial lighting incentive program has continued to decrease in 2013. This appears to relate to an overall decline in lamp sales in the province.<sup>5</sup> In response to this decline, the Company plans to increase promotion of the benefits of efficient lighting to distributors and commercial customers.

The new BEP provides custom rebates based on customers' detailed project proposals, and also offers individual product rebates. BEP projects will typically involve long timelines, due to the nature and size of the projects. No BEP projects have been completed since the program launched in November. The typical first step in a BEP project is a walk-through audit of a customer's facility by *takeCHARGE* personnel to identify savings opportunities. There were 10 such visits to commercial customer facilities in 2013.

Appendix B provides the details of customer participation, and energy and demand savings results for each of the *takeCHARGE* programs from 2009 through 2013.

The results of cost effectiveness testing for 2013, and for the five years since implementation of the lighting program, are provided in Appendices C and D, respectively. The testing results indicate the Newfoundland Power commercial portfolio has a positive economic impact.

The estimated value to the end of 2013 of electrical system savings from the *takeCHARGE* commercial lighting incentive program is \$1.5 million. The estimated value of savings related to each *takeCHARGE* program since implementation is provided in Appendix E.

---

<sup>5</sup> Lighting manufacturers' sales data indicates an approximately 30% sales decrease in the last two years.



### 3.3 Demand Management

Newfoundland Power's Curtailable Service Option (the "CSO") and Residential Seasonal Rate ("RSR") focus on demand management. The Company is also conducting a rate study to evaluate time-of-day rates (the "TOD Rates Study").

#### *Curtailable Service Option*

The CSO provides an incentive to large customers to reduce electrical demand at the request of the Company during the winter peak season. The CSO is available to general service customers billed on Rate 2.3 or 2.4 who can reduce their demand by at least 330 kVA. Participants who curtail their load at the request of the Company receive an annual credit on their electricity bills at the end of the winter season.

Twenty-one general service customers participated in the CSO during the 2012-2013 winter season, providing a potential load reduction of approximately 9 MW.<sup>6</sup> This load reduction is exercised to reduce demand to manage purchased power costs and minimize customer outages.

Detailed results for the 2012-2013 winter peak season were submitted to the Board in the *2013 Curtailable Service Option Report* dated April 19, 2013.

#### *Residential Seasonal Rate*

Under the Residential Seasonal Rate ("RSR"), residential customers pay a higher rate for electricity during the winter months (December to April), and a lower rate for electricity during the non winter months (May to November), compared to the standard residential rate. This encourages customers to use less electricity during the time of year when the system experiences the highest demand.

The RSR is available to all residential customers. Customers most likely to benefit from this rate are those who use little to no electricity during the winter months, and those whose electricity usage remains consistent throughout the year.

#### *Time of Day Rate Study*

The ongoing Time-of-day ("TOD") Rates Study is being undertaken to determine whether offering TOD rates will encourage customers to alter their electricity consumption during higher cost periods.<sup>7</sup>

Participants in the TOD Rate Study have the potential to achieve savings by shifting activities that require using large amounts of electricity from on-peak hours to off-peak hours or conserving electricity usage during on-peak hours.

<sup>6</sup> Since the filing of *2013 Curtailable Service Option Report*, the potential load reduction provided by the CSO has been reduced to 8 MW. This is the result of a reduction in customer participation in 2013 since the filing of the report. Results of the CSO for the 2013-2014 winter peak season will be submitted to the Board in April 2014.

<sup>7</sup> The higher cost peak periods are from December to March, between 8am and 12pm, and between 4pm and 8pm.

The objective of the TOD rate study is to help evaluate the impact that offering TOD rates can have on customers' usage patterns during the winter season and to provide experience to the Company in administering TOD rates. This may be beneficial if TOD rates are determined to be cost-effective in the future. The TOD rate study will also provide the opportunity for evaluation of the conservation effect of the use of in-home monitoring devices for residential customers.

#### **4.0 Energy Conservation Promotion and Education**

During 2013, Newfoundland Power continued its customer education and conservation awareness activities primarily through promotion of its *takeCHARGE* rebate programs and outreach activities. These education and awareness activities involved mass media marketing, community outreach, including school programming, and trade ally development and partnerships.

##### **4.1 Mass Media and Social Media**

The new "Saving Energy – There's money in that!" advertising campaign was launched in September 2013, with three new *takeCHARGE* television ads featuring the insulation, thermostat and ENERGY STAR® Windows rebate programs. The advertising campaign, which included newspaper, radio, online and social media advertisements, also highlighted the new HRV rebate program.

Five *takeCHARGE* newsletters were distributed to customers with electricity bills during 2013. These newsletters offer energy efficiency information and encourage participation in the rebate programs.

