File No. _____

NEWFOUNDLAND AND LABRADOR HYDRO
Head Office: St. John's, Newfoundland P.O. Box 12400 A1B 4K7
Telephone (709) 737-1400 • Fax (709) 737-1231 • Website: www.nlh.nf.ca

July 14, 2006

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

Attention: Ms. G. Cheryl Blundon
Director of Corporate Services and
Board Secretary

Dear Ms. Blundon:

Re: Newfoundland & Labrador Hydro's
2007 Capital Budget Application

Enclosed are fifteen (15) copies of Newfoundland Hydro's 2007 Capital Budget Application (the "Application").

This Application has been prepared in accordance with the guidelines and conditions for capital budget proposals as outlined by the Board in Order No. P.U. 7 (2002-2003) and the Provisional Capital Budget Application Guidelines dated June 2, 2005 (the "Provisional Guidelines").

The Application is generally consistent and comparable with past applications to allow ease of comparison. Section A sets out the high level summary of the 2007 budget by the categories traditionally used with the General Properties Section broken down into Information Systems and Telecommunications, Transportation and Administration. Section B contains the detailed project justifications for each period over $50,000. Each project

proposal contains the additional information directed by the Provisional Guidelines. For example, the heading for each budget proposal contains information with respect to the type (whether clustered, pooled or other) and classification (whether mandatory, normal or justifiable). Information is then contained in each budget proposal to support the type and classification proposed for the project. Multi-year projects, previously reviewed by the Board, are included as part of Section B.

Section C to the Application provides the information directed by the Provisional Guidelines with respect to materiality. Page C-1 lists all projects over $500,000. Page C-2 sets out the projects over $200,000 and less than $500,000, while Page C-3 lists all projects for 2007 below $200,000. Page C-4 provides a table listing the number of projects by type.

Section D to the Application relates to leases, (however there are no items for this section for this application) while Section E sets out the capital budget plan for the period 2001-2010. Section F to the Application contains the status report for the 2006 capital program.

Section G to the Application is the 10-year plan of projected operating maintenance expenditures for the Holyrood Generating Station which the Board directed to be filed annually with the capital budget in Order No. P.U. 14 (2004). Section H to the Application contains the reports that are referred to in the project proposals in Section B. Section I sets out the 2005 rate base for Hydro.

A copy of the Application has been forwarded, at the same time as filing with the Board, to Mr. Peter Alteen, Newfoundland Power, Mr. Tom Johnson, Consumer Advocate, Mr. Joseph Hutchings, Q.C., and Paul Coxworthy, the Counsel of record in the last number of applications for Industrial Customers.

We trust the enclosed is in order. If you have any questions, please contact the undersigned.

Yours truly,

Geoffrey P. Young
Legal Counsel

GPY/mgw
Encls.

c.c. Mr. Peter Alteen
Newfoundland Power

Mr. Tom Johnson
Consumer Advocate
O'Dea, Earle

Mr. Joseph Hutchings, Q.C.
Poole Althouse

Mr. Paul Coxworthy
Stewart McKelvey Stirling Scales

NEWFOUNDLAND AND LABRADOR HYDRO

2007 CAPITAL BUDGET

SUBMISSION TO PUBLIC UTILITIES BOARD

NEWFOUNDLAND AND LABRADOR HYDRO
2007 CAPITAL BUDGET

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NEWFOUNDLAND AND LABRADOR HYDRO
2007 CAPITAL BUDGET

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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 2007 capital budget pursuant to s.41(1) of the Act; (2) its 2007 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 2006 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 2005.

TO: The Board of Commissioners of Public Utilities ("the Board")

THE APPLICATION of Newfoundland and Labrador Hydro ("Hydro") ("the Applicant") states that:

1. The Applicant is a corporation continued and existing under the *Hydro Corporation Act*, 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 2007 Capital Budget in the amount of approximately $41.4 million prepared in accordance with the guidelines and conditions outlined in Order No. P.U. 7 (2002-2003) and the Provisional Capital Budget Application Guidelines dated June 2, 2005 (the "Provisional Guidelines").

