Q. **Conservation and DSM**

Provide the 2012-2016 conservation and demand management plan and the five-year plan preceding it.

A. The five-year conservation and demand management plans for the periods 2008-2011 and 2012-2016 are attached as PUB-NLH-437 Attachments 1 and 2.

A REPORT TO
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

FIVE-YEAR ENERGY CONSERVATION PLAN: 2008 - 2013

Pursuant to Order No. P.U. 8 (2007)

HYDRO
THE POWER OF COMMITMENT

NEWFOUNDLAND POWER
A FORTIS COMPANY

JUNE 2008

CONTENTS

1.0 EXECUTIVE SUMMARY

The *Five-Year Conservation Plan: 2008-2013* (the Plan) provides an overview of the current conservation marketplace in the Province of Newfoundland and Labrador, and outlines the strategy to be implemented by Newfoundland and Labrador Hydro and Newfoundland Power (the Utilities) for joint conservation activities. The Plan outlines technologies, programs, supporting elements and cost estimates that support a long term goal of development of a conservation culture and sustainable reduction in electricity consumption.

This *Five-Year Conservation Plan: 2008-2013* follows the broad methodological guidance contained in Marbek Resource Consultant Inc.'s January 2008 study of conservation potential[1] (the Potential Study), and considers the current conservation marketplace. The specific programs described in the Plan were selected by the Utilities to deliver energy efficiency savings to customers over the next five years. However, it is expected that program offerings and conservation activities in the province will evolve through 2013. This strategy will remain flexible to address the changing landscape, as both Newfoundland and Labrador Hydro and Newfoundland Power ramp up their collective efforts to realize energy efficiency potential.

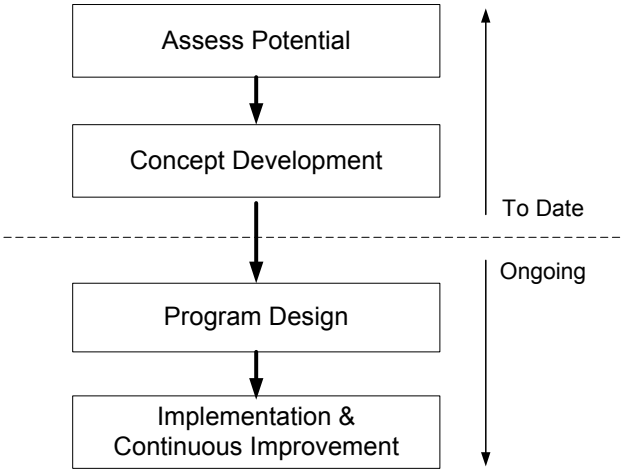
Delivery of these programs is scheduled to commence in 2009. The total estimated energy savings through 2013 under this plan are 79 GWh per year. The total estimated costs through 2013 are $28.7 million.

Figure 1 shows the major steps in program development. [2]

[1] The Potential Study was prepared by Marbek Resource Consultants Inc. jointly for Newfoundland and Labrador Hydro and Newfoundland Power. It was filed with the Board of Commissioners on Public Utilities (the Board) on March 20, 2008.

[2] The program development cycle was illustrated in the Potential Study *Program Evaluation Guidelines*, pp. 3.

Figure 1
CDM PROGRAM DEVELOPMENT: MAJOR STEPS



The Plan marks completion of concept development and the beginning of the program design phase.

2.0 OVERVIEW

2.1 Provincial Context

Public interest in energy conservation has increased materially over the recent past. This development has resulted from a number of factors including rising energy prices and a growing consciousness of the environmental impacts of energy usage. The Government of Newfoundland and Labrador's *2007 Energy Plan* clearly reflected an increased provincial public policy focus on improved overall energy efficiency.

The *2007 Energy Plan* announced the creation of the Energy Conservation and Efficiency Partnership (the ECEP) which will be chaired by the Provincial Department of Natural Resources. Both Utilities will be members of the ECEP.

The ECEP is currently in its formative stages and full membership is not yet fully established. However, the Department of Natural Resources (the Department) has taken the initiative to fund certain energy conservation programs that were delivered by the Utilities and community partners. In 2007, the Department contributed to the *Holiday Light Switch LED*[3] *Campaign* which encouraged electricity consumers to switch to more energy efficient LED Christmas season lighting and brought the support of the Council of Atlantic Premiers to the *SAVE CFL Campaign* which distributed compact fluorescent light bulbs (CFLs) in the Burin and Labrador West areas of the province.

The federal government also has a presence in the current conservation marketplace. The federal Department of Natural Resources' Office of Energy Efficiency publishes a number of consumer publications, and sponsors and participates in a variety of events and programs.[4]

[3] Light Emitting Diode (LED)

[4] The federal Department of Natural Resources (NRCan) Office of Energy Efficiency provides copies of consumer publications for utility circulation to its customers. NRCan programs include *Dollars to $ense* (aimed at energy conservation for small business) and *EcoEnergy Retrofit* (aimed at energy efficiency retrofits of existing homes) and CIPEC (aimed at providing capital assistance for industrial efficiency projects). In this province, federal program participation has been low but will be encouraged through new utility programs.

2.2 Utility Approach

The electricity sector in the province has been part of these broader developments in energy conservation. Consumers of electricity have indicated a heightened interest in understanding how to conserve and an expectation that Utilities will provide them assistance in this regard.[5] The Utilities have renewed their focus on energy efficiency and conservation in response to consumer expectations.[6]

Current utility energy efficiency and conservation efforts are undertaken on a co-operative basis. Both customer information and programming offered by the Utilities are coordinated to provide consistency for customers.[7]

The Plan outlines a joint utility approach to development of provincial conservation and demand management (CDM) activities[8]. The Utilities recognize that providing conservation and efficiency programming is in line with efforts to be responsible stewards of provincial electrical energy resources and is also consistent with provision of least cost reliable electric service.

A network of retail and trade participants in the provincial energy efficiency marketplace is also evolving. The Utilities have developed partnerships with such participants over the past few years. In addition, non-profit organizations with a variety of environmental and social objectives have demonstrated an interest in energy efficiency.[9]

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5 Surveys conducted by both Newfoundland and Labrador Hydro and Newfoundland Power since 2005 have consistently indicated that both Utilities' customers feel conservation is important and expect Utilities to provide information that helps enable customers to conserve electricity.

6 In the early 1990s, an increase in customer conservation programming occurred across North America including in Newfoundland and Labrador. This substantially diminished throughout North America in the later 1990s.

7 Both Utilities, for example, currently offer *Wrap Up For Savings* and co-ordinate informational messaging for customers and tips information on their websites.

8 The programs outlined in the Five-*Year Conservation Plan: 2008-2013* are proposed as joint initiatives which will address the provincial market in its entirety and will be coordinated under a single electricity conservation brand. However, each utility may identify unique opportunities that are appropriate to address their own customers. For example, isolated diesel communities may present opportunities that could be addressed independently by Newfoundland and Labrador Hydro.

9 Amongst such non-profit organizations are *Newfoundland and Labrador Federation of Municipalities, Habitat for Humanity, Atlantic Canada Sustainable Energy Coalition, Torbay Environment and Trails Committee, Seniors 50Plus Federation* and the *Conservation Corps Newfoundland and Labrador.*

The Plan has taken into account current participation in the electricity marketplace. It specifically attempts to complement efforts by others in conservation to improve overall effectiveness.

2.3 Conservation Potential

In January 2008, a comprehensive study of electricity conservation and demand management potential for the province was completed.

The Potential Study estimated the potential for electrical energy and demand savings on a sectoral basis (i.e., for each of the residential, commercial and industrial sectors). It also identified specific technologies available to assist in achieving that potential.

The Potential Study essentially provides a framework, consistent with current North American best practice, within which to assess conservation programming.[10] The findings enabled the Utilities to quickly focus on cost effective technologies for each sector and begin assessment of market characteristics which guide program concept development.

Market based data can also be expected to inform conservation planning and programming over the longer-term. The design, development and implementation of specific programs will yield information which will assist in both iterative revision/replacement of program offerings and broader conservation planning.[11] As forecasts and assumptions change, the potential available for overall conservation can be expected to change.[12]

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[10] The Potential Study includes *Program Evaluation Guidelines* which recommend specific metrics for assessing program cost effectiveness including the Total Resource Cost, Societal Cost Test and the Rate Impact Measure. See: *Program Evaluation Guidelines*, pp. 15 *et seq.*

[11] The use of market research as a tool in the program design and evaluation cycle is described at *Program Evaluation Guidelines*, pp. 3 *et seq.*

[12] During the concept development phase, many of the data inputs to the Potential Study were refined to reflect more recent data. For example, while the Potential Study indicated significant savings potential for Compact Fluorescent Lights in the residential market, recent market research found stronger growth in CFL penetration than had earlier data. This challenged the economics of a CFL rebate program.

Figure 2 shows the provincial energy usage forecast used in the Potential Study (the reference case), and the upper and lower achievable potentials estimated by the Potential Study[13].

Figure 2

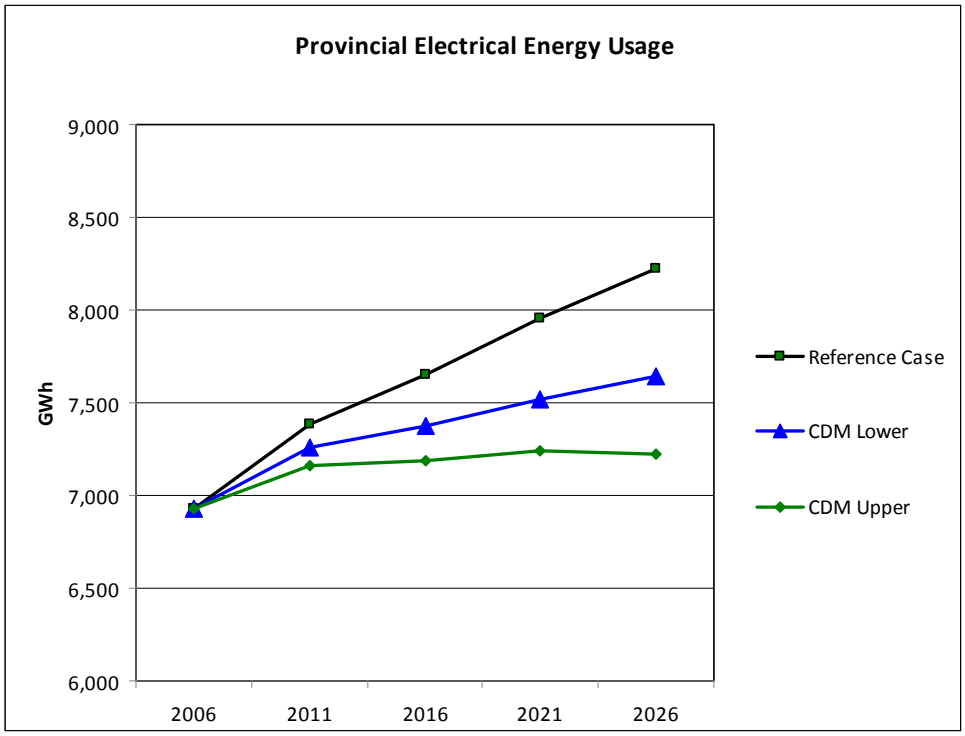

Figure 2 shows that over time, the cumulative effects of implementing cost effective technologies can significantly reduce the forecast growth in electrical usage.

