

1    Q.    Please provide copies of the five most recent annual Rural Deficit Initiatives reports.

2

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4    A.    Please see LWHN-NLH-021 Attachments 1 through 5 for the five most recent annual

5        Rural Deficit Initiatives reports.

A REPORT TO  
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES  
*(pursuant to Order No. P.U. 14(2004))*

**RURAL DEFICIT**  
**Summary of Specific Initiatives**  
**NEWFOUNDLAND AND LABRADOR HYDRO**

March 2009

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## 1 Introduction

Newfoundland and Labrador Hydro (Hydro) serves approximately 36,000 rural customers. Electrical service is provided to the majority of these customers at an operating loss or deficit. The number of customers in rural deficit areas is as follows:

Island Interconnected	23,000
Island Isolated	800
Labrador Isolated	2,500
L'Anse au Loup	1,000

There are approximately 9,000 rural customers served on the Labrador Interconnected System who pay rates which both recover costs as well as contribute to funding a portion of the rural deficit.

Population trends vary on a community by community basis, and generally speaking, can affect the magnitude of the deficit incurred in rural areas. While there is no cost of service available by diesel area, a declining population would typically mean there are fewer customers available to contribute to fixed costs. An increase in a population of a community can result in an improvement in per capita cost recovery, at least to the point where the increase in population causes an increase in load that drives a capital investment requirement. The following table provides the population trends for the isolated diesel areas:

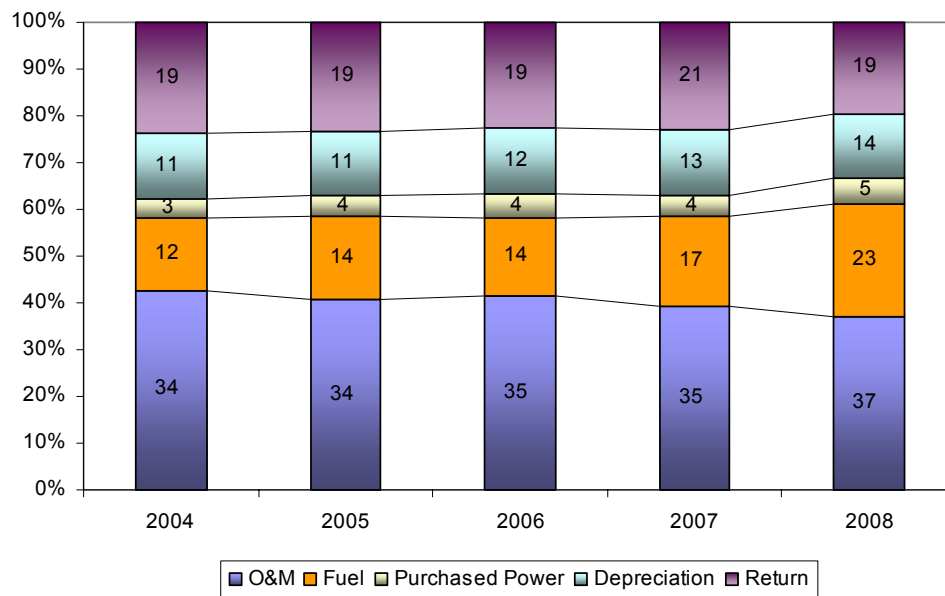
Forecast Trends for Isolated Diesel Communities			
Fast Decline	Slow Decline		Modest Growth
Ramea	Francois	Cartwright	Charlottetown
Little Bay Islands	Grey River	Makkovik	Nain
St Brendan's	McCallum	Postville	
	Black Tickle	St. Lewis	
	L'Anse au Loup	Norman Bay	
	Mary's Harbour	Paradise River	
	Port Hope Simpson	William's Harbour	
	Rigolet	Hopedale	

Hydro remains committed to providing least-cost, reliable power to all its customers, however increasing costs to service Rural Customers are also contributing to the magnitude of the deficit. Rising fuel costs in diesel areas remain a challenge, with no technically and economically feasible options presently identified to switch from fuel-based generation. Hydro continues to investigate options for this area. Increasing wages and other costs, such as those related to legislation, are also factors which impact the rural deficit. However, Hydro continues to seek opportunities to control costs in all areas, as illustrated in the following chart which shows the costs of operating the rural

systems, excluding Labrador Interconnected. The primary controllable cost, Operating and Maintenance Expense (O&M), has increased from \$34 million in 2004 to \$37 million in 2008, a compound annual growth rate of approximately 1.6 %. O&M comprises a smaller percentage of total costs each year since 2004, while fuel based costs, which includes purchased power, are forming ever larger percentages, having just about doubled in size from \$12 million in 2004 to \$23 million in 2008.

Chart 1

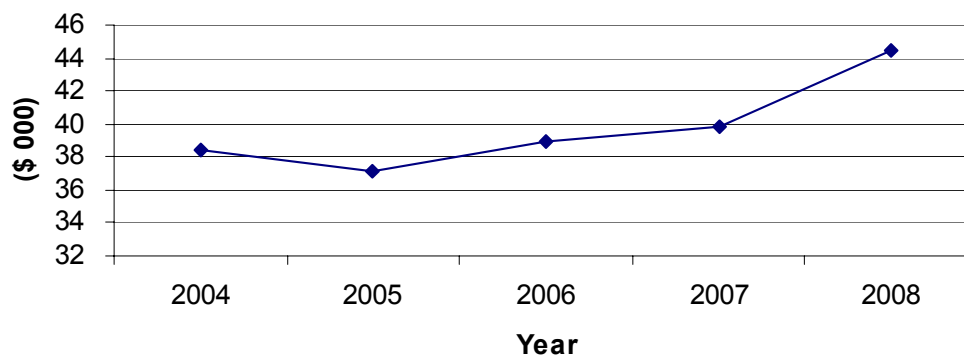
## Rural Costs (\$ millions)



The overall deficit has not grown at the same rate as costs, due to increasing revenues and the application of the Canadian Forces Base Goose Bay (CFB) credit. The deficit level since 2004 is shown in Chart 2.

Chart 2

## Rural Deficit



## **2 2008 Operating Initiatives**

### **Conservation and Demand Management**

Hydro and Newfoundland Power have teamed up to develop a new provincial energy conservation plan. Significant activities in 2008 include completion and filing with the Public Utilities Board of the conservation and demand management potential study of January 2008 prepared by Marbek Resource Consultants Limited and the joint Newfoundland Power/Newfoundland and Labrador Hydro five-year energy conservation plan of June 2008. The conservation programs for rural customers focus primarily on energy savings which will have a beneficial impact on the rural deficit through fuel savings at Holyrood and the isolated diesel plants.

