Q. **Conservation and DSM**

Provide the conservation and demand management (CDM) reports for the past 3 years.

A. The conservation and demand management (CDM) reports for the years 2011, 2012, and 2013 are attached as PUB-NLH-436 Attachments 1 to 3.

A REPORT TO
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

2011 Conservation and Demand Management Report

NEWFOUNDLAND AND LABRADOR HYDRO

May 2012

newfoundland labrador hydro
a nalcor energy company

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1 Introduction

This report provides an overview of Newfoundland and Labrador Hydro's (Hydro) activities undertaken in 2011 on Conservation and Demand Management (CDM). The report also provides some information on the future outlook and provides an estimate of the value of CDM from a utility perspective.

While the focus is on CDM information and programs directed at customers, Hydro also places efforts on improving the energy efficiency of its own facilities and there were further successes in that program in 2011.

This report describes the provincial approach towards the CDM initiatives, but focuses on the costs and initiatives for Hydro's portion of program implementation.

2 Provincial Context

Energy conservation initiatives were a topic of discussion during Hydro's 2006 General Rate Application (GRA) and a CDM Potential Study was completed in 2008. From that, a five-year strategic plan was completed which outlined proposed energy conservation initiatives to be implemented jointly by Newfoundland Power and Hydro.

The focus was, and is, on energy savings through the development of a culture of conservation. The activities in the Plan include rebate programs for each sector – residential, commercial and industrial – and supporting activities for awareness, education and community engagement to stimulate attitude change and behaviours. The program concepts from the Five-Year Plan and Hydro's 2010 Coupon Pilot Program are included in Appendix A - CDM Program Concepts.

Through Order No. P.U. 14 (2009), the Board of Commissioners of Public Utilities (Board) approved the definition and establishment of a Conservation Deferral Account. A definition for this deferral account was submitted to the Board on April 22, 2009 and is attached as Appendix B to this report.

The takeCHARGE brand was launched in 2008 as a joint utility effort and the first rebate programs were launched through takeCHARGE in 2009. Those same programs continue to be offered. Hydro expanded these program offerings in 2010-2011 with a coupon pilot program, designed to assess the interest from residential customers in lower cost technologies as a way to conserve electricity. This program required significant retailer partnership and coordination and grew from including ten retailers at launch to 17 participating retailers at close of the pilot. The lessons learned from the pilot program are now informing the development of lower cost technology options in the updated Five-Year Utility CDM Plan.

As well as utility-driven CDM programs, Hydro also worked with the Provincial Department of Natural Resources to deliver community based programming, targeting the coastal communities in Labrador. Phase I of the pilot was held in 2009 and the Phase II pilot occurred in 2010. These programs allowed Hydro to work with a community wide approach in isolated areas and provide education, resources and promotions of other programs and offerings to interested residential and commercial customers. The lessons learned from these programs have resulted in the development of a broader Isolated Systems Energy Efficiency Program.

Also working with the Provincial Climate Change, Energy Efficiency and Emissions Trading Secretariat (CCEEET), Hydro was engaged in two research projects: a survey of other provincial jurisdictions for commercial and industrial sector CDM programs to inform policy and program development, and work to provide assessments of energy modeling methodologies for greenhouse gas (GHG) reductions and efficiency program impacts.

3 2008-2013 Five-Year Plan Activities

In 2011, Hydro and Newfoundland Power began developing a new provincial Five-Year Plan to include an expansion of programs for both residential and commercial customers. The Plan is expected to be submitted to the Board in 2012.

The utilities have made gains in CDM program design and implementation, as well as in customer and market engagement since the launch of takeCHARGE in 2009. They also recognize the complexity of the barriers and behaviours in each of their service areas. In particular there has been a significant difference in the uptake of programs between the urban and rural markets which has led to targeted marketing and promotions in rural areas to build participation and awareness.

In moving forward with the updated Five-Year Plan, the utilities are examining a wide range of joint delivery components and strategies for addressing the differences in the rural and urban markets, measurement and evaluation processes and other issues. Each utility has taken the responsibility for addressing the unique aspects of their customers. Hydro informed the Board of an expansion of programming targeting the isolated and diesel systems in 2012 through the 2012 Conservation Cost Deferral and Program Expansion Report, filed December 22, 2011.

The Energy Savers Rebate programs offered through the takeCHARGE program launched in June 2009 were offered through 2011. These programs have produced energy savings and continue to prompt consumers to consider energy efficiency in their purchases. These programs target the highest end uses for the residential and commercial markets of heating and lighting, respectively. These programs are:

- Residential Windows;
- Residential Thermostats;
- Residential Insulation; and
- Commercial Lighting.

The Industrial Energy Efficiency Program (IEEP) is offered to transmission level Industrial Customers and in 2011 the first projects were submitted for incentive support. This program provides financial support for engineering feasibility studies of efficiency projects and for project implementation costs.

In addition to these provincial rebate programs, Hydro also offered a coupon-based energy efficiency program delivered through the takeCHARGE program to Hydro customers. This pilot program was launched in 2010 and closed in April 2011. This program provided in-store coupons for eight energy efficiency products including lighting fixtures, bulbs and hot water tank wraps. It also provided mail-in rebates for Energy Star rated refrigerators and dishwashers. The program was the first retailer based coupon program offered through takeCHARGE and lessons from the pilot will influence future program expansion plans.

Working with Industrial Customers on the IEEP has provided Hydro with a stronger understanding of some of the barriers to energy efficiency with this, and related sectors. Using these lessons, Hydro proposed a similar custom approach in its portfolio expansion to reach general service customers in isolated systems. In addition, Hydro outlined a larger community based efficiency program for the isolated systems providing resources and tools for both residential and commercial customers.

Table 1 and Table 2 below describe Hydro's total CDM expenses and energy savings from 2009 to 2011 across all of Hydro's systems including the Labrador Interconnected System. This report will provide further detail and breakdown of those costs that will be recovered through the deferral account and the associated energy reductions.

Table 1: Hydro CDM Portfolio Costs ($000)

	2009	2010	2011
Windows	44	48	140
Insulation	40	60	80
Thermostats	13	19	31
Coupon Program	0	140	135
Commercial Lighting	13	12	59
Industrial	57	221	103
Total	**123**	**452**	**408**

Table 2: Hydro Annual Energy Savings (MWh)

	2009	2010	2011
Windows	12	27	61
Insulation	31	84	407
Thermostats	6	25	27
Coupon Program	0	64	256
Commercial Lighting	3	10	227
Industrial	0	0	165
Total Existing	**52**	**210**	**1,143**

There are two components of the costs associated with the conservation and efficiency function. Direct program costs are charged to the Deferral Account, and costs associated with general energy efficiency awareness and education, strategic planning and program development are also incurred. These costs remain relatively stable regardless of the number of rebate programs currently offered in the portfolio.

These costs are outlined in Table 3 below. While these costs were in line with expectations for education and support, there was an increase in planning costs related to the planning and development of program concepts for the Isolated Systems Community Program and a Provincial Coupon Program.

Table 3: Hydro's Support Costs ($000)

	2009	2010	2011
Education	262	106	212
Support	53	48	43
Planning	176	180	304
Total	**491**	**334**	**559**

4 2011 Program Highlights

takeCHARGE is a joint utility approach to provincial CDM programming that allows for economies of scale to be achieved in areas such as marketing and outreach. The technologies selected for rebate programs address large energy use opportunities and have been verified as cost effective through standard utility economic screening. In addition, a range of education efforts around general energy efficiency messaging have also been implemented to develop a culture of conservation.

The utilities continue to receive positive response to the existing programs that address a wide provincial customer base. There have, however, been opportunities identified that address different needs within each utility's own distinct customer base. For example, rural Hydro customers respond positively to community engagement efforts as demonstrated by the Coupon Program events and lighting technology exchanges held by Hydro and the Coastal Labrador Pilot Program. The Coastal Labrador Energy Efficiency Pilot Program Phase II was implemented in 2011 and was an initiative funded by the Department of Natural Resources to provide energy efficiency technologies and education to residences and businesses in four isolated diesel communities. This program was not a utility-based ratepayer program, but was instead fully funded by the Province.

The technologies selected for joint utility rebates through provincial takeCHARGE programs have been those that address high energy end uses, such as residential heating and commercial lighting. In addition, technologies that have smaller end use profiles, such as lighting and hot water conservation products have been encouraged through Hydro's Coupon Pilot Program to promote a wider range of opportunities to conserve and provide assistance to customers in gaining access and awareness of lower cost options.

During 2011, takeCHARGE promotions continued to through mass market media, as well as through increasing its presence in social media with an active Facebook page and website. Using engagement techniques such as contests to facilitate discussions on energy efficiency, customers were able to learn about ways to conserve energy and takeCHARGE programs. There was an increase in retailer partnership on joint promotions in 2011. Hydro worked with retailers to jointly promote sales on rebated technologies and connect with in-store sales. For example, Hydro worked with select retailers to develop flyers and promotional materials to promote a programmable thermostat sale and highlight the takeCHARGE rebate available for these items as well.

5 Sector Highlights

In the residential sector, there was growth in all programs. The Insulation Program had the most significant increase, with four times the uptake of the previous year. This increase was largely due to a targeted promotion in the fall that provided an increased incentive for insulation upgrades in eligible homes. This promotion was marketed through print, web and direct in-store promotions and the results demonstrate it was a customer participation success. Since that event, Hydro has been able to engage in new joint sales and promotions with retailers on other products, namely thermostats, and retailers have expressed interest in further partnership opportunities for promoting efficient products. This is a positive result of the insulation promotion as retailers are a key stakeholder in moving forward energy efficiency programs.

A coupon program was launched in the fall of 2010[1] and ended in spring 2011. This initiative brought a wider range of technologies to the attention of homeowners; increased awareness and interest in energy efficiency; and allowed for the utilities to explore a new method of customer engagement. The program had the additional benefit of further educating and engaging retailers and retail staff on energy efficiency, providing more support to customers looking to conserve. Since the inception of this program, Hydro has seen an increase in the interest of retailers in working with the company on energy efficiency education and products.

The commercial sector saw growth in 2011 as well, due primarily to an increase in the number of participating lighting distributors and the inclusion of eligible lighting systems in new commercial construction in Hydro's service area. Hydro worked with the provincial Department of Transportation and Works to ensure new schools installed eligible efficient lighting.

In 2011, three projects were approved under the Industrial Energy Efficiency Program. These are the first capital retrofits to be incented through the program. One project began generating savings before the end of 2011 and the other two have in-service dates in 2012. Working with Industrial Customers on large projects involving engineering analysis and capital planning requires dedicated resources and individual coaching and support when compared to the residential sector and the commercial lighting program. There remains a need for continued one-on-one facilitation of the process to enable Industrial Customers to manage their daily operational priorities while examining energy efficiency and developing efficiency plans.