Customers are increasingly looking to social media for *takeCHARGE* energy efficiency education and event information. Social media also provides a way for customers to inquire and provide feedback about the Company's conservation programs. To date, approximately 11,000 Facebook users have "liked" the *takeCHARGE* Facebook fan page, and YouTube views are continuing to increase. *takeCHARGE* has also gained over 100 Twitter followers since initiating a Twitter presence in September 2013.

The 5<sup>th</sup> annual *takeCHARGE* Energy Efficiency Week was held from October 19<sup>th</sup> to October 25<sup>th</sup>, 2013. *takeCHARGE* teams hosted events at building supply stores across the province, providing energy efficiency advice to consumers and promoting the *takeCHARGE* Energy Savers rebate programs. During Energy Efficiency Week, *takeCHARGE* launched the "Are you an Energy Efficiency Super Saver?" contest on Facebook. Customers participated in the contest by posting pictures to Facebook illustrating the ways they conserve energy.

##### **4.2 Community Outreach**

During 2013, the Company participated in over 130 community outreach events. Energy efficiency information was presented on over 30 occasions to retailers and suppliers, senior citizens, youth and other groups. Interactive *takeCHARGE* information booths were displayed at approximately 100 home shows, trade fairs, shopping malls and retail stores across the island. Through these outreach activities, members of the *takeCHARGE* team assisted customers with

their energy efficiency questions, while raising awareness of energy conservation and the *takeCHARGE* rebate programs.

Eighteen municipalities participated in the *takeCHARGE* of Your Town Challenge to increase energy efficiency in residents' homes, businesses and municipal facilities. Participating towns were awarded points for their involvement in specific energy efficiency milestones and events. The Town of Placentia won the 2013 challenge, receiving \$7,500 towards an energy efficiency/environmental improvement in the community. Thirteen municipalities have signed up to participate in this year's Challenge.

During Energy Efficiency Week, *takeCHARGE* launched a new in-school educational initiative. The K-I-C (Kids in Charge) Start school program is designed to develop energy efficiency awareness in children from kindergarten to grade six. The program involves in-class presentations and contests designed to raise awareness of the importance of conserving energy at home and school. Since the beginning of the 2013/2014 school year, *takeCHARGE* has presented to approximately 1,650 students across the province.

#### **4.3 Trade Allies and Partners**

Trade allies play an integral role in helping customers make knowledgeable decisions regarding energy conservation and home improvements. Retail partners display information about *takeCHARGE* programs and energy efficiency products in their stores and in flyers, as well as during special promotional events.

In 2013, Newfoundland Power continued to develop its partnerships with building supply retailers such as Kent, Hickey's, and Costco, and with other trade allies. During the year, Newfoundland Power *takeCHARGE* team members visited more than 230 retailers. These visits included presentations aimed at educating retail staff on the benefits of energy efficient products, and increasing awareness of the *takeCHARGE* rebate programs.

In 2013, *takeCHARGE* partnered with HRV manufacturer Venmar in an advertising campaign to promote the new *takeCHARGE* Energy Savers HRV program. Partnering with distributors and installers is an important element of the new program.

*takeCHARGE* also continues to develop other partnerships in the business community. In 2013, Newfoundland Power participated in commercial tradeshow and conferences across the island, including the Placentia Bay Industrial Showcase, the Newfoundland Environmental Industries Association Conference and the BuildGreen Atlantic Conference. Presentations introducing the new BEP to business owners were made through associations such as the Association of Seafood Processors, Hospitality Newfoundland and Labrador, and Municipalities Newfoundland and Labrador. The BEP program was also promoted in various business association newsletters.

#### **5.0 Planning and Evaluation**

In the *Five-Year Energy Conservation Plan: 2012-2016* ("2012 Plan"), Newfoundland Power addressed the evaluation processes that will guide its customer energy conservation initiatives through the planning period. These processes are based on Canadian utility best practices and the Company's experience with program delivery since the 1990s.

Table 5 summarizes the primary methods used by Newfoundland Power to plan and evaluate its customer conservation initiatives.

**Table 5**  
**CDM Evaluation and Planning Tools<sup>8</sup>**

<b>Evaluation &amp; Planning Tool</b>	<b>Frequency</b>	<b>Purpose</b>
Conservation Potential Study	5 years	Identify opportunities for energy savings
5-Year Plan	3 – 5 years	Determine programs and supporting activities
External Review	2 years for each program	Program process effectiveness and market transformation impacts
Post-Implementation Review	6 – 12 months after new program launch	Program process effectiveness
Process Evaluation	Annual	Program process effectiveness
Economic Testing	Annual	Economic & energy savings impacts
Customer Survey	Annual	Assess customer awareness and responsiveness
Verification Audits	Ongoing	Gather customer feedback on programs and customer program compliance
Partner Consultation	Ongoing	Gather feedback and assess customer responsiveness

Appendix F provides detailed descriptions of the processes used by the Company to develop and evaluate its customer conservation programming.