### **Internal Energy Use**

In 2008, Hydro raised its focus on improving internal efficiency to reduce the internal use of energy. This initiative is targeting reductions in energy usage in all facilities including diesel plants and offices within the areas affecting the rural deficit. As in the Conservation and Demand Management initiative with customers, this will result in reduced fuel requirements to supply load in these areas.

### **Bill Printing**

In 2008, Hydro moved the printing of customer bills to in-house to save the printing costs incurred by using an outside printing service company.

## **3 2008 Capital Initiatives**

The replacement of mufflers on diesel units in L'Anse au Loup and St. Anthony<sup>1</sup> is expected to prolong the life of the exhaust systems. The new stainless steel systems are less prone to corrosion as a result of the intermittent operations of these units than the previously installed carbon steel systems.

The continuation of the Automated Meter Reading (AMR) Project<sup>2</sup> is justified based on a positive net present value, reducing meter reading aspect of the rural deficit in the long term. Savings in meter reading costs associated with salaries, safety supplies and transportation are anticipated. The AMR endpoints due to be installed are as follows:

St. Anthony	-	2,400
Barchoix	-	114

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<sup>1</sup> Pages B-128 to B-131, Hydro's 2008 Capital Budget Application.

<sup>2</sup> Pages B-153 to B-155, Hydro's 2008 Capital Budget Application; Pages C-87 to C-95, Hydro's 2009 Capital Budget Application.

Bay d'Espoir	-	1,324
Cow Head	-	454
Conne River	-	341
Daniel's Hr.	-	292
Hawke's Bay	-	968
Parson's Pond	-	250

## 4 Ongoing Initiatives

As previously reported, Hydro's control measures which contribute to controlling the rural deficit include:

- Continuing to capture waste heat in many diesel plants to heat Hydro premises;
- Planning diesel unit replacement size to optimize fuel efficiency;
- Monitoring diesel system fuel efficiency to identify poor performers so that corrective action may be taken;
- Utilizing commercial air flights during regular work hours where practical, rather than more expensive helicopter use and overtime hours;
- Having, when possible, operators choose the most fuel efficient mix of engines to supply the community load. This is done automatically in automated plants.
- The interconnection of Rencontre East, completed in 2006, was the least-cost alternative to supply long term reliable power to the former diesel plant community. A present worth comparison of costs for continued diesel operation versus the interconnection indicates the interconnection alternative would provide a 15-year payback under base case conditions. At the end of the 31-year study period, the interconnection provides a CPW (cumulative present worth) cost preference of \$1,042,907 over continued diesel operation.
- Through its conservation programs, recently rebranded "TakeCharge" in partnership with Newfoundland Power, Hydro continues to inform its customers of ways to reduce energy consumption and save money. Up to the end of 2005, Hydro distributed approximately 14,000 compact fluorescent lights to its customers in diesel systems. For further details regarding a current update on this initiative, see Attachment 2 in response to CA 5 NLH of Hydro's 2006 General Rate Application.
- More effective planning and scheduling has helped maintain reliable service during a period in which the operating and maintenance costs have tracked below inflation. There is a significant coordination effort in the up-front planning process to ensure delays and duplicate asset outages are minimized. Planning and scheduling results in better utilization of the workforce with the planner ensuring the available weekly capacity of each crew is matched to the estimated weekly work. Overall, planning and scheduling helps Hydro perform effective maintenance activities in the most efficient manner.

- Completing a life cycle cost analysis to help ensure the overall least-cost option is chosen when analyzing tenders for the purchase of new diesel engines. In the life cycle cost analysis such things as capital cost, overhaul cost, fuel cost (based upon fuel efficiency data), and routine operation and maintenance cost are considered.

## **5 Reliability**

It should be noted that cost reductions and increased system reliability are sometimes conflicting goals. Please refer to Hydro's 2008 Key Performance Indicator Report for distribution reliability statistics and commentary. Rural deficit control measures must be considered with due consideration given to reliability issues.



A REPORT TO  
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**RURAL DEFICIT**  
**Summary of Specific Initiatives**  
**NEWFOUNDLAND AND LABRADOR HYDRO**

March 2010

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## **1 Introduction**

Newfoundland and Labrador Hydro (Hydro) serves approximately 36,000 Rural Customers. Electrical service is provided to the majority of these customers at an operating loss or deficit.

There are approximately 9,000 Rural Customers served on the Labrador Interconnected System who pay rates which both recover costs as well as contribute to funding a portion of the rural deficit.

As stated in the 2008 Rural Deficit report, population trends vary on a community by community basis, and generally speaking, can affect the magnitude of the deficit incurred in rural areas. While there is no cost of service available by each diesel area or community, a declining population would typically mean there are fewer customers available to contribute to fixed costs. An increase in a population of a community can result in an improvement in per capita cost recovery, at least to the point where the increase in population causes an increase in load that drives a capital investment requirement. Population trend data has not been updated since the 2008 report, but Hydro's customer numbers<sup>1</sup> from 2000 to 2009 (Table 1 below) show the number of customers on the Labrador Isolated Systems are generally increasing. The reverse is true in the Island Isolated Systems.

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<sup>1</sup> Excludes streetlights

