

November 2, 2010

Board of Commissioners of Public Utilities  
Prince Charles Building  
120 Torbay Road, P.O. Box 21040  
St. John's, NL  
A1A 5B2

**ATTENTION: Ms. Cheryl Blundon**  
**Director Corporate Service & Board Secretary**

Dear Ms. Blundon:

**Re: Newfoundland and Labrador Hydro (Hydro) - 2011 Capital Budget Application**

Enclosed please find ten copies of a revised Application in which Hydro seeks approval of its revised capital budgets, and revisions to the following sections of Hydro's 2011 Capital Budget Application, Volume I:

**Revision 1 – November 2, 2010**

Section	Page Number
Table of Contents	ii
2011 Capital Projects Overview	4, 5 and 11
2011 Capital Plan	Appendix A: A-1 A-2, A-4, A-5, A-6, A-13, A-14; Appendix B: B-1
Total Capital Projects	A-1 to A-5, and A-7
2011 Capital Projects \$500,000 and Over	B-1, B-2, B-5, B-6, B-13, B-14, B-15, B-16, and B-83
Projects by Classification and Type	E-1, E-2 and E-5
Schedule of Capital Expenditures 2006-2015	G-1

The revisions to Volume 1 are highlighted in yellow for ease of reference.

The revised Application is necessitated by information which came to light subsequent to the filing of the original application. Specifically, the revisions relate to the following projects.

- (1) Complete Condition Assessment Phase 2 - Holyrood  
Intervenors requested a copy of the report on Phase 1 of the Holyrood Condition Assessment to be reviewed prior to completing their review of the proposal to complete Phase 2. The final report on the Phase 1 has not yet been received from the consultant. Rather than further delay the 2011 Capital Budget Application process, Hydro is withdrawing this proposal. Upon receipt and assessment of the Phase 1 report, Hydro intends to request separate approval of this proposal.

Ms. Cheryl Blundon  
Director Corporate Service & Board Secretary  
Board of Commissioners of Public Utilities  
November 2, 2010

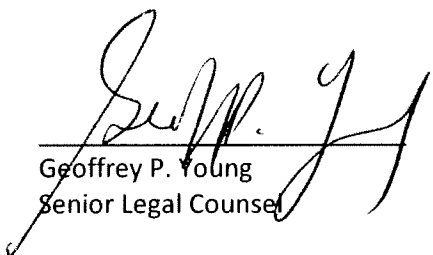
2

- (2) Overhaul Gas Turbine - Holyrood  
As described in the response to Request for Information (RFI) IC-NLH 26, changing circumstances have resulted in the need to study the current condition of the Holyrood Gas Turbine and to investigate options as to the next steps to ensure least cost, reliable power. This proposal is therefore withdrawn from the current Application.
- (3) Upgrade Stack Breeching Unit 1 - Holyrood  
The scope of work and budget for this proposal has been revised, as submitted on October 26, 2010.
- (4) Replace Network Communications Equipment – Various Sites  
The cost of this project has been reduced to exclude costs associated with non-regulated activities.

Should you have any questions on the enclosed, please contact the undersigned.

Yours truly,

**NEWFOUNDLAND AND LABRADOR HYDRO**



Geoffrey P. Young  
Senior Legal Counsel

cc: Peter Alteen/Gerard Hayes - Newfoundland Power  
Paul Coxworthy - Stewart McKelvey Stirling Scales

Joseph Hutchings, Q.C. - Poole Althouse  
Tom Johnson - Consumer Advocate

NLH 2011 Capital Budget Application  
**ADDENDUM 1 – November 2, 2010**

Page 1

---

Please be advised that **Volume 1 of the 2011 Capital Budget** Report has been revised –revisions have been highlighted.

**VOLUME 1:**

**TABLE OF CONTENTS**

Please replace:

Page i and ii                      with                      Page i and ii

**Application**

Complete section (including affidavit)

**2011 Capital Projects Overview**

Page 3 and 4                      with                      Page 3 and 4  
Page 5 and 6                      with                      Page 5 and 6  
Page 11 and 12                      with                      Page 11 and 12

**2011 Capital Plan**

**Appendix A:**

Page A-1 and A-2                      with                      Page A-1 and A-2  
Page A-3 and A-4                      with                      Page A-3 and A-4  
Page A-5 and A-6                      with                      Page A-5 and A-6  
Page A-13 and A-14                      with                      Page A-13 and A-14

**Appendix B**

Page B-1                      with                      Page B-1

**Section A: Total Capital Projects**

Complete section

NLH 2011 Capital Budget Application  
**ADDENDUM 1 – November 2, 2010**

Page 2

---

**Section B: Projects \$500,000 and Over**

Page B-1 and B-2	with	Page B-1 and B-2
Page B-5 and B-6	with	Page B-5 and B-6
Page B-13 and B-14	with	Page B-13 and B-14
Page B-15 and B-16	with	Page B-15 and B-16
Page B-83 and B-84	with	Page B-83 and B-84

**Section E: Projects by Classification and Type**

Page E-1 and E-2	with	Page E-1 and E-2
Page E-5	with	Page E-5

**Section G: Schedule of Capital Expenditures 2006 - 2015**

Complete section

Explanation re removal of **Reports – Tabs 5 and 6**

Please remove: Complete Condition Assessment Phase 2 (withdrawn)

Please remove: Overhaul Gas Turbine – Holyrood Report (withdrawn)

**IN THE MATTER OF** the *Public Utilities Act*, (the “Act”); and

**IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro for an Order approving: (1) its 2011 capital budget pursuant to s.41(1) of the Act; (2) its 2011 capital purchases, and construction projects in excess of \$50,000 pursuant to s.41 (3) (a) of the Act; (3) its leases in excess of \$5,000 pursuant to s. 41 (3) (b) of the Act; and (4) its estimated contributions in aid of construction for 2011 pursuant to s.41 (5) of the Act and for an Order pursuant to s. 78 of the Act fixing and determining its average rate base for 2009.

**TO:** The Board of Commissioners of Public Utilities (“the Board”)

**THE REVISED APPLICATION** of Newfoundland and Labrador Hydro (“Hydro”) (“the Applicant”) states that:

1. Hydro is a corporation continued and existing under the *Hydro Corporation Act, 2007*, is a public utility within the meaning of the Act and is subject to the provisions of the *Electrical Power Control Act, 1994*.
2. Section A to this Application is Hydro’s proposed 2011 Capital Budget in the amount of approximately \$60.2 million prepared in accordance with the guidelines and conditions outlined in Order No. P.U. 7 (2002-2003) and the Capital Budget Application Guidelines issued October 29, 2007.
3. Section B to this Application is a list of the proposed 2011 Construction Projects and Capital Purchases for \$500,000 and over, prepared in

accordance with Order No. P.U. 7 (2002-2003) and the Capital Budget Application Guidelines.

4. Section C to this Application is a list of the proposed 2011 Construction Projects and Capital Purchases for \$200,000 and over, but less than \$500,000, prepared in accordance with Order No. P.U. 7 (2002-2003) and the Capital Budget Application Guidelines.
5. Section D to this Application is a list of the proposed 2011 Construction Projects and Capital Purchases in excess of \$50,000 but less than \$200,000 prepared in accordance with Order No. P.U. 7 (2002-2003) and the Capital Budget Application Guidelines.
6. Section E to this Application summarizes Hydro's proposed 2011 capital projects by definitions, by classification and by materiality as required by the Capital Budget Application Guidelines.
7. Section F contains no new leases proposed for 2011 in excess of \$5,000 per year.
8. Section G to this Application is a Schedule of Hydro's Capital Expenditures for the period 2006 to 2015.
9. Section H to this Application is a report on the status of the 2010 capital expenditures including those approved by Orders No. P.U. 1 (2010), projects under \$50,000 not included in these Orders, and the 2009 capital expenditures carried forward to 2010.

10. Section I to this Application is a report on the ten year Plan of Maintenance Expenditures for the Holyrood Generating Station required to be filed by Order No. P.U. 14 (2004).
11. Section J to this Application shows Hydro's actual average rate base for 2009 of \$1,473,477,000.
12. Volumes I and II to this Application contains the supplementary reports referred to in various capital budget proposals.
13. The proposed capital expenditures for 2011 as set out in this Application are required to allow Hydro to continue to provide service and facilities for its customers which are reasonably safe, adequate and reliable as required by Section 37 of the Act.
14. The Applicant has estimated the total of contributions in aid of construction for 2011 to be approximately \$400,000. The information contained in the 2011 Capital Budget (Section A) takes into account this estimate of the contributions in aid of construction to be received from customers. All contributions to be recovered from customers shall be calculated in accordance with the relevant policies as approved by the Board.
15. Communications with respect to this Application should be forwarded to Geoffrey P. Young, Senior Legal Counsel, P.O. Box 12400, St. John's, Newfoundland and Labrador, A1B 4K7, Telephone: (709) 737-1277, Fax: (709) 737-1782.
16. The Applicant requests that the Board make an Order as follows:

- (1) Approving Hydro's 2011 Capital Budget as set out in Section A hereto, pursuant to section 41 (1) of the Act;
- (2) Approving 2011 Capital Purchases and Construction Projects in excess of \$50,000 as set out in Sections B, C, and D hereto, and its leases as set in Section F, pursuant to section 41 (3) of the Act;
- (3) Approving the proposed estimated contributions in aid of construction as set out in paragraph 11 hereof for 2011 as required by section 41 (5) of the Act, with all such contributions to be calculated in accordance with the policies approved by the Board; and
- (4) Fixing and determining Hydro's average rate base for 2009 in the amount of \$1,473,477,000 pursuant to section 78 of the Act.