Moving forward, Hydro will continue to address the high cost of electricity generation in diesel communities, building on the interest level of home and business through the Coastal Labrador Community Projects. Two program concepts have been developed addressing that specific market. These programs provide direct installation of a wide range of energy

[1] The Hydro Coupon program design was filed in October 2010.

conserving technologies to homeowners and customer support to address the unique needs of the businesses in these small communities.

Future expansions of programming for the residential and commercial sectors are in the development for the new Five-Year Plan. Options for the residential sector include widening the offerings to smaller technologies, such as those addressed in the Coupon Program. In the commercial sector, possible expansions include additional lighting technologies and a potential custom approach, modelled on the IEEP.

Hydro will also continue to work with Newfoundland Power and other partners to study emerging opportunities for CDM programming and develop appropriate strategies for advancing a conservation culture in the Province. As previously discussed, further expansions through takeCHARGE, in partnership with Newfoundland Power, are in development for submission to the Board in 2012 which will expand offerings to the broader residential and commercial sectors.

6 Regulated Program Energy Savings and Program Costs

Table 4 below illustrates the energy savings from Hydro customers in relation to programming associated with the annual regulated deferral request. In 2010, Hydro focused on promoting the Windows Rebate Program, resulting in a strong increase in participation in 2010 but a reduced level of participation in 2011 as promotions then focused on the Insulation Program. These promotions resulted in a very strong customer participation in the Insulation Program. The Coupon Program savings follow the delivery timelines of the program. Launched in October 2010 and running until May 2011, there was a buildup of participation as customers became aware of the program and of the benefits of the new technologies being rebated. The first retrofit project funded through the Industrial Energy Efficiency Program was installed in 2011, resulting in the first measurable savings attributable to that program.

Table 4: Energy Savings from Deferral Account Activity (MWh)

	2009	2010	2011
Windows	31	50	38
Insulation	12	16	229
Thermostats	6	15	16
Coupon Program	0	47	166
Commercial Lighting	3	0	92
Industrial	0	0	165
Total Existing	**52**	**128**	**706**

The costs associated with the delivery of the CDM program portfolio include direct costs for advertising, salaries, rebates and other expenses associated with a specific rebate program. These costs vary depending on the uptake of the program and the number of programs offered. Table 5 below provides a program level breakdown.

Table 5: Program Costs from Deferral Account Activity ($000)

	2009	2010	2011
Windows	44	41	69
Insulation	40	53	116
Thermostats	13	18	25
Coupon Program	0	113	123
Commercial Lighting	13	0	43
Industrial	57	190	98
Total Existing	**167**	**415**	**474**

7 Program Participation and Savings

The following provides the breakdown of rebate transactions and savings for each of the programs in the Five-Year Plan and the Coupon Pilot Program. These numbers reflect costs and savings associated with activity associated with the Deferral Account.

The estimated energy savings represent savings from participants in that year. These savings will occur each year for the life of the measures installed.

Table 6: Life to Date Program Participation

Program	Number of Rebates			
	2009	2010	2011	Life to Date
Energy Star Window Rebate Program	11	19	41	71
Insulation Rebate Program	14	24	104	142
Thermostat Rebate Program	4	28	32	64
Coupon Pilot Program	-	N/A	N/A	N/A
Commercial Lighting Rebate Program	0	0	6,996	6,996
Industrial Energy Efficiency Program	0	0	1	1

Table 7: Life to Date Energy Savings

Program	Estimated Energy Savings MWh/Yr			
	2009	2010	2011	Life to Date
Energy Star Window Rebate Program	31	50	38	119
Insulation Rebate Program	12	16	229	257
Thermostat Rebate Program	6	15	16	37
Coupon Pilot Program	0	47	166	213
Commercial Lighting Rebate Program	0	0	92	92
Industrial Energy Efficiency Program	0	0	165	165

8 Life to Date Value of Program Energy Savings

The value of energy and demand savings has been estimated from a utility perspective based on overall cost reductions associated with the Deferral Account Activity. The value of savings includes Holyrood fuel savings and impacts on transmission and distribution costs including losses. Estimated energy and demand savings are not based on assumption of timing of installation of the measure during the year, and allow for reductions due to free ridership which is the portion of the incentives issued to customers that we assume would have installed the measure even without the incentive.

Table 8: Life to Date Value of Energy Savings ($)

Program	2009	2010	2011	Life to Date
Energy Star Window Rebate Program	191	997	3,402	4,590
Insulation Rebate Program	1,163	6,484	21,250	28,897
Thermostat Rebate Program	60	894	2,881	3,835
Coupon Pilot Program	0	4,712	26,608	31,320
Commercial Lighting Rebate Program	0	0	6,723	6,723
Industrial Energy Efficiency Program	0	0	1,019	1,019

Appendix A

CDM Program Concepts

Residential Windows

Program Description

The objective of this program is to increase the installation of *Energy Star* qualified windows, resulting in savings in space heating energy. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets residential customers, including new construction and replacement of existing windows at end of life. Eligibility is limited to electrically heated homes.

Eligible Measures

Eligible measures in this program are *Energy Star* qualified windows.

Delivery Strategy

Delivery of this program will be integrated with the revised *Wrap Up for Savings* insulation and thermostat programs.

Marketing initiatives will include partnering with retailers and trade allies in the home building and renovation industry, to target both do-it-yourself and professional installers. Communications will incorporate the *Energy Star* brand and related marketing support, as well as cross-promotion of the EcoEnergy Retrofit program from Natural Resources Canada. Tools and tactics will include retail and model home point-of-sale materials, advertising, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed through customer application.

Residential Windows

Market Considerations

Energy Star qualified windows make up approximately 10% to 15% of window sales in the province, and understanding of the product is generally poor among customers and retailers. Initial cost is also a barrier to increased market penetration, due to a 10% to 15% price premium. Eligible windows are widely available. Local manufacturers produce approximately 50% of the provincial window sales, and most manufacturers offer *Energy Star* qualified products.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value will be based on the incremental cost of *Energy Star* qualified windows over the standard type.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	40	420	400	500	510	610	2,480
Estimated Cumulative Energy Savings (MWh)	-	230	570	1,020	1,700	2,610	
Total Resource Cost (TRC)	2.4						

Residential Thermostats

Program Description

The existing thermostat rebate program will be revised based on the CDM Potential Study and market research. The continuing objective of this program is to increase the use of both programmable thermostats, which automatically set back room temperature, and high performance thermostats, which control room temperature very accurately, in order to save space heating energy. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets residential customers, including home retrofit and new construction. Eligibility is limited to electrically heated homes.

Eligible Measures

Eligible measures in this program include both programmable and high performance thermostats (for example, those which control within +/- 0.5C.)

Delivery Strategy

Delivery of this program will be integrated with the new residential windows and revised *Wrap Up for Savings* insulation programs.

Marketing initiatives will include partnering with manufacturers, retailers, electrical contractors, as well as homebuilders and real estate professionals to educate consumers regarding the energy savings and comfort benefits of programmable and high performance thermostats. Communications will incorporate cross-promotion of the EcoEnergy Retrofit program from Natural Resources Canada. Tools and tactics will include retail and model home point-of-sale materials, advertising, tradeshows, community outreach and trade ally activities. Rebates will be processed directly by authorized retailers and through customer-submitted coupons.

Residential Thermostats

Market Considerations

Sales of programmable and high performance thermostat types make up less than 10% of total thermostat sales provincially. Customer awareness of the important role of thermostats in heating system efficiency is low**.** Initial cost is a barrier to increased market penetration, particularly for new home construction where continued use of minimum quality thermostats represents significant lost opportunity. Availability of electronic high performance thermostats is currently limited in most areas, though programmable types are widely available.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value will be based on the incremental cost of the targeted thermostat types over the standard type.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings [1]

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	-	300	220	280	230	270	1,300
Estimated Cumulative Energy Savings (MWh)	-	270	650	1,210	1,910	2,650	
Total Resource Cost 2.4							

[1] Includes the cost of revising the existing program and the resulting energy savings. Excludes the cost and energy savings of existing program.

Residential Insulation

Program Description

The existing *Wrap Up for Savings* program will be revised based on the CDM Potential Study and market research. The continuing objective of this program is to increase the insulation level in basements, crawl spaces, walls and attics, resulting in savings in space heating energy. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets residential customers, including home retrofit and new construction. Eligibility is limited to electrically heated homes.

Eligible Measures

Eligible measures in this program include insulation upgrades to basements, crawl spaces, walls and attics. Rebates for new homes are limited to basement insulation beyond building code compliance. Technical requirements for each upgrade type will be reviewed during program detailed design.

Delivery Strategy

Delivery of this program will be integrated with the new residential windows and revised thermostat programs.

Marketing initiatives will include partnering with retailers and trade allies in the home building and renovation industry, to target both do-it-yourself and professional installers. Communications will incorporate cross-promotion of the EcoEnergy Retrofit program from Natural Resources Canada. Tools and tactics will include retail and model home point-of-sale materials, advertising, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed through customer application.

Residential Insulation

Market Considerations

Older homes and small homes often have inadequate insulation levels. For example, over 45% of homes in the province built before 1950 have uninsulated basements. Most new homes constructed in the province still have no insulation on the concrete portion of basement walls. Initial cost is a barrier to increased market penetration, as is awareness of the impact on space heating energy, and the practical difficulties of renovating an existing living space. Recent experience with the *Wrap Up for Savings* program has shown participation to be responsive to awareness-building marketing activities.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value will be reviewed and will be restructured based on insulating value (R-value) rather than a prescriptive product list as currently offered.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings [1]

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	40	1,210	1,210	1,400	1,430	1,590	6,880
Estimated Cumulative Energy Savings (MWh)	-	4,130	8,670	13,660	19,160	25,200	
Total Resource Cost 2.6							

[1] Includes the cost of revising the existing program and the resulting energy savings. Excludes the cost and energy savings of existing program.

Commercial Lighting

Program Description

The objective of this program is to increase the installation of more efficient lighting technologies in commercial buildings. The program components include rebates on a specific list of qualifying technologies, and a variety of education and marketing tools.

Target Market: Commercial

This program targets retrofit of commercial building lighting, encouraging customers to replace existing lighting equipment.

Eligible Measures

The list of eligible measures in this program is based on the technologies identified as eligible for rebate under existing programs offered by other Canadian utilities (for example Ottawa Hydro and BC Hydro). These include T8 fluorescent electronic ballasts or fixtures, compact fluorescent lights (CFLs), and *Energy Star LED* exit signs.

Delivery Strategy

This program is expected to be operational for three years. Delivery will be integrated with future commercial sector programming, which is expected to include a custom project-based incentive program similar to the industrial custom program.