Table 1: Number of Customers

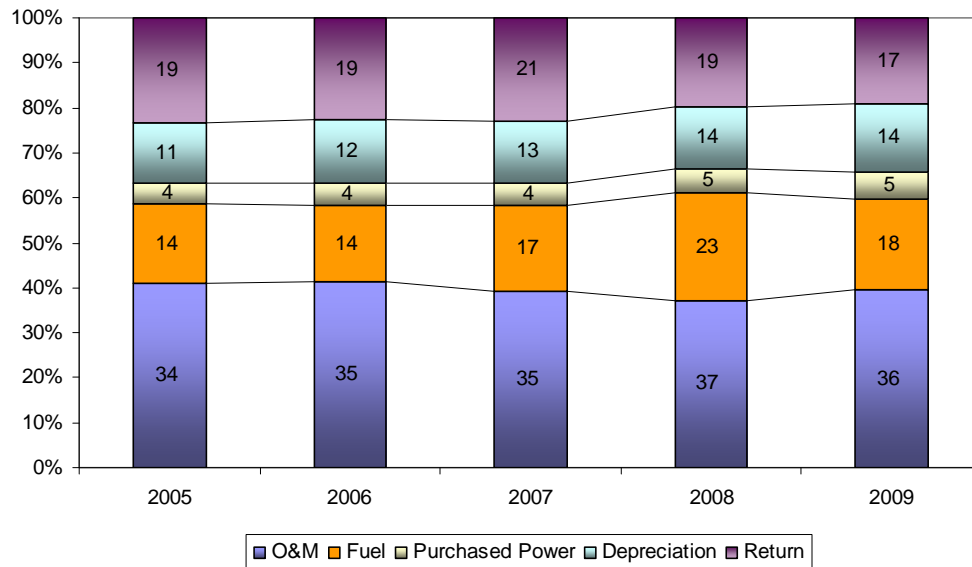
Community	Number of Customers			Percent Increase (Decrease)
	2000	2005	2009	2000 to 2009
<b>Labrador</b>				
Charlottetown	177	197	208	18%
Mary's Harbour	212	255	255	20%
Norman Bay	20	20	19	-5%
Port Hope Simpson	208	221	228	10%
St. Lewis	133	133	131	-2%
Williams Harbour	39	39	38	-3%
Black Tickle	95	100	105	11%
Cartwright	306	326	337	10%
Hopedale	198	217	227	15%
Makkovik	162	179	194	20%
Nain	327	401	426	30%
Paradise River	27	29	32	19%
Postville	99	113	123	24%
Rigolet	140	151	159	14%
L'Anse au Loup	928	957	969	4%
<b>Island</b>				
Francois	85	78	77	-9%
Grey River	78	71	70	-10%
Little Bay Islands	150	137	136	-9%
McCallum	78	67	64	-18%
Rencontre	398	356	349	-12%
St. Brendan's	109	87	87	-20%
	152	143	143	-6%

Hydro remains committed to providing least-cost, reliable power to all its customers; however increasing costs to service Rural Customers, many of which Hydro has limited control over are contributing to the magnitude of the deficit. Rising fuel costs in diesel areas, increasing wages, general inflationary pressure on material supply costs and other costs, such as those required to meet legislative requirements impact the rural deficit. However, Hydro continues to seek opportunities to control costs in all areas, but the results are not quantifiable year over year. Chart 1 below shows the trends in the share of each cost category to the total cost of operating the rural systems, excluding Labrador Interconnected. The primary controllable cost, Operating and Maintenance

Expense (O&M), has increased from \$34.3 million in 2005 to \$36 million in 2009, with a slight decrease in 2009 from the 2008 O&M. This represents a slight rise in O&M as a percentage of total costs, as fuel based costs declined primarily due to overall fuel savings at Holyrood. The magnitude of the O&M cost increase is minor relative to the more significant changes that can occur to the fuel based costs.

**Chart 1**

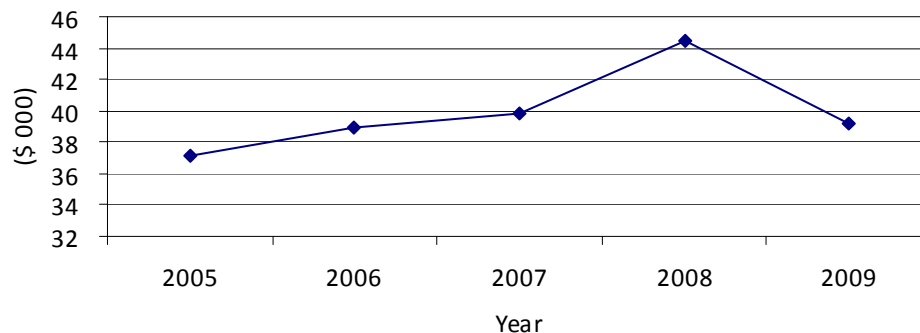
Rural Costs (\$ millions)



The overall deficit was reduced in 2009 compared to 2008, primarily due to the \$5 million reduction in fuel costs and return shown in Chart 1 above.

**Chart 2**

Rural Deficit



## **2 2009 Operating Initiatives**

### **2.1 Conservation and Demand Management**

Hydro and Newfoundland Power have teamed up to develop a new provincial energy conservation plan. In addition, it has on behalf of the Department of Natural Resources completed a conservation project in Hopedale and Port Hope Simpson to assess the opportunities for customers to save energy and provide them with some energy saving devices which are resulting in reduced energy usage in those communities. The 2009 initiatives are included in Section 3.2 of Hydro's December 2009 quarterly report previously filed with the Board.

### **2.2 Labrador Isolated Fuel Tanks**

Since the road interconnection of the Southern Labrador communities, where possible, Hydro has reduced its reliance on large fuel storage tanks. The result is a reduction in the associated capital requirements and ongoing maintenance costs of these large storage tanks.

### **2.3 Station Service Loading**

Hydro completed a review of the station service loading in all diesel plants and as a result engaged a consultant to complete a detailed review of Grey River in 2009. Improvements from this initiative will be brought forward in a future year capital project.

### **2.4 In-line Heating**

Hydro has started installing in-line heaters (1500 W, 120 V) at diesel plants and terminal stations which will help reduce energy consumption.

### **3 2009 Capital Initiatives**

The conductor on Line 2 in the Rocky Harbour distribution system was replaced<sup>2</sup> with a larger conduction which will reduce annual line losses by approximately 75,400 kWh which is equivalent to displacing 120 barrels of fuel at the Holyrood Thermal Generating Station.

As stated in the 2008 Rural Deficit Report, the ongoing implementation of Automated Meter Reading (AMR) Project<sup>3</sup> is reducing meter reading aspect of the rural deficit in the long term. In 2009, AMR implementation was completed in numerous distribution systems. The savings from AMR are associated with salaries, safety supplies and transportation for meter readers.

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<sup>2</sup> Pages C-124 to C-129, Hydro's 2009 Capital Budget Application

<sup>3</sup> Pages B-153 to B-155, Hydro's 2008 Capital Budget Application; Pages C-87 to C-95, Hydro's 2009 Capital Budget Application

## 4 Ongoing Initiatives

As previously reported, Hydro's control measures which contribute to controlling the rural deficit include:

- Continuing to capture waste heat in many diesel plants to heat Hydro premises;
- Planning diesel unit replacement size to optimize fuel efficiency;
- Monitoring diesel system fuel efficiency to identify poor performers so that corrective action may be taken;
- Utilizing commercial air flights during regular work hours where practical, rather than more expensive helicopter use;
- Having, when possible, operators choose the most fuel efficient mix of engines to supply the community load. This is done automatically in automated plants;
- More effective planning and scheduling has helped maintain reliable service during a period in which the operating and maintenance costs have tracked below inflation. There is a significant coordination effort in the upfront planning process to ensure delays and duplicate asset outages are minimized. Planning and scheduling results in better utilization of the workforce with the planner ensuring the available weekly capacity of each crew is matched to the estimated weekly work. Overall, planning and scheduling helps Hydro perform effective maintenance activities in the most efficient manner;
- Completing a life cycle cost analysis to help ensure the overall least-cost option is chosen when analyzing tenders for the purchase of new diesel engines. In the life cycle cost analysis such things as capital cost, overhaul cost, fuel cost (based upon fuel efficiency data), and routine operation and maintenance cost are considered;
- In 2008, Hydro raised its focus on improving internal efficiency to reduce the internal use of energy. This ongoing activity is targeting reductions in energy usage in all facilities including diesel plants, offices and line depots within the areas affecting the rural deficit. As in the Conservation and Demand