**DATED** at St. John's, Newfoundland, this *2nd* day of November, 2010.

**NEWFOUNDLAND AND LABRADOR HYDRO**

  
\_\_\_\_\_  
Geoffrey P. Young  
Senior Legal Counsel

Newfoundland and Labrador Hydro,  
500 Columbus Drive, P.O. Box 12400  
St. John's, Newfoundland, A1B 4K7  
Telephone: (709) 737-1715  
Facsimile: (709) 737-1782



**IN THE MATTER OF** the *Public Utilities Act*, (the "Act"); and

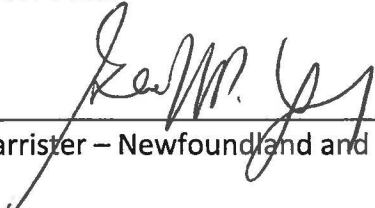
**IN THE MATTER OF** an Application by Newfoundland and Labrador Hydro for an Order approving: (1) its 2011 capital budget pursuant to s.41(1) of the Act; (2) its 2011 capital purchases, and construction projects in excess of \$50,000 pursuant to s.41 (3) (a) of the Act; (3) its leases in excess of \$5,000 pursuant to s. 41 (3) (b) of the Act; and (4) its estimated contributions in aid of construction for 2011 pursuant to s.41 (5) of the Act and for an Order pursuant to s. 78 of the Act fixing and determining its average rate base for 2009.


**AFFIDAVIT**

I, James R. Haynes, Professional Engineer, of St. John's in the Province of Newfoundland and Labrador, make oath and say as follows:

1. I am Vice-President, Regulated Operations, of Newfoundland and Labrador Hydro, the Applicant named in the attached Application.
2. I have read and understand the foregoing Application.
3. I have personal knowledge of the facts contained therein, except where otherwise indicated, and they are true to the best of my knowledge, information and belief.

**SWORN** at St. John's in the )  
Province of Newfoundland and )  
Labrador )  
this 2nd day of November 2010, )  
before me: )

  
\_\_\_\_\_  
Barrister – Newfoundland and Labrador

  
\_\_\_\_\_  
James R. Haynes



**Table of Contents**  
**Volume I**

TAB

**APPLICATION****OVERVIEW****2011 CAPITAL PLAN****SECTION A: CAPITAL BUDGET**

Capital Budget Overview ..... A-1

Capital Budget Summary by Category: ..... A-2

## Capital Budget Detail:

Generation ..... A-3

Transmission and Rural Operations ..... A-4

General Properties ..... A-6

**SECTION B: PROJECTS \$500,000 AND OVER**

Overview ..... B-1

Explanations ..... B-3

Multi-Year Projects ..... B-86

**SECTION C: PROJECTS \$200,000 AND OVER BUT LESS THAN \$500,000**

Overview ..... C-1

Explanations ..... C-2

**SECTION D: PROJECTS OVER \$50,000 BUT LESS THAN \$200,000**

Overview ..... D-1

Explanations ..... D-2

**SECTION E: CLASSIFICATION**

Projects \$500,000 and Over by Classification ..... E-1

Projects \$200,000 and Over but less than \$500,000 by Classification ..... E-3

Projects Over \$50,000 but less than \$200,000 by Classification ..... E-4

Projects Over \$50,000 by Type ..... E-5

**SECTION F: LEASES**

2011 Leasing Costs ..... F-1

**Table of Contents**  
**Volume I**  
**(cont'd.)**

	<b>TAB</b>
<b>SECTION G: CAPITAL EXPENDITURES 2006 - 2015</b>	
Schedule of Capital Expenditures 2006 - 2015 .....	G-1
<b>SECTION H: STATUS REPORT</b>	
Status Report 2010 Capital Expenditures to June 30 .....	H-1
<b>SECTION I: PROJECTED OPERATING MAINTENANCE EXPENDITURES</b>	
Plan of Projected Operating Maintenance Expenditures 2011 - 2020 For Holyrood Generating Station .....	I-1
<b>SECTION J: RATE BASE</b>	
Rate Base for 2009 .....	J-1
<b>REPORTS:</b>	
Replace Static Excitation Systems - Upper Salmon, Holyrood, and Hinds Lake .....	1
Upgrade Stack Breaching Unit 1 – Holyrood .....	2
Refurbish Fuel Storage Facility – Holyrood.....	3
Upgrade Hydrogen System – Holyrood .....	4
Complete Condition Assessment Phase 2 – Holyrood <b>This report has been withdrawn</b> ..	5
Overhaul Gas Turbine – Holyrood <b>This report has been withdrawn</b> .....	6
Upgrade Burnt Dam Access Road Phase 2 - Bay d'Espoir .....	7
Upgrade Synchronous Condenser Unit 3 – Holyrood.....	8
Upgrade Forced Draft Fan Ductwork Unit 1 – Holyrood .....	9
Replace Relay Panels Unit 3 – Holyrood .....	10

**Volume II**

Upgrade Intake Gate Controls - Bay d'Espoir .....	11
Upgrade Generating Station Service Water System - Cat Arm .....	12
Replace Boiler Blowdown Tanks – Holyrood .....	13
Upgrade Electrical Equipment – Holyrood .....	14
Replace Steam Seal Regulator Unit 2 – Holyrood.....	15
Perform Wood Pole Line Management Program - Various Sites .....	16
Perform Arc Flash Remediation - Various Sites .....	17
Replace Fuel Storage Facility – Postville .....	18
Upgrade Distribution Systems - Francois, Rigolet and Happy Valley .....	19
Perform Grounding Upgrades - Various Sites.....	20
Replace Guy Wires TL-215 - Doyles to Grand Bay .....	21
Replace Off-Road Track Vehicles - Bishop's Falls and Fogo.....	22
Upgrade Substation – Wabush .....	23

- Performance assessment
- Legislative requirements
- Reliability improvement
- Cost efficiencies
- Operating experience
- Changing operating conditions
- Asset Maintenance Strategy
- Discussions between Regulated Operations and Engineering Services
- Familiarity with equipment
- Operating and Maintenance cost, and
- Professional judgment.

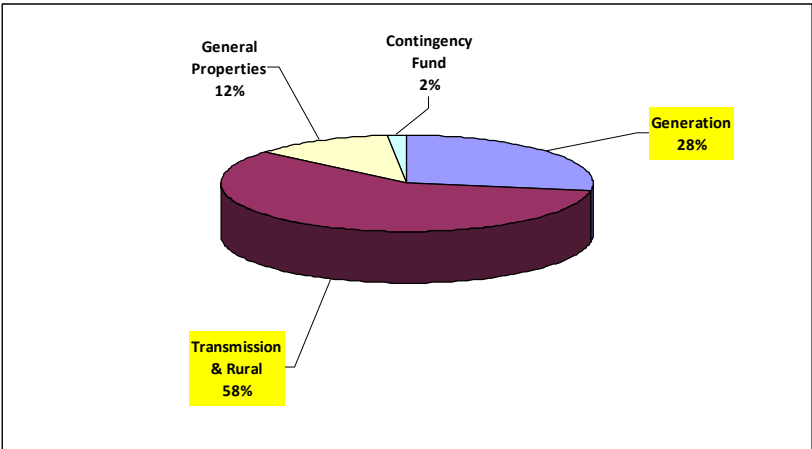
There are three broad categories of replacement criteria:

- Time and condition based, such as diesel generators (100,000 hours of operation) and vehicles (combination of years and operating hours for some classes);
- Condition based, such as transmission line wood poles and turbine bushings and seals; and
- Technical assessment based, where an evaluation of reliability, performance, condition, costs and other factors result in a capital proposal.

In summary, this Application contains a capital plan in which the overriding consideration is least cost, reliable generation, transmission and distribution of electricity while maintaining and enhancing safety and environmental performance. Assets are operated and maintained to deliver the least life cycle cost.

Chart 1 shows the breakdown of the 2011 Capital Budget by major classification. The classifications, other than the contingency fund, which represents only 2 percent of the 2011 budget, are then discussed further.

Chart 1. 2011 Capital Budget - Summary

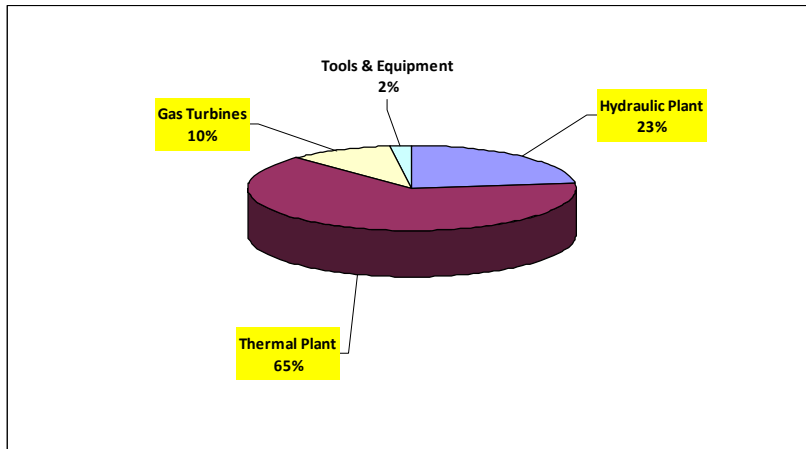


**GENERATION ASSETS**

On the Island Interconnected System, power and energy are provided by Hydro through a mix of hydroelectric and fossil-fired generation, as well as some power purchases. This production, along with the transmission system, is managed by Hydro’s Energy Control Centre to ensure economic and reliable dispatch of available resources. At the end of 2009, Hydro’s Island Interconnected production facilities consisted of 15 generating stations varying in size from 360 kW to 592 MW, with a total 1,592 MW of net capacity. Additionally, tools and equipment are required for the operating and maintenance of these generation assets.