The Potential Study estimated energy savings at five-year intervals. At the end of the first interval, 2011, the Potential Study shows a lower achievable potential savings of approximately 124 GWh. This compares with savings of 79 GWh currently estimated for the specific programs identified in the Plan.[14]

[13] The Potential Study examined two scenarios for conservation programming, with the Lower Achievable being a less aggressive approach and the Upper Achievable being a more aggressive approach. The achievable savings included considerations of market barriers, complementary programs and agencies, as well as other factors.

[14] As additional programs are developed during the planning period, expected savings will increase.

2.4 Other Considerations

The long-term course of conservation programming can be expected to evolve as the estimates of the cost of new electricity supply evolve. This reflects the essential fact that *cost effective* conservation programs will be those that yield benefits in excess of estimated new or future supply options. The supply outlook beyond 2014 for the Island Interconnected System is somewhat clouded by the possible Lower Churchill/Infeed project currently being assessed. If it does proceed, this project will impact the economic evaluation of conservation programming.

The consumer price of electricity could also affect conservation programming economics into the future. Currently, Newfoundland Power is undertaking a comprehensive rate review with a primary focus on economic efficiency in electricity pricing. While the results of this review may ultimately impact conservation programming, no particular assumption has been made regarding that review in the Plan.

3.0 FIVE-YEAR CONSERVATION PLAN: 2008-2013

3.1 The Plan in General

The Plan has been prepared jointly by the Utilities. It is anticipated that it will be updated periodically as program development and implementation capability develops and the conservation marketplace evolves.

The Plan adopts the sector based approach to conservation planning and programming used in the Potential Study. The detailed design of the programs in this plan will follow from the recommendations of the Potential Study and will consider lessons learned from other utilities in CDM program delivery. In addition, the types of programs included are broadly consistent with those currently offered by public utilities in Canada.[15]

The specific program focus of the next five years is *energy* conservation. Current high marginal energy costs (which predominantly reflect fuel costs) on both the Island Interconnected System and isolated systems justify such a focus.[16] However, it should be noted that because of the strong link between energy and demand, the programs launched will also bring about demand reductions.[17]

The principal focus for programming is the near term period 2009-2010. The last three years of the current five-year planning horizon (i.e., 2011-2013) are expected to have materially expanded program offerings to address additional energy conservation technologies. Program development and implementation capabilities will be increased and additional information will be obtained through continued market research and experience from the delivery of initial programs.

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15 Differences from other jurisdictions are largely due to local market factors, and the need for the Utilities to ramp up their delivery capacity and gain expertise before increasing the level of programming offered.

16 Newfoundland and Labrador Hydro's current system planning criteria for the Island Interconnected grid also has a significant energy focus. In other jurisdictions, pressures to build new generation capacity for peak load periods may result in more focus on demand savings or peak reductions.

17 Newfoundland Power's existing Demand Management activities (Curtailable Service Option and Facilities Management) will continue but are excluded from the Plan.

3.2 Program Selection

The development of the specific programs in the Plan has been based on a market assessment for Newfoundland and Labrador. The programs and supporting initiatives outlined address the market barriers and opportunities, providing communication and education initiatives in addition to rebate and incentive programs. The broad program concepts have been defined, which will lead to detailed program design and implementation.[18]

The Potential Study used avoided cost screening[19] to develop the list of economically viable technologies. This cost screen identified a large number of potential technologies, which warrant investigation of associated program delivery costs.

In addition, implementation capability of the Utilities was a primary criterion in program selection. The selected programs build on the current capacities of the Utilities gained through existing and past incentive programs, partnered initiatives and education efforts.

The selected technologies reflect the refinement of the energy conservation potential and economics identified in the Potential Study, through updated local market information and program cost estimates. The primary metric for assessing program cost effectiveness proposed in the Potential Study is the Total Resource Cost (TRC) test.[20] Each program implemented by the Utilities will have a positive TRC result.[21]

Schedule A contains the program descriptions for the Plan.

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[18] Detailed program design will include (i) completion of comprehensive market research and determination of appropriate incentives, (ii) identifying the required market relationships (i.e., service and product supply) for program delivery, (iii) creation of customer information, (iv) development of necessary systems and procedures to support the program, and (v) establishing appropriate parameters for ongoing program monitoring and evaluation.

[19] The screen was based on avoided costs from an earlier study conducted by NERA Economic Consulting, entitled Marginal Costs of Generation and Transmission, completed in May 2006 for Newfoundland and Labrador Hydro.

[20] The TRC test measures the net program benefits against program costs. See: *Program Evaluation Guidelines*, pp. 15 *et seq*.

[21] The TRC results for each program are found on the program profile templates found in Schedule A.

3.3 Specific Programs

The programs selected for implementation in the near term period 2009 - 2010 are as follows:

- Residential Windows
- Residential Thermostats
- Residential Insulation
- Commercial Lighting
- Industrial Customer Custom Projects

Programs for the residential sector are aimed at space heating and include *Energy Star* windows, programmable and high efficiency thermostats, and insulation. For the window and thermostat programs, a relatively high level of market information is available from product retailers, wholesalers and manufacturers currently in the conservation marketplace. For the insulation program, market data is more disaggregated and refining data more challenging. Market information from the existing rebate programs offered by the Utilities has been useful for the thermostat and insulation programs.

Commercial programming is focused on lighting, which the Potential Study identified as the single largest area of opportunity for this sector. Data for the lighting market is also disaggregated, and further research will be required for detailed program design. Utilities in other Canadian jurisdictions have used this type of program as a point of entry to the commercial conservation market.[22]

The approach to the industrial sector responds to the unique nature of industrial facilities, with a program based on custom engineering proposals, as established in other jurisdictions.

Table 1 shows energy reduction estimates associated with the specific programs outlined in the Plan.

[22] Based on information from Hydro Ottawa and Fortis BC.

Table 1

Conservation Programs Energy Reduction Estimates: 2008-2013 by Sector (MWh)						
	2008[23]	**2009**	**2010**	**2011**	**2012**	**2013**
Residential	1,120	5,690	10,950	16,950	23,830	31,520
Commercial	-	590	1,760	2,930	2,930	2,930
Industrial[24]	-	-	-	20,000	45,000	45,000
Total	**1,120**	**6,280**	**12,710**	**39,880**	**71,760**	**79,450**

Estimated energy savings for the residential sector reflect existing programs and program development capability of the Utilities, which have largely focused on this sector. Commercial sector energy savings reflect program growth in a sector that is relatively new to the Utilities. Industrial sector estimates are based on ongoing consultation with transmission level customers.[25]

Table 2 shows cost estimates for the specific programs outlined in the Plan.

Table 2

Conservation Programs Program Cost Estimates: 2008-2013[26] by Sector ($000s)							
	2008[27]	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Residential	330	1,930	1,830	2,180	2,170	2,470	10,910
Commercial	-	290	310	340	-	-	940
Industrial	100	1,470	2,640	4,270	-	-	8,480
Total	**430**	**3,690**	**4,780**	**6,790**	**2,170**	**2,470**	**20,330**

[23] 2008 energy reduction estimates reflect existing programs.
[24] The Potential Study industrial sector savings did not include the customers' self-generation supplied energy. However, these are included here.
[25] Expected energy reductions are consistent with the Potential Study overall. On a sectoral basis, differences with the Potential Study reflect new market information and the current program development capabilities of the Utilities.
[26] Estimates include all costs associated with specific programs, including program research, design, incentives, marketing, and management.
[27] 2008 program cost estimates reflect existing programs and new program development.

Within the planning period, the Utilities will continue to assess applicability of additional technologies outlined in the Conservation Potential Study for local market conditions. For the residential sector, assessment of heating technologies and the market for energy efficient appliances and energy monitoring devices may result in program initiatives. For the commercial sector, an expansion of more customized incentives in the area of lighting will be assessed, and programs implemented where justified. Incentives for other commercial end uses, including HVAC, refrigeration and the building envelope, will also be assessed for program potential. For the industrial sector, programming is expected to be more customized to better achieve potential efficiencies in this small customer group.

3.4 Education, Support and Planning

The successful implementation of a conservation plan over the long-term will require continuing efforts in general customer energy awareness and support. In addition, ongoing development and evaluation of potential programs will be required. These activities, while justified, will not be associated with the implementation of specific programs.[28]

Table 3 shows cost estimates for education, support and planning for the period 2008 to 2013.

[28] For example, informational, promotional, or educational effects aimed at brand awareness (i.e., *Energy Star* appliances) or products (i.e., compact fluorescent lighting) may not be related to a specific utility program but still be valuable to customers.

Table 3

Education, Support and Planning Cost Estimates: 2008-2013 ($000s)							
	2008[29]	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Education[30]	580	660	750	770	820	900	4,480
Support[31]	150	120	150	180	190	220	1,010
Planning[32]	440	290	630	550	550	410	2,870
Total	**1,170**	**1,070**	**1,530**	**1,500**	**1,560**	**1,530**	**8,360**

The Utilities currently estimate that the aggregate cost associated with these activities will average approximately $1.4 million per year from 2008 through 2013.

3.5 Cost Recovery & Regulatory Approach

Schedule B contains a summary of currently estimated program costs and energy savings associated with the Plan.

The currently estimated costs are material: $1,600,000 in 2008 and $4,760,000 in 2009. They are not fully reflected in the current rates of either Newfoundland and Labrador Hydro or Newfoundland Power.[33]

Each of the specific programs outlined in the Plan will be subject to cost-effectiveness tests *prior* to implementation. The implementation of each is expected to be economically attractive when compared to the forecast cost of energy produced and

[29] 2008 cost estimates reflect existing and new activities in education, support and development.
[30] Education costs are principally costs associated with promoting energy awareness and include advertising, outreach events, and initiatives in partnership with others. Joint branding for electricity conservation will begin with the launch of these new programs.
[31] Support costs are principally costs associated with customer interaction focused on energy efficiency. As these costs support the full CDM portfolio but cannot be connected to specific programs, a portion of them will be included in assessing overall program cost effectiveness.
[32] Planning costs are the costs of program planning, development management and evaluation.
[33] Current rates of Newfoundland and Labrador Hydro and Newfoundland Power are based upon aggregate cost recovery for conservation of approximately $1,044,000 (Newfoundland and Labrador Hydro, $400,000; Newfoundland Power $644,000.)

delivered in the absence of implementation.[34] Accordingly, recovery of the costs of the programs in rates will be justified on a cost-of-service basis.

The estimates associated with the Plan reflect the current state of program development and can be expected to be refined as detailed program design progresses in 2008. To enable development and implementation of the specific programs in 2008 and 2009 will require the matter of cost recovery to be addressed, at least on an interim basis, prior to the end of 2008.[35]

[34] The primary metric for assessing program cost effectiveness proposed in the Potential Study is the Total Resource Cost (TRC) test. The TRC test measures the net program benefits against program costs. See: *Program Evaluation Guidelines*, pp. 15 *et. seq*.

[35] The Utilities are examining regulatory approaches in other jurisdictions and their applicability to this situation. Considerations include determining accounting treatments, cost allocation among ratepayers, communications and reporting mechanisms.