Management initiative with customers, this will result in reduced fuel requirements to supply load in these areas;

- Also in 2008, Hydro moved the printing of customer bills to in-house and is saving the printing costs it would have incurred by continued use of an outside printing service company; and
- In 2009, mailing costs were reduced by improved sorting of customer bills to avoid multiple mailouts to customers with multiple accounts and by eliminating return envelopes for customers not paying by mail.

## **5 Reliability**

It should be noted that cost reductions and increased system reliability are sometimes conflicting goals. Please refer to Hydro's 2009 Key Performance Indicator Report for distribution reliability statistics and commentary. Rural deficit control measures must be considered with due consideration given to reliability issues.

A REPORT TO  
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## **RURAL DEFICIT ANNUAL REPORT**

### **Summary of Specific Initiatives**

## **NEWFOUNDLAND AND LABRADOR HYDRO**

April 2011

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## **1 Introduction**

Newfoundland and Labrador Hydro (Hydro) serves approximately 37,000 Rural Customers. Electrical service is provided to the majority of these customers at an operating loss or deficit.

There are approximately 10,000 Rural Customers served on the Labrador Interconnected System who pay rates which both recover costs as well as contribute to funding a portion of the rural deficit.

As stated in prior years, population trends vary on a community by community basis, and generally speaking, can affect the magnitude of the deficit incurred in rural areas. While there is no cost of service available by each diesel area or community, a declining population would typically mean there are fewer customers available to contribute to fixed costs. An increase in a population of a community can result in an improvement in per capita cost recovery for fixed cost, at least to the point where the increase in population does not cause an increase in load that drives a capital investment requirement. Population trend data has not been updated since the 2008 report, but Hydro's customer numbers<sup>1</sup> from 2000 to 2010 (Table 1 below) show the net number of customers on the Labrador Isolated Systems are generally increasing. The reverse is true in the Island Isolated Systems.

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<sup>1</sup> Excludes streetlights

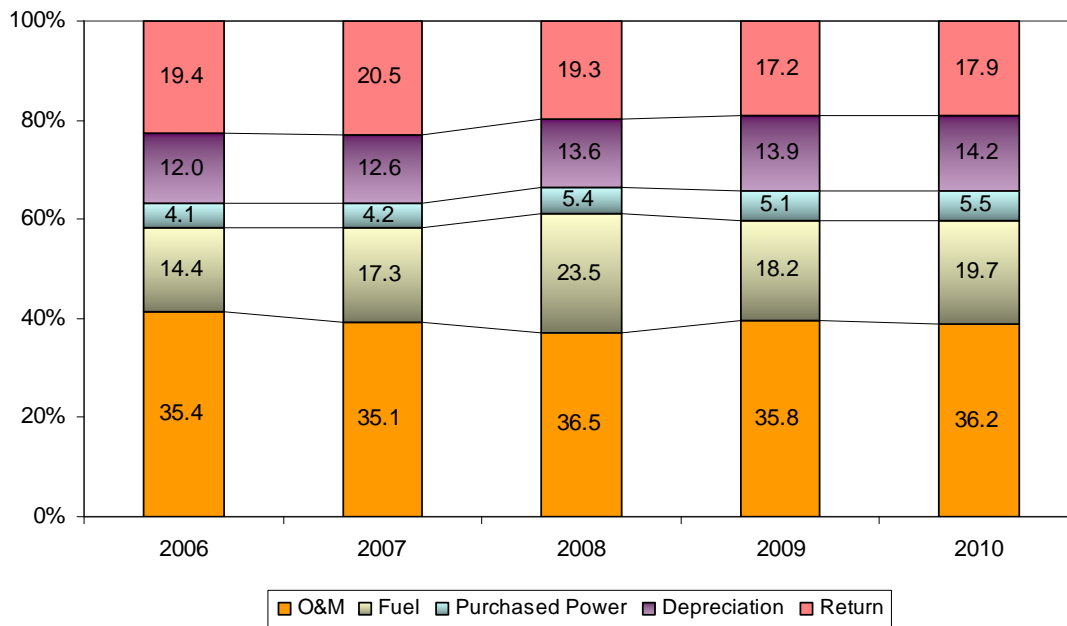
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Mary's Harbour	212	255	259	22%
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Williams Harbour	39	39	35	-10%
Black Tickle	95	100	103	8%
Cartwright	306	326	340	11%
Hopedale	198	217	238	20%
Makkovik	162	179	212	31%
Nain	327	401	443	35%
Paradise River	27	29	35	30%
Postville	99	113	125	26%
Rigolet	140	151	164	17%
L'Anse au Loup	928	957	981	6%
<b>Island</b>				
Francois	85	78	78	-8%
Grey River	78	71	68	-13%
Little Bay Islands	150	137	131	-13%
McCallum	78	67	63	-19%
Ramea	398	356	350	-12%
St. Brendan's	152	143	141	-7%

Hydro remains committed to providing least-cost, reliable power to all its customers; however increasing costs to service Rural Customers, many of which Hydro has limited control over are contributing to the magnitude of the deficit. Rising fuel costs in diesel areas over which Hydro has no control and no regulatory protection, increasing wages, general inflationary pressure on material supply costs and other costs, such as those required to meet legislative requirements impact the rural deficit. However, Hydro continues to seek opportunities to control costs in all areas, but the results are not quantifiable year over year. Chart 1 below shows the trends in the share of each cost category to the total cost of operating the rural systems, excluding Labrador Interconnected. The primary controllable cost, Operating and Maintenance Expense

(O&M), has increased from \$35.4 million in 2006 to \$36.2 million in 2010 with a slight decrease in 2009 from the 2008 O&M. In 2010, there was a slight decrease in O&M as a percentage of total costs. The magnitude of the O&M cost increase remains minor relative to the more significant changes that can occur to the fuel based costs.