Marketing initiatives will include partnering with lighting manufacturers, distributors, and electrical contractors who will carry the program to potential customers. The program will create business opportunities for trade allies to sell more efficient lighting products. This approach has proven effective in other jurisdictions and in previous Newfoundland Power experience. Tools and tactics will include trade ally and business association activities, such as workshops for contractors and distributors, retail point-of-sale materials, and advertising in trade publications. Demonstration projects will be selected from early participants. Rebates will be processed through customer application.

Commercial Lighting

Market Considerations

The largest portion of the market opportunity in commercial lighting is with standard T12 fluorescent tube lighting with electromagnetic ballasts. This technology is used in approximately 60% of existing commercial building interior lighting in the province, though new construction is almost exclusively using the more efficient T8 fluorescents with electronic ballasts. Federal regulations will remove the electromagnetic ballast from new sales starting in 2010. However, there is a significant opportunity for replacement of existing T12 installations prior to their normal end of life (average lifespan 17 years). Primary barriers to increased use of the more efficient products include the higher initial capital cost, and lack of understanding of the opportunity for energy and cost savings.

Incentive Strategy

Incentives for this program include rebates for a prescriptive list of eligible technologies. The list will be based on the technologies identified as eligible for rebate under existing programs offered by other Canadian utilities (for example Ottawa Hydro and BC Hydro).

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	-	290	310	340	-	-	940
Estimated Cumulative Energy Savings (MWh)	-	590	1,760	2,930	2,930	2,930	

Total Resource Cost 1.1

Industrial Custom Program

Program Description

The objective of this program is to improve electrical energy efficiency in a variety of industrial processes. The program components include financial incentives based on energy savings, and other supports to enable industrial facilities to identify and implement efficiency and conservation opportunities. This program is a custom program to respond to the unique needs of the industrial market, rather than a prescriptive technology approach.

Target Market: Industrial

This program targets retrofit of industrial process equipment in the transmission level customers served by Newfoundland and Labrador Hydro.

Eligible Measures

Eligibility of projects is based on engineering review and confirmation of estimated energy savings impact. Technologies include, but are not limited to, compressed air, pump systems, process equipment and process controls.

Delivery Strategy

This program will be delivered through a call for proposals to Industrial Customers (IC) for energy saving projects that meet set financial criteria. These proposals will undergo engineering review for approval. Selected projects will be eligible for rebates based on savings and payback period reductions, as well as enabling supports including facility education, energy audits and other customized offerings.

The program will be managed internally with external engineering verification of projects and monitoring and evaluation of energy savings. The utility will take the role of facilitator and consultant in providing methods for ICs to complete project proposals and implement approved projects.

This program model has been used successfully in other jurisdictions. To ensure the cost effectiveness of this model with the unique nature and size of the industrial market in Newfoundland and Labrador, this program will launch as a three-year program using a single call for proposals and full evaluation cycle.

Industrial Custom Program

Market Considerations

This market requires a one-on-one approach to project design and delivery. The program builds on the work already completed by the ICs, and addresses their unique barriers to improved efficiency, which include, but are not limited to, access to capital and human resources.

The lifecycle for each program transaction will be measured in months rather than weeks because of the need for review, contract development, implementation timelines and post-installation monitoring and evaluation. This type of program requires that facilities have financial and business stability to continue operations for a time period appropriate to achieve cost effective savings.

Incentive Strategy

Incentives for this program include rebates based on energy savings, as well as funding assistance for additional enabling mechanisms. Rebate levels, maximum rebate amounts and payment schedules will be determined in the program detailed design phase. Rebates for each approved project will be determined through the call for proposals process, based on the engineering proposal and following a schedule agreed upon by the customer and utility.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, including engineering review and inspection of all projects and assessment of long-term impact on customer processes. Formal program evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	100	1,470	2,640	4,270	-	-	8,480
Estimated Energy Savings (MWh)	-	-	-	20,000	45,000	45,000	
Total Resource Cost 2.9							

Residential Coupon Based Energy Efficiency Program

Program Description

This project is a coupon based energy efficiency program targeting Hydro's 31,000 residential customers located across the province in 220 communities. The program provides both at-the-cash coupon promotion for smaller efficiency technologies and mail in rebates for larger Energy Star appliances. This range allows customers to engage in energy efficiency with a wide range of purchase decisions. The program also provides necessary supports, awareness and mechanisms to allow small community retailers to participate and promote their products. All partners are supported by a local program representatives working in the field.

Target Market: Residential

This program targeted residential customers across a range of technology purchases.

Eligible Measures

Eligible measures include smaller items such as CFLs and LED holiday lights, but also some larger items such as Energy Star lighting fixtures, hot water tank wraps and Energy Star clothes washers. The program includes measures with savings resulting from primarily plug load and water heating savings.

Delivery Strategy

At launch the program has ten partner retailers. Local retailers in targeted communities were approached to procure products and offer the coupons for the duration of the program. The rebates on the ENERGY STAR® qualified dishwasher and refrigerator were made available more widely to the entire Hydro customer base through promotions online, info available through the call centre and bill inserts.

Residential Coupon Based Energy Efficiency Program

Market Considerations

This project was designed to:

- Deliver a new, accessible, TRC positive instant coupon-based energy efficiency program in Hydro communities and gain knowledge on the challenges of using this type of approach in communities of different sizes.
- Generate knowledge of energy conservation measures and awareness of the takeCHARGE program offerings.
- Establish new partnerships in the retail sector and engage them in an ongoing wider product offering program and gain a better understanding of Hydro's customer base on the interest in smaller energy efficiency technologies.
- Increase the market penetration of energy saving products and overall energy efficiency awareness.

Incentive Strategy

Incentives for this program include at-the-cash coupons which reduced the cost of the efficient products for the customer at purchase and two additional ENERGY STAR® appliance products with a mail-in rebate similar to the traditional takeCHARGE Energy Savers Rebate programs.

Program Monitoring & Evaluation

Evaluation components include examining the participation, the administration processes, and attitudes of the partners. These included:

- Coupon uptake: number of coupons distributed and number of coupons redeemed;
- Event participation: number of participants; and
- Retailer and participant experiences: number of participants who learned more about energy conservation, takeCHARGE and energy saving products based on interactions with the program.

Estimated Costs & Energy Savings

Costs ($000s)	$240,000-$265,000
Energy Savings (MWh)	473
TRC	2.05

Appendix B

Definition of Deferral Account

Newfoundland and Labrador Hydro
April 22, 2009

Conservation and Demand Management (CDM) Cost Deferral Account
Proposed Definition

The account shall be charged with the costs incurred in implementing the CDM Program Portfolio. The costs will include such items as detailed program development, promotional materials, advertising, pre and post customer installation checks, application and incentive processing, incentives, trade ally training, employee training, and program evaluation costs associated with programs in the CDM Program Portfolio.

The account will exclude any expenditure properly chargeable to plant accounts. The account shall also exclude conservation expenditures that are general in nature, such as costs associated with providing energy conservation awareness, responding to customer inquiries, planning, research and general supervision that are not associated with a specific program in the CDM Program Portfolio.

The account will exclude any expenditure related to programs or incentives that are fully recoverable from other parties, including government. Where a program or initiative is partially funded by other parties, the amount funded will be used to reduce the appropriate expenditures.

Costs associated with Labrador Interconnected customers will be tracked separately from costs associated with the other customers, as programs for the latter are based upon a cost structure which is significantly different from the Labrador Interconnected System and future disposition may be treated separately.

Transfers to, and from, the proposed account will be tax effected.

The disposition of any balance in this account will be subject to a future Order of the Board.

A REPORT TO
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

2012 Conservation and Demand Management Report

NEWFOUNDLAND AND LABRADOR HYDRO

March 2013

newfoundland labrador hydro
a nalcor energy company

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1 Introduction

This report provides an overview of Newfoundland and Labrador Hydro's (Hydro) activities undertaken in 2012 on Conservation and Demand Management (CDM). The report also provides some information on the future outlook and provides an estimate of the value of CDM from a utility perspective.

While the focus is on CDM information and programs directed at customers, Hydro also places efforts on improving the energy efficiency of its own facilities and there were further successes in that program in 2012.

This report describes the provincial approach towards the CDM initiatives, but focuses on the costs and initiatives for Hydro's portion of program implementation. 2012 was a very active year for Hydro, with significant program expansions in both residential and commercial sectors, targeting the isolated diesel systems. In addition to large scale programming, a smaller program promoting block heater timers was launched for customers in the Labrador Interconnected System. The Five Year Energy Conservation Plan: 2012-2016 (the Plan) was filed with the Board in 2012 and outlines further program expansions for 2013 and 2014 for both commercial and residential customers.

2 Provincial Context

Energy conservation initiatives were a topic of discussion during Hydro's 2006 General Rate Application (GRA). Since that time, a CDM Potential study was completed in 2008. From that, a five-year strategic plan was completed which outlined proposed energy conservation initiatives to be implemented jointly by Newfoundland Power and Hydro.

The focus of the Plan was and is on energy savings through the development of a culture of conservation. The activities in the Plan include rebate programs for each sector – residential, commercial and industrial – and supporting activities for awareness, education and community engagement to stimulate attitude change. Since that Plan, Hydro has also offered programs directly to their customers: the Coupon Pilot Program in 2010-2011, the Isolated Systems[1] Community Energy Efficiency Program, Isolated Systems Business Efficiency Program (ISBEP)[2] and a Block Heater Timer program, all launched in 2012. An overview of the programs offered during 2012 is included in Appendix A: CDM Programs and includes current programs offered both through a joint utility partnership or directly targeting Hydro's customers.

Through Order No. P.U. 14 (2009), the Board approved the definition and establishment of a Conservation Deferral Account. A definition for this deferral account was submitted to the Board on April 22, 2009 and is attached as Appendix B to this report.

The takeCHARGE brand was launched in 2008 as a joint utility effort and the first rebate programs were launched through takeCHARGE in 2009. Those same programs continue to be offered.

Hydro continues to have a positive working relationship with the Provincial Climate Change, Energy Efficiency and Emissions Trading Secretariat (CCEEET). In 2012, the takeCHARGE team provided support and feedback on the development of the energy efficiency portion of the Turn Back the Tide[3] website and social media activities regarding climate change and energy efficiency.

[1] These programs target isolated diesel systems as well as the L'anse au Loup System covering the south coast of Labrador.
[2] Board Order No. P.U. 3(2012) approved the deferral of 2012 costs related to the Conservation program.
[3] The Government of Newfoundland and Labrador's "Turn Back the Tide" campaign is being delivered by the Office of Climate Change, Energy Efficiency and Emissions Trading, and is a public awareness campaign on climate change and energy efficiency. The website address is www.turnbackthetide.ca.