### **5.1 2013 Residential Program Evaluation**

In 2013, an external review of the *takeCHARGE* residential conservation programs was completed (“the 2013 Evaluation”). The 2013 Evaluation was conducted by DNV GL- Energy.<sup>9</sup> It examined the effectiveness of the customer-facing program processes with a focus on feedback from retailers, contractors, builders and non-participating customers. The 2013 Evaluation included technology market research consisting of surveys and interviews with customers, retailers and contractors. The research was aimed at determining the effect of the rebate programs on new home construction and retrofit markets, and assessing the effectiveness of the customer-facing elements of program delivery. Non-participants and program partners were also consulted to understand the barriers to program participation.

<sup>8</sup> In addition to the evaluation and planning tools listed in Table 5, the Company also conducts market and technology research on ad hoc basis as required, and engages in ongoing operational planning.

<sup>9</sup> DNV GL- Energy, located in Burlington, Massachusetts, specializes in evaluating programs that promote energy efficiency, demand response, and distributed generation. Final analysis and results from this evaluation will be received in April 2014.

DNV GL- Energy's preliminary findings indicate that customers are influenced by the *takeCHARGE* programs to increase the amount of energy efficient technologies in their homes. For example, the evaluation found that the *takeCHARGE* insulation program influenced customers who installed insulation in their homes to increase the amount of insulation installed.

The 2013 Evaluation included market share analysis based on a contractor and retailer survey. This analysis indicates the *takeCHARGE* programs have influenced the market and increased adoption of the technologies promoted by the programs. The survey also indicated favorable results regarding satisfaction with the programs and with contractor and retailer interactions with the Company.

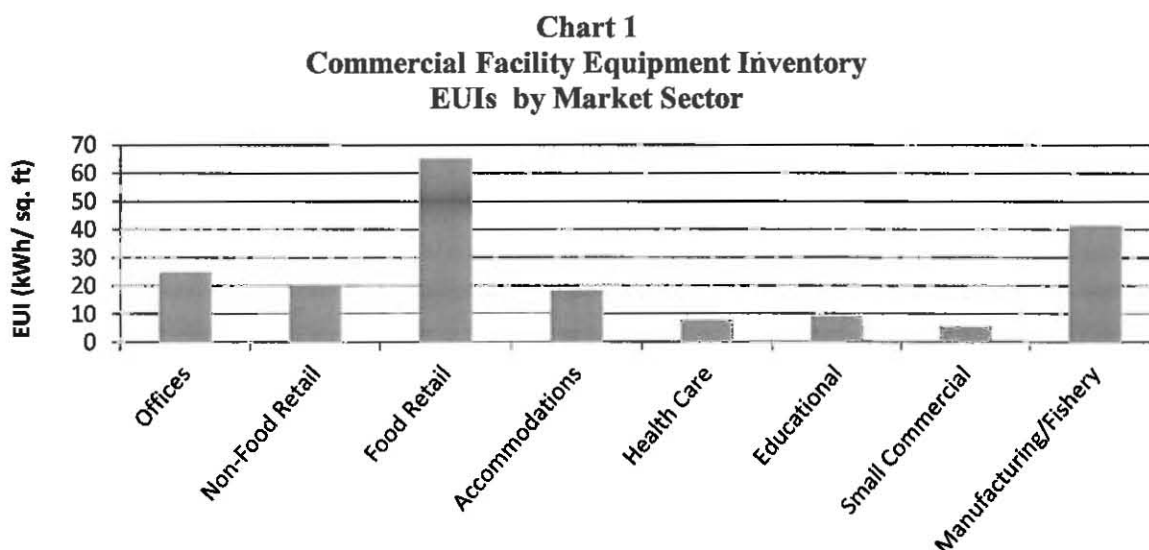
The 2013 Evaluation concluded that one-third of participating contractors actively use energy efficiency as a selling point, and have integrated it into their marketing strategies. These results suggest that *takeCHARGE* can increase its influence in the contractor market so that contractors consider energy efficiency and promote it as part of their marketing strategy.

The outcomes of the 2013 Evaluation will assist the Company in making improvements to program design and delivery of the residential conservation programs.

## 5.2 Commercial Facility Equipment Inventory

In 2013, the Utilities completed a joint Commercial Facility Equipment Inventory ("CFEI") on 54 commercial facilities. The inventory provides information on how commercial customers use electricity. The CFEI was completed by CBCL Limited, a consultant that conducted on-site facility audits for participating commercial customers. The audits required the consultant to take an inventory of all mechanical and electrical equipment in the facility, and analyze the data to determine how much electricity is being used, and by what equipment.

Chart 1 shows the Energy Use Intensity ("EUI") for customers that participated in the CFEI by market sector.<sup>10</sup>



<sup>10</sup> EUI is the kWh consumed per square foot of floor space (kWh/sq. ft.).