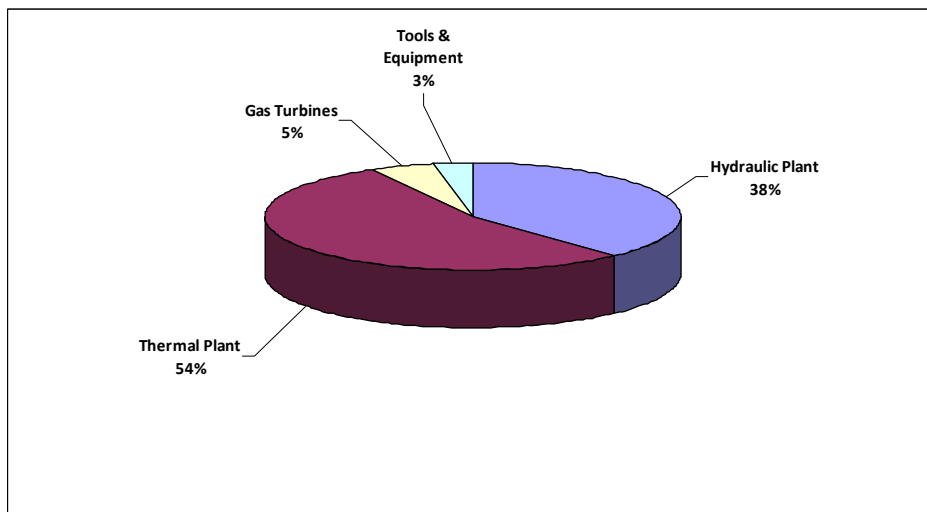
The division of the 2011 Capital Budget for Island Interconnected generation among Hydraulic Plant, Thermal Plant, Gas Turbines and Tools and Equipment expenditures is shown in Chart 2.

**Chart 2: 2011 Capital Budget – Generation**



The five-year (2005 to 2009) average is shown in Chart 3. For 2011, thermal plant represents 65 percent of the Island Interconnected generation budget, compared with 54 percent over the past five years. Thermal plants continue to require major capital expenditures as the majority of the plants have reached the age of maturity and significant expenditures are required to ensure that these important generating assets can continue to operate reliably.

**Chart 3: Five-year average Capital Budget - Generation (2005 - 2009)**



### **Hydraulic Plant**

Hydro's hydraulic generating plants range from less than 10 years to more than 40 years of age. Capital expenditures are required to ensure reliability and to maximize the potential useful operating lives of these assets, of which many components have reached or are coming to the end of their expected service lives. This application includes a proposal for the static excitation systems at Hinds Lake and Upper Salmon and the replacement of chart recorders at four plants. This equipment has become obsolete and must be replaced to ensure reliable operation of the hydro facilities, which form the backbone of our generating fleet.

### **Thermal Plant**

The three units of the Holyrood Thermal Generating Station have now reached or exceeded their generally expected service life of 30 years. Condition assessment and selective life extension will permit them to operate reliably until 2020. Holyrood remains critical to the reliable supply of power to the Island Interconnected System, as it serves the base load of the system and will be required to do so in the short to medium term. The long term operational plan for this facility has been uncertain, as Hydro has investigated the feasibility of developing the Lower Churchill River and importing electricity from Labrador to the Island, which would eliminate the need for energy production from Holyrood. Should that project proceed, Holyrood will remain a critically important facility prior to completion of the Lower Churchill Project. Following completion of the Lower Churchill project, the Holyrood plant will continue to be an essential component of the Provincial electrical grid as a synchronous condensing facility. Additionally, the plant will function as a standby facility during the early years of operation of the Lower Churchill generating plant and direct current link between Labrador and Newfoundland, until 2020, when it will be converted for use in synchronous condensing. The implications of the Lower Churchill project are discussed in detail in the report entitled "Generation Planning Issues 2010 Mid Year Update", located in Volume II of this submission.

The challenges faced by Hydro are complex because circumstances require that Holyrood must operate in a manner quite different than the norm for thermal plants. Conventional practice is that a thermal plant is base loaded throughout its career until it reaches maturity and then the plant is operated as a peaking or standby facility in its final years, thus operating at a very low capacity factor, often less than 10 percent. This thermal plant has passed the age at which other utilities have performed condition assessment and life extension studies and have either retired the facilities or have initiated life extension projects. However,

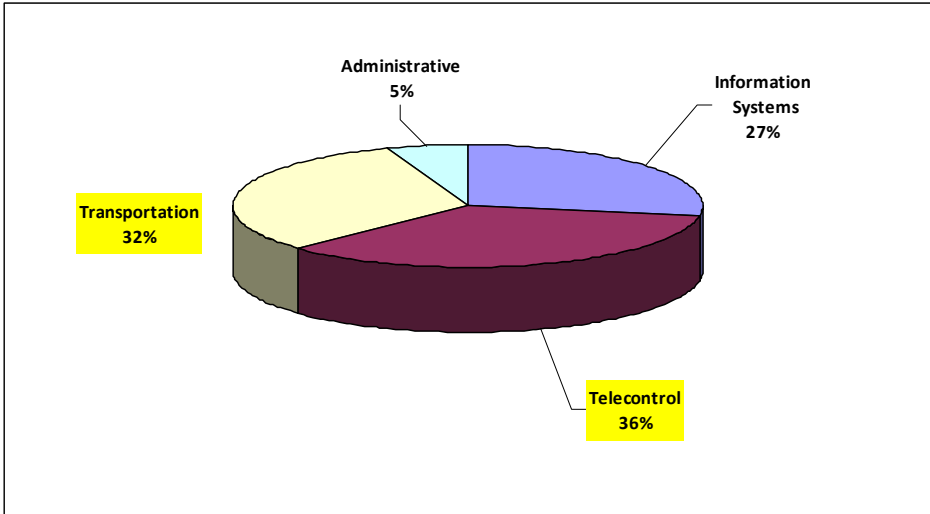


**GENERAL PROPERTIES ASSETS**

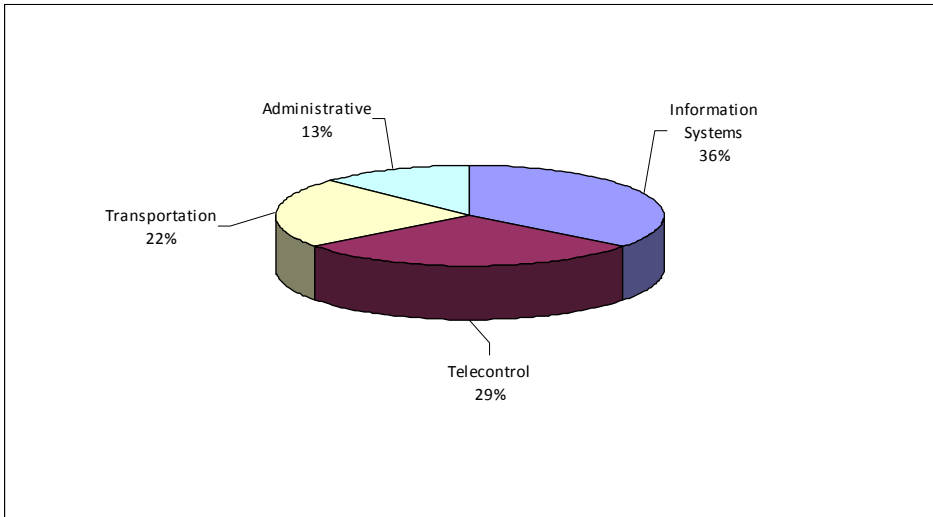
The General Properties category includes projects related to Hydro’s Information Systems, where technology is strategically deployed in a wide variety of business applications. This section of the application also includes proposals for security enhancements, vehicle replacements and telecommunications system replacements which are all necessary for the provision of reliable and cost effective service to customers.

Chart 6 and 7 show the breakdown of the General Properties Capital Budget for 2011 and the previous 5 year average, respectively.

**Chart 6: 2011 Capital Budget - General Properties**



**Chart 7: Five-Year Capital Budget - General Properties (2005 – 2009)**



**Information Systems**

The Information Systems proposals include ongoing capital expenditures, and are directed towards maintaining Hydro’s computing capacity and associated infrastructure ensuring that it remains current and reliable. Projects include upgrades to the software applications used throughout the Hydro system, the replacement of desktop and laptop computers, and the replacement of peripheral computer equipment.

**Telecontrol**

Operating an integrated electrical system requires reliable communication systems across Hydro’s province-wide facilities and among its employees, many of whom work in remote locations. The 2011 capital budget proposals in this category include infrastructure replacements and, in some cases, ongoing replacement or refurbishment programs, for such items as:

- Radome replacements
- Replacing battery banks and battery chargers; and
- Refurbishment of the Deer Lake microwave site.

In summary, Hydro's Capital Budget Application for 2011 contains various projects designed to provide cost effective and reliable power and energy to the residents and businesses of the province while ensuring employee and public safety and enabling Hydro to fulfill its environmental obligations.

	<u>Expended to 2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u> <u>(\$000)</u>	<u>2014</u>	<u>2015</u>	<u>Total</u>
<b>GENERATION</b>	3,495	16,587	27,652	22,586	12,956	7,504	90,779
<b>TRANSMISSION AND RURAL OPERATIONS</b>	5,076	35,236	31,877	30,626	35,613	44,204	182,632
<b>GENERAL PROPERTIES</b>	526	7,419	9,630	11,455	10,926	11,676	51,632
<b>CONTINGENCY FUND</b>	0	1,000	1,000	1,000	1,000	1,000	5,000
<b>TOTAL CAPITAL BUDGET</b>	<u>9,097</u>	<u>60,241</u>	<u>70,159</u>	<u>65,667</u>	<u>60,496</u>	<u>64,384</u>	<u>330,043</u>