3. Section B to this Application is a list of the proposed 2007 Construction Projects and Capital Purchases in excess of $50,000 prepared in accordance with Order No. P.U. 7 (2002-2003) and the Provisional Guidelines.

4. Section C to this Application summarizes Hydro's proposed 2007 capital projects by definitions, by classification and by materiality as required by the Provisional Guidelines.

5. There are no new Leases in excess of $5,000 per year for 2007 listed in Section D.

6. Section E to this Application is a Schedule of Hydro's Capital Expenditures for the period 2001 to 2010.

7. Section F to this Application is a report on the status of the 2006 capital expenditures including those approved by Orders Nos. P.U. 31 (2005), P.U. 10 (2006) and P.U. 12 (2006), projects under $50,000 not included in these Orders, and the 2005 capital expenditures carried forward to 2006.

8. Section G 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).

9. Section H to this Application contains the supplementary reports referred to in various capital budget proposals.

10. Section I to this Application shows Hydro's actual average rate base for 2005 of $1,473,759,000.

11. The proposed capital expenditures for 2007 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.

12. The Applicant has estimated the total of contributions in aid of construction for 2007 to be approximately $300,000. The information contained in the 2007 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.

13. 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.

The Applicant requests that the Board make an Order as follows:

(1) Approving Hydro's 2007 Capital Budget as set out in Section A hereto, pursuant to section 41 (1) of the Act;

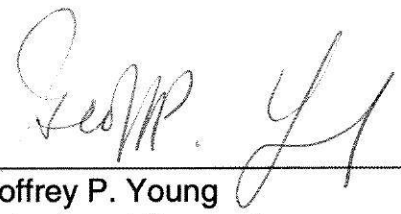
(2) Approving 2007 Capital Purchases and Construction Projects in excess of $50,000 as set out in Section B hereto, pursuant to section 41 (3) (a) of the Act;

(3) Approving the proposed estimated contributions in aid of construction as set out in paragraph 11 hereof for 2007 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 2005 in the amount of $1,473,759,000, pursuant to section 78 of the Act.

DATED at St. John's, Newfoundland, this fourteenth day of July, 2006.

NEWFOUNDLAND AND LABRADOR HYDRO



Geoffrey P. Young
Senior Legal Counsel

Newfoundland and Labrador Hydro
P.O. Box 12400
500 Columbus Drive
St. John's, Newfoundland and Labrador
A1B 4K7
Telephone: (709) 737-1443

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 2006 capital budget pursuant to s.41(1) of the Act; (2) its 2006 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 2006 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 2004.

TO: The Board of Commissioners of Public Utilities ("the Board")

AFFIDAVIT

I, John E. Mallam, Professional Engineer, make oath and say as follows:

1. That I am the Vice-President of Engineering Services of Hydro and as such I have knowledge of the matters arising in the within matter.

2. That I have read the contents of the attached Application and those contents are correct and true to the best of my knowledge, information and belief.

SWORN TO in the City of St. John's, in the Province of Newfoundland and Labrador) this 14th day of July, 2006, before me:

Geoffrey P. Young
Barrister - Newfoundland and Labrador

John E. Mallam

Hydro has been entrusted with the responsibility to provide reliable service to its customers. This responsibility and obligation is required of Hydro through the Hydro Corporation Act, the Electrical Power Control Act, 1994, and the Public Utilities Act. Providing a reliable supply of electrical energy depends on maintaining assets in a sound condition. Maintaining these assets in a reliable operating status is accomplished through a combination of routine maintenance and the replacement of assets when necessary due to wear and tear or when necessary and prudent due to the assets reaching the end of their useful service lives.

On the Island Interconnected system, Hydro owns and operates 1526 MW of hydro and thermal generation assets. Hydro owns and operates 38 MW of thermal generation on the Labrador Interconnected system and owns and operates 29 MW of diesel generation in the 21 isolated rural systems. Hydro also owns and operates 3,742 km of transmission lines at voltages of 230, 138 and 69 kV. In addition, Hydro owns and operates approximately 3,334 km of distribution lines.