The CFEI concluded that, of the customers audited, the food retail market sector are the largest users of electricity on a square footage basis, followed by the manufacturing/fishery market sector. These two industries represent approximately 22% of Newfoundland Power's commercial sector electricity use.

The information collected in the CFEI will help identify potential energy savings opportunities in the commercial sector and will be a direct input into the upcoming conservation potential study. The conservation potential study will enable the Company to determine how best to focus and support the customer energy conservation programs in the future.

### ***5.3 Ductless Mini Split Heat Pump Research***

In Order No. P.U. (2013), the Board directed Newfoundland Power to report to the Board on its evaluation of the potential of mini-split heat pumps.

In 2013, the Company commenced research on ductless mini-split heat pumps ("MSHP"). The objectives of this research are to assess the current MSHP market in Newfoundland, the utility of the MSHP as a supplementary heat source and the potential impact of MSHPs on the electricity system. The research completed in 2013 consisted of a review of technical literature, consultation with MSHP distributors and installers, and customer surveying.

The Company conducted energy use modeling on MSHPs in several typical home types in its service territory, and found the estimated savings to be consistent with those found in the technical literature. The analysis indicates that a typical electric heat customer could reduce their energy bill by 20-30%, depending on the size and efficiency of the home. However, the savings are highly dependent on the proper installation and operation of the MSHP, and on the primary home heating system.

In November 2013, Newfoundland Power hosted a roundtable with 10 MSHP distributors and installers. These sessions highlighted the importance of using a certified professional installer. Improper installation and service can negatively impact the performance and expected life of the MSHP, and may void the manufacturer's warranty.

The roundtable also revealed that there are limits on the availability of MSHP systems and installers, particularly in rural areas of the province. Consequently, customers in rural areas could experience delays in obtaining service for their MSHPs and incur higher costs than would be experienced in urban centers. However, based on the consultations with distributors and installers, there appears to be strong local interest in MSHPs.

Newfoundland Power also surveyed customers in 2013 to assess their knowledge of, and experience with, MSHPs.<sup>11</sup> Of the customers surveyed, less than 5% indicated they were "very familiar" with MSHPs; another 10% were "somewhat familiar." When customers were asked how likely they would be to install a MSHP based on a 5-year payback, 20% said they would be "very likely" to install a system; an additional 38% said they would be "somewhat likely" to install a system.

---

<sup>11</sup> Questions regarding customers' knowledge and experience with MSHPs were included in Newfoundland Power's customer satisfaction and conservation-related surveys.

The Company is currently gathering information from a sample of customers who have MSHPs installed in their homes. This information will be used to assess customers' experience with the local MSHP market, and to evaluate the energy impacts and cost effectiveness of their systems. Based on this final phase of the study, which will be completed in 2015, Newfoundland Power will make determinations regarding the potential for MSHPs to impact the electrical system.

#### **5.4 2014 Planning and Evaluation Process**

In Order No. P.U. 13 (2013), the Board required Newfoundland Power to provide recommendations as to a process for review of the conservation programs involving the Board and other interested parties.

Effectively, the first step in the planning and development of customer conservation programming is the completion of a conservation potential study.<sup>12</sup> It is anticipated that Newfoundland Power and Hydro will initiate a conservation potential study in 2014.<sup>13</sup>

The primary objective of a conservation potential study is to identify opportunities for energy savings. The study process typically involves consultation with a variety of interested parties, allowing stakeholders and interested parties to provide input into the selection of program technologies and planning processes.

It is Newfoundland Power's view that the broad stakeholder consultation process undertaken during a conservation potential study provides an appropriate opportunity to involve interested persons in the review of conservation programming, as contemplated by the Board in Order No. P.U. 13 (2013).

Prior to commencement of the upcoming conservation potential study, Newfoundland Power will provide the Board and the Consumer Advocate with a detailed overview of the contemplated process, and will consult with the Board and interested parties regarding their participation in the process.

#### **6.0 CDM Costs**

Table 6 summarizes Newfoundland Power's costs associated with CDM activities from 2009 to 2013.

---

<sup>12</sup> The conservation potential study process is described in detail in Appendix F.

<sup>13</sup> The schedule for commencement of the upcoming conservation potential study is uncertain, as it is contingent on the completion of an updated marginal cost study by Hydro.