	<u>Expended to 2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u> <u>(\$000)</u>	<u>2014</u>	<u>2015</u>	<u>Total</u>
<b><u>GENERATION</u></b>							
Hydraulic Plant	0	3,856	4,372	3,742	9,862	2,636	24,467
Thermal Plant	1,929	10,679	19,735	18,607	1,359	3,442	55,750
Gas Turbines	1,566	1,694	3,367	183	1,687	1,413	9,910
Tools and Equipment	0	358	179	54	47	14	652
<b>TOTAL GENERATION</b>	<b>3,495</b>	<b>16,587</b>	<b>27,652</b>	<b>22,586</b>	<b>12,956</b>	<b>7,504</b>	<b>90,779</b>
<b><u>TRANSMISSION AND RURAL OPERATIONS</u></b>							
Terminal Stations	3,092	9,607	9,621	8,222	6,398	10,531	47,470
Transmission	141	4,154	3,486	5,762	8,170	9,408	31,122
Distribution	1,656	14,721	14,008	9,851	11,659	14,593	66,487
Generation	187	3,841	1,386	2,915	6,716	5,870	20,915
Properties	0	356	438	990	882	1,672	4,337
Metering	0	637	216	730	1,161	568	3,313
Tools and Equipment	0	1,919	2,723	2,157	627	1,561	8,988
<b>TOTAL TRANSMISSION AND RURAL OPERATIONS</b>	<b>5,076</b>	<b>35,236</b>	<b>31,877</b>	<b>30,626</b>	<b>35,613</b>	<b>44,204</b>	<b>182,632</b>
<b><u>GENERAL PROPERTIES</u></b>							
Information Systems	526	2,034	3,926	2,215	2,322	1,856	12,879
Telecontrol	0	2,628	1,693	3,490	1,672	5,315	14,797
Transportation	0	2,351	3,319	3,341	4,264	1,455	14,729
Administrative	0	407	693	2,409	2,668	3,051	9,227
<b>TOTAL GENERAL PROPERTIES</b>	<b>526</b>	<b>7,419</b>	<b>9,630</b>	<b>11,455</b>	<b>10,926</b>	<b>11,676</b>	<b>51,632</b>
<b>CONTINGENCY FUND</b>	<b>0</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>5,000</b>
<b>TOTAL CAPITAL BUDGET</b>	<b>9,097</b>	<b>60,241</b>	<b>70,159</b>	<b>65,667</b>	<b>60,496</b>	<b>64,384</b>	<b>330,043</b>

PROJECT DESCRIPTION	Expended						Total
	to 2010	2011	2012	2013 (\$000)	2014	2015	
<b>HYDRAULIC PLANT</b>							
Replace Static Excitation System - Upper Salmon, Holyrood, and Hinds Lake		1,214	1,528	1,367			4,109
Upgrade Burnt Dam Spillway Structure- Bay d'Espoir		258	692	994	959		2,903
Upgrade Access Road - Various Sites		998	115		1,446	107	2,667
Upgrade Intake Gate Controls - Bay d'Espoir		352	468				820
Upgrade Generating Station Service Water System - Cat Arm		360	440				800
Purchase Hydrometeorological Stations - Various Sites		113	402	285			800
Upgrade Public Safety Around Dams and Waterways - Bay d'Espoir		49	50	51	53	54	258
Purchase Spare Disconnect - Bay d'Espoir		176					176
Replace Automatic Transfer Switches - Bay d'Espoir and Hinds Lake		156					156
Replace Fire Alarm System - Hinds Lake		109					109
Install Compressor for Frazil Ice Removal - Upper Salmon		69					69
Upgrade Unit 2 and 4 Generator Bearing - Bay d'Espoir			156			185	341
Replace Microscada Computers - Granite Canal			187				187
Replace Cooling Water Rotary Strainer - Upper Salmon			114				114
Install Gates RR Pond - Granite Canal			84				84
Replace Cooling Water Pumps 2 and 4 in Powerhouse 1 - Bay d'Espoir			69				69
Install Unit 1 Governor Oil Filtration System - Upper Salmon			67				67
Refurbish Turbines - Snook's Arm and Venam's Bight				156	611		767
Install Automated Fuel Monitoring System - Upper Salmon				247	237		483
Replace Chart Recorders - Various Sites				273			273
Replace Jet Fuel Tank at Burnt Dam - Bay d'Espoir				219			219
Upgrade Unit Relay Protection - Paradise River				151			151
Rewind Stator Units 4, 1 and 3 - Bay d'Espoir					4,609		4,609
Upgrade Victoria Structure - Bay d'Espoir					450	461	911
Upgrade Station Service Water System - Various Sites					606		606

PROJECT DESCRIPTION	Expended	2011	2012	2013	2014	2015	Total
	to 2010						
				(\$000)			
<b>HYDRAULIC PLANT (cont'd.)</b>							
Replace Units 1 - 6 Autogreasing Systems - Bay d'Espoir					210	190	400
Install Automatic Sprinkler System - Bay d'Espoir					303		303
Automate Generator Deluge Systems Units 1 - 7 - Bay d'Espoir					265		265
Install New Fall Arrest Systems on Surge Tanks 1 - 3 - Bay d'Espoir					113		113
Install Dyn Air Gap Monitoring System on Units - Upper Salmon and Hinds Lake						679	679
Install Protective Coating on Surge Tank - Bay d'Espoir						615	615
Install Trash/Safety Booms - Granite Canal and Hinds Lake						345	345
<b>TOTAL HYDRAULIC PLANT</b>	<b>0</b>	<b>3,856</b>	<b>4,372</b>	<b>3,742</b>	<b>9,862</b>	<b>2,636</b>	<b>24,467</b>
<b>THERMAL PLANT</b>							
Upgrade Stack Breaching Units 1, 2, and 3 - Holyrood		1,770	3,623	3,710			9,103
Refurbish Fuel Storage Facility - Holyrood		2,638	2,853				5,491
Complete Condition Assessment Phases 2, 3 and 4 - Holyrood			752	757			1,510
Replace Programmable Logic Controllers - Holyrood	1,432	747	902				3,081
Upgrade Forced Draft Fan Ductwork Unit 1 - Holyrood		843	860	880			2,582
Upgrade Hydrogen System - Holyrood		1,192	800				1,992
Replace Steam Seal Regulator Units 1 and 2 - Holyrood	335	389	438				1,162
Replace Pumphouse Motor Control Centres - Holyrood	50	999					1,049
Upgrade Synchronous Condenser Unit 3 - Holyrood		484	406				889
Replace Relay Panels Unit 3 - Holyrood		277	554				831
Replace Boiler Blowdown Tanks - Holyrood		750					750
Upgrade Electrical Equipment - Holyrood		188	206	285			679

PROJECT DESCRIPTION	Expended	2011	2012	2013	2014	2015	Total
	to 2010						
				(\$000)			
<b><u>THERMAL PLANT (cont'd.)</u></b>							
Replace Fire Pump Diesel - Holyrood	112	195					307
Install Weatherhoods for Vent Fans - Holyrood		208					208
Upgrade Marine Terminal - Holyrood			6,747	11,382			18,129
Upgrade Fuel Oil Heat Tracing - Holyrood			976	1,009			1,985
Install Backup System for Raw Water Supply and Clarifiers - Holyrood			496				496
Implement Energy Efficiency Initiatives - Holyrood			122	125			247
Install Unit 3 CR Condensate Drains and HP Heater Trip Level - Holyrood				245			245
Replace Condensate Polisher Annunciator Panels Units 1 and 2 - Holyrood				215			215
Upgrade Cranes and Hoists - Holyrood					550		550
Purchase Critical Spare 4kV Motors - Holyrood					421		421
Install Economizer Recirculation Lines Units 1 and 2 - Holyrood					220		220
Install Main Fuel Oil Tank Farm Lighting - Holyrood					168		168
Replace Waste Water Basin Building - Holyrood						981	981
Replace Rectifying Transformer - Unit 1 - Holyrood						839	839
Upgrade Facilities to Reduce Business Continuity Risk - Holyrood						651	651
Install Variable Speed Drives - Holyrood						436	436
Install Turbine Lube Oil Conditioners - Holyrood						339	339
Upgrade Powerhouse Door and Siding - Holyrood						131	131
Rewind Generators 1 and 2 - Holyrood						65	65
<b>TOTAL THERMAL PLANT</b>	<b>1,929</b>	<b>10,679</b>	<b>19,735</b>	<b>18,607</b>	<b>1,359</b>	<b>3,442</b>	<b>55,750</b>

PROJECT DESCRIPTION	Expended	2011	2012	2013	2014	2015	Total
	to 2010						
				(\$000)			
<b><u>GAS TURBINES</u></b>							
Upgrade Gas Turbine Plant Life Extension - Hardwoods	1,305	1,324	3,367				5,995
Upgrade Glycol System - Stephenville	261	299					560
Upgrade Gas Turbine Operator Console - Stephenville		72					72
Construct Gas Turbine Equipment Enclosure - Holyrood				183			183
Upgrade Gas Turbine Plant Life Extension - Stephenville					1,392	1,413	2,805
Replace Gas Turbine Radiator - Holyrood					295		295
<b>TOTAL GAS TURBINE PLANTS</b>	<b>1,566</b>	<b>1,694</b>	<b>3,367</b>	<b>183</b>	<b>1,687</b>	<b>1,413</b>	<b>9,910</b>
<b><u>TOOLS AND EQUIPMENT</u></b>							
Purchase Tools and Equipment Less than \$50,000	0	280	92	54	47	14	487
Install Handheld Pendant to Overhead Crane - Bay d'Espoir			87				87
Purchase Laser Alignment Equipment - Holyrood		79					79
<b>TOTAL TOOLS AND EQUIPMENT</b>	<b>0</b>	<b>358</b>	<b>179</b>	<b>54</b>	<b>47</b>	<b>14</b>	<b>652</b>
<b>TOTAL GENERATION</b>	<b>3,495</b>	<b>16,587</b>	<b>27,652</b>	<b>22,586</b>	<b>12,956</b>	<b>7,504</b>	<b>90,779</b>
<b><u>TERMINAL STATIONS</u></b>							
Upgrade Terminal Stations to 25kV - Labrador City	2,983	3,500	3,507				9,990
Upgrade Power Transformers - Various Sites		866	880	4,596	899	1,213	8,453
Replace Disconnects - Various Sites		295	886	835	793	831	3,640
Replace Compressed Air System - Various Sites	79	781	564	614	917	524	3,478
Perform Grounding Upgrades - Various Sites		321	324	329	337	345	1,657