The predecessor to Hydro (the Newfoundland Power Commission) was incorporated in 1954 and its primary purpose at the time was to electrify the province. The 50's and 60's saw a tremendous growth of Hydro in terms of expansion of its assets. The result of this expansion is that the majority of Hydro's most important assets are about forty years old. This is true of Hydro's largest hydro installation at Bay d'Espoir, its Holyrood Thermal Generating Station and much of its transmission and distribution systems.

Many of the capital proposals contained in this and previous capital budget applications resulted from the age of Hydro's assets. Many of the components of Hydro's infrastructure have reached the end of their useful lives and have required replacement. The quantity as well as the dollar value of these routine sustaining capital proposals can also be expected to increase in future for the following reasons: the age of plant components are increasing; and replacement parts are becoming unavailable as manufacturers declare equipment and components obsolete and withdraw support.

Generation Assets

The Holyrood Generating Station stage 1 (Units 1 and 2) is now thirty-seven years old while stage 2 (Unit 3) is twenty-six years old. The generally accepted life expectancy for thermal plants is thirty years. Hydro's two largest gas turbine plants, Hardwoods and Stephenville, are now thirty years old. The generally accepted life expectancy for gas turbine plants is between twenty-five and thirty years. These three plants have required considerably more maintenance in recent years and all three have required significant capital expenditures to maintain a reasonable level of reliability and availability. This application contains proposals for projects such as fuel piping replacement, controls replacement and turbine/generator component replacement, all necessary to ensure continued reliable operation.

The Holyrood Thermal Generating Station, and the Hardwoods and Stephenville gas turbine plants are approaching the ends of their conventional operating lives; therefore, this Capital Budget Application contains proposals for major assessments of these three generating stations. The information obtained from these assessments will enable Hydro to make informed decisions about longer term operating and development plans for these facilities.

The assessment of the Holyrood Thermal Generating Station will provide essential information as to the condition of the assets and the availability of replacement parts and technical support as well as the feasibility of converting the plant to burn natural gas and of the installation of scrubbers and precipitators to effect lower environmental emissions. This information will be combined with due consideration for the needs of Hydro's customers, and of the pressures of escalating fuel prices and changing environmental standards.

There are a number of civil projects associated with Hydro's generation assets, including the reconstruction of access roads to the Upper Salmon Generating Station and the Burnt Dam in the Bay d'Espoir system and the replacement of a bridge to the

Paradise River hydro plant. At the Holyrood Thermal Generating Station, Hydro is proposing to continue its 600 volt disconnecting means project which is required for employee safety.

The combination of recent high fuel costs and improvements in wind generation technologies has given rise to an opportunity for Hydro to displace thermal generation on an economic and environmentally superior basis. This continuing project, already approved by the Board under Order No. P.U. 31 (2005), will enable Hydro to collect necessary data for locating sites for potential wind farms.

Hydro's generation capital projects are required to ensure continued or improved reliability, to provide least cost energy, to enable Hydro to provide a safe workplace for its employees, to provide for the safety of the general public, and to ensure that Hydro's impact on the environment is limited in a responsible manner.

Transmission and Rural Operations

Much of Hydro's transmission plant was initially constructed at the same time as Hydro's large generating plants – in the 1960's. Because the expected useful life of this plant is typically in the forty-year range, significant reconstruction requirements are arising. This work is needed to ensure that Hydro can continue to provide a level of reliability that provides our customers with increasing value for their energy dollars. The reconstruction projects include the replacement of insulators, poles, breakers and instrument transformers. Maintaining high voltage transmission lines requires that workers can gain access to those lines in remote areas, which requires off road vehicles. In order for Hydro's line crews to access the transmission lines with heavy equipment from the highways, it is essential that they have off-loading areas constructed so that this access can be obtained in a safe, timely and cost effective manner for both employees and the general public.

Hydro owns and operates 21 remote electrical systems along the coasts of Labrador and the Island. These are served by diesel generation. Providing service to customers in these communities requires that the fuel storage, diesel generating units and distribution systems all be kept in safe, reliable and environmentally responsible working order and this application includes projects for these purposes.