**Chart 1**

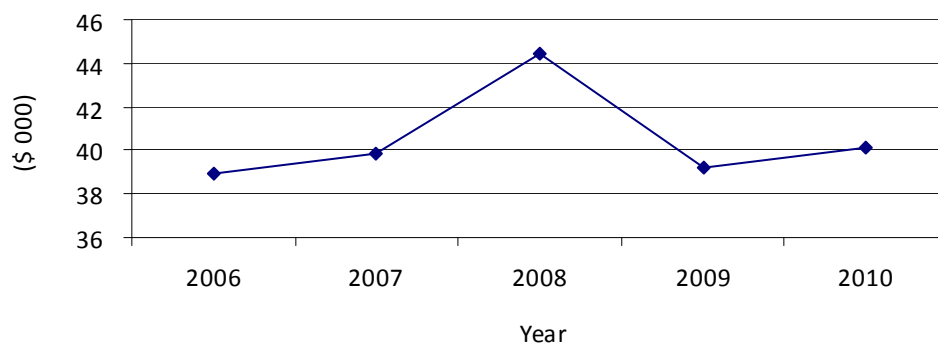
Rural Costs (\$ millions)



The overall deficit in 2010 exceeded the 2009 deficit by approximately \$1 million primarily due to the \$1.5 million increase in fuel costs shown in Chart 1 above.

**Chart 2**

Rural Deficit



## **2 2010 Operating Initiatives**

### **2.1 Fuel Additive Pilot Project**

Hydro has targeted three diesel sites to add a fuel additive called ACES. This product has testing and documentation to support it being capable of improving the fuel efficiency by up to 10%, with side benefits of reduced emissions, increased engine and fuel pump lubrication and prevention of algae growth if applied to the bulk storage. The ACES was added in December of 2010 in Rigolet and Mary's Harbour but the pilot only started in Feb/March 2011. If this project proves itself, and then applied across the diesel systems, it could result in a savings between \$750,000 and \$1 million.

### **2.2 Internal Energy Efficiency Initiatives**

In 2010, Hydro's internal energy efficiency measures contribute to overall cost containment, some of which is allocated to Rural Customers and therefore contributes to deficit reduction. These measures include:

#### Bay d'Espoir – 404 MWh estimated annual energy savings

- Equivalent fuel reduction of 640 barrels of oil at HTGS.
- Further to previous year's actions, additional electric heaters at the Upper Salmon, West Salmon, and North Salmon intake structures are operated according to seasonal requirements.

#### Holyrood Thermal Generating Station – 690 MWh estimated annual energy savings

- Equivalent fuel reduction of 1,095 barrels of oil at HTGS.
- Further to previous year's actions, a large station service transformer at the Roddickton Woodchip Facility was de-energized.

#### Hydro Place – 1,500 MWh estimated annual energy savings

- Equivalent fuel reduction of 2,381 barrels of oil at HTGS.



- Further to previous year's upgrades, computer room air conditioning requirements have been reduced by approximately 13 tons of refrigeration.

#### TRO Central – 4.5 MWh estimated annual energy savings

- Equivalent to 7 barrels of oil reduction.
- Further to previous year's actions, roof upgrade work at the Stoney Brook Terminal Station Control Building included increased insulation levels, and low flow faucet aerators were installed to help reduce hot water use at the Bishop's Falls complex.
- Energy audit completed of the Hydro complex at Bishop's Falls in 2010. Quick hit recommendations to be acted on in 2011.

### **2.3 Introduced e-billing**

Hydro began offering e-billing to its customers in 2010. E-billing is an electronic paperless form of receiving a bill by email. This method of billing is convenient, beneficial to the environment and offers a small cost savings on postage, paper and envelopes. To the end of 2010, approximately \$480 was being saved monthly.

### **3 2010 Capital Initiatives**

Enhancements to the set points of the Cartwright Diesel plant units<sup>2</sup> allows improved load sharing and cycling with improved fuel consumption. The system automation to ensure the right unit is dispatched at the correct time to maximize efficiency for the plant which will reduce fuel consumption.

The ongoing implementation of Automated Meter Reading (AMR) Project<sup>3</sup> is reducing meter reading costs aspect of the rural deficit in the long term. Automated Meter Reading (AMR) was implemented for the Fogo/Change Islands System in 2010 displacing one full-time Meter Reader position. This initiative reduced operating cost by approximately \$63,000 annually based on current salary and benefits.

Distribution capital upgrades are completed with a focus of replacing any known troublesome assets. For example, in 2011 a capital project is scheduled to upgrade the distribution system in Francois. The scope will include replacement of deteriorated poles, insulators, secondary conductor, transformers and know customer service connection deterioration. The upgrade in an isolated community addresses any known concerns, and trouble calls in the future will be reduced.

The Norman's Bay Diesel Plant upgrade capital project<sup>4</sup> resulted in three new, more efficient engines being installed.

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<sup>2</sup> Pages B-125 to B- 126. Hydro's 2008 Capital Budget Application - Replace Switchgear – Cartwright, project completed.

<sup>3</sup> Pages B-153 to B-155, Hydro's 2008 Capital Budget Application; Pages C-87 to C-95, Hydro's 2009 Capital Budget Application

<sup>4</sup> Pages B-17 to B-18, Hydro's 2009 Capital Budget Application.

## 4 Ongoing Initiatives

As previously reported, Hydro's control measures which contribute to controlling the rural deficit include:

- Continuing to capture waste heat in many diesel plants to heat Hydro premises;
- Planning diesel unit replacement size to optimize fuel efficiency;
- Monitoring diesel system fuel efficiency to identify poor performers so that corrective action may be taken;
- Utilizing commercial air flights during regular work hours where practical, rather than more expensive helicopter use;
- Having operators choose the most fuel efficient mix of engines, when possible, to supply the community load. This is done automatically in automated plants;
- More effective planning and scheduling has helped maintain reliable service during a period in which the operating and maintenance costs have tracked below inflation. There is a significant coordination effort in the upfront planning process to ensure delays and duplicate asset outages are minimized. Planning and scheduling results in better utilization of the workforce with the planner ensuring the available weekly capacity of each crew is matched to the estimated weekly work. Overall, planning and scheduling helps Hydro perform effective maintenance activities in the most efficient manner;
- Completing a life cycle cost analysis to help ensure the overall least-cost option is chosen when analyzing tenders for the purchase of new diesel engines. In the life cycle, cost analysis such things as capital cost, overhaul cost, fuel cost (based upon fuel efficiency data), and routine operation and maintenance cost are considered;
- In 2008, Hydro raised its focus on improving internal efficiency to reduce the internal use of energy. This ongoing activity is targeting reductions in energy usage in all facilities including diesel plants, offices and line depots within the areas affecting the rural deficit. As in the Conservation and Demand

Management initiative with customers, this will result in reduced fuel requirements to supply load in these areas;

- Also in 2008, Hydro moved the printing of customer bills to in-house and is saving the printing costs it would have incurred by continued use of an outside printing service company;
- In 2009, mailing costs were reduced by improved sorting of customer bills to avoid multiple mailouts to customers with multiple accounts and by eliminating return envelopes for customers not paying by mail;
- Conservation and Demand Management initiatives continue, as reported in Section 3.3 of Hydro's Quarterly Regulatory report for the year ended December 31, 2010; and
- Since 2009, Hydro has been installing in-line heaters (1500 W, 120 V) at diesel plants and terminal stations which will help reduce energy consumption.