PROJECT DESCRIPTION	Expended	2011	2012	2013	2014	2015	Total
	to 2010						
				(\$000)			
<b><u>TELECONTROL</u></b>							
<b><u>NETWORK SERVICES</u></b>							
<b><u>Infrastructure Replacement</u></b>							
Replace Radomes - Various Sites		196	166	160	164	168	854
Replace MDR 6000 Microwave Radio (West) - Various Sites		72	683				755
Purchase Tools and Equipment Less than \$50,000		86	87	89	92	94	447
Refurbish Microwave Site - Deer Lake		207					207
Install Fibre Optic Cable Deer Lake to Berry Hill - TL226			210	1,905			2,115
Replace Remote Terminal Units - Various Sites			88	87	85	330	590
Replace Mobile Radio System Churchill Falls to Happy Valley				57	554		612
Replace Power Line Carrier Bottom Brook to Doyles - TL214				431			431
Upgrade Powerhouse Phone Services - Paradise River				99			99
Replace MDR 4000 Microwave Radio (East and West) - Various Sites					202	2,894	3,097
<b><u>Network Infrastructure</u></b>							
Replace Battery Banks and Chargers - Various Sites		978	241	282	289	296	2,086
Replace Network Communications Equipment - Various Sites		667	120	126	142	146	1,200
Install Substation Communications Management - Various Sites				204			204
<b><u>Upgrade of Technology</u></b>							
Upgrade Ice Protection - Chapel Hill Microwave Site		294					294
Upgrade Site Facilities - Various Sites		48	49	50	51	52	249
Replace Telephone Keypad - Wabush		80					80
Install Wireless Networking - Various Sites			49				49
Upgrade IP Scada Network - Various Sites					93	359	452
Replace PLC - Berry Hill to Peter's Barron - TL227						708	708
Build Remote Computer Link Between Cat Arm Governors and Bay d'Espoir						268	268
<b>TOTAL TELECONTROL</b>	<b>0</b>	<b>2,628</b>	<b>1,693</b>	<b>3,490</b>	<b>1,672</b>	<b>5,315</b>	<b>14,797</b>

<b>PROJECT DESCRIPTION</b>	<b>Expended to 2010</b>	<b>2011</b>	<b>2012</b>	<b>2013 (\$000)</b>	<b>2014</b>	<b>2015</b>	<b>Total</b>
<b><u>TRANSPORTATION</u></b>							
Replace Vehicles and Aerial Devices - Hydro System - Various Sites		2,351	3,319	3,341	4,264	1,455	14,729
<b>TOTAL TRANSPORTATION</b>	<b>0</b>	<b>2,351</b>	<b>3,319</b>	<b>3,341</b>	<b>4,264</b>	<b>1,455</b>	<b>14,729</b>
<b><u>ADMINISTRATION</u></b>							
Remove Safety Hazards - Various Sites		252	259	265	272		1,048
Purchase Tools and Equipment Less than \$50,000		79	125	70	77	74	424
Replace Humidifiers in Air Handling Units - Hydro Place		76					76
Perform Upgrades as Determined in Building Condition Study - Hydro Place			150	166	246	159	722
Replace AC Units - Hydro Place			159				159
Upgrade Hydro Place Systems and Exterior - Hydro Place				1,908	2,073	2,818	6,799
<b>TOTAL ADMINISTRATION</b>	<b>0</b>	<b>407</b>	<b>693</b>	<b>2,409</b>	<b>2,668</b>	<b>3,051</b>	<b>9,227</b>
<b>TOTAL GENERAL PROPERTIES</b>	<b>526</b>	<b>7,419</b>	<b>9,630</b>	<b>11,455</b>	<b>10,926</b>	<b>11,676</b>	<b>51,632</b>

**APPENDIX B**

**Twenty-Year Capital Plan**

	Accuracy 10%	Accuracy 25%				Accuracy 50%				Accuracy 50% to order of magnitude										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Generation</b>																				
Hydro plants	3,856	4,372	3,742	9,862	2,636	1,150	2,190	695	515	760	575	810	275	425	510	1,025	150	510	0	0
Thermal Plant	10,877	19,938	18,814	1,359	3,442	4,700	4,200	2,750	5,100	5,250	3,700	6,750	5,300	2,325	2,850	3,000	4,700	3,650	3,900	0
Gas Turbines	1,694	3,367	183	1,687	1,413	1,400	250	950	2,450	3,450	3,100	3,325	3,410	3,450	3,250	3,530	2,220	1,600	1,200	0
Tools and Equipment	358	179	54	47	14	393	393	393	393	393	393	393	393	393	393	393	393	393	393	0
<b>Transmission and Terminals</b>																				
Terminal Stations	9,607	9,621	8,222	6,398	10,531	7,635	7,480	10,225	10,105	10,535	7,935	8,751	8,280	7,870	7,685	8,205	8,115	8,395	5,395	0
Transmission	4,233	3,641	5,922	8,334	9,496	8,202	10,407	9,428	8,123	8,591	11,574	12,476	11,370	18,594	16,250	15,201	16,072	17,556	23,434	25,786
Metering	637	216	730	1,161	568	33	33	33	33	33	33	33	33	33	33	33	33	33	33	0
Tools and Equipment	1,919	2,723	2,157	627	1,561	1,817	1,150	1,081	1,053	1,552	1,444	1,246	1,074	1,362	3,186	1,280	355	1,106	1,517	0
<b>Rural Systems</b>																				
Distribution	14,721	14,008	10,312	12,132	15,076	12,587	13,267	14,276	14,307	11,437	11,007	9,559	10,138	7,977	9,955	10,066	9,362	8,730	5,630	0
Diesel Plants	3,919	1,466	2,915	6,716	5,870	6,242	4,220	5,865	3,960	2,605	2,660	2,190	1,180	1,075	630	2,935	3,940	1,195	0	0
<b>General Properties</b>																				
Information Systems	2,034	3,926	2,215	2,322	1,856	3,368	4,303	4,682	3,488	2,848	6,700	1,880	6,652	2,203	2,746	1,752	1,752	2,235	1,818	0
Telecontrol	2,627	1,693	3,490	1,672	5,315	8,139	1,140	2,119	2,000	3,550	6,037	5,762	1,984	3,247	1,805	2,592	1,251	2,931	2,373	0
Transportation	2,351	3,319	3,341	4,264	1,455	1,668	3,253	2,446	1,544	4,433	2,883	2,705	1,564	2,309	2,638	1,577	0	5,187	1,798	0
Administrative	407	693	2,570	2,913	4,151	468	318	398	478	618	518	518	418	678	718	468	618	618	318	0
<b>Contingency Fund</b>	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
<b>Total Existing Assets</b>	<b>60,241</b>	<b>70,159</b>	<b>65,667</b>	<b>60,496</b>	<b>64,384</b>	<b>58,802</b>	<b>53,604</b>	<b>56,341</b>	<b>54,550</b>	<b>57,055</b>	<b>59,559</b>	<b>57,399</b>	<b>53,071</b>	<b>52,941</b>	<b>53,650</b>	<b>53,058</b>	<b>49,961</b>	<b>55,139</b>	<b>48,809</b>	<b>26,786</b>
<b>Total for 20 Years</b>	<b>1,111,671</b>																			
<b>Average</b>	<b>55,584</b>																			
<b>Total Holyrood without Lower Churchill</b>	0	0	0	0	0	125,490	235,600	261,450	150,150	22,900	1,425	1,000	0	1,500	50	0	0	2,500	0	
<b>Total for 20 Years</b>	802,065																			
<b>Average</b>	40,103																			

	<u>Expended to 2010</u>	<u>2011</u>	<u>Future Years</u>	<u>Total</u>
		(\$000)		
<b>GENERATION</b>	3,495	16,587	10,760	30,841
<b>TRANSMISSION AND RURAL OPERATIONS</b>	5,076	35,236	19,641	59,952
<b>GENERAL PROPERTIES</b>	526	7,419	1,797	9,742
<b>CONTINGENCY FUND</b>		1,000	0	1,000
<b>TOTAL CAPITAL BUDGET</b>	<u>9,097</u>	<u>60,241</u>	<u>32,198</u>	<u>101,535</u>

	<u>Expended to 2010</u>	<u>2011</u>	<u>Future Years</u>	<u>Total</u>
	(\$000)			
<b><u>GENERATION</u></b>				
Hydraulic Plant	0	3,856	3,803	7,658
Thermal Plant	1,929	10,679	3,590	16,198
Gas Turbines	1,566	1,694	3,367	6,627
Tools and Equipment	0	358	0	358
<b>TOTAL GENERATION</b>	<u>3,495</u>	<u>16,587</u>	<u>10,760</u>	<u>30,841</u>
<b><u>TRANSMISSION AND RURAL OPERATIONS</u></b>				
Terminal Stations	3,092	9,607	7,382	20,081
Transmission	141	4,154	1,198	5,494
Distribution	1,656	14,721	8,542	24,919
Generation	187	3,841	1,822	5,850
Properties	0	356	0	356
Metering	0	637	88	725
Tools and Equipment	0	1,919	609	2,529
<b>TOTAL TRANSMISSION AND RURAL OPERATIONS</b>	<u>5,076</u>	<u>35,236</u>	<u>19,641</u>	<u>59,952</u>
<b><u>GENERAL PROPERTIES</u></b>				
Information Systems	526	2,034	475	3,035
Telecontrol	0	2,628	683	3,311
Transportation	0	2,351	639	2,989
Administrative	0	407	0	407
<b>TOTAL GENERAL PROPERTIES</b>	<u>526</u>	<u>7,419</u>	<u>1,797</u>	<u>9,742</u>
<b>CONTINGENCY FUND</b>		<u>1,000</u>		<u>1,000</u>
<b>TOTAL CAPITAL BUDGET</b>	<u>9,097</u>	<u>60,241</u>	<u>32,198</u>	<u>101,535</u>