**Table 6**  
**Conservation and Demand Management Costs**  
**(\$000s)**

	2009	2010	2011	2012	2013
<b>General Conservation Costs</b>					
Education and Outreach	404	380	216 <sup>14</sup>	226	366
Support	183	158	176	169	159
Planning	<u>225</u>	<u>249</u>	<u>205</u>	<u>277<sup>15</sup></u>	<u>310<sup>16</sup></u>
Total General Conservation Costs	812	787	597	672	835
<b>Conservation Program Costs<sup>17</sup></b>					
<i>Residential</i>					
Wrap up for Savings <sup>18</sup>	12	0	0	0	0
Thermostat Rebates <sup>17</sup>	8	0	0	0	0
Energy Savers Programs					
Insulation	382	758	2,151	756	935
Thermostats	190	310	144	445	202
Windows	697	991	792	1,056	1,465
HRV <sup>19</sup>	-	-	-	-	48
Small Technologies <sup>20</sup>	-	-	-	-	3
<i>Commercial</i>					
Lighting	67	83	157	101	99
Business Efficiency Program <sup>18</sup>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>67</u>
Total Conservation Program Costs	1, 356	2,142	3,244	2,358	2,819
CDM Capital Expenditures <sup>21</sup>	156	53	42	10	32
<b>Demand Management Program Costs</b>					
Curtailable Service Option	<u>225</u>	<u>278</u>	<u>326</u>	<u>357</u>	<u>243</u>
<b>Total</b>	<b><u>2,549</u></b>	<b><u>3,260</u></b>	<b><u>4,209</u></b>	<b><u>3,397</u></b>	<b><u>3,929</u></b>

<sup>14</sup> The decrease in Education and Outreach costs in 2011 primarily reflects reallocation of staff from outreach activities to verification audits of program participants.

<sup>15</sup> The increase in Planning costs in 2012 reflects the planning efforts to develop the 2012 Plan.

<sup>16</sup> The increase in Planning costs in 2013 reflects the costs associated with completing the CFEI.

<sup>17</sup> Variations in program costs primarily reflect variations in levels of participation.

<sup>18</sup> Programs replaced with *takeCHARGE* Energy Savers programs in 2009.

<sup>19</sup> New programs introduced in 2013.

<sup>20</sup> New program to be introduced in 2014.

<sup>21</sup> Capital expenditures are associated with improvements to the takechargenl.ca website and the Company's system for program tracking and evaluation.



## **7.0 Outlook**

In 2014, Newfoundland Power intends to increase program participation among customers retrofitting existing homes, launch a new residential conservation program, and conduct research to enhance its planning activities.

As of January 1<sup>st</sup>, 2014, the existing *takeCHARGE* insulation and ENERGY STAR windows programs have been aligned with the National Building Code of Canada revisions announced in December 2012. These code changes mandate that all new homes include basement insulation and energy efficient windows. As a result, the *takeCHARGE* programs have been modified to exclude new homes from program eligibility. The programs will now focus on retrofitting of existing homes.

In 2014, Newfoundland Power will expand its residential customer energy conservation programs to include a coupon-based incentive program for smaller energy efficient technologies, such as specialty lighting products and household appliances. This program will offer instant rebates/coupons at purchase on a list of energy efficient products for the home. The objective is to increase residential energy efficiency awareness and create cost-effective energy savings. The program, which will launch in the spring of 2014, will be delivered through participating retailers via spring and fall promotional campaigns.

In 2014, the Utilities will initiate a conservation potential study, which will provide a full assessment of conservation potential in the province. The assessment will involve market research through customer surveys to gather information regarding electricity end uses in the residential sector. The information gathered, together with the information collected in the CFEI and a broad stakeholder consultation process, will be used to assess potential electricity savings opportunities, and will be a direct input into the next planning cycle.

Newfoundland Power will continue its community outreach and industry trade ally partnerships as key components of its approach to customer education energy conservation initiatives. The Company will also continue to work with the Provincial Government to promote awareness of energy conservation and programs that benefit customers.

## **Appendix A**

### ***takeCHARGE* Program Descriptions**

## ***takeCHARGE Program Descriptions***

### **Residential *takeCHARGE* Rebate Programs**

Program applications are processed primarily through customer applications. The programs are promoted in partnership with trade allies in the retail, home building and renovation industries.

#### ***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 home's building envelope. Eligibility for the programs 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 one cent per R-value per square foot of insulation added to their attics and two cents per R-value per square foot of insulation added to basement walls or ceilings.

#### ***Thermostat Rebate Program***

This program encourages installation of programmable and electronic thermostats to allow customers better control of the temperature in their home and save energy. These high performance thermostats allow customers to set back the temperature during the night or when they are away. Eligibility for the programs 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 for each programmable thermostat and \$5 for each electronic high performance thermostat are offered.

#### ***ENERGY STAR Window Rebate Program***

This program encourages customers to purchase ENERGY STAR rated windows over standard windows to improve the efficiency of their home's building envelope and reduce space heating energy. Eligibility for the programs is limited to electrically heated homes, determined on the basis of annual energy usage. Home retrofit projects are eligible. Customers who purchase ENERGY STAR windows can receive a rebate of two dollars per square foot of window installed.