## **5 Reliability**

It should be noted that cost reductions and increased system reliability are sometimes conflicting goals. Please refer to Hydro's 2009 Key Performance Indicator Report for distribution reliability statistics and commentary. Rural deficit control measures must be considered with due consideration given to reliability issues.

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## **1 Introduction**

Newfoundland and Labrador Hydro (Hydro) serves approximately 37,800 Rural Customers. Electrical service is provided to the majority of these customers at an operating loss or deficit, except for the approximately 10,000 Rural Customers served on the Labrador Interconnected System who pay rates which both recover costs as well as contribute to funding a portion of the rural deficit.

As stated in prior years, population trends vary on a community by community basis, and generally speaking, can affect the magnitude of the deficit incurred in rural areas. While there is no cost of service available by each diesel area or community, a declining population would typically mean there are fewer customers available to contribute to fixed costs. An increase in the number of customers in a community can result in an improvement in per capita cost recovery for fixed cost, at least to the point where the increase in population does not cause an increase in load that drives a capital investment requirement. In isolated diesel communities, in particular, the incremental cost of fuel would rarely be recovered by increased sales due to increased population, number of customer accounts or simply increased load.

Hydro's mandate to provide least-cost, safe and reliable power to all its customers remains its primary focus. Controllable costs, primarily Operating and Maintenance (O&M) costs remain relatively consistent from year to year, despite increasing wages, general inflationary pressure on material supply costs and other costs. The current provincial economy remains an increasing cost driver. Hydro continues to control its O&M costs using measures such as Conservation and Demand Management (CDM) aimed at internal energy efficiency. Such efforts both reduce Hydro's O&M costs and assist in reducing overall system fuel costs. Hydro remains committed to influencing non-controllable costs such as fuel prices by its efforts placed upon CDM initiatives aimed at its customers.

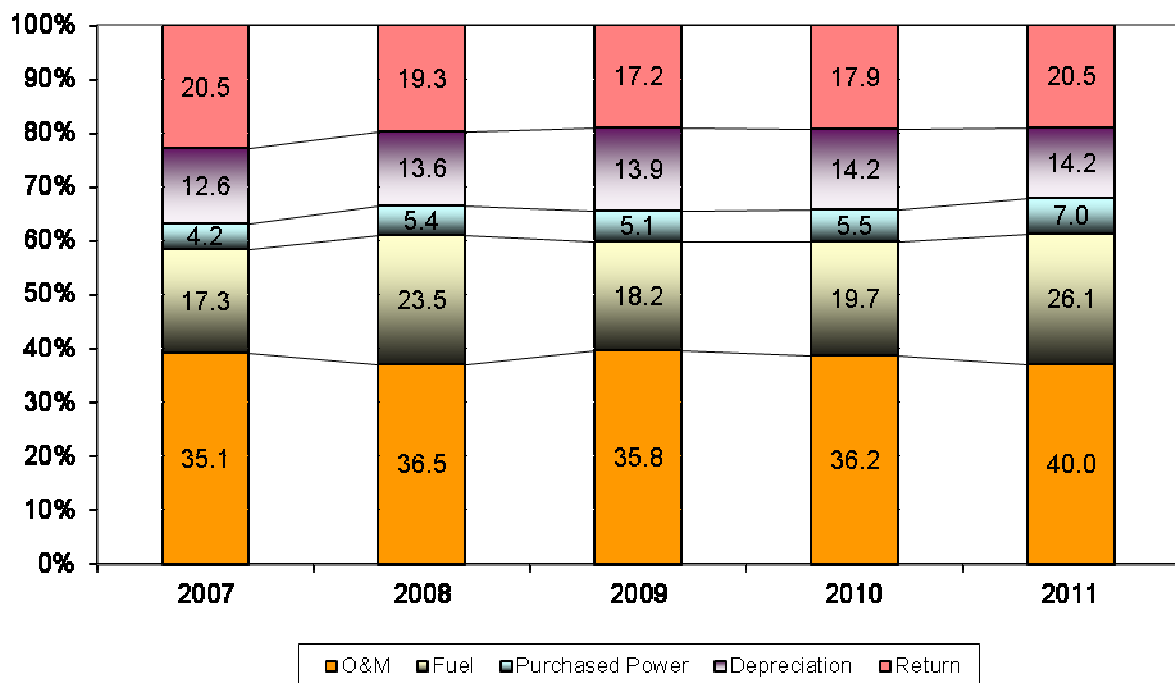


Chart 1 below shows the trends in the share of each cost category to the total cost of operating the rural systems, excluding Labrador Interconnected. The primary controllable cost, O&M, has increased from \$35.1 million in 2007 to \$40.0 million in 2011. O&M cost increases have been driven primarily by increases in wages and benefits, as explained in the Financial Key Performance Indicator (KPI) section of Hydro's 2011 KPI report.

In 2011, O&M as a percentage of total costs decreased from a high of 40% in 2009 to 37% in 2011.

**Chart 1**

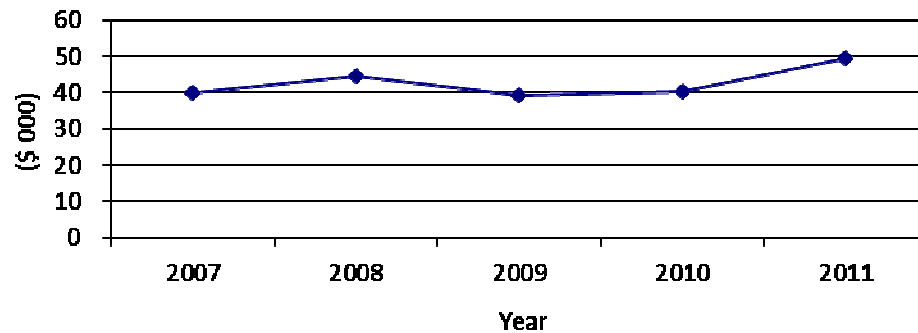
**Rural Costs (\$ millions)**



The overall deficit in 2011 exceeded the 2010 deficit by approximately \$9.2 million, primarily due to the \$1.5 million increase in fuel costs shown in Chart 1 above. Note that the capital related fixed costs (return on rate base and depreciation expense) continue to account for approximately 60% of the overall costs.