PROJECT DESCRIPTION	Expended		Future		Page
	to 2010	2011	Years	Total	Ref
			(\$000)		
<b>HYDRAULIC PLANT</b>					
Replace Static Excitation Systems - Upper Salmon, Holyrood and Hinds Lake		1,214	2,895	4,109	B - 3
Upgrade Burnt Dam Access Road Phase 2 - Bay d'Espoir		998		998	B - 17
Upgrade Intake Gate Controls - Bay d'Espoir		352	468	820	B - 26
Upgrade Generating Station Service Water System - Cat Arm		360	440	800	B - 28
Upgrade Burnt Dam Spillway Structure - Bay d'Espoir		258		258	C - 2
Purchase Spare Disconnect - Bay d'Espoir		176		176	D - 2
Replace Automatic Transfer Switches - Bay d'Espoir and Hinds Lake		156		156	D - 4
Purchase Hydrometeorological Stations - Various Sites		113		113	D - 7
Replace Fire Alarm System - Hinds Lake		109		109	D - 11
Install Compressor for Frazil Ice Removal - Upper Salmon		69		69	D - 19
Upgrade Public Safety Around Dams and Waterways - Bay d'Espoir		49		49	
<b>TOTAL HYDRAULIC PLANT</b>	<b>0</b>	<b>3,856</b>	<b>3,803</b>	<b>7,658</b>	
<b>THERMAL PLANT</b>					
Replace Programmable Logic Controllers - Holyrood	1,432	747	902	3,081	
Refurbish Fuel Storage Facility - Holyrood		2,638		2,638	B - 8
Upgrade Hydrogen System - Holyrood		1,192	800	1,992	B - 10
Upgrade Stack Breaching Unit 1 - Holyrood		1,770		1,770	B - 5
Replace Pumphouse Motor Control Centres - Holyrood	50	999		1,049	
Upgrade Synchronous Condenser Unit 3 - Holyrood		484	406	889	B - 19
Upgrade Forced Draft Fan Ductwork Unit 1 - Holyrood		843		843	B - 22
Replace Relay Panels Unit 3 - Holyrood		277	554	831	B - 24
Replace Boiler Blowdown Tanks - Holyrood		750		750	B - 30
Upgrade Electrical Equipment - Holyrood		188	491	679	B - 32
Replace Steam Seal Regulator Unit 2 - Holyrood		175	438	613	B - 34
Replace Steam Seal Regulator Unit 1 - Holyrood	335	214		549	
Replace Fire Pump Diesel - Holyrood	112	195		307	
Install Weatherhoods for Vent Fans - Holyrood		208		208	C - 44
<b>TOTAL THERMAL PLANT</b>	<b>1,929</b>	<b>10,679</b>	<b>3,590</b>	<b>16,198</b>	
<b>GAS TURBINES</b>					
Upgrade Gas Turbine Plant Life Extension - Hardwoods	1,305	1,324	3,367	5,995	
Upgrade Glycol System - Stephenville	261	299		560	
Upgrade Gas Turbine Operator Console - Stephenville		72		72	D - 16
<b>TOTAL GAS TURBINE PLANTS</b>	<b>1,566</b>	<b>1,694</b>	<b>3,367</b>	<b>6,627</b>	
<b>TOOLS AND EQUIPMENT</b>					
Purchase Tools and Equipment Less than \$50,000		280	0	280	
Purchase Laser Alignment Equipment- Holyrood		79		79	D - 13
<b>TOTAL TOOLS AND EQUIPMENT</b>	<b>0</b>	<b>358</b>	<b>0</b>	<b>358</b>	
<b>TOTAL GENERATION</b>	<b>3,495</b>	<b>16,587</b>	<b>10,760</b>	<b>30,841</b>	

PROJECT DESCRIPTION	Expended		Future		Page Ref
	to 2010	2011	Years	Total	
			(\$000)		
<b>TERMINAL STATIONS</b>					
Upgrade Terminal Stations to 25 kV - Labrador City	2,983	3,500	3,507	9,990	
Perform Grounding Upgrades - Various Sites		321	1,336	1,657	B - 49
Upgrade Substation - Wabush		459	626	1,086	B - 55
Upgrade Power Transformers - Various Sites		866		866	B - 59
Upgrade Station Reliability and Safety - Rocky Harbour		435	360	795	B - 61
Replace 69 kV SF6 Breakers - St. Anthony Airport		490	290	780	B - 65
Replace Breaker, Structures and Disconnects - Hawke's Bay		687		687	B - 69
Replace Compressed Air System - Bay d'Espoir		84	564	648	B - 71
Replace 230 kV Circuit Breaker - Sunnyside		41	590	631	B - 73
Upgrade Trailer Mobile Substation - Bishop's Falls	30	468		498	
Replace Compressed Air Piping and Install Dewpoint Monitoring - Holyrood	79	417		496	
Replace Insulators - Various Sites		401		401	C - 68
Upgrade Air Blast Circuit Breakers - Various Sites		334		334	C - 81
Replace Disconnects - Various Sites		295		295	C - 127
Replace Compressor, Dryer and Air Piping Header System - Corner Brook Frequency Converter Station		280		280	C - 151
Replace Instrument Transformers - Various Sites		199		199	D - 21
Install Alternate Station Services - Stony Brook and Massey Drive		86	109	195	D - 35
Replace Digital Fault Recorder - Bay d'Espoir		169		169	D - 41
Replace Surge Arresters - Various Sites		75		75	D - 60
Voisey's Bay Nickel - Long Harbour Power Supply	3,605	8,327	2,123	14,055	
Cost Recovery - Vale Inco	(3,605)	(8,327)	(2,123)	(14,055)	
<b>TOTAL TERMINAL STATIONS</b>	<b>3,092</b>	<b>9,607</b>	<b>7,382</b>	<b>20,081</b>	
<b>TRANSMISSION</b>					
Perform Wood Pole Line Management Program - Various Sites		2,019		2,019	B - 41
Replace Guy Wires TL-215 - Doyles to Grand Bay		289	1,198	1,487	B - 51
Upgrade Line TL-244 - Plum Point to Bear Cove	141	1,055		1,196	
Construct Transmission Line Equipment Off-Loading Areas - Various Sites		791		791	B - 63
<b>TOTAL TRANSMISSION</b>	<b>141</b>	<b>4,154</b>	<b>1,198</b>	<b>5,494</b>	
<b>DISTRIBUTION</b>					
Voltage Conversion - Labrador City	1,089	3,501	4,810	9,400	
Upgrade L2 Distribution Feeder - Glenburnie	267	578	2,711	3,556	
Provide Service Extensions - All Service Areas		3,385		3,385	B - 36
Upgrade Distribution Systems - All Service Areas		2,499		2,499	B - 38
Upgrade Distribution Lines - Roddickton and Makkovik	218	1,645		1,863	
Upgrade Distribution Systems - Francois, Rigolet and Happy Valley		1,068	652	1,720	B - 47
Replace Poles - Various Sites		882		882	
Upgrade L2 Voltage Conversion to 25 kV - Gaultois	82	511		593	B - 57
Replace Substation Infrastructure - Burgeo		128	368	496	C - 58
Install Voltage Regulators - Conne River and L'Anse au Loup		293		293	C - 136
Replace Recloser Control Panels - Various Sites		232		232	C - 162
<b>TOTAL DISTRIBUTION</b>	<b>1,656</b>	<b>14,721</b>	<b>8,542</b>	<b>24,919</b>	



PROJECT DESCRIPTION	Expended		Future		Page
	to 2010	2011	Years	Total	Ref
			(\$000)		
<b>GENERATION</b>					
Perform Arc Flash Remediation - Various Sites		430	1,586	2,016	B - 43
Replace Fuel Storage Facility - Postville		2,007		2,007	B - 45
Replace Unit 566 and 2001 - Francois	168	450		618	
Replace Unit 2018 - McCallum	19	421		440	
Replace Mini Hydro Turbine - Roddicton		87	235	322	C - 89
Install Sequence of Events Monitor in Diesel Plant - Port Hope Simpson		155		155	D - 45
Replace Fuel Storage Tank - Francois		131		131	D - 49
Upgrade Fuel Storage - Norman Bay		114		114	D - 51
Upgrade Plant Overhead Crane Lifting System - Mary's Harbour		47		47	
<b>TOTAL GENERATION</b>	<b>187</b>	<b>3,841</b>	<b>1,822</b>	<b>5,850</b>	
<b>PROPERTIES</b>					
Install Fall Protection Equipment - Various Sites		198		198	D - 24
Legal Survey of Primary Distribution Line Right of Way - Various Sites		79		79	D - 54
Install Waste Oil Storage Tank - St. Lewis		79		79	D - 58
<b>TOTAL PROPERTIES</b>	<b>0</b>	<b>356</b>	<b>0</b>	<b>356</b>	
<b>METERING</b>					
Install Automated Meter Reading - Labrador City and Port au Choix		451	88	539	B - 75
Purchase Meters, Equipment and Tanks - Various Sites		186		186	D - 38
<b>TOTAL METERING</b>	<b>0</b>	<b>637</b>	<b>88</b>	<b>725</b>	
<b>TOOLS AND EQUIPMENT</b>					
Replace Off-Road Track Vehicles - Bishop's Falls and Fogo		494	609	1,104	B - 53
Replace Light Duty Mobile Equipment - Various Sites		757		757	B - 67
Purchase Excavators - Bishop's Falls		361		361	C - 75
Purchase Tools and Equipment Less than \$50,000		256		256	
Purchase Portable Dissolved Gas Analysis Unit - Bishop's Falls		52		52	D - 62
<b>TOTAL TOOLS AND EQUIPMENT</b>	<b>0</b>	<b>1,919</b>	<b>609</b>	<b>2,529</b>	
<b>TOTAL TRANSMISSION AND RURAL OPERATIONS</b>	<b>5,076</b>	<b>35,236</b>	<b>19,641</b>	<b>59,952</b>	