#### ***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 all 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.

## **Commercial *takeCHARGE* Rebate Programs**

### ***Commercial Lighting Incentive Program***

The Commercial Lighting Program targets energy reductions through more efficient lighting technologies in commercial buildings. The Commercial Lighting Program offers incentives for lamps and ballasts to commercial customers in effort to reduce the cost differential for upgrading to the higher efficiency lighting systems and provide a sales incentive for the lighting distributor.

The Commercial Lighting Program also includes incentives for LED exit signs for retrofit applications.

High bay fluorescent lighting, including T8 and T5 fluorescent fixtures used in areas with high ceilings, such as warehouses, gymnasiums, arenas and garages are also eligible for incentives.

These lighting technologies offer energy savings of 25% to 90% compared to standard lighting systems.

The program is primarily promoted through local lighting distributors. It is a requirement of the program that the lighting distributors provide the Company with sales and customer data.

### ***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 projects.

This program is available for existing commercial facilities that can save energy by installing more efficient equipment and systems. The program includes custom projects and rebates for specific measures on a per unit basis.

## **Appendix B**

### ***takeCHARGE* Program Participation and Savings Results**

### **takeCHARGE Program Participation and Savings Results**

The following tables provide details of customer participation levels achieved and savings results from each of the existing programs since implementation.

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 saving measures installed by all participants in the program. These savings will continue to occur each year for the life of the measures installed.

**Table B-1  
Insulation Rebate Program  
Life to Date Program Participation and Savings**

<b>Program</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Life to Date</b>
Customer Participation	607	661	2,628	1,071	1,254	6,221
Estimated Annual Energy Savings (MWh)	1,588	2,177	7,525	3,725	3,931	18,946
Estimated Peak Demand Savings (kW)	488	674	2,322	1,150	1,213	5,847

**Table B-2  
Thermostat Rebate Program  
Life to Date Program Participation and Savings**

<b>Program</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Life to Date</b>
Customer Participation	915	1,538	1,808	1,705	1,641	7,607
Estimated Annual Energy Savings (MWh)	470	1,186	1,350	1,380	1,302	5,688
Estimated Peak Demand Savings (kW)	145	366	416	425	402	1,754

**Table B-3**  
**ENERGY STAR Window Rebate Program**  
**Life to Date Program Participation and Savings**

<b>Program</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Life to Date</b>
Customer Participation	478	899	1,867	2,075	2,234	7,553
Estimated Annual Energy Savings (MWh)	405	989	1,961	2,537	2,365	8,257
Estimated Peak Demand Savings (kW)	125	305	605	783	730	2,548

**Table B-4**  
**HRV Rebate Program**  
**Life to Date Program Participation and Savings**

<b>Program</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Life to Date</b>
Customer Participation	-	-	-	-	29	29
Estimated Annual Energy Savings (MWh)	-	-	-	-	17	17
Estimated Peak Demand Savings (kW)	-	-	-	-	5	5

**Table B-5**  
**Commercial Lighting Incentive Program**  
**Life to Date Program Participation and Savings**

<b>Program</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Life to Date</b>
Customer Participation	168	232	227	132	88	847
Estimated Annual Energy Savings (MWh)	170	707	1,292	778	496	3,443
Estimated Peak Demand Savings (kW)	69	296	464	262	163	1,254

**Table B-6**  
**takeCHARGE Rebate Program**  
**Life to Date Program Participation and Savings**

<b>Program</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Life to Date</b>
Customer Participation	2,168	3,330	6,530	4,983	5,246	22,257
Estimated Annual Energy Savings (MWh)	2,633	5,059	12,128	8,420	8,111	36,351
Estimated Peak Demand Savings (kW)	827	1,641	3,807	2,620	2,513	11,408

## **Appendix C**

### ***takeCHARGE* Program Cost Effectiveness Results – 2013**



**takeCHARGE Program**  
**Cost Effectiveness Results – 2013**

The costs and benefits of the *takeCHARGE* programs were analyzed from the perspective of participants, non-participants and total resources.<sup>22</sup> For 2013, the program tests indicated benefit to cost ratios as follows:

<b>Program</b>	<b>Participants Test<sup>23</sup></b>	<b>Rate Impact Test<sup>24</sup></b>	<b>Total Resource Cost Test<sup>25</sup></b>
Insulation Rebate Program	2.7	0.9	1.9
Thermostat Rebate Program	8.5	1.0	5.4
ENERGY STAR® Window Rebate Program	8.2	0.7	2.3
HRV Rebate Program <sup>26</sup>	<u>5.2</u>	<u>0.2</u>	<u>0.2</u>
<b>Total Residential Portfolio</b>	<b>4.1</b>	<b>0.8</b>	<b>2.3</b>
Commercial Lighting Incentive Program	<u>6.4</u>	<u>1.2</u>	<u>5.3</u>
<b>Total Program Portfolio</b>	<b><u>4.2</u></b>	<b><u>0.8</u></b>	<b><u>2.4</u></b>
<b>Provincial Residential Portfolio<sup>27</sup></b>	<b>4.2</b>	<b>0.8</b>	<b>2.2</b>
<b>Provincial Commercial Portfolio<sup>27</sup></b>	<b>6.4</b>	<b>1.2</b>	<b>4.9</b>

The *takeCHARGE* program portfolio economic test results have positive economic effects and a slight impact on customer rates.