3 Five Year Plan Activities

The Five Year Energy Conservation Plan: 2012-2016 was filed with the Board in 2012 and outlines further program expansions for 2013 and 2014 for both commercial and residential customers and provides for an evaluation and assessment of next steps for the industrial sector. In addition to the joint utility programs offered provincially, there are three programs offered by Hydro that directly target their customers in isolated and Labrador Interconnected systems. These are also offered through the takeCHARGE brand to maintain consistency for all utility offered energy conservation programs.

The takeCHARGE Energy Savers Rebate programs launched in June 2009 were offered through 2012. These programs have delivered energy savings and continue to prompt consumers to consider energy efficiency in their purchases. These programs target the highest end uses for the residential and commercial markets of heating and lighting, respectively. These programs are:

- Residential Windows;
- Residential Thermostats;
- Residential Insulation; and
- Commercial Lighting.

The Industrial Energy Efficiency Program (IEEP) launched in 2010 with the first project cash incentives approved in 2011 and additional projects completed in 2012. This program provides financial support for engineering feasibility studies of efficiency opportunities and capital projects.

In addition to these provincial rebate programs, Hydro launched programs for both residential and commercial customers. The Isolated System Energy Efficiency Program provided for direct install of a kit of technologies in a participating customer's home. The kit included items for water savings, draft proofing, lighting and other measures. Homeowners received education on energy efficiency and information on the existing takeCHARGE rebate programs. There were community events, social media promotions and exchanges held to promote the program and energy efficiency awareness. More than 85%[4] of homes received a direct install visit in the communities targeted in 2012.

In addition to the residential component of the program, commercial customers also received a direct install with lighting, draft sealing and water conservation measures. As well as the direct install visit, customers were made aware of the newly launched Isolated Systems Business Efficiency Program (ISBEP) that provides a custom approach towards finding energy efficiency solutions for the business community. Similar to the

[4] Final report from Summerhill Group indicates an 87.6% install rate for 2012.

IEEP, the program provides assessment of the opportunities at the customers' site and provides an incentive for capital work based on the predicted energy savings.

A smaller program was launched in the Labrador Interconnected System to promote and provide incentives for Block Heater Timers. Timers are rarely used in this region, although the penetration of block heaters is very high. This program was launched in partnership with corporate partners Iron Ore Company of Canada (IOC) and Cliffs (Wabush Mines) to provide giveaways, promotions and retail coupons on this technology. Our corporate partners are increasing the incentive amount and providing additional promotions and outreach for the program to customers in the Labrador West area.

Table 1: Hydro CDM Portfolio Costs and Table 2: Hydro Annual Energy Savings, describe Hydro's total CDM expenses and energy savings from 2009 to 2012 across all of Hydro's systems including the Labrador Interconnected System. This report will provide further detail and breakdown of those costs that will be recovered through the deferral account and the associated energy reductions.

Table 1: Hydro CDM Portfolio Costs ($000)

	2009	**2010**	**2011**[5]	**2012**
Windows	44	48	80	117
Insulation	40	60	140	126
Thermostats	13	19	31	47
Coupon Program	-	140	135	-
Commercial Lighting	13	12	59	20
Industrial	57	221	103	173
Block Heater Timer				31
Isolated Systems Community				858
ISBEP				93
Heat Recovery Ventilator				-
Business Efficiency Program				-
Small Technologies				-
Total Portfolio	**167**	**500**	**548**	**1,465**

[5] In the 2011 Conservation and Demand Management Report, the costs for Windows and Insulation were reversed in the 2011 column. This table provides a correction of that error.

Table 2: Hydro Annual Energy Savings (MWh)

	2009	2010	2011	2012
Windows	12	27	61	136
Insulation	31	84	407	383
Thermostats	6	25	27	43
Coupon Program	-	64	256	-
Commercial Lighting	3	10	227	95
Industrial	0	0	165	3,172
Block Heater Timer				0
Isolated Systems Community				1,673
ISBEP				3
Heat Recovery Ventilator				-
Business Efficiency Program				-
Small Technologies				-
Total	**52**	**210**	**1,143**	**5,505**

There are two components of the costs associated with the conservation and efficiency function. In addition to direct program costs which are charged to the Deferral Account, there are costs associated with general energy efficiency awareness and education, strategic planning and program development. These costs remain relatively stable regardless of the number of rebate programs currently offered in the portfolio.

These costs are outlined in Table 3: Hydro Support Costs, below.

Table 3: Hydro Support Costs 2009-2013 ($000)

	2009	2010	2011	2012
Education	262	106	212	200
Support	53	48	43	53
Planning	176	180	304	127
Total	**491**	**334**	**559**	**380**

4 2012 Program Highlights

takeCHARGE is a joint utility effort to provincial CDM programming that allows for economies of scale to be achieved in areas such as marketing and outreach efforts. The technologies selected for rebate programs address large energy use opportunities and have been verified as cost effective through standard utility economic screening. In addition, a range of education efforts around general energy efficiency messaging have also been implemented to develop a culture of conservation.

Participation continues to increase in Hydro's service area. Retailers continue to be key partners in reaching customers, and a pilot project undertaken in 2011-2012 with retailers to promote Energy Star Window purchases and rebate submission demonstrated this role. Select retailers completed applications on behalf of customers and received a small financial incentive for every eligible rebate submitted. This effort was both to increase the sales for Energy Star Windows but also to reduce the barriers of the application process for the customer. Hydro rebate participation numbers are typically low, so it is challenging to determine the exact impact of such an initiative, but it does seem to have had an impact. The lessons learned from this report will be used to determine further opportunities for retailer engagement on a provincial scale.

In the residential sector, there was growth in both the windows and thermostat programs. The decrease from 2011 savings in the insulation program is a result of the very strong activity around an aggressive insulation promotion and increased rebate that was held in 2011 that was not repeated in 2012.

Participation in the commercial lighting program has been a challenge in 2012 due to an increase in the cost of the more efficient lighting that is eligible for incentive. While the price has levelled out and even returned to previous cost levels, the local lighting suppliers are not yet following suit. The utilities continue to work with distributors to gain insight into the impacts this is having on the market.

Industrial Customer participation continues to be a challenge as customers focus on their own operation and processing, and energy efficiency does not appear to be a primary driver for resource allocation. There is still a great need for strong, hands-on support to enable customers to manage their daily operational priorities while examining energy efficiency and developing efficiency plans.

During 2012, takeCHARGE promotions continued through mass market media approaches, as well as through an increasing presence in social media with an active Facebook page and website. Using contests and engagement in discussions on energy efficiency, customers were able to learn about ways to conserve as well as hear about takeCHARGE programs. Social media continues to be an effective way to engage customers in discussing ways to conserve energy and the customer engagement has directed people to the website for additional detailed rebate program information.

5 Sector Highlights

In the residential sector, outreach and non-traditional promotions and awareness building continue to demonstrate strong results in reaching a diverse market. For example, the takeCHARGE program has been represented through community events, product exchanges and giveaways to reach customers in a variety of ways. The Isolated Systems Energy Efficiency Program in isolated communities provided events and open community dialogue, opportunities to participate in lighting exchanges as well as providing coupons for small technologies such as lighting at local retailers and the opportunity to have a number of items installed free of charge in the customer's home. The Program is administered by Summerhill Group on behalf of Hydro and through Summerhill, local people were hired and trained to deliver the program. The very high participation rate of more than 85% of homes is in large part due to the program having a local presence and engaging people on a personal level with regards to energy decisions at home.

The commercial market requires additional understanding and support of a different nature. In the summer of 2012, the ISBEP was launched, providing rebates and technical assistance for commercial customers in the isolated diesel communities and L'Anse au Loup area. This custom approach is similar to the IEEP and Hydro technical staff work with customers one on one to address their energy efficiency needs. Hydro had already learned from the IEEP that business customers require technical support in identifying the opportunities but also significant support in moving the project forward while they manage immediate business concerns.

In 2012, the IEEP had successes with continued participation in capital retrofits with one Industrial Customer on the Island Interconnected System. Additional projects were discussed and explored with other customers but were not completed. The challenges of keeping sustained interest in efficiency projects with competing business concerns has resulted in continued low numbers of projects and savings, despite the identification of cost effective projects.

Hydro will also continue to work with Newfoundland Power and other partners to determine emerging opportunities for CDM programming and develop appropriate strategies for developing a conservation culture in the province. The 2012 activities included filing the updated Plan, commencing discussions with CCEEET on changing codes in both commercial and residential sectors and new program launches for both sectors.

6 Regulated Program Energy Savings and Program Costs

Table 4 below illustrates the energy savings from Hydro customers in relation to programming associated with the annual regulated deferral request. In 2012, there was growth on the windows and thermostat programs and an increase in uptake on insulation. The commercial lighting challenges with market prices of the eligible technologies are reflected in this year's savings. The strong successes in the IEEP and the Isolated System Community Energy Efficiency Program reflect efforts to offer a program model that responds to the needs of the customers being targeted. Strong facilitation and support was provided for the IEEP participants and one-on-one community level participation opportunities provided through the Isolated System Community Energy Efficiency Program. A small energy savings in 2012 resulted from the completion of the first project through the ISBEP program.

Table 4: Energy Savings from Deferral Account Activity (MWh)

	2009	2010[6]	2011	2012
Windows	12	16	38	50
Insulation	31	63	229	126
Thermostats	6	15	16	28
Coupon Program	0	47	166	-
Commercial Lighting	3	0	92	25
Industrial	0	0	165	3,172
Block Heater Timer				0
Isolated Systems Community				1,673
ISBEP				3
Heat Recovery Ventilator				-
Business Efficiency Program				-
Small Technologies				-
Total	**52**	**141**	**706**	**5,077**

The costs associated with the delivery of the CDM program portfolio include direct costs for advertising, salaries, rebates and other expenses directly associated with a specific rebate program. These costs vary depending on the uptake of the program and the number of programs offered. Table 5: Program Costs from Deferral Account Activity provides a program level breakdown.

[6] In the 2011 Conservation and Demand Management Report, the energy savings for Windows and Insulation were reversed in the 2009 and 2010 columns. This table provides a correction of that error. Review of the savings information for 2010 showed that the Insulation savings reported (50 MWh/yr) were actual savings assumed from time of rebate submission and had not been annualized. This correction has been made, to ensure consistency with other programs and resulted in an increase in the savings to 63 MWh/yr.

Table 5: Program Costs from Deferral Account Activity ($000)

	2009	2010	2011[7]	2012
Windows	44	41	69	102
Insulation	40	53	116	108
Thermostats	13	18	25	43
Coupon Program	-	113	123	-
Commercial Lighting	13	-	43	10
Industrial	57	190	98	170
Block Heater Timer				-
Isolated Systems Community				858
ISBEP				93
Heat Recovery Ventilator				-
Business Efficiency Program				-
Small Technologies				-
Total Portfolio	**167**	**415**	**474**	**1,384**

[7] In the 2011 Conservation and Demand Management Report, the costs for Windows and Insulation were reversed in the 2011 column.