4.0 OUTLOOK

The majority of specific programs outlined in the Plan target the residential sector. To a degree, this is reflective of current program development capability. It is the current outlook of Newfoundland and Labrador Hydro and Newfoundland Power that the program offering will expand during the period to 2013.

During the planning period, the Utilities will undertake a reassessment of the conservation potential. This will assist in ensuring that utility conservation programming remains both responsive to potential in an evolving conservation market and complementary to initiatives undertaken by other participants, including governments. A reassessment of potential with respect to marginal cost updates will also assist in ensuring that programming continues to capture all cost effective technologies to reflect evolving system supply scenarios. Continued involvement in the marketplace will ensure programming continues to reflect the evolving marketplace.

The Utilities intend to work closely with the ECEP to ensure a consistent and coordinated approach is maintained in the delivery of conservation in the provincial marketplace.

Newfoundland and Labrador Hydro and Newfoundland Power expect that an appropriate means of stakeholder participation in conservation planning will develop through the ECEP in the near term.

The ECEP may also provide access to government funding to bridge particular barriers such as those in residential low-income program areas, and facilitate implementation of appropriate standards to support energy conservation.

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							

Table B1
Conservation Programs
Program Cost Estimates: 2008-2013
by Sector
($000s)

	2008	2009	2010	2011	2012	2013	Total
Residential							
Insulation Program	260	1,210	1,210	1,400	1,430	1,590	7,100
Thermostat Program	30	300	220	280	230	270	1,330
Energy Star Windows Program	40	420	400	500	510	610	2,480
Commercial							
Lighting Rebate Program	-	290	310	340	-	-	940
Industrial							
Custom Retrofit Project Rebate Program	100	1,470	2,640	4,270	-	-	8,480
Total	**430**	**3,690**	**4,780**	**6,790**	**2,170**	**2,470**	**20,330**

Table B2
Conservation Programs
Energy Reduction Estimates: 2008-2013
by Sector
(MWh)

	2008	2009	2010	2011	2012	2013
Residential						
Insulation Program	1,060	5,190	9,730	14,720	20,220	26,260
Thermostat Program	60	270	650	1,210	1,910	2,650
Energy Star Windows Program	-	230	570	1,020	1,700	2,610
Commercial						
Lighting Rebate Program	-	590	1,760	2,930	2,930	2,930
Industrial						
Custom Retrofit Project Rebate Program	-	-	-	20,000	45,000	45,000
Total	**1,120**	**6,280**	**12,710**	**39,880**	**71,760**	**79,450**

FIVE-YEAR ENERGY CONSERVATION PLAN: 2012 – 2016

August 2012

FIVE-YEAR CONSERVATION PLAN: 2012 – 2016

CONTENTS

1.0 EXECUTIVE SUMMARY

Since the launch of the *Five-Year Energy Conservation Plan: 2008*-2013 ("the 2008 Plan") in 2008, Newfoundland and Labrador Hydro ("Hydro") and Newfoundland Power have offered customer energy conservation programs jointly under the takeCHARGE brand. These have included a variety of information and financial supports which help customers manage their energy usage. Energy savings resulting from these programs is forecast to exceed 68.3 GWh by the end of 2012.[1]

The current joint *Five-Year Energy Conservation Plan: 2012-2016* (the "2012 Plan") outlines the approach being taken by Hydro and Newfoundland Power (the "Utilities") to provide further opportunities for their customers to cost-effectively manage their electricity usage. The principles underlying the 2012 Plan are consistent with the 2008 Plan and with the 2008 conservation potential study (the "Potential Study").[2]

The 2012 Plan includes the continuation of the current joint customer energy conservation program portfolio and addition of new programs for the residential and commercial sectors. The proposed programs will promote additional high-efficiency technologies and reach a broader group of customers. The 2012 Plan also addresses customer education, program planning and evaluation processes, as well as the Utilities' costs and cost recovery arrangements. As in the 2008 Plan, the goal of these initiatives is to achieve energy savings through developing a culture of conservation.

[1] The energy savings indicated throughout the *Five-Year Energy Conservation Plan: 2012-2016* represent *gross* energy savings achieved by customers. These savings reflect all technologies installed by participating customers since program implementation. *Net* energy savings would reflect adjustments for: (i) the timing of customer installations giving rise to the energy savings; and (ii) program *free ridership* (an estimate of participants who would have chosen the more efficient product without the program).

[2] The 2008 Potential Study was prepared by Marbek Resource Consultants Inc., jointly for the Utilities. It was filed with the Board on March 20, 2008.

2.0 BACKGROUND

2.1 General

The Utilities jointly developed the 2008 Plan, which was filed with the Board in June 2008. The 2008 Plan provided an overview of the conservation marketplace in Newfoundland and Labrador and outlined a strategy to be implemented by the Utilities to offer joint energy conservation activities.[3]

Since 2008, the Utilities have offered customer energy conservation information and programming on a joint and coordinated basis under the takeCHARGE energy conservation brand.[4] The Utilities' provision of energy conservation programming is responsive to customer expectations, supports efforts to be responsible stewards of electrical energy resources and is consistent with provision of least cost, reliable electricity service.[5]

The focus of the Utilities' conservation initiatives is achievement of energy savings through the development of a culture of conservation.[6] Initiatives address energy savings opportunities for customers in each sector: residential, commercial and industrial.

The types of initiatives undertaken by the Utilities are complementary to the efforts of others in the provincial energy conservation marketplace. The Utilities partnered with

[3] Prior to 2008, the conservation information and programming offered by the Utilities were coordinated to provide consistency for customers. For example, both Utilities offered Wrap Up for Savings residential insulation incentive programs and coordinated the information provided to customers through websites and advertising.

[4] The programs outlined in the 2008 Plan were primarily joint initiatives which addressed the provincial market in its entirety. It was anticipated, however, that each utility might identify unique opportunities that would be appropriate to address their own customers.

[5] Surveys conducted by both the Utilities since 2005 have consistently indicated that customers are taking action toward conservation and expect the Utilities to provide information that enables customers to save electricity.

[6] Newfoundland Power also targets peak demand reductions through demand management activities, including the Curtailable Service Option and facilities management initiatives. These activities are expected to continue, but are not included in the 2012 Plan.

government, trade allies and other local interest groups, and coordinate utility initiatives with these stakeholders.

The customer energy conservation programming undertaken by the Utilities is cost effective, with the value of energy savings exceeding the costs required for program delivery. The primary metric for assessing cost effectiveness of the customer energy conservation programs is the Total Resource Cost ("TRC") test.[7]

2.2 Programs

Based on the 2008 Plan, the Utilities have jointly offered customer energy conservation programs which provide both information and financial incentives to encourage customer installation of energy efficient technologies, such as *ENERGY STAR* windows.[8] In addition, Hydro has offered expanded programming for its customers, such as incentives for commercial customers in its isolated system service territories.

Schedule A summarizes the energy savings and costs for the customer energy conservation programs offered by the Utilities from 2009 through 2011.

[7] The primary measure of the cost effectiveness of the customer energy conservation programs is the Total Resource Cost (TRC) test. The TRC test measures the net program benefits, in terms of utility system avoided costs, against utility and customer costs for the program. This is the most commonly used approach to evaluate utility program cost effectiveness. Complementary approaches also consider benefits and costs from the perspective of the utility only, the participant only and the non-participants.

[8] Once installed, these more energy efficient technologies provide energy savings for the customer throughout the life of the product. For example, an *ENERGY STAR* window has an estimated life of 25 years and will result in energy savings benefits throughout that period.

Residential Programs

Table 1 provides a summary of residential customer energy savings achieved through the Utilities' conservation programs from 2009 through 2012(F).[9]

Table 1
Residential Portfolio Energy Savings
2009 through 2012(F)
(MWh)

	2009	2010	2011	2012(F)	Total
Estimated Annual Energy Savings	2,512	7,064	18,651	29,015	57,242

The takeCHARGE residential programs are expected to result in aggregate energy savings of approximately 57.2 GWh by the end of 2012.[10] These savings are consistent with the forecast savings from the 2008 Plan.[11]

The Utilities' joint residential programs have been bundled for marketing as the takeCHARGE Energy Savers. The primary objectives of these programs have been to reduce space heating energy consumption and thus reduce peak demand. The programs include rebates and financing which are processed mainly through customer applications. Eligibility is limited to electrically-heated homes and is dependent on annual kWh usage. Both new home construction and renovation projects have been eligible for rebates.

Insulation Program

The Insulation Program has resulted in the highest amount of energy savings of all programs in the portfolio. This program provides incentives to upgrade insulation levels in basements and attics. Experience with this program has shown customer participation to be responsive to awareness-building marketing activities. With the

[9] Energy savings reflect *gross* customer energy savings achieved in each year, and includes savings arising from all technologies installed by participants since program implementation.

[10] Since implementation in 2009, there have been over 17,000 participants in the takeCHARGE residential customer programs.

[11] The 2008 Plan included total forecast energy savings from residential customer energy conservation programs of 57.4 GWh from 2009 through 2012 (see 2008 Plan, Table 1, page 11).

anticipated implementation of changes to building standards in December of 2012, it will become mandatory for all new houses to install basement insulation.[12] As a result, reassessment of program guidelines is warranted. Retailers and contractors are important trade allies for this program.

ENERGY STAR Window Program

ENERGY STAR windows improve a home's building envelope and reduce space heating energy consumption. Approximately 50 - 60% of windows sold in the province are now *ENERGY STAR* qualified, compared to approximately 10 - 15% in 2008. Anticipated changes to building standards will mandate that all new homes install more efficient windows.[13] The observed changes in the local market and anticipated changes in building standards indicate reassessment is warranted. This program is promoted in partnership with trade allies, such as window manufacturers, retailers, and home building and renovation contractors.

Thermostat Program

Programmable and high performance electronic thermostats give customers greater control over the temperature in their homes and can allow them to reduce the temperature while they are away. Thermostat replacements allow customers to conserve energy at relatively low cost and effort. Since this program was implemented, market penetration of programmable and high performance electronic thermostats has increased but they continue to represent a small portion of total thermostat sales.[14] The Utilities partner with retailers in delivering this program, including joint promotions and retail sales flyers.

[12] Changes to the National Building Code of Canada, Part 9, are expected to make basement insulation mandatory for new residential construction. The St. John's Energy Reduction Strategy that was implemented in September 2011 requires all new homes in the city to install electronic thermostats, basement insulation and *ENERGY STAR* windows.

[13] Changes to the National Building Code of Canada, Part 9, are expected to make energy efficient windows mandatory for new residential construction. The efficiency standard to be required is equivalent to the current *ENERGY STAR* standard.

[14] Minimum quality thermostats continue to be widely used in new home construction mainly because of their low cost.

Coupon Pilot Program

Hydro offered a coupon-based program from Fall 2010 through Spring 2011 as a pilot for residential customers in targeted communities. This pilot program provided rebates through at-the-cash coupons for small energy efficient technologies, such as compact fluorescent lights ("CFLs"), and through mail in rebates for *ENERGY STAR* appliances, such as clothes washers. This initiative raised awareness of a variety of low cost technologies; strengthened partnerships with retailers; and gave the Utilities experience with a new method of customer engagement.[15]

Isolated Systems Community Program

Launched in 2012, this program provides a variety of energy efficient technologies specifically to Hydro's customers in some isolated system service territories. Technologies, such as CFLs and hot water pipe insulation are being made available to be directly installed, at no cost to participating homes and businesses. In addition, for residential customers, at-the-cash coupons are being offered for a range of small energy efficient technologies, and mail-in incentives are being offered for the purchase of additional energy efficient technologies, such as *ENERGY STAR* appliances.