<sup>22</sup> Benefit to cost ratio results of greater than 1.0 indicate the program has positive economic effect. Analysis is based on the Hydro's 2007 marginal cost study updated with recent forecasts of fuel costs and customer rates.

<sup>23</sup> A *Participants Test* is used to determine if a program minimizes the overall costs for participants.

<sup>24</sup> A *Rate Impact Test* is used to determine whether the program minimizes rates for non-participants.

<sup>25</sup> A *Total Resource Cost Test* is used to determine if a program minimizes the overall cost of supplying energy. The Company uses the Total Resource Cost Test as its primary measure of cost effectiveness.

<sup>26</sup> The cost effectiveness results for the HRV rebate program in 2013 represent only 4 months of program participation benefits and 8 months of program development and program costs. Because these results do not represent a full year of participation, the program test results are low. The HRV rebate program is expected to have positive cost effectiveness results in 2014.

<sup>27</sup> Provincial portfolio cost benefit tests include program results of both Newfoundland Power and Hydro. The provincial residential portfolio tests do not include Hydro's pilot Coupon Program and the Industrial Energy Efficiency Program.

## **Appendix D**

### ***takeCHARGE* Program Cost Effectiveness Results - Life to Date**

**takeCHARGE Program**  
**Cost Effectiveness Results – Life to Date**

The costs and benefits of the *takeCHARGE* programs were analyzed from the perspective of participants, non-participants and total resources.<sup>28</sup> Based on costs and benefits since the programs were implemented in 2009, these tests indicated benefit to cost ratios as follows:

<b>Program</b>	<b>Participants Test<sup>29</sup></b>	<b>Rate Impact Test<sup>30</sup></b>	<b>Total Resource Cost Test<sup>31</sup></b>
Insulation Rebate Program	3.4	0.9	2.6
Thermostat Rebate Program	7.3	0.9	3.1
ENERGY STAR® Window Rebate Program	7.0	0.7	2.5
HRV Rebate Program <sup>32</sup>	<u>5.2</u>	<u>0.2</u>	<u>0.2</u>
<b>Total Residential Portfolio</b>	<b>4.3</b>	<b>0.9</b>	<b>2.6</b>
Commercial Lighting Incentive Program	<u>7.2</u>	<u>1.5</u>	<u>7.6</u>
<b>Total Program Portfolio</b>	<b><u>4.4</u></b>	<b><u>0.9</u></b>	<b><u>2.8</u></b>
<b>Provincial Residential Portfolio<sup>33</sup></b>	<b>4.4</b>	<b>0.9</b>	<b>2.6</b>
<b>Provincial Commercial Portfolio<sup>33</sup></b>	<b>7.3</b>	<b>1.4</b>	<b>7.0</b>

The *takeCHARGE* program portfolio economic test results have positive economic effects and a slight impact on customer rates based on life to date program results.

<sup>28</sup> Benefit to cost ratio results of greater than 1.0 indicate the program has positive economic effect. Analysis is based on the Hydro's 2007 marginal cost study updated with recent forecasts of fuel costs and customer rates.

<sup>29</sup> A *Participants Test* is used to determine if a program minimizes the overall costs for participants.

<sup>30</sup> A *Rate Impact Test* is used to determine whether the program minimizes rates for non-participants.

<sup>31</sup> A *Total Resource Cost Test* is used to determine if a program minimizes the overall cost of supplying energy. The Company uses the Total Resource Cost Test as its primary measure of cost effectiveness.

<sup>32</sup> The cost effectiveness results for the HRV rebate program in 2013 represent only 4 months of program participation benefits and 8 months of program development and program costs. Because these results do not represent a full year of participation, the program test results are low. The HRV rebate program is expected to have positive cost effectiveness results in 2014.

<sup>33</sup> Provincial portfolio cost benefit tests include program results of both Newfoundland Power and Hydro. The provincial residential portfolio tests do not include Hydro's pilot Coupon Program.