7 Program Participation and Savings

The following provides the breakdown of rebate transactions and savings for each of the programs in the Five Year Plan and the Coupon Pilot Program. These numbers reflect costs and savings associated with activity recorded in the Deferral Account.

The estimated energy savings represent savings from participants in that year. These savings will occur each year for the life of the measures installed.

Table 6: Life to Date Program Participation

	Number of Rebates				
Program	**2009**	**2010**	**2011**	**2012**	**Life to Date**
Energy Star Window Rebate Program	11	19	41	61	132
Insulation Rebate Program	14	24	104	50	192
Thermostat Rebate Program	4	28	32	45	109
Coupon Pilot Program	-	N/A	N/A	N/A	0
Commercial Lighting Rebate Program[8]	0	0	6,996	1,321	8,317
Industrial Energy Efficiency Program	0	0	1	1	2
Block Heater Timer				0	0
Isolated System Community				N/A	0
ISBEP				1	1
Heat Recovery Ventilator				-	0
Business Efficiency Program				-	0
Small Technologies				-	0

[8] For the Commercial Lighting Program, rebates can range from 10 efficient bulbs to hundreds of bulbs, and ballasts. For that reason, the numbers listed in this table are numbers of technologies rebated, rather than the actual number of rebates.

Table 7: Life to Date Energy Savings

	Estimated Energy Savings MWh/yr				
Program	**2009**	**2010**[9]	**2011**	**2012**	**Life to Date**
Energy Star Window Rebate Program	12	16	38	50	116
Insulation Rebate Program	31	63	229	126	449
Thermostat Rebate Program	6	15	16	28	65
Coupon Pilot Program	0	47	166	0	213
Commercial Lighting Rebate Program	0	0	92	25	117
Industrial Energy Efficiency Program	0	0	165	3,172	3,337
Block Heater Timer				0	0
Isolated System Community				1,673	1,673
ISBEP				3	3
Heat Recovery Ventilator					0
Business Efficiency Program					0
Small Technologies					0

[9] In the 2011 Conservation and Demand Management Report, the energy savings for Windows and Insulation were reversed in the 2009 and 2010 columns.

8 Life to Date Value of Program Energy Savings

The value of energy and demand savings has been estimated from a utility perspective based on overall cost reductions associated with the program costs recorded in the Deferral Account. It includes Holyrood fuel savings and impacts on transmission and distribution costs including losses. No losses are included for the Industrial Energy Efficiency Program as they are transmission level customers. 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. The value of energy savings changes each year due primarily to the change in avoided fuel prices and an update from using 2009 dollars to 2012 dollars.

Table 8: Life to Date Value of Energy Savings ($)

	Estimated Energy Savings MWh/yr				
Program	**2009**	**2010**	**2011**	**2012**	**Life to Date**
Energy Star Window Rebate Program	233	1,197	4,084	10,477	15,991
Insulation Rebate Program	1,078	6,037	25,469	57,650	90,234
Thermostat Rebate Program	61	893	2,879	6,635	10,468
Coupon Pilot Program	-	4,712	26,608	54,307	85,627
Commercial Lighting Rebate Program	-	-	7,972	21,582	29,554
Industrial Energy Efficiency Program	-	-	961	291,564	292,525
Block Heater Timer	-	-	-	0	0
Isolated System Community	-	-	-	167,906	167,906
ISBEP	-	-	-	221	221
Heat Recovery Ventilator	-	-	-	-	-
Business Efficiency Program	-	-	-	-	-
Small Technologies	-	-	-	-	-

Appendix A

CDM Program Concepts

Residential Windows

Program Description

The objective of this program is to increase the installation of *Energy Star* qualified windows, resulting in savings in space heating energy. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets residential customers, including new construction and replacement of existing windows at end of life. Eligibility is limited to electrically heated homes.

Eligible Measures

Eligible measures in this program are *Energy Star* qualified windows.

Delivery Strategy

Delivery of this program will be integrated with the revised *Wrap Up for Savings* insulation and thermostat programs.

Marketing initiatives will include partnering with retailers and trade allies in the home building and renovation industry, to target both do-it-yourself and professional installers. Communications will incorporate the *Energy Star* brand and related marketing support, as well as cross-promotion of the EcoEnergy Retrofit program from Natural Resources Canada. Tools and tactics will include retail and model home point-of-sale materials, advertising, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed through customer application.

Residential Windows

Market Considerations

Energy Star qualified windows make up approximately 10% to 15% of window sales in the province, and understanding of the product is generally poor among customers and retailers. Initial cost is also a barrier to increased market penetration, due to a 10% to 15% price premium. Eligible windows are widely available. Local manufacturers produce approximately 50% of the provincial window sales, and most manufacturers offer *Energy Star* qualified products.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value will be based on the incremental cost of *Energy Star* qualified windows over the standard type.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	40	420	400	500	510	610	2,480
Estimated Cumulative Energy Savings (MWh)	-	230	570	1,020	1,700	2,610	
Total Resource Cost (TRC)	2.4						

Residential Thermostats

Program Description

The existing thermostat rebate program will be revised based on the CDM Potential Study and market research. The continuing objective of this program is to increase the use of both programmable thermostats, which automatically set back room temperature, and high performance thermostats, which control room temperature very accurately, in order to save space heating energy. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets residential customers, including home retrofit and new construction. Eligibility is limited to electrically heated homes.

Eligible Measures

Eligible measures in this program include both programmable and high performance thermostats (for example, those which control within +/- 0.5C.)

Delivery Strategy

Delivery of this program will be integrated with the new residential windows and revised *Wrap Up for Savings* insulation programs.

Marketing initiatives will include partnering with manufacturers, retailers, electrical contractors, as well as homebuilders and real estate professionals to educate consumers regarding the energy savings and comfort benefits of programmable and high performance thermostats. Communications will incorporate cross-promotion of the EcoEnergy Retrofit program from Natural Resources Canada. Tools and tactics will include retail and model home point-of-sale materials, advertising, tradeshows, community outreach and trade ally activities. Rebates will be processed directly by authorized retailers and through customer-submitted coupons.

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Residential Thermostats

Market Considerations

Sales of programmable and high performance thermostat types make up less than 10% of total thermostat sales provincially. Customer awareness of the important role of thermostats in heating system efficiency is low**.** Initial cost is a barrier to increased market penetration, particularly for new home construction where continued use of minimum quality thermostats represents significant lost opportunity. Availability of electronic high performance thermostats is currently limited in most areas, though programmable types are widely available.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value will be based on the incremental cost of the targeted thermostat types over the standard type.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings [1]

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	-	300	220	280	230	270	1,300
Estimated Cumulative Energy Savings (MWh)	-	270	650	1,210	1,910	2,650	

Total Resource Cost 2.4

[1] Includes the cost of revising the existing program and the resulting energy savings. Excludes the cost and energy savings of existing program.

Residential Insulation

Program Description

The existing *Wrap Up for Savings* program will be revised based on the CDM Potential Study and market research. The continuing objective of this program is to increase the insulation level in basements, crawl spaces, walls and attics, resulting in savings in space heating energy. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets residential customers, including home retrofit and new construction. Eligibility is limited to electrically heated homes.

Eligible Measures

Eligible measures in this program include insulation upgrades to basements, crawl spaces, walls and attics. Rebates for new homes are limited to basement insulation beyond building code compliance. Technical requirements for each upgrade type will be reviewed during program detailed design.

Delivery Strategy

Delivery of this program will be integrated with the new residential windows and revised thermostat programs.

Marketing initiatives will include partnering with retailers and trade allies in the home building and renovation industry, to target both do-it-yourself and professional installers. Communications will incorporate cross-promotion of the EcoEnergy Retrofit program from Natural Resources Canada. Tools and tactics will include retail and model home point-of-sale materials, advertising, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed through customer application.

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Residential Insulation

Market Considerations

Older homes and small homes often have inadequate insulation levels. For example, over 45% of homes in the province built before 1950 have uninsulated basements. Most new homes constructed in the province still have no insulation on the concrete portion of basement walls. Initial cost is a barrier to increased market penetration, as is awareness of the impact on space heating energy, and the practical difficulties of renovating an existing living space. Recent experience with the *Wrap Up for Savings* program has shown participation to be responsive to awareness-building marketing activities.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value will be reviewed and will be restructured based on insulating value (R-value) rather than a prescriptive product list as currently offered.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings [1]

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	40	1,210	1,210	1,400	1,430	1,590	6,880
Estimated Cumulative Energy Savings (MWh)	-	4,130	8,670	13,660	19,160	25,200	
Total Resource Cost 2.6							

[1] Includes the cost of revising the existing program and the resulting energy savings. Excludes the cost and energy savings of existing program.

Commercial Lighting

Program Description

The objective of this program is to increase the installation of more efficient lighting technologies in commercial buildings. The program components include rebates on a specific list of qualifying technologies, and a variety of education and marketing tools.

Target Market: Commercial

This program targets retrofit of commercial building lighting, encouraging customers to replace existing lighting equipment.

Eligible Measures

The list of eligible measures in this program is based on the technologies identified as eligible for rebate under existing programs offered by other Canadian utilities (for example Ottawa Hydro and BC Hydro). These include T8 fluorescent electronic ballasts or fixtures, compact fluorescent lights (CFLs), and *Energy Star LED* exit signs.

Delivery Strategy

This program is expected to be operational for three years. Delivery will be integrated with future commercial sector programming, which is expected to include a custom project-based incentive program similar to the industrial custom program.

Marketing initiatives will include partnering with lighting manufacturers, distributors, and electrical contractors who will carry the program to potential customers. The program will create business opportunities for trade allies to sell more efficient lighting products. This approach has proven effective in other jurisdictions and in previous Newfoundland Power experience. Tools and tactics will include trade ally and business association activities, such as workshops for contractors and distributors, retail point-of-sale materials, and advertising in trade publications. Demonstration projects will be selected from early participants. Rebates will be processed through customer application.

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Commercial Lighting

Market Considerations

The largest portion of the market opportunity in commercial lighting is with standard T12 fluorescent tube lighting with electromagnetic ballasts. This technology is used in approximately 60% of existing commercial building interior lighting in the province, though new construction is almost exclusively using the more efficient T8 fluorescents with electronic ballasts. Federal regulations will remove the electromagnetic ballast from new sales starting in 2010. However, there is a significant opportunity for replacement of existing T12 installations prior to their normal end of life (average lifespan 17 years). Primary barriers to increased use of the more efficient products include the higher initial capital cost, and lack of understanding of the opportunity for energy and cost savings.

Incentive Strategy

Incentives for this program include rebates for a prescriptive list of eligible technologies. The list will be based on the technologies identified as eligible for rebate under existing programs offered by other Canadian utilities (for example Ottawa Hydro and BC Hydro).

