

**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)*



**JUNE 2008**

**CONTENTS**

1.0 EXECUTIVE SUMMARY ..... 1

2.0 OVERVIEW ..... 3

    2.1 Provincial Context..... 3

    2.2 Utility Approach ..... 4

    2.3 Conservation Potential ..... 5

    2.4 Other Considerations..... 7

3.0 FIVE-YEAR CONSERVATION PLAN: 2008-2013 ..... 8

    3.1 The Plan in General..... 8

    3.2 Program Selection ..... 9

    3.3 Specific Programs ..... 10

    3.4 Education, Support and Planning ..... 12

    3.5 Cost Recovery & Regulatory Approach ..... 13

4.0 OUTLOOK..... 15

Schedule A - Specific Program Descriptions

Schedule B - Summary of Estimated Costs and Energy Savings

## 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<sup>1</sup> (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.

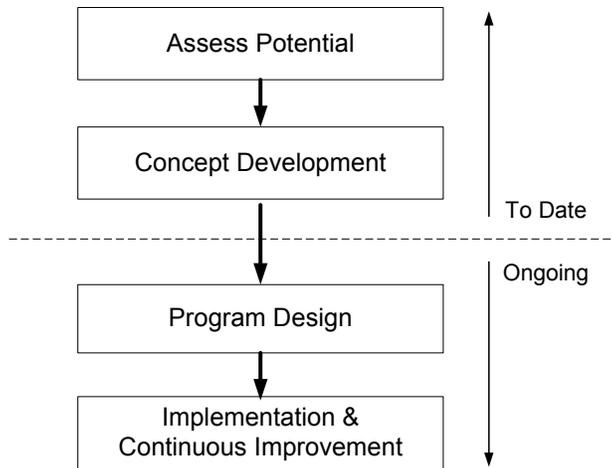
Figure 1 shows the major steps in program development.<sup>2</sup>

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<sup>1</sup> 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.

<sup>2</sup> 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<sup>3</sup> 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.<sup>4</sup>

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<sup>3</sup> Light Emitting Diode (LED)

<sup>4</sup> 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 Sense* (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.<sup>5</sup> The Utilities have renewed their focus on energy efficiency and conservation in response to consumer expectations.<sup>6</sup>

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.<sup>7</sup>

The Plan outlines a joint utility approach to development of provincial conservation and demand management (CDM) activities<sup>8</sup>. 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.<sup>9</sup>

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<sup>5</sup> 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.

<sup>6</sup> 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.

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

<sup>8</sup> 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.

<sup>9</sup> 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.<sup>10</sup> 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.<sup>11</sup> As forecasts and assumptions change, the potential available for overall conservation can be expected to change.<sup>12</sup>

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<sup>10</sup> 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.*

<sup>11</sup> 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.*

<sup>12</sup> 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<sup>13</sup>.

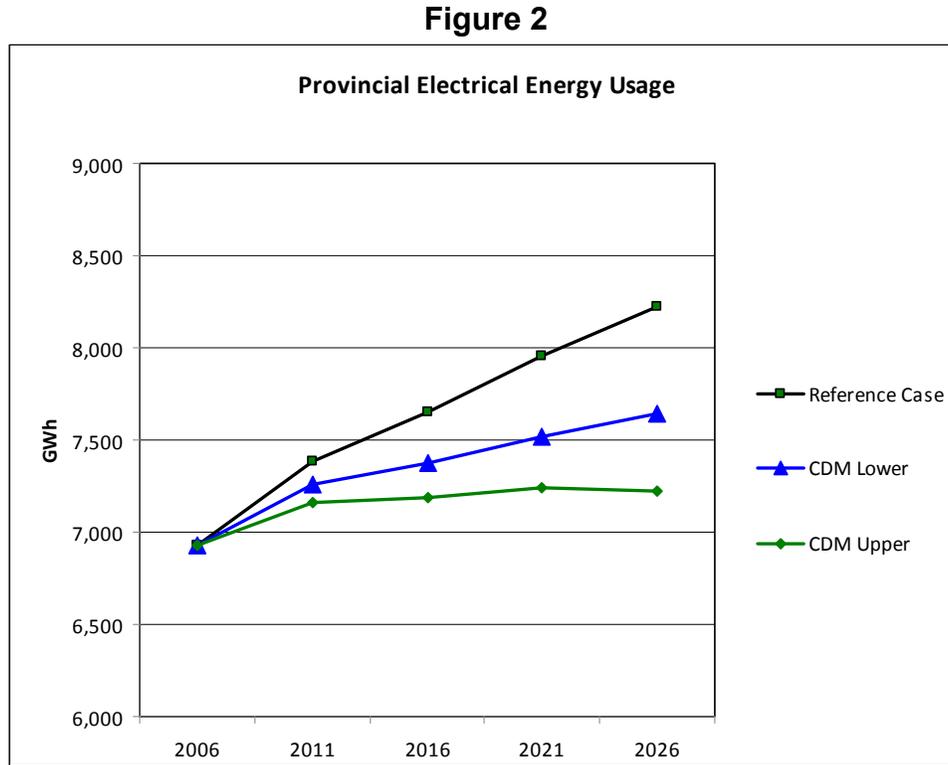


Figure 2 shows that over time, the cumulative effects of implementing cost effective technologies can significantly reduce the forecast growth in electrical usage.