**Appendix E**

***takeCHARGE* Program  
Value of Savings Results – Life to Date**

**takeCHARGE Program**  
**Value of Energy Savings – Life to Date**

The value of energy and demand savings has been estimated from a utility perspective based on overall cost reductions on the Island Interconnected System.<sup>34</sup> Since their implementation in 2009, the value of savings resulting from Newfoundland Power customer participation in the takeCHARGE programs is as follows:

**Life to Date Value of Energy Savings**  
**(\$000s)**

<b>Program</b>	<b>2009 - 2012</b>	<b>2013</b>	<b>Total</b>
Insulation Rebate Program	3,491	2,676	6,167
Thermostat Rebate Program	1,095	905	2,000
ENERGY STAR® Window Rebate Program	926	949	1,875
HRV Rebate Program	—	1	1
<b>Total Residential Portfolio</b>	<b>5,512</b>	<b>4,531</b>	<b>10,043</b>
Commercial Lighting Incentive Program	860	690	1,550
<b>Total Program Portfolio</b>	<b><u>6,372</u></b>	<b><u>5,221</u></b>	<b><u>11,593</u></b>

<sup>34</sup> The value of savings includes Holyrood fuel savings and impacts on transmission and distribution costs including losses on an inflation adjusted basis (\$2013). Estimated energy and demand savings are based on when the customer completed installation of energy saving measures during the year, and allow for reductions due to free ridership. This estimate is less than that based on savings accrued to participants on an annual basis, as presented elsewhere in this report.

**Appendix F**

***takeCHARGE* Program  
Planning and Evaluation Tools**

### ***Conservation Potential Study***

The primary outcomes of a conservation potential study are identification of cost-effective energy saving measures, general parameters for program development, and quantification of achievable energy savings potential by sector and end-use. These outcomes form the basis for long-term CDM planning, including energy savings targets, specific program design, implementation, evaluation, and program delivery budgets.

The potential study provides a framework for utilities to properly examine various conservation opportunities. The study process includes consultation with interested parties to allow for input and assessment of the conservation potential. It also includes an opportunity for input in selecting the potential program technologies and the planning process by interested parties and various stakeholders.

Throughout the potential study process, workshops are held to consult with stakeholders such as residential and commercial customers, trade allies, and retail partners about how they utilize energy and their opinions on energy efficient technology penetration potential in the provincial market. Consultation also includes government and non-governmental organizations which may influence energy use through their policies or programs. The results of these consultations are used as a direct input into conservation potential study outcomes.

### ***5-Year Plan***

The completion of a conservation potential study is effectively the commencement of the next planning and program development cycle. The objective of the process is to develop a 5-year plan for the implementation of comprehensive customer energy conservation programs around the technologies that were determined to have conservation potential in the provincial market.

Programs are developed and revised through consultation with the various market stakeholders, such as government, trade allies and local interest groups, to gather feedback on program delivery strategy. The 5-year plan for CDM also addresses customer education, planning and evaluation processes, as well as cost recovery and cost sharing arrangements.

### ***External Review***

The evaluation processes described in the 2012 Plan included an annual evaluation conducted by an independent third party evaluator. The unbiased assessment of the effectiveness of conservation programs is considered to be an industry best practice. These annual evaluations will alternate from year to year between the residential and commercial sectors.

The findings of the independent evaluations are intended to be used to refine program design and implementation details on an ongoing basis, and will also be considered in future planning.

### ***Post-Implementation Review***

The Company will conduct an evaluation during the early stages of program implementation to identify program inefficiencies or barriers, and adapt these programs, as indicated, to increase participation. This evaluation will consist of reviewing information from customers who have

participated and conducting market research with trade allies to ensure the programs are responsive to customers' needs.

### ***Process Evaluation***

Process evaluations are conducted annually to analyze how the *takeCHARGE* programs are performing from both the administrators and the participants perspectives. The Company reviews its customer energy conservation program and market data to identify effective ways to improve the design, marketing, and implementation of the *takeCHARGE* programs, increase program participant satisfaction, and increase energy savings.

### ***Economic Testing***

Economic and energy savings evaluation of the customer energy conservation programs is performed annually.<sup>35</sup> Program participants are required to provide certain information on the program rebate applications. This information ranges from technical data, such as the R-value of installed insulation, or efficiency rating of a HRV to the type of heating in the home and its geographic location. Analysis of this data allows the Company to accurately estimate the energy savings for each program and perform industry standard economic tests.

### ***Customer Surveys***

Annual customer telephone surveys are routinely conducted to gather feedback regarding customers' attitudes toward energy conservation, program awareness and their home energy use. The information from these various sources is a primary input to the planning process for program revision or expansion.

### ***Verification Audits***

In-person verification audits are used to evaluate the effectiveness of program delivery processes. These audits are performed on a portion of program participants to gather feedback regarding the effectiveness of the program from the customers' perspective, as well as to ensure compliance with program guidelines.

### ***Partner Consultation***

The market transformation impacts of the *takeCHARGE* customer energy conservation programs are routinely assessed through regular visits to retailers and consultation with other trade allies. This consultation enables the Company to gather market data and program delivery insights.

---

<sup>35</sup> The costs and benefits of the *takeCHARGE* programs are analyzed from the perspective of participants, non participants and total resources. See Appendices B and C.