Block Heater Timers

Launched in 2012, this program provides giveaways and at-the-cash coupons for block heater timers to customers in Hydro's Labrador Interconnected System. While vehicle engine block heaters are used extensively in this area, timers are rarely used. Instead of using electricity throughout the night, block heater timers allow vehicle owners to reduce the amount of time that electricity is used to warm the vehicle engine.

[15] The findings from this pilot program are being considered in the development and delivery of new programming proposed to be offered jointly by the Utilities.

Commercial Programs

Table 2 provides a summary of commercial customer energy savings achieved through the Utilities' conservation programs from 2009 through 2012(F).

Table 2
Commercial Program Energy Savings
2009 through 2012(F)
(MWh)

	2009	2010	2011	2012(F)	Total
Estimated Annual Energy Savings (MWh)	173	890	2,459	3,738	7,260

The takeCHARGE commercial programs will result in estimated aggregate energy savings of approximately 7.3 GWh by the end of 2012.[16] This level of savings is consistent with the forecast savings from the 2008 Plan.[17]

Commercial Lighting Program

The Commercial Lighting Program targets reduced energy use through efficient lighting in commercial buildings, including high performance T8 fluorescent lighting and LED exit signs. Installation of high performance T8 fluorescent lighting technologies has increased since the program was introduced. The incremental cost of high performance T8 lamps has recently increased due to rising manufacturing costs, indicating a reassessment of program incentive levels is warranted. Marketing for this program includes partnering with lighting manufacturers, distributors, electrical contractors and lighting service providers.

Isolated Systems Business Efficiency Program

Launched in 2012, this program is targeted toward commercial customers located in Hydro's isolated system service territories. In this custom program, the incentives are based on the potential energy savings of efficiency improvement projects. This allows

[16] Since implementation in 2009, there have been over 1,600 participants in the takeCHARGE commercial customer programs.

[17] The 2008 Plan included total forecast energy savings from commercial customer energy conservation programs of 8.2 GWh from 2009 through 2012 (see 2008 Plan, Table 1, page 11).

customers to implement energy efficient technologies that are suitable for their specific buildings, equipment and operations. This program provides a next step for commercial customers who become interested in energy efficiency through the Isolated Systems Community Program.

Industrial Programs

Table 3 provides a summary of industrial customer energy savings achieved through Utility customer energy conservation programs from 2009 through 2012(F).

Table 3
Industrial Program Energy Savings
2009 through 2012(F)
(MWh)

	2009	2010	2011	2012(F)	Total
Estimated Annual Energy Savings (MWh)	-	-	165	3,617	3,782

The industrial customer energy savings are forecast to be approximately 3.8 GWh by the end of 2012. These savings are significantly below forecast savings from the 2008 Plan due to much lower than anticipated participation by industrial customers.[18] This reflects both financial and human resource barriers to participation, and Hydro has been working to make the program responsive to these barriers as they arise.

Industrial Energy Efficiency Program

The Industrial Energy Efficiency Program is a custom program that responds to the unique needs of Hydro's transmission level industrial customers. This program provides financial support for engineering feasibility studies of efficiency projects and for project implementation costs. The first projects were submitted for incentive support in 2011.

[18] The 2008 Plan included total forecast energy savings from commercial customer energy conservation programs of 65 GWh from 2009 through 2012 (see 2008 Plan, Table 1, page 11).

2.3 Education & Support

Since 2008, the Utilities have provided conservation related education and support to their customers through a variety of initiatives, including a joint website, outreach activities and partnerships with other organizations in the provincial conservation marketplace.

In late 2008, the Utilities launched the takeCHARGE website, which provides customers with general information about energy efficiency as well as specific programs available to them.

Table 4 provides a summary of takeCHARGE website visits from 2008 through 2011.

Table 4
takeCHARGE Website Visits
Energy Conservation Information

	2008	**2009**	**2010**	**2011**
Website Visits	23,444	49,648	52,013	72,996

Customers' use of the takeCHARGE website to find energy conservation information has increased each year since its launch.

Since 2009, the Utilities have participated in over 400 outreach events province wide, including interactive takeCHARGE information booths displayed at home shows, retailers and trade fairs. These events allow the Utilities to assist customers and increase awareness of energy conservation and the takeCHARGE programs.

The Utilities have developed partnerships with retailers, manufacturers, distributors, contractors and other trade allies across the province. These partners often play an important role in assisting customers with advice on energy conservation and home improvement decisions. The Utilities work with industry associations, such as the Canadian Home Builders Association (CHBA) and the Building Owners and Managers

Association (BOMA), to educate their members. These partnerships also provide the Utilities with market and program delivery insights.

Table 5 shows costs for education and support for the period 2009 to 2012(F).

Table 5
Conservation Education & Support
Costs 2009-2012(F)
($000s)

	2009	2010	2011	2012(F)	Total
Education	666	486	428[19]	684	2,264
Support	236	206	219	240	901
Total	**902**	**692**	**647**	**924**	**3,165**

2.4 Planning & Evaluation

The customer energy conservation program portfolio is routinely evaluated by the Utilities to support planning and continuous improvement of program delivery. Programs are evaluated throughout their lifecycle from the perspective of: (i) energy savings impacts; (ii) market transformation impacts; and (iii) delivery process effectiveness. The results of these evaluations support continuous improvement of the conservation programs and identification of future opportunities.
Customer participation in the energy conservation programs and the resulting energy savings impacts are reviewed annually. This information, along with the Utilities' cost information, is used to evaluate the cost effectiveness of the programs.[20]

Market transformation impacts of the customer energy conservation programs are evaluated primarily through partnerships with trade allies and customer surveying. An annual customer telephone survey is used to assess customers' home energy use and

[19] The decrease in education costs in 2011 primarily reflects reallocation of staff from outreach activities to verification audits of program participants.

[20] The Utilities report to the PUB annually on their conservation activities. This includes economic cost benefit analysis of each program, from the perspective of participants, non participants and total resources.

conservation practices, takeCHARGE brand awareness and program impacts.[21] The Utilities also conduct periodic customer surveys focused on how customers use energy in their homes and businesses.[22]

To evaluate delivery process effectiveness, in-person verification audits are performed on a portion of program participants to gather feedback on the programs from the customer's perspective as well as to ensure compliance with program guidelines. Information collected from all participating customers is also analyzed.[23] Programs are reviewed periodically by a third party evaluator to assess process effectiveness.[24]

Table 6 shows costs for conservation planning for the period 2009 to 2012(F).[25]

Table 6
Conservation Planning
Costs 2009-2012(F)
($000s)

	2009	2010	2011	2012(F)	Total
Planning	401	429	509	491	1,830

Variations in annual conservation planning costs primarily reflect the periodic nature of the Utilities' program planning activities.

[21] In the first quarter 2012, 96% of provincial electricity consumers indicated the primary motivation for trying to cut back on electricity use is to save money or lower their electricity bill. This is an increase from 85% in 2010 and 89% in 2009.

[22] These surveys gather information such as quantity, size and type of electric appliances and equipment, heating source and building envelope characteristics. This type of "end use" survey was last conducted in the province in 2007, and the next one is planned for 2013.

[23] Rebate application forms collect a variety of information, ranging from technical data, such as the model of thermostat, window or lighting product, to the type of heating in the home and its geographic location.

[24] In 2011, the CADMUS Group conducted interviews with program staff and partners and reviewed program documents and data. Some recommendations from this review have already been implemented, and others have been used in planning for program revisions and/or expansion.

[25] Conservation planning costs include cost related to surveys and research, development of the potential study and five-year plan, and general administration.

2.5 Costs & Cost Recovery

Table 7 provides a summary of the customer energy conservation program costs of the Utilities from 2009 through 2012(F).[26]

Table 7
Conservation Program Costs
2009 through 2012(F)
($000s)

	2009	2010	2011	2012(F)	Total
Residential	1,366	2,326	3,473	3,389	10,554
Commercial	80	95	216	235	626
Industrial	57	221	103	388	769
Total	**1,503**	**2,642**	**3,792**	**4,012**	**11,949**

The Utilities' costs related to conservation programs will increase from approximately $1.5 million in 2009 to $4.0 million in 2012. This primarily reflects increased levels of customer participation and rebates related to the joint takeCHARGE program portfolio.[27] Also, in 2012, Hydro's costs related to expanded programming in their isolated diesel systems and in Labrador have increased. The increasing levels of customer participation in the programs have resulted in increasing energy savings. The overall cost effectiveness results of the takeCHARGE programs have been positive and have improved with increasing participation.[28]

The Utilities each bear the costs related to the provision of customer energy conservation programming in their own service territory. Most general conservation and

[26] This cost summary does not include (i) general conservation costs; (i) costs related to programs offered independently by the Utilities prior to June 2009; and (ii) costs related to Newfoundland Power's Demand Management activities (Curtailable Service Option and Facilities Management).

[27] The quantity and timing of customer participation in any program is a matter of individual customer choice, and can be difficult to forecast. For example, customer response to the special insulation rebate offer during Energy Efficiency Week 2011 exceeded the Utilities' expectations. In Newfoundland Power's service territory, 1,475 customers participated and $1.1 million in rebates were provided as a result of this promotion. By comparison, during the full year of 2010, 661 Newfoundland Power customers participated in the insulation program.

[28] The primary measure of the cost effectiveness of the customer energy conservation programs is the Total Resource Cost (TRC) test. The TRC test results for each program are found in Schedule C.

program costs, such as customer rebates and costs related to responding to customer inquiries, are incurred directly by each utility. Costs which are incurred jointly, such as provincial mass media advertising, are split on an 85% / 15% basis between Newfoundland Power and Hydro.[29]

Cost Recovery

Hydro's current customer rates, as approved by the Board in Order No. P.U. 8 (2007), include recovery of approximately $0.4 million in costs related to management and planning of conservation programming. In each year since 2009, Hydro has deferred recovery of direct program costs related to the expansion of customer energy conservation programming under the 2008 Plan.[30]

Newfoundland Power's current customer rates, as approved by the Board in Order No. P.U. 43 (2009), include recovery of approximately $3.3 million in costs related to conservation and demand management.[31] Currently, Newfoundland Power expenses all conservation related costs in the year in which they are incurred.

2.6 National & Provincial Developments

Customer energy conservation programs are offered by electric and gas utilities in many Canadian jurisdictions. In total, Canadian electric utility ratepayer-funded energy conservation and demand management budgets exceeded $1 billion in 2011.[32] This reflects an increase in the level of program activity in recent years.[33] Several provincial

[29] This approach to division of jointly incurred costs reflects the proportion of customers served by each utility.

[30] The deferred recovery of these costs in 2009, 2010, 2011 and 2012 was approved by the Board in Order Nos. P.U. 14 (2009), P.U. 13 (2010), P.U. 4 (2011), and P.U. 3 (2012), respectively.

