Q. **Reference: Rates and Regulation Evidence**

Identify the specific initiatives, by year, that Hydro has undertaken to reduce the rural deficit for the period 2007 to 2013 and estimate the 2013 Test Year savings (in dollars and kW/kWh) resulting from those initiatives. (Rates and Regulation Evidence, page 4.4, lines 3 to 4)

A. Please see NP-NLH-098 Attachment 1 (Revision 1) and Attachment 2 for a list of initiatives which impact the rural deficit, along with the quantifiable 2015 Test Year savings. Hydro continues to consider projects and initiatives which align with its mandate to provide least cost, reliable and safe power. Many projects and initiatives are related not only to the rural deficit areas, but are Hydro-wide. Additionally, not all initiatives are quantifiable in terms of the reduction in costs avoided or saved. Please also see to Hydro's response to NP-NLH-097.

Newfoundland and Labrador Hydro
Initiatives with Rural Deficit Impacts

		Estimated 2015 Test Year Savings		
Year	**Initiative**	**$**	**kW**	**GWh**
Ongoing	Customer Focused Energy Efficiency Measures (includes 2013 Actuals)	1,043,916	Unknown	9.4
Ongoing	Internally Focused Energy Efficiency Measures (includes 2013 Actuals)	614,340	Unknown	4.2
Ongoing	The Automated Meter Reading Project is justified based on a positive net present value, reducing the rural deficit in the long term.	475,000	N/A	
2008	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.	N/A	N/A	
2010	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.	45,000	N/A	
2007	The diesel unit replacement and fuel storage system upgrade at Williams Harbour includes improved fuel efficiency, lower emissions and reduced maintenance costs.	N/A	N/A	
2007	Upgrades to exhaust stacks in Grey River include expected benefits of eliminating cleaning costs and	N/A	N/A	
2008	The replacement of mufflers on diesel units in L'Anse au Loup and St. Anthony 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.	N/A	N/A	
2009	In 2009, mailing costs were reduced by improved sorting of customer bills to avoid multiple mail outs to customers with multiple accounts and by eliminating return envelops for customers not paying by mail.	N/A	N/A	
2009	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.	N/A	N/A	
2009	Hydro started installing in-line heaters (1500 W, 120 V) at diesel plants and terminal stations which will help reduce energy consumption.	N/A	N/A	
2009	The conductor on Line 2 in the Rocky Harbour distribution system was replaced 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.	11,000	N/A	
2010	Enhancements to the set points of the Cartwright Diesel plant units 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.	N/A	N/A	
2010	The Norman's Bay Diesel Plant upgrade capital project resulted in three new, more efficient engines being installed.	N/A	N/A	
2011	The installation of a hydronic heating system at Nain utilizing waste heat from the generating units for plant heating means that the generating units do not have to produce the energy required for electric heating. Capturing waste heat is now implemented in more than half of Hydro's diesel plants.	N/A	N/A	
2012	During the process to repair fire damage at the the Black Tickle diesel plant, replacement equipment and control strategies were selected to reduce station service electricity consumption. A review of 12 months of station service post-repairs indicated a total annual savings of 48 MWh, which equates to approximately 14,000 L of avoided generator fuel consumption.	15,000	N/A	
2013	Retrofit of existing T12 light fixtures with more energy efficient T8 lamps and electric ballasts in a facility in each Transmission and Rural Operations (TRO) region (Bishop's Falls Services Building, Cow Head Line Depot, HVY/GB North Plant) in 2013.	N/A	N/A	
2013	Installation of automatic temperature set back controls in a facility in each TRO region (HVY/GB North Plant, Bishop's Falls Services Building, Cow Head Line Depot) with ceiling mounted electric fan heaters in 2013.	N/A	N/A	
2014	Retrofit existing T12 light fixtures with more energy efficient T8 lamps and electric ballasts at three area offices (Wabush, Port Saunders, and Bishop's Falls) beginning in 2014;	N/A	N/A	
2015	Hydro is planning a pilot LED streetlight replacement project for the Town of Nain. The results of the pilot project will then assist Hydro in deciding if the implementation of LED streetlights should be implemented on a larger scale. LED streetlights will yield fuel cost savings due to lower energy requirements compared to high pressure sodium lights. LED streetlights may also result in lower operating and maintenance costs than the existing HPS lights.	N/A	N/A	

Note: Refer also to NP-NLH-098 Attachment 2 "Rural Deficit Annual Report - Summary of Specific Initiatives", filed with the Board on March 31, 2014, for further ongoing Rural Deficit control measures and Conservation and Demand Management Program Initiatives.

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

March 2014

newfoundland labrador hydro
a nalcor energy company

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1 Introduction

Newfoundland and Labrador Hydro (Hydro) serves approximately 38,000 Rural Customers. Electrical service is provided to the majority of these customers at an operating loss or deficit, except for the approximately 10,900 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.

While there is no cost of service available by each diesel area or community, generally speaking, revenues from Rural Customers, particularly diesel areas, do not fully offset fixed costs. Therefore, the incremental cost of fuel is a direct impact to the rural deficit as it is not fully recovered from revenues from increased sales.