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness and a representative sample of installations will be inspected. Formal evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	-	290	310	340	-	-	940
Estimated Cumulative Energy Savings (MWh)	-	590	1,760	2,930	2,930	2,930	
Total Resource Cost 1.1							

Industrial Custom Program

Program Description

The objective of this program is to improve electrical energy efficiency in a variety of industrial processes. The program components include financial incentives based on energy savings, and other supports to enable industrial facilities to identify and implement efficiency and conservation opportunities. This program is a custom program to respond to the unique needs of the industrial market, rather than a prescriptive technology approach.

Target Market: Industrial

This program targets retrofit of industrial process equipment in the transmission level customers served by Newfoundland and Labrador Hydro.

Eligible Measures

Eligibility of projects is based on engineering review and confirmation of estimated energy savings impact. Technologies include, but are not limited to, compressed air, pump systems, process equipment and process controls.

Delivery Strategy

This program will be delivered through a call for proposals to Industrial Customers (IC) for energy saving projects that meet set financial criteria. These proposals will undergo engineering review for approval. Selected projects will be eligible for rebates based on savings and payback period reductions, as well as enabling supports including facility education, energy audits and other customized offerings.

The program will be managed internally with external engineering verification of projects and monitoring and evaluation of energy savings. The utility will take the role of facilitator and consultant in providing methods for ICs to complete project proposals and implement approved projects.

This program model has been used successfully in other jurisdictions. To ensure the cost effectiveness of this model with the unique nature and size of the industrial market in Newfoundland and Labrador, this program will launch as a three-year program using a single call for proposals and full evaluation cycle.

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Industrial Custom Program

Market Considerations

This market requires a one-on-one approach to project design and delivery. The program builds on the work already completed by the ICs, and addresses their unique barriers to improved efficiency, which include, but are not limited to, access to capital and human resources.

The lifecycle for each program transaction will be measured in months rather than weeks because of the need for review, contract development, implementation timelines and post-installation monitoring and evaluation. This type of program requires that facilities have financial and business stability to continue operations for a time period appropriate to achieve cost effective savings.

Incentive Strategy

Incentives for this program include rebates based on energy savings, as well as funding assistance for additional enabling mechanisms. Rebate levels, maximum rebate amounts and payment schedules will be determined in the program detailed design phase. Rebates for each approved project will be determined through the call for proposals process, based on the engineering proposal and following a schedule agreed upon by the customer and utility.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, including engineering review and inspection of all projects and assessment of long-term impact on customer processes. Formal program evaluations will be conducted within the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2008	2009	2010	2011	2012	2013	Total
Estimated Costs ($000s)	100	1,470	2,640	4,270	-	-	8,480
Estimated Energy Savings (MWh)	-	-	-	20,000	45,000	45,000	

Total Resource Cost 2.9

Residential Coupon Based Energy Efficiency Program

Program Description

This project is a coupon based energy efficiency program targeting Hydro's 31,000 residential customers located across the province in 220 communities. The program provides both at-the-cash coupon promotion for smaller efficiency technologies and mail in rebates for larger Energy Star appliances. This range allows customers to engage in energy efficiency with a wide range of purchase decisions. The program also provides necessary supports, awareness and mechanisms to allow small community retailers to participate and promote their products. All partners are supported by a local program representatives working in the field.

Target Market: Residential

This program targeted residential customers across a range of technology purchases.

Eligible Measures

Eligible measures include smaller items such as CFLs and LED holiday lights, but also some larger items such as Energy Star lighting fixtures, hot water tank wraps and Energy Star clothes washers. The program includes measures with savings resulting from primarily plug load and water heating savings.

Delivery Strategy

At launch the program has ten partner retailers. Local retailers in targeted communities were approached to procure products and offer the coupons for the duration of the program. The rebates on the ENERGY STAR® qualified dishwasher and refrigerator were made available more widely to the entire Hydro customer base through promotions online, info available through the call centre and bill inserts.

Residential Coupon Based Energy Efficiency Program

Market Considerations

This project was designed to:

- Deliver a new, accessible, TRC positive instant coupon-based energy efficiency program in Hydro communities and gain knowledge on the challenges of using this type of approach in communities of different sizes.
- Generate knowledge of energy conservation measures and awareness of the takeCHARGE program offerings.
- Establish new partnerships in the retail sector and engage them in an ongoing wider product offering program and gain a better understanding of Hydro's customer base on the interest in smaller energy efficiency technologies.
- Increase the market penetration of energy saving products and overall energy efficiency awareness.

Incentive Strategy

Incentives for this program include at-the-cash coupons which reduced the cost of the efficient products for the customer at purchase and two additional ENERGY STAR® appliance products with a mail-in rebate similar to the traditional takeCHARGE Energy Savers Rebate programs.

Program Monitoring & Evaluation

Evaluation components include examining the participation, the administration processes, and attitudes of the partners. These included:

- Coupon uptake: number of coupons distributed and number of coupons redeemed;
- Event participation: number of participants; and
- Retailer and participant experiences: number of participants who learned more about energy conservation, takeCHARGE and energy saving products based on interactions with the program.

Estimated Costs & Energy Savings

Costs ($000s)	$240,000-$265,000
Energy Savings (MWh)	473
TRC	2.05

Appendix B

Definition of Deferral Account

Newfoundland and Labrador Hydro
April 22, 2009

Conservation and Demand Management (CDM) Cost Deferral Account
Definition

The account shall be charged with the costs incurred in implementing the CDM Program Portfolio. The costs will include such items as detailed program development, promotional materials, advertising, pre and post customer installation checks, application and incentive processing, incentives, trade ally training, employee training, and program evaluation costs associated with programs in the CDM Program Portfolio.

The account will exclude any expenditure properly chargeable to plant accounts. The account shall also exclude conservation expenditures that are general in nature, such as costs associated with providing energy conservation awareness, responding to customer inquiries, planning, research and general supervision that are not associated with a specific program in the CDM Program Portfolio.

The account will exclude any expenditure related to programs or incentives that are fully recoverable from other parties, including government. Where a program or initiative is partially funded by other parties, the amount funded will be used to reduce the appropriate expenditures.

Costs associated with Labrador Interconnected customers will be tracked separately from costs associated with the other customers, as programs for the latter are based upon a cost structure which is significantly different from the Labrador Interconnected System and future disposition may be treated separately.

Transfers to, and from, the proposed account will be tax effected.

The disposition of any balance in this account will be subject to a future Order of the Board.

A REPORT TO
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

2013 Conservation and Demand Management Report

NEWFOUNDLAND AND LABRADOR HYDRO

April 2014

newfoundland labrador hydro
a nalcor energy company

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1 Introduction

This report provides an overview of Conservation and Demand Management (CDM) activities undertaken by Newfoundland and Labrador Hydro (Hydro) in 2013. The report also provides information on major activities planned for 2014 and provides an estimate of the value of CDM from a utility perspective.

The programming described in this report includes the joint utility programs offered through *takeCHARGE* but focuses on the costs and initiatives for Hydro's portion of program implementation. Hydro also offers programs under the *takeCHARGE* banner targeting only Hydro customers.

The initial takeCHARGE programs were launched in 2009 and while those programs remain in market, a wide range of programs have been added in subsequent years and available through 2013. Programs have also seen changes in offerings and eligibility requirements. Evaluations and program reviews are underway for long-standing programs as well.

2 Coordination and Context

2.1 Utility Planning

Energy conservation initiative was a topic of interest during Hydro's 2006 General Rate Application (GRA). Since that time, a CDM Potential Study was completed in 2008. From that, a five-year strategic plan[1] was completed which outlined proposed energy conservation initiatives to be implemented jointly by Newfoundland Power and Hydro (the Utilities). The Utilities have since designed and implemented a robust joint utility portfolio of programs. Current programs offered through the joint utility model are available for residential and commercial customer classes and provide rebate options to address energy savings for the larger energy consumers for each class.

The updated strategic plan[2] continued the focus on joint utility programs but also outlined additional program opportunities identified and implemented by Hydro to address additional opportunities in higher avoided cost isolated diesel systems in addition to a program for block heater timers in the Labrador Interconnected System. Hydro launched the Isolated Systems Business Efficiency Program (ISBEP) in the Isolated and L'Anse au Loup Systems in 2012 and an expansion of this program model was launched through the joint utility partnership late in 2013. Hydro has been developing programs and approaches outside the joint utility approach to engage customers with additional ways to conserve and to provide learnings for potential expanded offerings through joint utility programs. In this way, Hydro's retailer coupon program

[1] Five Year Energy Conservation Plan: 2008-2012
[2] Five Year Energy Conservation Plan: 2012-2016

offered in 2010-2011 has created the impetus for the Small Technology program to be launched provincially in 2014 which provides the same at-cash and mail-in coupons for a range of technologies including lighting and appliances. The ISBEP, launched in 2012, is the predecessor of the Business Efficiency Program, launched provincially in 2013 for commercial customers.

In 2012 Hydro launched a program to promote the use of block heater timers. This program is unique to the Labrador Interconnected System because of its extremely cold climate which presents a significant conservation opportunity for Hydro. The program launch event was a giveaway of block heater timers to provide awareness in the market of the technology and was then followed up with a coupon in store for purchase discount. The program was set to run two winter seasons (2012-2013 and 2013-2014). An evaluation report will be completed in the fourth quarter of 2014.

The focus of both joint utility CDM plans was on energy savings through the longer-term goal of the development of a culture of conservation and has not included a demand management component. Hydro is currently working to complete an updated marginal cost study to gauge the need for and potentially guide future initiatives around demand management.

The activities in the plan include rebate programs for each sector – residential, commercial and industrial – and supporting activities for awareness, education and community engagement to stimulate attitude change. An overview of the programs offered during 2013 is included in Appendix A: CDM Program Descriptions and includes current programs offered both through a joint utility partnership and those directly targeting Hydro's customers.

The Utilities have begun third party formal program evaluations. In 2013 work began with DNV GL-Energy[3] to complete a market and process evaluation of the residential joint utility programs. This work will be completed in 2014 and the Utilities will develop a plan to address recommendations from the evaluation. The Utilities will be working to conduct joint utility program reviews and evaluation in the future on an annual basis. As well in 2014, Hydro will be reviewing the two Isolated Systems' programs to assess the next steps for each program offering as they were outlined as three-year programs in the current Five-Year CDM plan. Hydro will also be conducting an evaluation of the block heater timer program in 2014.

2.2 Government Engagement

Hydro continues to have a positive working relationship with the Provincial Climate Change Energy Efficiency and Emissions Trading Secretariat (CCEEET) and remains engaged in dialogue on potential programming, policy, and partnership opportunities. In 2013, Hydro worked with CCEEET on the development of tools for educating the public and builders on changes to the National Building Code of Canada impacting new residential builds. Hydro has been engaged in discussions regarding updates to national energy codes for commercial buildings and their

[3] DNV-GL Energy is recognized within the energy efficiency sector, providing program evaluation and assessments.

energy efficiency impacts in the Province. As well, Hydro was involved in the development of tools to engage provincial departments and agencies in the continued roll out of the Building Better Buildings Policy[4].