[31] In 2009, Newfoundland Power deferred recovery of $1.5 million in costs related to the expansion of customer energy conservation programming under the 2008 Plan, as approved by the Board in Order No. P.U. 13 (2009). This amount was amortized for recovery over the remaining 4 years of the 2008 Plan, as approved by the Board in Order No. P.U. 43 (2009).

[32] See *2011 Consortium for Energy Efficiency Annual Industry Report*.

[33] Newfoundland Power conducted a survey of Canadian electric utilities regarding energy conservation programming in preparation of the 2012 Plan. In comparison to a similar survey conducted in 2008, the results indicate an overall increase in expenditures of over 75% among the utilities surveyed.

governments have established targets for energy conservation or peak reduction, including Prince Edward Island, Ontario and British Columbia.[34]

The federal government, through the Department of Natural Resources, continues to offer a number of educational initiatives, publications and programs.[35] However, the federal *EcoEnergy Retrofit* program, which supported energy efficiency retrofits of existing homes, has been discontinued effective June 2012.

The Government of Newfoundland and Labrador also offers a number of consumer awareness initiatives and programs to support energy efficiency. Through the Newfoundland and Labrador Housing Corporation's *Residential Energy Efficiency Program*, the Province continues to offer financial support for low income housing retrofits. Also, the *Green Fund* program provides funding for commercial and institutional projects which improve energy efficiency and reduce greenhouse gas emissions. However, the Province's *EnerGuide* program, which provided additional funding for participants in the federal *EcoEnergy Retrofit* program, has been discontinued along with the federal program.

In 2009, the Province created the Office of Climate Change, Energy Efficiency and Emissions Trading ("CCEEET") to lead policy development on climate change and energy efficiency, promote coordination of these issues across government departments, and engage other stakeholders.[36] The Utilities continue to coordinate with

[34] In the United States, ratepayer funded electric energy efficiency program budgets have increased from $2.7 billion in 2007 to $6.8 billion in 2011. The growth in expenditures and energy savings results has been attributed to a number of state regulatory policy changes supporting these programs, as well as state-mandated energy efficiency targets. See Institute for Electric Efficiency, *Summary of Ratepayer-Funded Electric Efficiency Impacts, Budgets, and Expenditures*, January 2012.

[35] The federal department of Natural Resources (NRCan) continues to publish information for consumers and businesses through the Office of Energy Efficiency, and offer workshops such as the *Dollars to $ense* series for businesses, industry and municipalities.

[36] As follow-up to its *2007 Energy Plan*, the Province through CCEEET released two action plans in 2011 which outline specific goals and commitments over the next five years. *Charting our Course: Climate Change Action Plan 2011* and *Moving Forward: Energy Efficiency Action Plan 2011.*

the Province on electric energy efficiency initiatives, and meet through the Energy Efficiency Working group facilitated by CCEEET.[37]

3.0 PLAN: 2012-2016

3.1 General

The 2012 Plan has been developed jointly by the Utilities and builds on the outcomes of the 2008 Plan.

Energy conservation continues to be the primary objective of initiatives in the 2012 Plan, though all programs will also result in demand reductions.[38] Customer energy conservation programs and education initiatives are focused by sector: residential, commercial, and industrial.

The 2012 Plan is based on market information for Newfoundland and Labrador. It addresses market opportunities and barriers to customer action regarding energy conservation by providing incentive programs, communication and education initiatives, and other customer support activities.

The specific program concepts outlined in the 2012 Plan will lead to detailed program design and implementation.[39]

[37] Under its mandate to strengthen the Province's evidence base for policy development, the CCEEET completed several projects in 2011, including an assessment of methods for modeling energy efficiency program impacts, as well as a review of Canadian commercial/industrial programs aimed at informing local program development.

[38] Current high marginal energy costs on the Island Interconnected System and isolated diesel systems justify a focus on energy. Current marginal energy costs primarily reflect fuel costs. For example, the cost of electricity generated at Holyrood is currently estimated at $0.189/kWh. This is based upon a 630 kWh conversion efficiency and oil price forecast of $118.80/barrel for 2012 as reflected in the Rate Stabilization Plan.

[39] Detailed program design will include (i) completion of comprehensive market research and determination of appropriate incentives, (ii) identifying the required market relationships (i.e., service and product supply) for program delivery, (iii) creation of customer information, (iv) development of necessary systems and procedures to support the program, and (v) establishing appropriate parameters for ongoing program monitoring and evaluation.

The programs proposed are broadly consistent with those offered by utilities in other Canadian jurisdictions, and with the priorities identified in the Potential Study. The 2012 Plan anticipates updating the Potential Study in 2014, including gathering more in-depth data regarding energy end-uses and market opportunities. The Utilities' next iteration of multi-year energy conservation planning will incorporate the findings from this updated study.

3.2 Selection

The 2012 Plan anticipates evolving the existing takeCHARGE programs and introducing new programs. These new programs will promote additional high-efficiency technologies and are intended to reach a broader group of customers, particularly commercial and small industrial customers. The design of the expanded portfolio of programs has been based on the experience of the Utilities and others in the local marketplace, feedback from customers, priorities identified in the Potential Study in 2008, as well as experience shared from other Canadian jurisdictions.

The selected programs have been assessed by the Utilities in terms of engineering, market and economic viability. Engineering viability is assessed in terms of potential for energy and demand savings. Market viability is assessed in terms of potential for growth in customer adoption as well as barriers to further adoption. Economic viability is assessed in terms of net program benefits and costs, primarily using the TRC test.[40] Current uncertainty regarding future electricity supply developments for the Island and related costs has been considered.[41] Program selection has also considered external factors such as government mandated standards and policy.[42]

[40] Use of TRC for economic screening of programs is consistent with the 2008 Potential Study, the 2008 Plan, and current Canadian utility practice.

[41] Economic screening for the 2012 Plan was based on the most recent marginal cost study for the Island Interconnected System (2006) updated by Hydro in February 2012 to reflect changes in fuel costs and other factors. Results of the next marginal cost study will be a primary input to the next iteration of joint utility conservation planning in 2014 – 2015.

[42] For example, the anticipated changes to the *National Building Code of Canada, Part 9*; the City of St. John's *Energy Reduction Strategy*; and the Province's *Moving Forward: Energy Efficiency Action Plan 2011*.

Schedule B contains the program descriptions for the 2012 Plan.

3.3 Programs

The Utilities plan to continue to offer the existing program portfolio, with some revisions, as well as add three new programs.

Table 8 shows, by sector, the portfolio of programs to be offered under the 2012 Plan.

Table 8
Conservation Programs
by Sector

Residential	Commercial	Industrial
Insulation Thermostat *ENERGY STAR* Window Isolated Systems Community Program[43] Small Technologies[44] Heat Recovery Ventilator[44] Block Heater Timer[43]	Lighting Isolated Systems Business Efficiency Program[43] Business Efficiency Program[44]	Industrial Energy Efficiency Program

Residential Programs

Insulation, Thermostat & ENERGY STAR Window Programs

These existing joint incentive programs primarily target space heating energy savings, and will continue to be offered with some revisions.

National Building Code revisions that are expected to be implemented in December 2012 will mandate that all new homes install more energy efficient windows and basement insulation. As a result, these programs will continue to be offered for new

[43] Program offered by Hydro to customers in a portion of their service territory.
[44] New joint program proposed under the 2012 Plan.

and existing homes through 2012, but will be modified in 2013 to exclude new homes.[45] The coming National Building Code revisions are not expected to impact thermostat requirements for new home construction.

Isolated Systems Community Program

This program will continue through 2014, and will be offered to customers in Hydro's isolated system service territories. A combination of directly installed technologies and coupon-based incentives will be offered.

Small Technology Program

This new joint program will promote a variety of smaller technologies, such as CFLs and LED lighting, 'smart' power bars and *ENERGY STAR* televisions, through instant rebate coupons and promotional events across the province.[46] This program will appeal to a broad customer group as these technologies will not involve a major home renovation.[47]

Heat Recovery Ventilator Program

This new joint program will promote installation of higher efficiency heat recovery ventilators ("HRVs").[48] HRVs have been widely used in new home construction in the province since the 1990s, to control humidity and air quality. High efficiency HRVs are available which reduce home heating energy requirements by warming incoming fresh air with recycled heated air.

[45] These programs are expected to exclude minimum building code compliance in new homes.

[46] Eligible measures in this program will vary over time and will be selected based on cost effectiveness, energy saving potential and local market conditions.

[47] Similar programs are offered in several other Canadian jurisdictions, including British Columbia, Ontario, Quebec and Nova Scotia. Design of this program will consider programs in other jurisdictions as well as the Coupon Program pilot and Isolated Systems Community Program.

[48] The efficiency of HRVs is measured in terms of sensible heat recovery efficiency or SRE. The revised National Building Code of Canada, Part 9, is expected to require all new home HRV installations to have an SRE level of at least 60%. The program will promote HRVs with an SRE level of 70% or more. More efficient HRVs offer energy savings primarily through improved retention of indoor heat during the winter season.

Block Heater Timer Program

This program will continue through 2014, and will be offered to customers in Hydro's Labrador Interconnected System. Block heater timers will be promoted through giveaways and at-the-cash coupons for residential vehicle owners.

Commercial Programs

Commercial Lighting Program

For the commercial sector, the existing joint lighting efficiency program will be expanded to promote additional lighting technologies, particularly those suitable for areas with high ceilings, such as warehouses, gymnasiums, arenas and garages.[49]

Isolated Systems Business Efficiency Program

This program will continue through 2014, and will be offered to Hydro's commercial customers located in their isolated system service territories. The program will continue to provide incentives based on the energy savings of customer-proposed projects.

Business Efficiency Program

This new joint program will promote improved energy efficiency in a broad group of commercial customers, from small to very large, across industry segments and equipment types. The program will include financial incentives based on energy savings from customer project proposals, as well as rebates for specific measures on a per unit basis.[50]

[49] Lighting presents the largest single opportunity for electricity savings in the commercial sector. This is consistent with the findings of the 2008 Potential Study and with the experience of other Canadian utilities. Program incentive levels may be adjusted to reflect increased incremental costs of higher efficiency lamps.

[50] Similar programs are offered in several other Canadian jurisdictions, including British Columbia, Ontario, Quebec and Nova Scotia.

Industrial Programs

Industrial Energy Efficiency Program

Through 2014, this program will continue to offer support and custom financial incentives based on energy savings for retrofit of industrial process equipment for Hydro's transmission level industrial customers.

Customer Energy Savings

Table 9 shows forecast customer energy reduction estimates for the programs in the 2012 Plan, by sector, from 2012 through 2016.

Table 9
2012 Plan Energy Reduction Estimates
2012 through 2016
(MWh)

	2012	2013	2014	2015	2016	Total
Residential	29,015	38,616	49,985	64,418	79,077	261,111
Commercial	3,738	6,155	10,258	15,512	21,474	57,137
Industrial	3,617	14,567	24,600	24,600	24,600	91,984
Total	**36,370**	**59,338**	**84,843**	**104,530**	**125,150**	**410,232**

The programs in the 2012 Plan will result in estimated aggregate customer energy savings of approximately 410.2 GWh from 2012 through 2016.