PROJECT DESCRIPTION	<u>Expended to 2010</u>	<u>2011</u>	<u>Future Years</u>	<u>Total</u>	<u>Page Ref</u>
			(\$000)		
<b><u>INFORMATION SYSTEMS</u></b>					
<b><u>SOFTWARE APPLICATIONS</u></b>					
<b><u>New Infrastructure</u></b>					
Perform Minor Application Enhancements - Hydro Place		121		121	D - 89
Cost Recoveries		(39)		(39)	
<b><u>Upgrade of Technology</u></b>					
Corporate Application Environment - Upgrade Microsoft Products	751	675	678	2,104	
Cost Recoveries	(225)	(203)	(203)	(631)	
Replace iSeries Computer and Upgrade Operating System - Hydro Place		643		643	C - 178
Cost Recoveries		(206)		(206)	
<b>TOTAL SOFTWARE APPLICATIONS</b>	<u>526</u>	<u>992</u>	<u>475</u>	<u>1,993</u>	
<b><u>COMPUTER OPERATIONS</u></b>					
<b><u>Infrastructure Replacement</u></b>					
Replace Personal Computers - Various Sites		404		404	C - 183
Replace Peripheral Infrastructure - Various Sites		258		258	C - 199
Upgrade Enterprise Storage Capacity - Hydro Place		227		227	D - 78
Cost Recoveries		(73)		(73)	
<b><u>New Infrastructure</u></b>					
Develop Learning Management System Courses - Hydro Place		123		123	D - 87
Cost Recoveries		(40)		(40)	
<b><u>Upgrade of Technology</u></b>					
Upgrade Server Technology Program - Hydro Place		209		209	D - 82
Cost Recoveries		(67)		(67)	
<b>TOTAL COMPUTER OPERATIONS</b>	<u>0</u>	<u>1,042</u>	<u>0</u>	<u>1,042</u>	
<b>TOTAL INFORMATION SYSTEMS</b>	<u>526</u>	<u>2,034</u>	<u>475</u>	<u>3,035</u>	

PROJECT DESCRIPTION	Expended to 2010	2011	Future Years (\$000)	Total	Page Ref
<b><u>TELECONTROL</u></b>					
<b><u>NETWORK SERVICES</u></b>					
<b><u>Infrastructure Replacement</u></b>					
Replace MDR 6000 Microwave Radio (West) - Various Sites		72	683	755	B - 81
Refurbish Microwave Site - Deer Lake		207		207	C - 209
Replace Radomes - Various Sites		196		196	D - 65
Purchase Tools and Equipment Less than \$50,000		86		86	
<b><u>Network Infrastructure</u></b>					
Replace Battery Banks and Chargers - Various Sites		978		978	B - 79
Replace Network Communications Equipment - Various Sites		667		667	B - 83
<b><u>Upgrade of Technology</u></b>					
Upgrade Ice Protection - Chapel Hill Microwave Site		294		294	C - 188
Replace Telephone Keypad - Wabush		80		80	D - 91
Upgrade Site Facilities - Various Sites		48		48	
<b>TOTAL TELECONTROL</b>	<b>0</b>	<b>2,628</b>	<b>683</b>	<b>3,311</b>	
<b><u>TRANSPORTATION</u></b>					
Replace Vehicles and Aerial Devices - Various Sites		2,351	639	2,989	B - 77
<b>TOTAL TRANSPORTATION</b>	<b>0</b>	<b>2,351</b>	<b>639</b>	<b>2,989</b>	
<b><u>ADMINISTRATION</u></b>					
Remove Safety Hazards - Various Sites		252		252	C - 204
Purchase Tools and Equipment Less than \$50,000		79		79	
Replace Humidifiers in Air Handling Units - Hydro Place		76		76	D - 93
<b>TOTAL ADMINISTRATION</b>	<b>0</b>	<b>407</b>	<b>0</b>	<b>407</b>	
<b>TOTAL GENERAL PROPERTIES</b>	<b>526</b>	<b>7,419</b>	<b>1,797</b>	<b>9,742</b>	



PROJECT DESCRIPTION	Expended		Future		Page
	to 2010	2011	Years	Total	Ref
<b>GENERATION</b>					
Upgrade Gas Turbine Plant Life Extension - Hardwoods	1,305	1,324	3,367	5,995	
Replace Static Excitation Systems - Upper Salmon, Holyrood and Hinds Lake		1,214	2,895	4,109	B - 3
Upgrade Stack Breaching Unit 1 - Holyrood		1,770		1,770	B - 5
Replace Programmable Logic Controllers - Holyrood	1,432	747	902	3,081	
Refurbish Fuel Storage Facility - Holyrood		2,638		2,638	B - 8
Upgrade Hydrogen System - Holyrood		1,192	800	1,992	B - 10
Replace Pumphouse Motor Control Centres - Holyrood	50	999		1,049	
Upgrade Burnt Dam Access Road Phase 2 - Bay d'Espoir		998		998	B - 17
Upgrade Synchronous Condenser Unit 3 - Holyrood		484	406	889	B - 19
Upgrade Forced Draft Fan Ductwork Unit 1 - Holyrood		843		843	B - 22
Replace Relay Panels Unit 3 - Holyrood		277	554	831	B - 24
Upgrade Intake Gate Controls - Bay d'Espoir		352	468	820	B - 26
Upgrade Generating Station Service Water System - Cat Arm		360	440	800	B - 28
Replace Boiler Blowdown Tanks - Holyrood		750		750	B - 30
Upgrade Electrical Equipment - Holyrood		188	491	679	B - 32
Replace Steam Seal Regulator Unit 2 - Holyrood		175	438	613	B - 34
Upgrade Glycol System - Stephenville	261	299		560	
Replace Steam Seal Regulator Unit 1 - Holyrood	335	214		549	
<b>TOTAL GENERATION</b>	<b>3,383</b>	<b>14,823</b>	<b>10,760</b>	<b>28,965</b>	
<b>TRANSMISSION AND RURAL OPERATIONS</b>					
Upgrade Terminal Stations to 25 kV - Labrador City	2,983	3,500	3,507	9,990	
Voltage Conversion - Labrador City	1,089	3,501	4,810	9,400	
Upgrade L2 Distribution Feeder - Glenburnie	267	578	2,711	3,556	
Provide Service Extensions - All Service Areas		3,385		3,385	B - 36
Upgrade Distribution Systems - All Service Areas		2,499		2,499	B - 38
Perform Wood Pole Line Management Program - Various Sites		2,019		2,019	B - 41
Perform Arc Flash Remediation - Various Sites		430	1,586	2,016	B - 43
Replace Fuel Storage Facility - Postville		2,007		2,007	B - 45
Upgrade Distribution Lines - Roddickton and Makkovik	218	1,645		1,863	
Upgrade Distribution Systems - Francois, Rigolet and Happy Valley		1,068	652	1,720	B - 47
Perform Grounding Upgrades - Various Sites		321	1,336	1,657	B - 49
Replace Guy Wires TL-215 - Doyles to Grand Bay		289	1,198	1,487	B - 51
Upgrade Line TL-244 - Plum Point to Bear Cove	141	1,055		1,196	

PROJECT DESCRIPTION	Expended		Future		Page
	to 2010	2011	Years	Total	Ref
	(\$000)				
<b>TRANSMISSION AND RURAL OPERATIONS (cont'd.)</b>					
Replace Off-Road Track Vehicles - Bishop's Falls and Fogo		494	609	1,104	B - 53
Upgrade Substation - Wabush		459	626	1,086	B - 55
Replace Poles - Various Sites		882		882	B - 57
Upgrade Power Transformers - Various Sites		866		866	B - 59
Upgrade Station Reliability and Safety - Rocky Harbour		435	360	795	B - 61
Construct Transmission Line Equipment Off-Loading Areas - Various Sites		791		791	B - 63
Replace 69 kV SF <sub>6</sub> Breakers - St. Anthony Airport		490	290	780	B - 65
Replace Light Duty Mobile Equipment - Various Sites		757		757	B - 67
Replace Breaker, Structures and Disconnects - Hawke's Bay		687		687	B - 69
Replace Compressed Air System - Bay d'Espoir		84	564	648	B - 71
Replace 230 kV Circuit Breaker - Sunnyside		41	590	631	B - 73
Replace Unit 566 and 2001 - Francois	168	450		618	
Upgrade L2 Voltage Conversion to 25 kV - Gaultois	82	511		593	
Install Automated Meter Reading - Labrador City and Port au Choix		451	88	539	B - 75
<b>TOTAL TRANSMISSION AND RURAL OPERATIONS</b>	<b>4,948</b>	<b>29,696</b>	<b>18,928</b>	<b>53,572</b>	
<b>GENERAL PROPERTIES</b>					
Replace Vehicles and Aerial Devices - Various Sites		2,351	639	2,989	B - 77
Corporate Application Environment - Upgrade Microsoft Products	526	473	475	1,473	
Replace Battery Banks and Chargers - Various Sites		978		978	B - 79
Replace MDR 6000 Microwave Radio (West) - Various Sites		72	683	755	B - 81
Replace Network Communications Equipment - Various Sites		667		667	B - 83
<b>TOTAL GENERAL PROPERTIES</b>	<b>526</b>	<b>4,541</b>	<b>1,797</b>	<b>6,864</b>	
<b>TOTAL PROJECTS OVER \$500,000</b>	<b>8,857</b>	<b>49,060</b>	<b>31,485</b>	<b>89,401</b>	

**Project Title:** Upgrade Stack Breeching Unit 1  
**Location:** Holyrood  
**Category:** Generation - Thermal  
**Definition:** Other  
**Classification:** Normal

**Project Description:**

This project involves the upgrading of the stack breeching serving generating Unit 1. Hydro completed thickness scanning on Unit 1 stack breeching steel casing in August 2010. The scan indicated that the casing was generally in good condition but localized areas required steel plate replacement due to corrosion. This project will refurbish the steel casing based on the results of the plate thickness scan, replace the expansion joints and the corroded support structure, and insulate the breeching externally complete with water tight cladding and flashing. Ice protection shelters will also be constructed above the replacement breeching in order to protect the external insulation from damage caused by ice falling from the stack and the plant power house.

The budget estimate for this project is shown in Table 1.