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 and/or limiting growth of overall system fuel costs.

Table 1 below shows the rural deficit for 2009 to 2013, excluding Labrador Interconnected. The primary controllable cost, operating expenses, has increased from $35.8 million in 2009 to $44.4 million in 2013, primarily driven by increases in wages and benefits and increases in maintenance and material costs due to investment in aging assets.

Table 1
Hydro Rural (Excluding Labrador Interconnected)

$ millions	Annual Amounts					Year over Year			
	2009	2010	2011	2012	2013	2010/ 2009	2011/ 2010	2012/ 2011	2013/ 2012
Revenues	51.2	53.3	58.4	60.8	62.5	2.1	5.1	2.4	1.7
Costs:									
Operating Expenses	35.8	36.2	40.0	43.0	44.4	0.3	3.8	3.0	1.4
Fuel	18.2	19.7	26.1	27.6	28.9	1.5	6.4	1.5	1.2
Purchased Power	5.1	5.5	7.0	7.5	7.7	0.4	1.5	0.4	0.2
Depreciation	13.9	14.2	14.2	11.6	12.5	0.3	(0.1)	(2.6)	0.9
Return[1]	17.2	17.9	20.5	20.4	19.7	0.7	2.6	(0.1)	(0.8)
Total	90.4	93.4	107.8	110.1	113.1	3.1	14.3	2.3	3.0
Rural Deficit	39.2	40.2	49.4	49.3	50.6	1.0	9.2	(0.1)	1.3

1. Reflects return on debt only, equity return on rate base excludes rural assets.

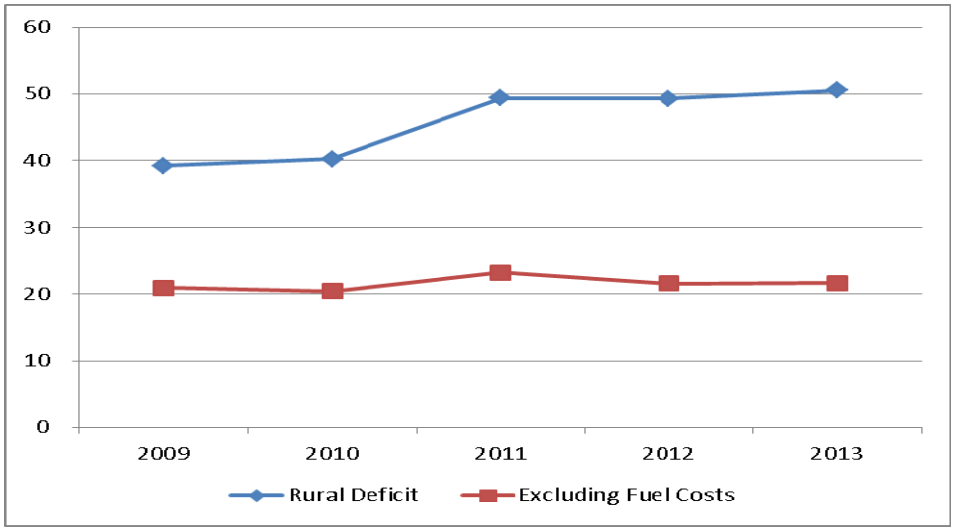
Table 1 shows the overall rural deficit of $50.6 million in 2013 was higher than 2012 by approximately $1.3 million or 2.6%, due to increases in operating expenses, fuel cost, and depreciation partially offset by higher revenues. Revenues were higher in 2013 due to increased sales (12 GWh or 2.6%) and the impact of the July 1, 2012 rate increase of approximately 6.6%[1].

Energy supply to the isolated rural areas (excludes rural Island Interconnected) increased by 5.1% or 3.5 GWh in 2013, resulting in higher fuel costs. The increase in sales in 2013 relative to 2012 is primarily attributable to colder weather in 2013.

Chart 1 illustrates that the rural deficit has been relatively consistent year over year when the impact of fuel costs is excluded.

[1] The rates for Rural Customers, other than Labrador Interconnected, are adjusted annually each July 1 as a result of the operation of Newfoundland Power's Rate Stabilization Account.

Chart 1
Five-Year Rural Deficit ($ millions)



The 2013 Test Year rural deficit estimate filed with Hydro's General Rate Application (GRA) was $60.7 million. The material increase relative to the 2013 actual rural deficit of $50.6 million is a result of higher return on equity[2], higher fuel costs, and lower revenues resulting from the proposed rate decrease.

2 Operating Initiatives

2.1 Internal Energy Efficiency Initiatives

In 2013, Hydro completed or launched operating initiatives that are part of multi-year projects through its internal energy efficiency program. Such initiatives contribute to overall cost containment, a portion of which is allocated to Rural Customers and therefore contributes to deficit reduction.