Customer energy savings are forecast to increase through 2016, due to expansion of the program portfolio for both residential and commercial sector customers. Growth in customer energy savings from the existing joint residential programs is expected to be limited by the exclusion of new home construction from insulation and ENERGY STAR window program eligibility. Several of Hydro's program offerings are expected to be concluded during the planning period.[51]

[51] These include the Isolated Systems Community Program, Block Heater Timer Program, Isolated Systems Business Efficiency Program, and Industrial Energy Efficiency Program. Design of alternate programming for the industrial sector is anticipated in the next iteration of the Utilities' program planning in 2014 – 2015.

210 Plan Program Costs

Table 10 shows forecast costs for the programs in the 2012 Plan, by sector, from 2012 through 2016.

Table 10
2012 Plan Program Cost Estimates
2012 through 2016
($000s)

	2012	2013	2014	2015	2016	Total
Residential	3,389	3,452	4,193	4,454	4,331	19,818
Commercial	235	1,013	1,163	1,290	1,376	5,077
Industrial	388	1,111	909	-	-	2,408
Total	**4,012**	**5,576**	**6,264**	**5,744**	**5,707**	**27,303**

The Utilities' costs related to programs in the 2012 Plan are forecast to be approximately $27.3 million over the five-year planning period. Overall forecast cost increases primarily reflect the expansion of the joint customer energy conservation program portfolio.

3.4 Education & Support

The Utilities will continue customer education and support activities which enable the offering of customer energy conservation programs. The Utilities will continue to provide customer support and be responsive to customer expectations. Current educational activities, including customer outreach events, the takeCHARGE website and partnerships with industry stakeholders will also continue.

The Utilities' educational initiatives will be expanded to include building awareness of additional conservation opportunities as well as addressing a broader audience. These initiatives will include providing information regarding conservation measures which are not promoted through incentive programs. Additional focus will also be placed on youth education, to support a broader culture of conservation. While these activities are not directly associated with any particular program, they are necessary for the long-term

success of the customer energy conservation program portfolio.

Table 11 shows forecast costs for education and support for the period 2012 to 2016.

Table 11
Conservation Education & Support
Costs 2012-2016
($000s)

	2012	2013	2014	2015	2016	Total
Education	684	769	870	932	965	4,220
Support	240	244	267	285	297	1,333
Total	**924**	**1,013**	**1,137**	**1,217**	**1,262**	**5,553**

3.5 Planning & Evaluation

The 2012 Plan incorporates research and analysis required for the next iteration of multi-year conservation portfolio planning by the Utilities.

Table 12 shows forecast planning costs included in the 2012 Plan.

Table 12
Conservation Planning
Costs 2012-2016
($000s)

	2012	2013	2014	2015	2016	Total
Planning	491	596	866	551	498	3,003

Variability in annual planning costs reflects the Utilities' multi-year planning cycle for customer energy conservation programs.

Beginning in 2013, the Utilities will conduct customer surveys and audits to gather data regarding electricity end-uses in the residential and commercial sectors. This data will be a key input to the assessment of potential electricity savings opportunities in the

province. An update of the conservation Potential Study is planned for 2013 – 2014.[52] The Utilities anticipate development of the next multi-year plan for customer energy conservation programming in 2014 – 2015.

During the planning period, the program portfolio will continue to be evaluated on similar criteria as current programs, including energy savings, market impacts and delivery process effectiveness. Additional review by third party evaluators is expected, reflecting the expanded program portfolio and delivery methods.[53] Program evaluation findings will be used to refine program design and implementation details on an ongoing basis, as well as support further planning.

3.6 Costs & Cost Recovery

Schedule C provides a summary of forecast energy savings, cost estimates and cost effectiveness analysis results for the programs in the 2012 Plan.[54]

Costs related to the customer energy conservation programs outlined in the 2012 Plan are forecast to increase from $4.0 million in 2012 to $5.7 million in 2016.[55] This increase primarily reflects the addition of new programs. The incremental cost of expanded customer energy conservation programming is not currently reflected in the customer rates of either Hydro or Newfoundland Power.

Cost Recovery

The energy saving technologies installed as a result of the Utilities' programs will provide benefits for an extended period. In order to match the extended nature of these benefits, cost recovery over a number of years would be appropriate. Based on the anticipated duration of energy savings benefits and prior practice of the Board,

[52] An updated marginal cost study is also expected to be a key input to the conservation Potential Study and the next conservation plan in 2014 – 2015.
[53] Evaluation costs are primarily reflected in the costs for each specific program.
[54] Cost forecasts can be expected to be refined as detailed program design progresses in 2012 and 2013.
[55] All customer energy conservation programs outlined in the 2012 Plan are cost effective, and are justified on a cost of service basis.

amortization of program costs over a period of 5 to 10 years appears reasonable.[56] This is consistent with Canadian public utility practice.[57]

The Utilities' annually recurring general conservation costs would continue to be expensed as incurred.[58]

4.0 OUTLOOK

The 2012 Plan represents a significant expansion of customer energy conservation programming for the Utilities. It reflects the considerable potential for cost effective energy savings in the residential and commercial sectors in the province.

The Utilities anticipate a full reassessment of conservation potential during the planning period. Greater certainty regarding supply scenarios and related costs will be an important input to this assessment and to future program evolution.

The program concepts outlined in the 2012 Plan can be expected to evolve through more detailed design and during their operation. The goal of this program adaptation is to further improve both economic benefits and customer understanding, while responding to market conditions.

The Utilities will continue to work with the Province, through CCEEET, including coordinating conservation delivery and policy, as well as building a knowledge base for decision-making.

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[56] In Order No. P.U. 6 (1991), the Board first authorized five-year deferred recovery of Newfoundland Power's demand side management costs. This deferral practice was discontinued as the result of the Board's Order No. P.U. 7 (1996-97).

[57] Currently, the British Columbia Utilities Commission requires utility conservation program costs to be amortized and recovered over 10-year or 15-year periods. Prior to its adoption of International Financial Reporting Standards in 2012, Manitoba Hydro recovered conservation program costs over variable periods of up to 15 years based upon the conservation technologies implemented. Prior to the P.E.I. Office of Energy Efficiency assuming administration of conservation programs in March 2011, Maritime Electric Co. Ltd. amortized conservation cost recovery over a 5-year period.

[58] While general customer energy conservation costs provide benefits to customers in terms of information, knowhow and advice, those benefits are not transparently quantifiable in the same manner as program benefits.

Table A-1
Conservation Programs
Energy Reductions: 2009 – 2012 (F)
by Sector
(MWh)

	2009	2010	2011	2012	Total
Residential					
Insulation Program	1,619	3,880	11,812	15,501	32,812
Thermostat Program	476	1,687	3,064	4,503	9,730
ENERGY STAR Window Program	417	1,433	3,455	5,727	11,032
Coupon Program	-	64	320	320	704
Isolated Systems Community Program	-	-	-	2,640	2,640
Block Heater Timer Program	-	-	-	324	324
Total Residential Portfolio	**2,512**	**7,064**	**18,651**	**29,015**	**57,247**
Commercial					
Lighting Rebate Program	173	890	2,459	3,717	7,239
Isolated Systems Business Efficiency Program	-	-	-	21	21
Total Commercial Portfolio	**173**	**890**	**2,459**	**3,738**	**7,260**
Industrial					
Industrial Energy Efficiency Program	-	-	165	3,617	3,782
Total Portfolio	**2,685**	**7,954**	**21,275**	**36,371**	**68,285**

Table A-2
Conservation Programs
Program Costs: 2009 – 2012 (F)
by Sector
($000s)

	2009	2010	2011	2012	Total
Residential					
Insulation Program	422	818	2,231	764	4,235
Thermostat Program	203	329	175	425	1,132
ENERGY STAR Window Program	741	1,039	932	1,053	3,765
Coupon Program	-	140	135	-	275
Isolated Systems Community Program	-	-	-	1,123	1,123
Block Heater Timer Program	-	-	-	24	24
Total Residential Portfolio	**1,366**	**2,326**	**3,473**	**3,389**	**10,554**
Commercial					
Lighting Rebate Program	80	95	216	156	547
Isolated Systems Business Efficiency Program	-	-	-	79	79
Total Commercial Portfolio	**80**	**95**	**216**	**235**	**626**
Industrial					
Industrial Energy Efficiency Program	57	221	103	388	769
Total Portfolio	**1,503**	**2,642**	**3,792**	**4,012**	**11,949**

Insulation Program

Program Description
The objective of this program is to increase the insulation level in residential basements, crawl spaces and attics. Increasing the insulation R-value in a home will result in space heating energy savings. The program components include rebates and financing, and a variety of education and marketing tools. This program has been offered through takeCHARGE since 2009.
Target Market: Residential
This program targets residential customers. Changes to the National Building Code of Canada that are expected to be implemented in December 2012 will mandate that all new homes install basement insulation. As a result, this program will be offered to new and existing homes through 2012 but will be modified in 2013 to exclude minimum building code compliance in new homes. Eligibility will continue to be limited to electrically-heated homes.
Eligible Measures
Eligible measures in this program include insulation upgrades to basements, crawl spaces and attics. Rebates for new homes are limited to basement insulation beyond building code compliance. Technical requirements will be aligned with National Building Code of Canada.
Delivery Strategy
The delivery strategy for this program remains unchanged. Delivery of this program will continue to be bundled with the *ENERGY STAR* window, thermostat and HRV programs as part of the takeCHARGE residential portfolio. Marketing initiatives include partnering with retailers and trade allies in the home building and renovation industry, and target both do-it-yourself and professional installers. Tools and tactics will include retail and model home point-of-sale materials, advertising, website, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed through customer application.

Insulation Program

Market Considerations

Barriers to increased market penetration include initial cost, awareness of the impact on space heating energy, and the practical difficulties of renovating an existing living space. Experience with the existing program has shown participation to be responsive to awareness-building marketing activities. With the implementation of the new building standards, market penetration of basement insulation in new homes is expected to increase.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value is unchanged at two cents per R-value per square foot of insulation added to basement walls or ceilings, and one cent per square foot of insulation added to the attic. A time limit will be implemented for incentive redemption.

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 every two years during operation.

Estimated Costs & Energy Savings

	2012	**2013**	**2014**	**2015**	**2016**	**Total**
Estimated Costs ($000s)	764	692	623	706	665	3,451
Estimated Cumulative Energy Savings (MWh)	15,501	18,477	21,252	24,182	27,256	106,668
Total Resource Cost						**2.9**

Thermostat Program

Program Description

The objective of this program is to encourage installation of programmable and high performance electronic thermostats in homes. Programmable and high performance electronic thermostats allow customers to better control the temperature of their homes and to set back the temperature during the night or while away. The program components consist of rebates, financing options, and a variety of education and marketing tools. This program has been offered through takeCHARGE since 2009.

Target Market: Residential

This program targets residential customers, including home retrofit and new home construction. Eligibility will continue to be limited to electrically-heated homes.

Eligible Measures

Eligible measures in this program include both programmable and high performance electronic thermostats (those which control within +/- 0.5^{o}C.)

Delivery Strategy

The delivery strategy for this program remains unchanged. Delivery of this program will continue to be bundled with the insulation, windows and HRV programs as part of the takeCHARGE residential portfolio.

Marketing initiatives include partnering with retailers, electrical contractors, homebuilders and real estate professionals, to educate consumers regarding the energy savings and comfort benefits of programmable and high performance thermostats. Tools and tactics include retail and model home point-of-sale materials, website, tradeshows, community outreach and trade ally activities. Rebates will be processed through customer-submitted coupons.