Public outreach continues on climate change through the Province's Turn Back the Tide program. Hydro works with CCEEET staff on the coordination of messaging on the energy efficiency component of that campaign, primarily through social media.

3 CDM Programs

3.1 Portfolio Level Program Costs and Energy Savings

Table 1: Hydro CDM Portfolio Costs, and Table 2: Hydro Annual Energy Savings, describe Hydro's total CDM expenses and energy savings from 2009 to 2013 across all of Hydro's systems including the Labrador Interconnected System. This report will provide further detail and breakdown of those costs that will be recovered through the CDM Deferral Account[5] and the associated energy reductions in section 6 Regulated Program Energy Savings and Program Costs.

Table 1: Hydro's CDM Portfolio Spending ($000s)

	2009	2010	2011	2012	2013
Windows	44	48	80	117	169
Insulation	40	60	140	126	157
Thermostats	13	19	31	47	51
Coupon Program	-	140	135	-	-
Commercial Lighting	13	12	59	20	29
Industrial	57	221	103	173	89
Block Heater Timer	-	-	-	31	8
Isolated Systems Community	-	-	-	858	871
ISBEP	-	-	-	93	115
Heat Recovery Ventilator	-	-	-	-	11
Business Efficiency Program	-	-	-	-	45
Small Technologies	-	-	-	-	1
Total	**167**	**500**	**548**	**1,465**	**1,546**

[4] Build Better Buildings Policy was established by the Province to establish guidelines for environmental sustainability and energy efficiency for government funded buildings. Additional information can be found at www.gov.nl.ca/nr/publications/energy/betterbuildingspolicy.pdf

[5] The CDM Cost Deferral Account is meant to defer the program costs for regulated Hydro (excludes program costs for the Labrador Interconnected System). The Board approved the deferral of Hydro's 2013 program costs in Board Order No. P.U. 35(2013).

Table 2: Hydro's Annual Energy Savings (MWh)					
	2009	**2010**	**2011**	**2012**	**2013**
Windows	13	37	61	136	99
Insulation	35	126	404	382	545
Thermostats	9	35	30	53	24
Coupon Program	-	64	256	-	-
Commercial Lighting	3	10	227	95	99
Industrial	-	-	165	3,172	-
Block Heater Timer	-	-	-	-	288
Isolated Systems Community	-	-	-	1,673	1,096
ISBEP	-	-	-	3	26
Heat Recovery Ventilator	-	-	-	-	-
Business Efficiency Program	-	-	-	-	-
Total	**60**	**272**	**1,143**	**5,514**	**2,177**

3.2 Residential Programs

Hydro's residential portfolio includes four programs offered jointly by the Utilities and two solely by Hydro. The joint utility programs launched in 2009 of ENERGY STAR® windows, Insulation and Thermostats continue to be offered through 2013 with insulation having a very successful year. This is primarily due to the participation of builders insulating basements in new builds.

During 2013, Hydro had an increased presence in local retailer flyers to promote these technologies. This will continue to be a focus moving forward to provide additional local advertising and to create a stronger partnership with retailers in promoting the rebates.

As of January 1, 2014 both insulation and Energy Star windows were no longer eligible for new builds. This is due to updated building codes for the Province that requires insulated basements and windows with specifications in line with current Energy Star standard. The thermostat program will remain unaffected. With these changes in eligibility, the focus will be to reach the existing home retrofit market.

The High Efficiency Heat Recovery Ventilation (HRV) program was launched in the fall of 2013, providing a $175 rebate for HRVs with a Sensible Recovery Efficiency (SRE) of 70% or greater that is installed by an HRAI[6]certified installer. This rebate is eligible for new and existing homes, regardless of heating source as the savings come primarily from savings in the equipment's operation. Hydro has been working with installers to ensure they are aware of the specifications for eligible models and are promoting high efficiency products.

[6] Heating Refrigeration and Air Conditioning Institute

The Isolated Systems Community Energy Efficiency Program is a program engaging residential and commercial customers in the Isolated and L'Anse Au Loup systems. It is administered by Summerhill Group[7], and involves a number of interventions. In 2013, there were six components implemented:

- 1,153 customers (1,073 residential and 80 commercial) received a direct install of items including lighting and water conservation tools and education and information on other ways to conserve. This represented a 94.5% installation rate for the target geography in 2013;
- Drain Water Heat Recovery[8] Pilot (DWHR) - Thirty-three customers across Labrador received a Power Pipe® installation, achieving energy savings of 22.98 MWh. Installations were completed in Cartwright, Charlottetown, Makkovik, Mary's Harbour, Port Hope Simpson, and the Labrador Straits and evaluation of these participants will inform next steps for this technology;
- Retail Discount Coupons continue to be in place but are receiving low uptake. Coupons are available for smaller items including low flow showerheads, CFLs and timers;
- Appliance Mail-in Rebates provide discounts for larger items in the home and encourage the purchase of high efficiency models;
- Pop-up Shop Pilots were hosted to assist in bringing smaller technologies to customers as participation in the retailer coupons remains low; and
- Seasonal LED Light String Exchange (SLED) was held in five communities.

The Block Heater Timer program was launched in 2012 but no savings were reported until 2013 due to the need to validate savings through surveys. Participation in 2012 was through the product giveaway events held in Labrador City and Goose Bay. Participants agreed to be contacted with a survey on their use of the product and attitudes towards the product. These surveys were conducted near the end of the block heater season and determined that there was a 63% installation rate which Hydro views as a positive result. The giveaway was intended to get the technology into the community and generate positive experiences and attitudes towards the timers which was followed up by discount coupons for later purchase at local partnering retailers. Participation was minimal through the coupon program for the first year, ending spring 2013, but promotions in the fall have increased uptake.

3.3 Commercial Programs

The uptake of the HP T-8 lighting systems has continued to be a challenge through 2013. Hydro's customer base for T-8 commercial lighting has a significant amount of government

[7] Summerhill Group is an energy efficiency services company specializing in consumer engagement program delivery with offices in Toronto and Halifax.

[8] Drain-water (or greywater) heat recovery systems capture this energy from water already used (for example, to shower, wash dishes, or wash clothing) to preheat cold water entering the water heater or going to other water fixtures. This reduces the amount of energy needed for water heating.

facilities that use specific tendering processes making changing product specifications from standard fixtures to more efficient models challenging. Hydro continues to work with the Province to secure the purchase of eligible lighting. In 2013 the list of eligible technologies was expanded to include lighting for medium and high bay options such as warehouses and arenas. The initial HP T-8 lighting systems were provided as a buy down of the incremental cost[9]. This program design resulted in savings, but many customers purchasing eligible products were unaware of the programs existence. The expanded technologies for medium and high bay are available to customers through mail-in rebates. To inform customers of the new mail-in rebates, there will be an increase in the promotion of the Commercial Lighting program in 2014 including trade publications, mail outs and other methods.

There were more than 40 walkthrough audits conducted by Hydro technical staff in the Island and Labrador Isolates Systems, to identify opportunities and assist customers to progress through the ISBEP from opportunity identification to technical analysis and project completion with the goal of completed retrofits in 2014. The ISBEP saw two retrofit projects fully completed in 2013, involving upgrades to lighting in a retail location and the addition of variable frequency drives to a processing system in a fish plant. Together these projects resulted in approximately $10,000 of incentives paid by Hydro and annual savings of 26 MWh. Commercial retrofits can have a significant delay due to planning and budget cycles, however, activity is expected to be strong in 2014.

The launch of the Business Efficiency Program in November of 2013 enabled Hydro staff to conduct walkthrough audits on the Labrador Interconnected System and the Great Northern Peninsula and will be expanded to other regions. This program is designed with the same model as the ISBEP, providing walkthrough audits, technical support, financial support of feasibility studies and capital retrofits. This program had a lower incentive level as the Island Interconnected and Labrador Interconnected Systems have lower avoided costs than those of the Isolated Systems, and Hydro anticipates the first projects to be completed in 2014.

3.4 Industrial Program

The Industrial Energy Efficiency Program (IEEP) was launched in 2010 as a three-year pilot and was closed to new applicants in the fall of 2013. This program provides financial support for engineering feasibility studies of efficiency opportunities and capital projects. While positive discussions took place with all Industrial Customers, only Corner Brook Pulp & Paper fully participated from the initial facility end use profile through to completed capital projects. CLEAResult has been engaged to conduct a review of the pilot and assess opportunities for moving forward, which was completed in first quarter 2014. Initial findings indicate there continues to be a strong interest among Industrial Customers in participating but challenges with competing business priorities have hampered uptake of the program. CLEAResults

[9] Incremental buy down programs provide a more efficient product for the same price as the less efficient model because the utility subsidizes the increased cost for the customer.

recommendations will be used to develop a continued plan to ensure relevant programming is available to the industrial sector.

There were no Industrial Customer projects completed in 2013 but there were three significant projects approved just before the close of the pilot. These three projects, which are all with Corner Brook Pulp & Paper, will result in annual savings of 15 GWh. They have a total project cost of $2.4M, with Hydro's incentive covering 50% of those costs at $1.2M. The projects are all expected to be completed in 2014.

4 Planning and Evaluation

As the CDM portfolio continues to expand in programs and complexity, the evaluation processes for programs have also progressed. In 2013, the Utilities engaged DNV-GL Energy to conduct a market and process evaluation of the Energy Star windows, insulation and thermostat programs. The evaluation will explore changes in the market place, the impacts of the programs on consumers and provide recommendations on next step program improvements. The research is being conducted by means of extensive surveys and analysis of retailers, participants and non-participants and will conclude in 2014. Initial results show that participants were very satisfied with the programs[10]. Home visits continue to happen for at least 5% of all participants to verify the install of the technology but also to promote other rebates and engage in energy efficiency.

In 2013, the Utilities began an "End Use Survey" of commercial buildings completed by CBCL Limited[11]. The survey will provide a set of in-depth profiles of energy end use in more than 50 buildings across a number of sectors to provide additional information on the local commercial market and provide a key input to the update of the CDM Potential Study to be started by the Utilities in 2014. The data collection was primarily conducted in 2013 with the final summary report and database tools to be completed in 2014.

Hydro is also conducting reviews and evaluations of programs offered directly to its customers. The IEEP is undergoing a review at the end of the three-year pilot. CLEAResult has been engaged to complete a process review of the pilot and provide recommendations for improvements in approach. The bulk of interviews with program staff and customers were completed in 2013 with the final report being completed in 2014. Initial indications are that customer interest in energy efficiency programs is high and the program has provided value to those who have participated. Hydro will be preparing a plan to offer energy efficiency programming to Industrial Customers on an ongoing basis and will seek Board approval of a longer-term approach.