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.<sup>14</sup>

<sup>13</sup> 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.

<sup>14</sup> 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.<sup>15</sup>

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.<sup>16</sup> However, it should be noted that because of the strong link between energy and demand, the programs launched will also bring about demand reductions.<sup>17</sup>

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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<sup>15</sup> 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.

<sup>16</sup> 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.

<sup>17</sup> Newfoundland Power's existing Demand Management activities (Curtailed 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.<sup>18</sup>

The Potential Study used avoided cost screening<sup>19</sup> 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.<sup>20</sup> Each program implemented by the Utilities will have a positive TRC result.<sup>21</sup>

Schedule A contains the program descriptions for the Plan.

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<sup>18</sup> 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.

<sup>19</sup> 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.

<sup>20</sup> The TRC test measures the net program benefits against program costs. See: *Program Evaluation Guidelines*, pp. 15 *et seq.*

<sup>21</sup> 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.<sup>22</sup>

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.

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<sup>22</sup> Based on information from Hydro Ottawa and Fortis BC.

**Table 1**  
**Conservation Programs**  
**Energy Reduction Estimates: 2008-2013**  
**by Sector**  
**(MWh)**

	<b>2008<sup>23</sup></b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Residential	1,120	5,690	10,950	16,950	23,830	31,520
Commercial	-	590	1,760	2,930	2,930	2,930
Industrial <sup>24</sup>	-	-	-	20,000	45,000	45,000
<b>Total</b>	<b>1,120</b>	<b>6,280</b>	<b>12,710</b>	<b>39,880</b>	<b>71,760</b>	<b>79,450</b>

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.<sup>25</sup>

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

**Table 2**  
**Conservation Programs**  
**Program Cost Estimates: 2008-2013<sup>26</sup>**  
**by Sector**  
**(\$000s)**

	<b>2008<sup>27</sup></b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Total</b>
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
<b>Total</b>	<b>430</b>	<b>3,690</b>	<b>4,780</b>	<b>6,790</b>	<b>2,170</b>	<b>2,470</b>	<b>20,330</b>

<sup>23</sup> 2008 energy reduction estimates reflect existing programs.

<sup>24</sup> The Potential Study industrial sector savings did not include the customers' self-generation supplied energy. However, these are included here.

<sup>25</sup> 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.

<sup>26</sup> Estimates include all costs associated with specific programs, including program research, design, incentives, marketing, and management.

<sup>27</sup> 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.<sup>28</sup>

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

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<sup>28</sup> 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 <sup>29</sup>	2009	2010	2011	2012	2013	Total
Education <sup>30</sup>	580	660	750	770	820	900	4,480
Support <sup>31</sup>	150	120	150	180	190	220	1,010
Planning <sup>32</sup>	440	290	630	550	550	410	2,870
<b>Total</b>	<b>1,170</b>	<b>1,070</b>	<b>1,530</b>	<b>1,500</b>	<b>1,560</b>	<b>1,530</b>	<b>8,360</b>

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.<sup>33</sup>

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

<sup>29</sup> 2008 cost estimates reflect existing and new activities in education, support and development.

<sup>30</sup> 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.

<sup>31</sup> 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.

<sup>32</sup> Planning costs are the costs of program planning, development management and evaluation.

<sup>33</sup> 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.<sup>34</sup> 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.<sup>35</sup>

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<sup>34</sup> 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.*

<sup>35</sup> 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, tradeshow, 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, tradeshow, 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 <sup>1</sup>

	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							

<sup>1</sup> 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, tradeshow, 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 <sup>1</sup>

	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 <sup>2.6</sup>							

<sup>1</sup> 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						

**Schedule B**  
**Page 1 of 1**

<b>Table B1</b> <b>Conservation Programs</b> <b>Program Cost Estimates: 2008-2013</b> <b>by Sector</b> <b>(\$000s)</b>							
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Total</b>
<b>Residential</b>							
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
<b>Commercial</b>							
Lighting Rebate Program	-	290	310	340	-	-	940
<b>Industrial</b>							
Custom Retrofit Project Rebate Program	100	1,470	2,640	4,270	-	-	8,480
<b>Total</b>	<b>430</b>	<b>3,690</b>	<b>4,780</b>	<b>6,790</b>	<b>2,170</b>	<b>2,470</b>	<b>20,330</b>

<b>Table B2</b> <b>Conservation Programs</b> <b>Energy Reduction Estimates: 2008-2013</b> <b>by Sector</b> <b>(MWh)</b>						
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>Residential</b>						
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
<b>Commercial</b>						
Lighting Rebate Program	-	590	1,760	2,930	2,930	2,930
<b>Industrial</b>						
Custom Retrofit Project Rebate Program	-	-	-	20,000	45,000	45,000
<b>Total</b>	<b>1,120</b>	<b>6,280</b>	<b>12,710</b>	<b>39,880</b>	<b>71,760</b>	<b>79,450</b>