Thermostat Program

Market Considerations

Market penetration of programmable and high performance electronic thermostats has increased in the past 2 years, but continues to represent a small portion of the overall sales volume. Minimum quality thermostats continue to be widely used in new home construction. The St. John's Energy Reduction Strategy that was implemented in September 2011 requires all new homes in the city to have electronic thermostats installed. This is expected to create increased participation in the program for customers residing in the city and may have some spillover effects. Thermostat requirements are not expected to be affected by National Building Code changes.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value is $5 per electronic thermostat and $10 per programmable thermostat. This continues to reflect incremental cost of the more efficient options. A time limit will be implemented for incentive redemption.

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 every two years during program operation.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	425	468	396	488	428	2,205
Estimated Cumulative Energy Savings (MWh)	4,503	6,413	8,014	9,972	11,642	40,545
Total Resource Cost						**3.0**

ENERGY STAR Window Program

Program Description

The objective of this program is to increase the installation of *ENERGY STAR* windows instead of standard windows. *ENERGY STAR* windows improve the efficiency of the home's building envelope and provide savings in space heating energy. The program components consist of rebates, financing options, and a variety of education and marketing tools. This program has been offered through takeCHARGE since 2009.

Target Market: Residential

This program targets residential customers. Changes to the National Building Code that are expected to be implemented in December 2012 will mandate that all new homes install more energy efficient windows. As a result, this program will be offered to new and existing homes through 2012 but will be modified in 2013 to exclude new homes. Eligibility will continue to be limited to electrically-heated homes.

Eligible Measures

Eligible measures in this program are *ENERGY STAR* qualified windows.

Delivery Strategy

The delivery strategy for this program remains unchanged. Delivery of this program will continue to be bundled with the insulation, thermostat and HRV programs part of the takeCHARGE residential portfolio.

Marketing initiatives will continue to include partnering with retailers and trade allies in the home building and renovation industry, and will target both do-it-yourself and professional installers. Communications will incorporate the *ENERGY STAR* brand and related marketing support. Tools and tactics will include retail and model home point-of-sale materials, advertising, website, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed primarily through customer application.

ENERGY STAR Window Program

Market Considerations

ENERGY STAR qualified windows currently comprise approximately 50% - 60% of window sales in the province, compared to 10% - 15% in 2008. With the implementation of National Building Code changes in 2013, market penetration is expected to increase in new homes. Understanding of the product is improving among customers and retailers. Eligible windows are widely available.

Incentive Strategy

Incentives for this program include rebates and financing. A rebate of $2 per square foot of window installed will be offered. This rebate level will be assessed to ensure it continues to reflect incremental cost of the more efficient option. A time limit will be implemented for incentive redemption.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, market penetration and a representative sample of installations will be inspected. Formal evaluations will be conducted every two years during program operation.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	1,053	889	640	723	684	3,990
Estimated Cumulative Energy Savings (MWh)	5,727	7,435	8,479	9,579	10,734	41,952
Total Resource Cost						**2.4**

Isolated Systems Community Program

Program Description

The objective of this program is to provide a portfolio of technologies and opportunities to save energy that will move the residential and commercial isolated system customers along an energy efficiency continuum during 2012-2014.

Target Market

This program targets both residential and commercial customers in Hydro's isolated systems. This includes Isolated Diesel systems on the Island and in Labrador and the L'Anse aux Loup system. Eligibility for specific components of the program will be determined on a per customer basis and may be limited by primary heating source.

Eligible Measures

Measures will be wide ranging, from smaller items such as CFLs, showerheads and hot water pipe insulation, to high efficiency appliances, and cross promotions for the existing takeCHARGE Energy Savers Rebate programs.

Delivery Strategy

Hydro has engaged Summerhill Group to deliver this program, using a number of delivery strategies to engage residential and commercial customers. These include direct install efforts, whereby the customer receives the technology in their home or business at no cost. During the direct install visit, customers also receive information on energy usage and efficiency options. Mail-in rebates are provided for eligible purchases, such as appliances. Local retailers are engaged to provide additional coupons and price reductions on other products as well as exchange events for products such as LED holiday lighting. The existing takeCHARGE programs are being promoted to increase participation in those programs within the isolated systems.

A small group of residential customers will participate in a domestic drain water heat recovery system pilot, using this technology and providing data and feedback to Hydro. While a common and tested technology in other jurisdictions, their install rates remain very low in this jurisdiction.

Isolated Systems Community Program

Market Considerations

Availability and awareness of energy efficient technologies continues to be an issue in rural communities and often technologies available are at a higher price than in urban markets. This program will address the barriers of availability and as the avoided costs in isolated markets are higher than the Island Interconnected system, programming can be more aggressive. The customer base has been primarily non-electric heat, but electric heat load has been growing. There is a heavy electric hot water heating penetration and opportunities exist in plug load and behavior based areas.

Commercial customers tend to be smaller businesses and as such find it challenging to find the time and resources to address energy consumption issues and this program will provide the one on one interactions needed to assist these customers.

Incentive Strategy

The technologies used in the direct install component of the program will be installed at no cost to participating homes and businesses. Additional incentives will be dependent on the technology and the resulting savings

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, and a representative sample of direct installs will be surveyed for confirmation of continued installation and use.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	1,123	908	426	-	-	2,457
Estimated Cumulative Energy Savings (MWh)	2,640	4,524	5,337	5,337	5,337	23,175
Total Resource Cost						**3.3**

Small Technologies Program

Program Description

The objective of this new program is to increase the efficiency levels in homes and increase energy efficiency awareness by offering instant rebate coupons on a list of energy efficient technologies. There will also be promotional events to raise awareness of the technologies and to engage the public.

Target Market: Residential

The small technology program will be marketed toward residential customers province wide. All customers will be eligible to participate regardless of age of home or heat source.

Eligible Measures

Eligible measures in this program will vary over time and will be selected based on cost effectiveness, energy saving potential and market conditions.

Delivery Strategy

Partnerships will be made with both chain and independent retailers to offer instant rebates to customers on a number of energy efficient products. The intent is to update the list each year, encouraging customers to purchase more products over time.

Coupon campaigns will be offered each year. These campaigns will include the delivery of public engagement events held at retailers. These events will consist of exchanges and giveaways that will promote the technologies offered through the coupons.

Small Technologies Program

Market Considerations

The technologies included in the program do not involve a major renovation. This program will allow the Utilities to reach customers that may not have been able to participate in the other incentive programs.

Incentive Strategy

Incentives for this program include instant rebates that will vary by year and campaign. The rebate value will be different for each technology offered, and will reflect incremental cost of the more efficient options.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness. Exit interviews will be conducted during selected retail events. Formal evaluations will be conducted after the first year of implementation, and biannually during operation.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	-	118	1,810	2,203	2,236	6,368
Estimated Cumulative Energy Savings (MWh)	-	-	3,994	11,625	19,447	35,067
Total Resource Cost						**1.1**

HRV Program

Program Description

The objective of this new program is to increase the installation of higher efficiency HRVs (those with a sensible heat recovery efficiency, or SRE, level of 70% or more). In 2013, the National Building Code is expected to require all new home HRV installations to have an SRE level of at least 60%. The program components include rebates and financing, and a variety of education and marketing tools.

Target Market: Residential

This program targets all residential customers regardless of heat source or age of home. Eligibility is available to all homes that install or replace an HRV.

Eligible Measures

Eligible measures in this program include all HRV models that have an SRE of 70% or more.

Delivery Strategy

Delivery of this program will be bundled with the insulation, window and thermostat programs as part of the takeCHARGE residential portfolio.

Marketing initiatives include partnering with retailers and trade allies in the home building and renovation industry, particularly certified HRV installers. Tools and tactics will include retail and model home point-of-sale materials, advertising, website, tradeshows, community outreach and trade ally activities. Rebates and financing will be processed through customer application.

HRV Program

Market Considerations

The market includes new construction and existing HRV replacement. HRVs are widely used in new home construction in the province. Early HRV installations of the 1990s are at or near the end of their useful life, so many of these will require replacement in the planning period. Initial cost is a barrier to increased market penetration, as is awareness of the benefits of selecting more efficient HRVs.

Incentive Strategy

Incentives for this program include rebates and financing. The rebate value is estimated to be $100 for qualifying HRV units. This will reflect incremental cost of the more efficient options.

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 after the first year of implementation, and every two years during operation.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	-	331	270	364	318	1,283
Estimated Cumulative Energy Savings (MWh)	-	475	1,180	1,993	2,931	6,578
Total Resource Cost						**1.5**

Block Heater Timers Program

Program Description

This program encourages the use of block heater timers by residential vehicle owners in the Labrador West and Central regions. Vehicle owners regularly plug in their block heaters overnight but 3 hours is enough for the safe operation of the vehicle to warm the coolant and the engine. The timers are available through giveaway and incented through at cash retail coupons.

Target Market: Residential

The program targets residential vehicle owners in the Labrador West and Central regions that do not currently use timers for their block heaters. It is estimated there is a potential market of nearly 10,000 residential vehicles in the region.

Eligible Measures

Eligible timers are 120 volt heavy duty outdoor timers with either manual or digital programming options. Timers provided through Hydro's giveaways are pre-programmed for a 3 hour operation whereas those available at retailers may be pre-programmed or require set up.

Delivery Strategy

The Block Heater Timer Program will run during the winter months with active promotions and giveaways to highlight the technology. The program will be launched with giveaway events happening at partner retailers in both Labrador West and Central and follow with the introduction of the $10 at cash rebate on pre-approved models of timers. Marketing and promotions include print and radio and efforts are made to engage local employers and find champions to be advocates of the product.

The launch event giveaway provides a limited number of pre-programmed timers to customers. These customers are required to participate in survey research to determine their attitudes towards and use of the timers for future verification of savings and to adjust marketing and promotional efforts.

Hydro will also explore partnerships with other groups and businesses in the region regarding further promotions and awareness of the product.

Block Heater Timers Program

Market Considerations

Initial research indicates that while block heaters are used extensively, timers are rarely used. It is common perception that a block heaters need to be plugged in overnight, rather than for limited time before start up. As well, due to lack of demand, retailers do not regularly carry the product and efforts need to be made with partner retailers to ensure on-going access to the timers. The average retail price for an eligible timer is approximately $23. Promotions and delivery strategies address both the customer perception and retail access components.

Incentive Strategy

The program provides giveaway of the technology initially to create awareness of the product and a $10 at cash rebate is provided through partner retailers, covering more than 40% of the cost of the product.

Program Monitoring & Evaluation

Contact information is collected for those redeeming at cash rebates and participating in the giveaways. Phone surveys will be conducted to validate usage and attitudes towards the product. The program will also be monitored for participation level and cost effectiveness.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	24	45	26	-	-	95
Estimated Cumulative Energy Savings (MWh)	324	972	1,410	1,410	1,410	5,526
Total Resource Cost						**6.0**

Lighting Program

Program Description

The objective of this program is to reduce energy use through 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. This program has been offered through takeCHARGE since 2009.

Target Market: Commercial

This program targets the owners of commercial buildings, encouraging these customers to install more efficient lighting equipment in new construction and retrofit of existing buildings.