[10] 76% to 93% indicated a very satisfied rating of participants surveyed.
[11] CBCL Limited is a multi-disciplinary consulting engineering firm that provides expertise in energy modeling, end use profiling and energy efficiency auditing.

5 Outreach and Support

During 2013, Hydro continued its customer education and conservation awareness activities primarily through promotion of its *takeCHARGE* rebate programs and outreach activities. Residential and Business programs are promoted through activities including mass media marketing, targeted promotions, community outreach, school programming, and trade ally development and partnerships.

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. A direct mail to qualifying customers of the thermostat rebate was done during 2013 to increase customer awareness.

takeCHARGE is also active in social media through a joint utility Facebook fan page, YouTube channel and Twitter account. 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 almost 200 Twitter followers since initiating a Twitter presence in September 2013.

Hydro engages with retailers, suppliers and other groups through presentations, and interactive booth displays to promote programs, answer questions and promote energy conservation. In addition, *takeCHARGE* launched the K-I-C (Kids in Charge) school program as a way 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, Hydro's *takeCHARGE team* has presented to approximately 150 students.

In 2013, *takeCHARGE* held the 5th annual Energy Efficiency Week from October 19 to October 25, 2013. Energy Efficiency Week is a way to promote general energy efficiency and engage in more participative methods of promotions. The main initiatives in 2013 were a Facebook Contest asking people "Are you an Energy Efficiency Super Saver?" Customers participated in the contest by posting pictures to Facebook illustrating the ways they conserve energy. A contest for grade K-6 classes was launched provincially asking students to explain how and why energy efficiency is important to them. Hydro areas accounted for 13 of the 34 entries. Again the Utilities offered 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. Hydro municipalities accounted for three out of the 13 who signed up, to participate in this year's Challenge.

Table 3: Hydro's Support Costs 2009-2013 ($000s)					
	2009	**2010**	**2011**	**2012**	**2013**
Education	262	106	212	200	192
Support	53	48	43	53	66
Planning	176	180	304	127	56
Total	**491**	**334**	**559**	**380**	**314**

6 Regulated Program Energy Savings and Program Costs

Table 4 below illustrates the energy savings from Hydro customers in relation to programming associated with the annual regulated deferral request. In 2012, there was growth in the windows and thermostat programs and an increase in uptake on insulation. The strong successes in the IEEP and the Isolated System Community Energy Efficiency Program reflect efforts to offer a program model that responds to the needs of the customers being targeted. Strong facilitation and support was provided for the IEEP participants and one-on-one community level participation opportunities provided through the Isolated System Community Energy Efficiency Program. A small energy savings in 2012 resulted from the completion of the first project through the ISBEP program.

Table 4: Energy Savings from Deferral Account Activity (MWh)					
	2009	**2010**	**2011**	**2012**	**2013**
Windows	8	14	38	50	43
Insulation	29	63	229	126	123
Thermostats	2	16	16	28	14
Coupon Program	-	47	166	-	-
Commercial Lighting	3	-	92	25	19
Industrial	-	-	165	3,172	-
Isolated Systems Community	-	-	-	1,673	1,096
ISBEP	-	-	-	3	26
Heat Recovery Ventilator	-	-	-	-	1
Business Efficiency Program	-	-	-	-	-
Total	**42**	**140**	**706**	**5,077**	**1,322**

The costs associated with the delivery of the CDM program portfolio include direct costs for advertising, salaries, rebates and other expenses directly associated with a specific rebate program. These costs vary depending on the uptake of the program and the number of programs offered. Table 5: Program Costs from Deferral Account Activity provides a program level breakdown.

Table 5: Program Costs from Deferral Account Activity ($000s)					
	2009	**2010**	**2011**	**2012**	**2013**
Windows	44	41	69	102	150
Insulation	40	53	116	108	112
Thermostats	13	18	25	43	47
Coupon Program	-	113	123	-	-
Commercial Lighting	13	-	43	10	17
Industrial	57	190	98	170	88
Isolated Systems Community	-	-	-	858	871
ISBEP	-	-	-	93	115
Heat Recovery Ventilator	-	-	-	-	8
Business Efficiency Program	-	-	-	-	40
Small Technologies	-	-	-	-	1
Total	**167**	**415**	**474**	**1,384**	**1,449**

7 Program Participation and Savings

Table 6 provides the breakdown of rebate transactions and savings for each of the programs in the Five-Year Plan and the Coupon Pilot Program. The transaction units are specific to each program. The Residential Energy Star Window, Insulation, Thermostat and HRV programs reflect approved rebates. The Coupon Program reflects numbers of coupons redeemed. The Commercial Lighting Program reflects the number of technologies rebated through the program. The Block Heater Timer Program reflects the number of timers determined to be installed through post-giveaway surveys or coupon redemption. The ISBEP, Industrial and Business Efficiency Programs reflect the number of completed retrofit projects. Finally, the Isolated Systems Program denotes the number of direct installs completed for both residential and commercial customers.

Table 6: Life to Date Program Participation						
Program	**2009**	**2010**	**2011**	**2012**	**2013**	**2013 Life to Date**
Windows	11	19	41	61	48	180
Insulation	14	24	104	50	53	245
Thermostat	4	28	32	45	23	132
Coupon Program	-	3,178	5,832	-	-	-
Commercial Lighting	-	-	6,996	1,321	1,078	9,395
Industrial	-	-	1	1	-	2
Isolated Systems Community	-	-	-	1,355	1,153	2,508
ISBEP	-	-	-	1	1	2
Heat Recovery Ventilator	-	-	-	-	1	1
Business Efficiency Program	-	-	-	-	-	-

The estimated energy savings represent savings from participants in that year through the Deferral Account activity. These savings will occur each year for the life of the measures installed.

Table 7: Life to Date Energy Savings						
Program	**Estimated energy savings (MWh)**					
	2009	**2010**	**2011**	**2012**	**2013**	**2013 Life to Date**
Windows	8	14	38	50	43	153
Insulation	29	63	229	126	123	570
Thermostat	2	16	16	28	14	76
Coupon Program	-	47	166	-	-	213
Commercial Lighting	3	-	92	25	19	139
Industrial	-	-	165	3,172	-	3,337
Isolated Systems Community	-	-	-	1,673	1,096	2,769
ISBEP	-	-	-	3	26	29
Heat Recovery Ventilator	-	-	-	-	1	1
Business Efficiency Program	-	-	-	-	-	-
Total	**42**	**140**	**706**	**5,077**	**1,322**	**7,287**

8 2014 Summary

The portfolio of programs continues to expand for Hydro with the launch of the Small Technologies program in June 2014. This program will provide redeemable coupons for small technologies and provide additional ways for customers to save energy.

Work will conclude with DNV-GL Energy on residential programs, with CLEAResult's work on the IEEP and with internal review of the Block Heater Timer Program. In addition, Summerhill will be providing support in determining next steps in engaging Isolated Systems in energy efficiency beyond 2014.

In addition to evaluating and reviewing existing programs and launching new programs, Hydro will also be engaged in planning work for the next iteration of CDM programs for Hydro customers and through the joint utility process.

9 Life to Date Value of Program Energy Savings

The value of energy and demand savings has been estimated from a utility perspective based on overall cost reductions associated with the program costs recorded in the Deferral Account. It includes Holyrood fuel savings and impacts on transmission and distribution costs including losses. No losses are included for the Industrial Energy Efficiency Program as they are transmission level customers. 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. The value of energy savings changes each year primarily due to the change in avoided fuel prices and an update from using 2009 dollars to 2013 dollars.

Table 8: Life to Date Value of Energy Savings (2013 $s)

Program	2009	2010	2011	2012	2013	2013 Life to Date
Windows	237	982	2,942	6,518	5,974	16,653
Insulation	1,098	5,053	19,803	32,815	19,044	77,813
Thermostat	62	847	2,025	3,830	2,945	9,708
Coupon Program	-	2,403	14,147	34,362	-	50,912
Commercial Lighting	-	-	8,118	13,880	5,083	27,082
Industrial	-	-	980	296,302	-	297,282
Isolated Systems Community	-	-	-	175,232	387,034	562,265
ISBEP	-	-	-	336	1,863	2,200
Heat Recovery Ventilator	-	-	-	-	-	-
Business Efficiency Program	-	-	-	-	-	-
Total	**1,397**	**9,286**	**48,016**	**563,275**	**421,944**	**1,043,916**

Appendix A

CDM 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 to 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 $2 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 regards of age of home or heat source.

Isolated System Community Energy Efficiency Program – Hydro Program

This program provided both residential and commercial components targeting customers in Isolated and L'Anse au Loup Systems. The focus is on residential customers through the direct install of a kit of technologies, at-cash coupons on

small technologies and mail-in rebates on energy efficient appliances. Commercial customers also receive a direct install of a kit of technologies. The kit includes items for water savings, draft proofing, lighting and other measures.

Homeowners received education on energy efficiency and information on the existing takeCHARGE rebate programs. There were community events, social media promotions and exchanges held to promote the program and energy efficiency awareness.

Through this program Hydro has piloted a number of approaches and technologies to assess their validity for the rural market including pop up retail shops, drain water heat recovery, and in 2014, Hydro will be exploring residential air sealing and online sales opportunities for energy efficient products.

Block Heater Timer Program – Hydro Program
Targeting customers in the Labrador Interconnected System this program encouraged the purchase of energy saving Block Heater Timers through in-store discounts offered at partnering retailers. The program launched with a giveaway of the technology to create awareness of the product as there was little or no use of the technology before the program. The incentive was offered over two winter seasons (2012-2013 and 2013-2014) and will end in spring 2014.

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 an 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 for program tracking.

Business Efficiency Program

Launched in 2013, 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.

Isolated Systems Business Efficiency Program (ISBEP) – Hydro Program

The ISBEP was launched in 2012 and targets commercial customers in the Isolated and L'Anse au Loup Systems. The program provides a custom approach to finding energy efficiency solutions and provides free energy walkthroughs as well as financial assistance for feasibility studies and for retrofit projects. It has the same program design and offerings as the joint utility Business Efficiency Program, but has higher incentive levels for retrofit work because of the higher avoided cost of generation in these systems.

Industrial Energy Efficiency Program (IEEP)

The objective of this program is to improve electrical energy efficiency in a variety of industrial processes. The program components include financial incentives based on energy savings, and other supports to enable industrial facilities to identify and implement efficiency and conservation opportunities. This program is a custom program to respond to the unique needs of the industrial market, rather than a prescriptive technology approach. It was launched as a three-year pilot program in 2010 and was closed to new projects in 2013. It is currently under an external consultant review and Hydro will be developing a longer-term strategy for energy efficiency in the industrial sector.