<b>Project Cost: (\$ x1,000)</b>	<b>2011</b>	<b>2012</b>	<b>Beyond</b>	<b>Total</b>
<b>Material Supply</b>	0.0	0.0	0.0	0.0
<b>Labour</b>	114.4	0.0	0.0	114.4
<b>Consultant</b>	0.0	0.0	0.0	0.0
<b>Contract Work</b>	1,364.7	0.0	0.0	1,364.7
<b>Other Direct Costs</b>	2.0	0.0	0.0	2.0
<b>O/H, AFUDC &amp; Escln.</b>	140.4	0.0	0.0	140.4
<b>Contingency</b>	148.1	0.0	0.0	148.1
<b>TOTAL</b>	<b>1,769.6</b>	<b>0.0</b>	<b>0.0</b>	<b>1,769.6</b>

**Operating Experience:**

Unit 1 stack breeching has a rectangular cross section that is constructed from carbon steel plate and insulated with borosilicate (glass) block. The stack breeching conveys the boiler flue gas outside the plant to the boiler exhaust stack where it is discharged into the atmosphere. The existing Unit 1 stack breeching was installed in 1990 replacing the original installed when Unit 1 was commissioned in 1971. In 1988, when Unit 1 was up-rated to produce 170 MW, the two forced draft fans were

modified to increase the volumetric flow rate of combustion air to the boiler servicing Unit 1. The fans convey ambient air to the boiler where it is mixed with fuel oil for combustion. After combustion, the flue gas exits the boiler and passes through the air pre-heaters prior to entering the stack breeching. In 1991, an internal inspection of the breeching revealed that erosion had caused damage to the borosilicate insulation. The erosion was attributed to the increased forced draft fan volumetric flow rate which delivered air at an average flu gas velocity of 50 feet per second compared to the original velocity at 43 feet per second. Erosion of the internal borosilicate insulation liner has been an ongoing issue inside the Unit 1 stack breeching since Unit 1 was up-rated.

In addition to erosion, cracks have developed in the internal insulating liner and concrete floor. As a result of erosion and cracks, flue gas contacts the steel plates underneath the insulation and concrete and condenses to form sulfuric acid which causes corrosion. Also, failure of the internal insulation blocks has caused the flue gas temperature to break down the adhesive membrane that bonds the blocks to the breeching plate.

**Project Justification:**

This project is required to maintain the reliability of generating Unit 1 at Holyrood. The stack breeching has deteriorated to a point where refurbishment is necessary. Also, deterioration of the breeching plate has the potential to discharge the boiler flue gas that contains sulfur dioxide inside the plant which is a major safety issue. [ Text deleted ]

Failure of the breeching during operation can result in an unplanned unit outage of four to six weeks duration and a repair cost estimated at \$1,000,000. An unscheduled unit outage during the peak winter load would result in a loss of 170 MW of generation to the Island Interconnected System.

**Future Plans:**

Projects to upgrade the stack breeching servicing Units 2 and 3 are planned for the years 2012 and 2013 respectively. Please see the five-year capital plan (Capital Plan 2011 tab, Appendix A).



**THIS PAGE IS INTENTIONALLY LEFT BLANK  
TO KEEP SEQUENTIAL NUMBERING**

**[Complete Condition Assessment Phase 2 Project has been withdrawn.]**

**THIS PAGE IS INTENTIONALLY LEFT BLANK  
TO KEEP SEQUENTIAL NUMBERING**

**[Complete Condition Assessment Phase 2 Project has been withdrawn.]**

**THIS PAGE IS INTENTIONALLY LEFT BLANK  
TO KEEP SEQUENTIAL NUMBERING  
[Overhaul Gas Turbine Project has been withdrawn.]**

**THIS PAGE IS INTENTIONALLY LEFT BLANK  
TO KEEP SEQUENTIAL NUMBERING  
[Overhaul Gas Turbine Project has been withdrawn.]**

**Project Title:** Replace Network Communications Equipment  
**Location:** Various Sites  
**Category:** General Properties - Telecontrol  
**Definition:** Other  
**Classification:** Normal

**Project Description:**

A number of devices on Hydro's Administrative network are now obsolete or near obsolescence. Once obsolete, vendor support and replacement parts will no longer be available. The most critical of these at this point in time is the 6513 switch, which serves all Hydro Employees. This project proposes to replace the 6513 switch. This project also proposes to upgrade the switches and switch design of the Information Systems server switches as well as the communications room switches. This is required in order to address single points of failure in these areas. The upgrade to the server switches will also increase available throughput to these servers in order to decrease network congestion by implementing full duplex operation among all access switches. Finally, this project proposes to replace the obsolete Packeteer appliance and Cisco 7206 WAN router and upgrade the CiscoWorks LAN Management Suite. Hydro's current version of CiscoWorks LAN Management Suite (version 2.6) has reached end of engineering support and must be upgraded to version 3.2. This proposal includes consideration for unforeseen network expenditures.

Table 1 provides the budget estimate for this project.

**Table 1: Budget Estimate**

<b>Project Cost: (\$ x1,000)</b>	<b>2011</b>	<b>2012</b>	<b>Beyond</b>	<b>Total</b>
<b>Material Supply</b>	414.0	0.0	0.0	414.0
<b>Labour</b>	96.8	0.0	0.0	96.8
<b>Consultant</b>	29.9	0.0	0.0	29.9
<b>Contract Work</b>	0.0	0.0	0.0	0.0
<b>Other Direct Costs</b>	3.5	0.0	0.0	3.5
<b>O/H, AFUDC &amp; Escln.</b>	68.8	0.0	0.0	68.8
<b>Contingency</b>	54.4	0.0	0.0	54.4
<b>TOTAL</b>	<b>667.3</b>	<b>0.0</b>	<b>0.0</b>	<b>667.3</b>

**Operating Experience:**

Hydro's Administrative network provides employees across the Province with access to enterprise software applications and tools, including Lotus Notes, File Servers, Printers, J.D. Edwards, Workplace Hazardous Materials Information System (WHMIS) information and the public Internet. The administrative network also provides remote access to telecommunications and other operational devices located throughout the Island for remote monitoring purposes.

**Project Justification:**

Equipment obsolescence poses multiple risks to Hydro in that vendor support and replacement parts are no longer available and software and security updates for these devices are no longer available. The replacement of obsolete devices and upgrade of critical software such as CiscoWorks is required in order to ensure the reliability and availability of the Administrative network. The upgrade of Information Systems server switches is required to improve the redundancy of IS servers and to improve the throughput available to users. The upgrade of the communications room switches is required to resolve a single point of failure in that area as well as address growth in that area. The throughput improvements for the switch stacks on all floors in Hydro Place are required to resolve congestion as well as to provide full duplex operation for all floors. This is required in order to improve access on all floors and correct the current design deficiency. All devices proposed for upgrade are critical to employee productivity. The upgrades will improve the reliability of the administrative network for all Hydro employees. The anticipated project schedule is shown in Table 2.

**Table 2: Project Milestones**

<b>Activity</b>	<b>Milestone</b>
Project Initiation	February 2011
Planning, Equipment Selection	March 2011
Tendering	April 2011
Evaluation and Award	April 2011
Design/Work Packages	July 2011
Hardware Delivery	July 2011
Hardware Configuration	August 2011
Installation and Commissioning	September 2011
Final Acceptance	September 2011
Project Completion and Closeout	September 2011



PROJECT DESCRIPTION	Expended	Future		Total	Type
	to 2010	2011	Years		
<b><u>NORMAL PROJECTS (cont'd.)</u></b>					
Replace Breaker, Structures and Disconnects - Hawke's Bay		687		687	Other
Upgrade Electrical Equipment - Holyrood		188	491	679	Pooled
Replace Network Communications Equipment - Various Sites		667		667	Other
Replace Compressed Air System - Bay d'Espoir		84	564	648	Other
Replace 230 kV Circuit Breaker - Sunnyside		41	590	631	Other
Replace Unit 566 and 2001 - Francois	168	450		618	Other
Replace Steam Seal Regulator Unit 2 - Holyrood		175	438	613	Other
Upgrade L2 Voltage Conversion to 25 kV - Gaultois	82	511		593	Other
Upgrade Glycol System - Stephenville	261	299		560	Other
Replace Steam Seal Regulator Unit 1 - Holyrood	335	214		549	Other
<b>TOTAL NORMAL PROJECTS</b>	<b>8,857</b>	<b>43,762</b>	<b>28,856</b>	<b>81,475</b>	
<b><u>JUSTIFIABLE PROJECTS</u></b>					
Upgrade Hydrogen System - Holyrood		1,192	800	1,992	Other
Upgrade Synchronous Condenser Unit 3 - Holyrood		484	406	889	Other
Upgrade Forced Draft Fan Ductwork Unit 1 - Holyrood		843		843	Other
Install Automated Meter Reading - Labrador City and Port au Choix		451	88	539	Other
<b>TOTAL JUSTIFIABLE PROJECTS</b>	<b>0</b>	<b>2,970</b>	<b>1,294</b>	<b>4,263</b>	



<u>Type</u>	<u>Number</u>	<u>(\$000)</u>
Clustered	1	280
Pooled	21	23,298
Other	<u>75</u>	<u>77,114</u>
<b>Total</b>	<b><u>97</u></b>	<b><u>99,692</u></b>

\* *Includes multi-year projects but excludes contingency fund*



	ACTUALS				BUDGET					
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>GENERATION</b>	7,557	9,636	13,703	9,592	21,630	16,768	27,834	22,768	13,138	7,686
<b>TRANSMISSION AND RURAL OPERATIONS</b>	19,249	19,150	24,711	32,988	29,060	35,804	32,445	31,194	36,182	44,772
<b>GENERAL PROPERTIES</b>	14,411	6,883	7,832	11,572	11,638	7,668	9,879	11,704	11,175	11,925
<b>TOTAL CAPITAL EXPENDITURES</b>	41,217	35,669	46,246	54,152	62,328	60,241	70,159	65,667	60,496	64,384