Eligible Measures

The eligible measures for this program have included high performance T8 lamps and ballasts, and LED exit signs. Beginning in 2013, additional measures will be eligible, including T8 and T5 fluorescent fixtures used in areas with high ceilings, such as warehouses, gymnasiums, arenas and garages.

Delivery Strategy

Delivery will be integrated with other takeCHARGE commercial sector programming. Marketing for this program will include partnering with lighting manufacturers, distributors, electrical contractors and lighting service providers as key market influencers and allies. The program will create business opportunities for trade allies to sell more efficient lighting products.

The program will also target commercial property owners through direct marketing and through industry associations such as the Building Owners and Managers Association.

Tools and tactics will include trade ally and business association activities, such as workshops for distributors, contractors and building operators, retail point-of-sale materials, website and advertising in trade publications. Demonstration projects will be selected from program participants. Rebates will be processed both through distributor point-of-sale and through customer application, depending on the lighting measure.

Lighting Program

Market Considerations

Use of high performance T8 fluorescent lighting has increased since the program was introduced. Approximately 60% of fluorescent ballasts sold annually are now high performance T8, rather than less efficient T12 or standard T8. However, less than 25% of fluorescent lamps are a high performance type. Some high efficiency technologies, such as T5 fluorescent high bay lighting, are now widely used in new commercial construction, but are used less frequently in existing buildings.

High performance fluorescent lighting systems use 25% to 40% less energy than standard fluorescent systems. LED technologies, such as LED exit signs, use 80-90% less energy than fixtures with incandescent lamps. The eligible technologies are widely available through existing channels. The primary market barriers include higher initial cost and lack of understanding of appropriate lighting technologies and savings potential.

Incentive Strategy

Program incentives reduce the cost differential for higher efficiency products and also provide a sales incentive to participating lighting distributors to sell high performance T8 lighting, ballasts and lamps to their customers. The incentives offered are $2.25 for lamps and $4.25 for ballasts. The incentive for exit signs is $21.00 per unit. The incentive for T8 and T5 fluorescent fixtures is estimated to be $60 per unit for replacement of 400 watt and 250 watt metal halide fixtures in high bay (and medium bay) applications. Pricing of some eligible measures has increased materially in the past 12 to 18 months. This largely reflects international supply dynamics. As a result, incentive levels will be reviewed annually to ensure consistency with incremental costs.

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 every two years during operation.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	156	462	446	460	466	1,989
Estimated Cumulative Energy Savings (MWh)	3,717	5,171	6,620	8,143	9,734	33,385
Total Resource Cost						**3.4**

Isolated Systems Business Efficiency Program

Program Description

The objective of the program is to improve electrical energy efficiency across a variety of end uses. The program components include financial incentives based on energy savings, and other supports to assist in opportunity identification and evaluation. This program provides a custom approach that will allow larger commercial customers to explore a wide range of technologies suitable to their own operations, as well as an engineered track that allows for smaller customers to assess opportunities for common end uses.

Target Market

Non-residential customers in Hydro's isolated diesel and L'Anse au Loup systems are eligible.

Eligible Measures

Eligibility of the measure is based on engineering analysis of the savings. Technologies would include, but not be limited to, lighting, HVAC, compressed air and others.

Delivery Strategy

For the engineered track, customers are able to utilize spreadsheets to assess their savings and potential rebates for common end uses, including:

- Commercial lighting – Interior, High bay or Directional
- Unitary A/C equipment (i.e. roof top units)
- Variable speed drives for fans or pumps
- Compressed air

The engineered track allows customers' progress to be incented based on their actual savings and baselines, unlike the traditional prescriptive incentive. The custom track involves a walkthrough audit and feasibility analysis to determine savings and eligible incentive. This allows for a wide range of eligible technologies and projects.

The program is managed internally with some external engineering verification of projects. The Utility facilitates customers through the appropriate processes to evaluate and implement approved projects. This model has been used successfully in other jurisdictions.

Isolated Systems Business Efficiency Program

Market Considerations

Barriers to efficiency in the commercial market include financial and human resource concerns. Incentives will assist in making energy efficiency upgrades more accessible. Human resource concerns are around awareness and knowledge of the technology options as well as time to develop the business case for retrofit projects.

The isolated systems have additional challenges with access to product and access to specific technical skill sets in the evaluation of projects and technology. Hydro's program staff will assist in addressing those gaps.

Incentive Strategy

Incentives will include rebates based on energy savings, as well as funding assistance for feasibility and engineering analysis of opportunities. Rebate levels and available engineering assistance will vary based on forecasted savings and scale of the project.

Program Monitoring & Evaluation

The program will be monitored for participation level, service quality, and cost effectiveness, and include site visits, engineering reviews and other methods of verifying savings.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	79	145	118	-	-	342
Estimated Cumulative Energy Savings (MWh)	21	166	435	435	435	1,491
Total Resource Cost						**1.2**

Business Efficiency Program

Program Description

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.

Target Market: Commercial

This program targets existing commercial facilities that can save energy by installing more efficient equipment and systems. The program will include a custom projects approach which will appeal primarily to large commercial customers with annual energy consumption of 1,000,000 kWhs or greater. The program will also include rebates for specific measures on a per unit basis, which will appeal to small to medium commercial customers as well.

Eligible Measures

Custom projects' eligibility will be based on engineering review and verification of estimated energy savings impacts. Specific measures eligible for per unit rebates will include HVAC equipment, refrigeration, motors and variable speed drives. It is expected that the initial list of eligible technologies will be expanded as the program matures based on program experience and market opportunities.

Delivery Strategy

For this program, the utility will manage the delivery and take the role of facilitator and consultant, supporting commercial customers to complete project proposals and implement approved projects. The program will utilize external engineering consultants for evaluation of larger project proposals and for monitoring and verification of energy savings.

The program will target equipment suppliers, service providers and consultants as key market influencers and allies in the promotion of energy efficient equipment. Rebates which reduce the cost of efficiency upgrade projects also provide a sales opportunity for these trade allies. Direct marketing to commercial facility owners and to industry associations will support the sales efforts of equipment and service providers.

Business Efficiency Program

Market Considerations

The custom project approach requires one-on-one support for project design and delivery at larger commercial facilities. The lifecycle for each custom project will be measured in months rather than weeks due to project planning and implementation timelines as well as post-installation verification and evaluation. This type of program requires that facilities have business and financial stability to continue operations for a time period appropriate to achieve cost effective savings.

Rebates for specific measures will appeal to a broad range of customers, providing a simpler approach for program participation.

Incentive Strategy

Incentives for this program include rebates based on $0.10 per kWh of energy savings in the first year of implementation. Financial support will also be available for facility energy audits and feasibility studies, if required, based on 50% cost sharing. Guidelines for maximum incentive per project and for scheduling incentive payments for custom projects will be determined in the program detailed design phase. A list of rebates will be developed to reflect incremental cost for specific measures on a per unit basis or based on energy use and hours of operation (for example, lighting controls or thermostats).

Program Monitoring & Evaluation

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

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	-	406	599	830	910	2,746
Estimated Cumulative Energy Savings (MWh)	-	684	2,736	6,042	9,975	19,437
Total Resource Cost						**1.4**

Industrial Energy Efficiency 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 new and existing 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

The program is managed internally with external engineering verification of projects and monitoring and evaluation of energy savings. The utility takes the role of facilitator and consultant in providing methods for industrial customers 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 was launched as a three-year program in 2009. With the first project applications being submitted in 2011, the pilot has been revised to close to new applications in 2013.

Industrial Energy Efficiency 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 industrial customers, 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.

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 every two years during program operation.

Estimated Costs & Energy Savings

	2012	2013	2014	2015	2016	Total
Estimated Costs ($000s)	388	1,111	909	-	-	2,408
Estimated Cumulative Energy Savings (MWh)	3,617	14,567	24,600	24,600	24,600	91,984
Total Resource Cost						**3.3**

Table C-1
Conservation Programs
Energy Reduction Estimates: 2012 – 2016
by Sector
(MWh)

	2009-2011	2012	2013	2014	2015	2016	Total
Residential							
Insulation Program	17,311	15,501	18,477	21,252	24,182	27,256	123,979
Thermostat Program	5,227	4,503	6,413	8,014	9,972	11,642	45,772
ENERGY STAR Window Program	5,305	5,727	7,435	8,479	9,579	10,734	47,258
Coupon Program	384	320	320	320	320	320	1,984
Isolated Systems Community Program	-	2,640	4,524	5,337	5,337	5,337	23,175
Small Technology Program	-	-	-	3,994	11,625	19,447	35,067
HRV Program	-	-	475	1,180	1,993	2,931	6,578
Block Heater Timer Program	-	324	972	1,410	1,410	1,410	5,526
Total Residential Portfolio	**28,227**	**29,015**	**38,616**	**49,985**	**64,418**	**79,077**	**289,338**
Commercial							
Lighting Rebate Program	3,522	3,717	5,306	7,087	9,035	11,064	39,731
Isolated Systems Business Efficiency Program	-	21	166	435	435	435	1,491
Business Efficiency Program	-	-	684	2,736	6,042	9,975	19,437
Total Commerical Portfolio	**3,522**	**3,738**	**6,155**	**10,258**	**15,512**	**21,474**	**57,137**
Industrial							
Industrial Energy Efficiency Program	165	3,617	14,567	24,600	24,600	24,600	92,149
Total Portfolio	**31,914**	**36,371**	**59,388**	**84,843**	**104,529**	**125,150**	**442,146**

Table C-2
Conservation Programs
Program Cost Estimates: 2012 – 2016
by Sector
($000s)

	2009-2011	2012	2013	2014	2015	2016	Total
Residential							
Insulation Program	3,471	764	692	623	706	665	6,922
Thermostat Program	707	425	468	396	488	428	2,912
ENERGY STAR Window Program	2,712	1,053	889	640	723	684	6,702
Isolated Systems Community Program	-	1,123	908	426	-	-	2,457
Small Technology Program	-	-	118	1,810	2,173	2,236	6,338
HRV Program	-	-	331	270	364	318	1,283
Block Heater Timer Program	-	24	45	26	-	-	95
Total Residential Portfolio	**7,165**	**3,389**	**3,452**	**4,193**	**4,454**	**4,331**	**26,983**
Commercial							
Lighting Rebate Program	391	156	462	446	460	466	2,380
Isolated Systems Business Efficiency Program	-	79	145	118	-	-	342
Business Efficiency Program	-	-	406	599	830	910	2,746
Total Commercial Portfolio	**391**	**235**	**1,013**	**1,163**	**1,290**	**1,376**	**5,268**
Industrial							
Industrial Energy Efficiency Program	381	388	1,111	909	-	-	2,789
Total Programs Portfolio	**7,937**	**4,012**	**5,576**	**6,264**	**5,744**	**5,707**	**35,240**

Table C-3
Conservation Programs
Total Resource Cost Test Results
by Sector

	TRC Results
Residential	
Insulation Program	2.9
Thermostat Program	3.0
ENERGY STAR Window Program	2.4
Isolated Systems Community Program	3.3
Small Technology Program	1.1
HRV Program	1.5
Block Heater Timer Program	6.0
Commercial	
Lighting Program	3.4
Isolated Systems Business Efficiency Program	1.2
Business Efficiency Program	1.4
Industrial	
Industrial Energy Efficiency Program	3.3