Chart 2

Rural Deficit



The overall change in the deficit is broken down as shown in Table 1 below.

Table 1

Change in Deficit by Component	
	From 2010 to 2011
O&M	3.8
Fuel	6.4
Purchased Power	1.5
Depreciation	(0.1)
Return	2.6
Revenue	(5.1)
<b>Total Increase (Decrease) in Deficit</b>	<b>9.2</b>

## 2 2011 Operating Initiatives

### 2.1 Internal Energy Efficiency Initiatives

In 2011, Hydro's internal energy efficiency measures contribute to overall cost containment, some of which is allocated to Rural Customers and therefore contributes to deficit reduction. These measures include:

Nain<sup>1</sup> Diesel Plant Waste Heat Recovery System for Space Heating - 60 MWh estimated annual savings

Previously, the diesel plant relied on several electric resistance heaters for space heating. In 2011, a system was installed to utilize the waste heat from the diesel generators to provide space heating throughout the building. The system is working well, and in addition to providing a more effective heating system, it has reduced the station service by an average of 24%. Based on the system's performance to date, it is expected to save approximately 60 MWh of electricity.

Bishop's Falls<sup>2</sup> Low-Cost Energy Conservation Measures - 55 MWh estimated annual savings

An energy audit of the Bishop's Falls complex was completed in 2010 which identified several opportunities for reducing energy consumption. In 2011, low-cost measures identified in the audit report were implemented for an estimated annual savings of 55 MWh of electricity.

Holyrood<sup>3</sup> Thermal Generation Station (Holyrood): Efficient Operating Practices - 114 MWh estimated annual savings

Holyrood has a 1.2 km pipe line which transports No. 6 fuel oil from tanker ships to the tank farm for storage. This line is equipped with electric heat tracing which operates continuously in order to maintain an acceptable viscosity for pumping. During the summer months, when shipments are not being received, the temperature set point was reduced in order to reduce unnecessary electricity consumption. Due to the size of the heat trace system and line, the small adjustment resulted in an estimated savings of 114 MWh.

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<sup>1</sup> Savings directly affect Labrador Isolated Rural Customers.

<sup>2</sup> Allocated between Island Interconnected and Island Isolated systems, and among all functions. Approximately 7% of island Interconnected costs assigned to Rural Customers.

<sup>3</sup> Approximately 7% of island Interconnected costs assigned to Rural Customers.

### **3 2011 Capital Initiatives**

The ongoing implementation of Automated Meter Reading (AMR) Project<sup>4</sup> is reducing meter reading costs aspects of the rural deficit in the long term. AMR is being implemented at Labrador West during 2011/2012 that will displace temporary help approximately equivalent to 1/2 an FTE position, which was required to meet the expansion occurring at Labrador West and corresponding customer growth. Upon completion, this initiative will reduce operating cost by approximately \$50,000 annually based on current salary and benefits.

Hydro's 2011 project, Replace Mini Hydro Turbine in Roddickton<sup>5</sup>, includes an energy efficiency component where additional energy will be generated and supplied into the Island Interconnected System because of an increase in turbine efficiency. While it is not possible to accurately measure turbine efficiency at this plant, it is estimated that the deteriorated turbine is operating at an efficiency of 77 percent as compared to its original guaranteed efficiency of 82 percent, and the project when completed in 2012 will result in an efficiency rate of 85 percent, resulting in a 10.4 percent increase in energy production. Although this project is of benefit to the entire Island Interconnected System, there will be an impact in the total fuel required for the system and therefore an impact upon the rural deficit.

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<sup>4</sup> Pages B-75 to B-76, Hydro's 2011 Capital Budget Application

<sup>5</sup> Pages C-89 to B-97, Hydro's 2011 Capital Budget Application, scheduled to be completed in 2012

## 4 Ongoing Initiatives

As previously reported, Hydro's control measures which contribute to controlling the rural deficit include:

- Continuing to capture waste heat in more than half of Hydro's diesel plants to heat Hydro premises;
- Planning diesel unit replacement size to optimize fuel efficiency;
- Monitoring diesel system fuel efficiency to identify poor performers so that corrective action may be taken;
- Utilizing commercial air flights during regular work hours where practical, rather than more expensive helicopter use;
- Having operators choose the most fuel efficient mix of engines, when possible, to supply the community load. This is done automatically in automated plants;
- More effective planning and scheduling, which includes a significant coordination effort in the upfront planning process to ensure delays and duplicate asset outages are minimized. Planning and scheduling results in better utilization of the workforce with the planner ensuring the available weekly capacity of each crew is matched to the estimated weekly work. Overall, planning and scheduling helps Hydro perform effective maintenance activities in the most efficient manner;
- Completing a life cycle cost analysis to help ensure the overall least-cost option is chosen when analyzing tenders for the purchase of new diesel engines. For example, new engines were put in service in Little Bay Islands, McCallum and Francois in 2011. In the life cycle, cost analysis such things as capital cost, overhaul cost, fuel cost (based upon fuel efficiency data), and routine operation and maintenance cost are considered;
- In 2008, Hydro raised its focus on improving internal efficiency to reduce the internal use of energy. This ongoing activity is targeting reductions in energy usage in all facilities including diesel plants, offices and line depots within the areas affecting the

rural deficit. As in the Conservation and Demand Management initiative with customers, this will result in reduced fuel requirements to supply load in these areas;

- Also in 2008, Hydro moved the printing of customer bills to in-house and is saving the printing costs it would have incurred by continued use of an outside printing service company;
- In 2009, mailing costs were reduced by improved sorting of customer bills to avoid multiple mailouts to customers with multiple accounts and by eliminating return envelopes for customers not paying by mail;
- Conservation and Demand Management initiatives continue, as reported in Section 3.3 of Hydro's Quarterly Regulatory report for the year ended December 31, 2011;
- Since 2009, Hydro has been installing in-line heaters (1500 W, 120 V) at diesel plants and terminal stations which will help reduce energy consumption;
- Hydro began offering e-billing to its customers in 2010. E-billing is an electronic paperless form of sending customer bills by email. This method of billing is convenient, beneficial to the environment and offers a small cost savings on postage, paper and envelopes. To the end of 2011, approximately \$740 was being saved monthly.

## **5 Reliability**

It should be noted that cost reductions and increased system reliability are sometimes conflicting goals. Please refer to Hydro's 2011 Key Performance Indicator Report for distribution reliability statistics and commentary. Rural deficit control measures must be considered with due consideration given to reliability issues.