[2] In 2009, under the authority of Section 5.1 of the Electrical Power Control Act, 1994, the Province directed the following: in calculating the return on rate base, the same return on equity would be set for Hydro as was set for Newfoundland Power (NP); Hydro would earn ROE on its entire rate base, including amounts related to rural assets; Hydro would be permitted to have a proportion of equity in its capital structure up to a maximum of the same as is approved for NP; and these policies would become effective commencing with the first GRA after January 1, 2009.

- Retrofit existing T12 light fixtures with more energy efficient T8 lamps and electric ballasts at three area offices (Wabush, Port Saunders, and Bishop's Falls) beginning in 2014;
- Retrofit of existing T12 light fixtures with more energy efficient T8 lamps and electric ballasts in a facility in each Transmission and Rural Operations (TRO) region (Bishop's Falls Services Building, Cow Head Line Depot, HVY/GB North Plant) in 2013; and
- Installation of automatic temperature set back controls in a facility in each TRO region (HVY/GB North Plant, Bishop's Falls Services Building, Cow Head Line Depot) with ceiling mounted electric fan heaters in 2013.

In addition, as previously reported, Hydro continues with its ongoing control measures which also contribute to controlling the rural deficit, as follows:

- 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;
- 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 mail outs to customers with multiple accounts and by eliminating return envelops for customers not paying by mail;
- 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; and
- 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. For 2013, there were 2,469 customers using E-bills as their method of billing. Based on a cost of approximately $0.70 to mail a customer bill, the savings from E-bills are $1,728 per month, or $20,740 per year.

2.2 Conservation and Demand Management (CDM) Program Initiatives

The high cost of generation in isolated diesel communities and growing system load in the L'Anse au Loup system provides opportunity for Hydro to implement aggressive programs

for energy efficiency. In 2012, two programs were launched to offer incentives and technologies for both residential and commercial customers.

Isolated System Community Energy Efficiency Program

The Isolated System Community Energy Efficiency Program (Community Program) provided kits of small technologies for both home and business customers, a total of more than 2,500 installs by the end of 2013. Items including water conservation and efficient lighting technologies were installed for homeowners and additional information on energy efficiency options and behaviours were shared. Coupons are currently available at 15 retailers across the communities for discounts on a number of technologies including CFLs, block heater timers and thermostats. Increased incentives for home insulation retrofits were provided for customers who qualified through the existing takeCHARGE rebate program and mail in rebates were provided for a number of appliances including Energy Star refrigerators, freezers and televisions. Additional exchange events were held to promote holiday LED lighting, and smart power bars that include timer options.

In 2013, 33 homes received installation of drainwater heat recovery systems as a pilot to assess this technology in isolated systems and monitoring of these homes will continue through 2014. In 2014, additional work will be completed to assess the opportunity and challenges for conducting bigger scale home retrofits that would provide larger energy savings for homeowners through work on the building envelope.

Commercial customers received a kit of items including an LED exit sign and CFLs and were provided additional information on ways to conserve and promotions of the Isolated Systems Business Energy Efficiency Program as the next step to save. The Community Program is a three-year program and is expected to result in a total energy savings of 3.3 GWh/year and fuel cost savings of $1.1 million.

Isolated Systems Business Efficiency Program

The Isolated Systems Business Efficiency Program was also launched in 2012 and provides a free walkthrough audit of the facility and report on energy saving opportunities for commercial customers. To the end of 2013, more than 40 audits had been completed with recommendation reports provided to customers. Incentives are based on a cents per kWh saved and ongoing technical support for projects is made available. This custom approach has led to projects addressing lighting, refrigeration and processes and others. This program deals primarily with small business customers and over the three-year program life is expected to result in total energy savings of 180 MWh.

3 Capital Initiatives

Automated Meter Reading Project

The ongoing implementation of Automated Meter Reading (AMR) will reduce meter reading costs inherent in the rural deficit over the long term. An AMR project began in the fall of 2012 for the Plum Point/Bear Cove Distribution System. This two-year project (2012-2013) was completed at the end of 2013. As of February 1, 2014, Hydro has been using the AMR system for meter reading and has discontinued the manual readings resulting in a reduction of one full-time position. This equates to operating savings of approximately $87,000. A two-year 2013/2014 AMR project for the Rocky Harbour, Glenburnie, Wiltondale, and Sally's Cove distribution systems is scheduled to be commissioned and completed by year-end 2014.

LED Streetlight Replacement Project

Hydro is planning a pilot LED streetlight replacement project for the Town of Nain. Nain was chosen because there is a preexisting capital work plan for the town which will help minimize overall pilot implementation cost. Also, given the location and climate of Nain, this area will help provide for a full evaluation of the performance of LED lights on an isolated system with challenging weather conditions. The results of the pilot project will then assist

Hydro in deciding if the implementation of LED streetlights should be implemented on a larger scale.

LED streetlights will yield fuel cost savings due to lower energy requirements compared to high pressure sodium (HPS) lights (Hydro estimates approximately 50% energy savings). LED streetlights may also result in lower operating and maintenance costs than the existing HPS lights. Should LED streetlights prove to be cost effective in Nain, Hydro will propose an expanded implementation program for LED street lighting.