A REPORT TO  
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES  
*(pursuant to Order No. P.U. 14(2004))*

## **RURAL DEFICIT ANNUAL REPORT**

### **Summary of Specific Initiatives**

## **NEWFOUNDLAND AND LABRADOR HYDRO**

May 2013



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## **1 Introduction**

Newfoundland and Labrador Hydro (Hydro) serves approximately 37,000 Rural Customers. Electrical service is provided to the majority of these customers at an operating loss or deficit, except for the approximately 10,300 Rural Customers served on the Labrador Interconnected System who pay rates which both recover costs as well as contribute to funding a portion of the rural deficit.

As stated in prior years, population trends vary on a community-by-community basis, and generally speaking, can affect the magnitude of the deficit incurred in rural areas. While there is no cost of service available by each diesel area or community, a declining population would typically mean there are fewer customers available to contribute to fixed costs. An increase in the number of customers in a community can result in an improvement in per capita cost recovery for fixed cost, at least to the point where the increase in population does not cause an increase in load that drives a capital investment requirement. In isolated diesel communities, in particular, the incremental cost of fuel would rarely be recovered by increased sales due to increased population, number of customer accounts or simply increased load.

Hydro's mandate to provide least-cost, safe and reliable power to all its customers remains its primary focus. Controllable costs, primarily operating expenses, remain relatively consistent from year to year, despite increasing wages, general inflationary pressure on material supply costs and other costs. Hydro continues to control its operating expenses using measures such as Conservation and Demand Management (CDM) aimed at internal energy efficiency. Such efforts both reduce Hydro's costs and assist in reducing overall system fuel costs. Hydro remains committed to influencing non-controllable costs such as fuel prices by its efforts placed upon CDM initiatives aimed at its customers.

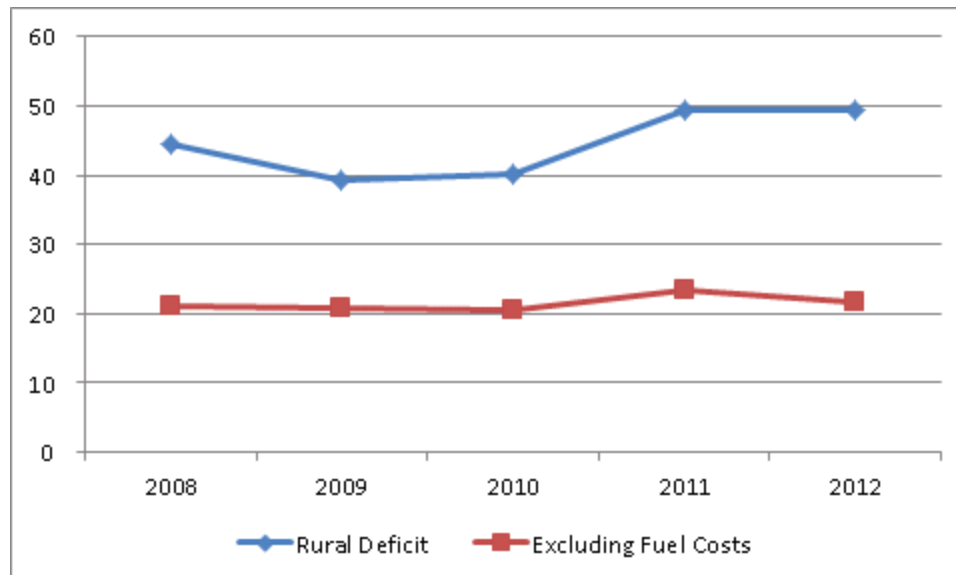
Table 1 below shows each cost category of operating the rural systems, excluding Labrador Interconnected. The primary controllable cost, Operating Expenses, has increased from \$36.5 million in 2008 to \$43.0 million in 2012. Operating Expense increases have been driven primarily by increases in wages and benefits.

**Table 1**  
**(\$ millions)**

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Operating Expenses	36.5	35.8	36.2	40.0	43.0
Fuel	23.5	18.2	19.7	26.1	27.6
Purchased Power	5.4	5.1	5.5	7.0	7.5
Depreciation	13.6	13.9	14.2	14.2	11.6
Return	19.3	17.2	17.9	20.5	20.4
<b>Total</b>	<b>98.3</b>	<b>90.4</b>	<b>93.4</b>	<b>107.8</b>	<b>110.1</b>

The overall deficit in 2012 remained level with the 2011 deficit. Increases in operating expenses and fuel costs were offset by decreased depreciation expense and increased revenue. Chart 1 below shows the level of the rural deficit since 2008.

**Chart 1**  
**Five-Year Rural Deficit**



The overall change in the deficit is broken down as shown in Table 2 below.

**Table 2**

Change in Deficit by Component	
	From 2011 to 2012 (\$ millions)
Operating Expenses	3.0
Fuel	1.5
Purchased Power	0.4
Depreciation	(2.6)
Return	(0.1)
Revenue	(2.3)
<b>Total Increase (Decrease) in Deficit</b>	<b>0.0</b>

## **2 2012 Operating Initiatives**

### **2.1 Internal Energy Efficiency Initiatives**

Hydro continues to consider internal energy efficiency measures, which contribute to overall cost containment, some of which are allocated to Rural Customers. Hydro's Quarterly Regulatory Report for the Quarter Ended December 31, 2012 included reporting on annual energy savings from Internal Energy Efficiency Programs. With 2012 targeted savings of 0.15 GWh, Hydro achieved 0.26 GWh, exceeding the target and increasing the energy savings over 2011 by over 50 percent. The 2012 savings were primarily realized through retrofits of lighting and heating controls, along with heating equipment and lighting optimization.

### **3      2012 Capital Initiatives**

The ongoing implementation of Automated Meter Reading (AMR) Project is reducing meter reading costs aspects of the rural deficit in the long term. An AMR project began in the fall of 2012 for the Plum Point/Bear Cove Distribution System. This is a two-year project (2012-2013) that upon completion will offset one full-time position to produce annual operating savings of approximately \$87,000.

## **4 Ongoing Initiatives**

Hydro continues to control costs, using initiatives reported in prior years. The major initiatives continue to be related to CDM and AMR, and the 2012 impacts of these initiatives are reported above.

## **5 Reliability**

It should be noted that cost reductions and increased system reliability are sometimes conflicting goals. Please refer to Hydro's 2012 Key Performance Indicator Report for distribution reliability statistics and commentary. Rural deficit control measures must be considered with due consideration given to reliability issues.