Hydro also provides service to residential and general service customers from the Island Interconnected Grid. Hydro has included projects in this application that are intended to ensure that distribution equipment that needs replacement due to age are replaced prior to failure. Aside from projects that are designed to ensure reliable service, this application also includes a project that will provide cost savings, over the longer terms, for the meter reading and billing processes. Hydro is proposing an automatic meter reading project to be deployed in its Bay d'Espoir and St. Anthony service areas served from the Island Interconnected Grid.

Hydro's employees and contractors work at numerous sites at considerable and dangerous elevations. Safety standards require that fall arrest facilities be provided so that work at these sites can be carried out in a safe manner. Hydro has therefore included a project in this application for the installation of fall arrest systems on such facilities as fuel storage tanks, terminal station control buildings, and water control structures.

General Properties

The General Properties category includes a number of important projects required in the provision of reliable and cost effective served to customers. These include projects whereby technology is strategically deployed in a wide variety of business applications. It includes security enhancements required to ensure that the provision of electricity, an essential service in modern life, is kept secure and free from interruption and interference. It includes the replacement of vehicles required to provide service throughout Hydro's service territories. And because operating a vertically integrated

electrical system requires failsafe communications between Hydro's facilities and employees operating in remote areas, it also includes projects such as VHF radio and microwave communication facilities.

In summary, Hydro's Capital Budget Application for 2007 contains various projects, which collectively, help provide cost effective and reliable power and energy to the residents and business of the province while ensuring employee and public safety and ensuring that Hydro fulfills its environmental obligations.

SECTION A

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - OVERVIEW
($,000)

	Exp To 2006	2007	Future Years	Total
GENERATION	2,303	13,354	62	15,719
TRANSMISSION & RURAL OPERATIONS	0	19,544	0	19,544
GENERAL PROPERTIES	4,175	7,523	0	11,698
ALLOWANCE FOR UNFORESEEN EVENTS	0	1,000	0	1,000
TOTAL CAPITAL BUDGET	6,478	41,421	62	47,961

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - SUMMARY BY CATEGORY
($,000)

	Exp To 2006	2007	Future Years	Total
GENERATION				
NEW GENERATION SOURCE				
Feasibility Studies	143	33	0	176
HYDRO PLANTS				
Construction Projects	0	1,392	0	1,392
Tools & Equipment	0	83	0	83
THERMAL PLANT				
Construction Projects	2,160	10,368	62	12,590
Property Additions	0	599	0	599
Tools & Equipment	0	42	0	42
GAS TURBINES				
Construction Projects	0	837	0	837
TOTAL GENERATION	2,303	13,354	62	15,719
TRANSMISSION & RURAL OPERATIONS				
TRANSMISSION	0	6,294	0	6,294
SYSTEM PERFORMANCE & PROTECTION	0	255	0	255
TERMINALS	0	1,459	0	1,459
DISTRIBUTION	0	7,618	0	7,618
GENERATION	0	1,480	0	1,480
GENERAL				
Metering	0	811	0	811
Properties	0	655	0	655
Tools & Equipment	0	972	0	972
TOTAL TRANSMISSION	0	19,544	0	19,544

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - SUMMARY BY CATEGORY
($,000)

	Exp To 2006	2007	Future Years	Total
GENERAL PROPERTIES				
INFORMATION SYSTEMS	0	1,247	0	1,247
TELECONTROL	4,175	1,950	0	6,125
TRANSPORTATION	0	3,528	0	3,528
ADMINISTRATION	0	798	0	798
TOTAL GENERAL PROPERTIES	4,175	7,523	0	11,698
ALLOWANCE FOR UNFORESEEN EVENTS		1,000		1,000
TOTAL CAPITAL BUDGET	6,478	41,421	62	47,961

NEWFOUNDLAND & LABRADOR HYDRO
GENERATION
2007 CAPITAL BUDGET - DETAIL
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
NEW GENERATION SOURCE						
GENERATION PROJECTS						
Wind Generation Inventory Study	143	33		176	Jul. 07	B-114(1)
TOTAL GENERATION PROJECTS	143	33	0	176		
HYDRO PLANTS						
CONSTRUCTION PROJECTS						
Upgrade Access Road - Upper Salmon		675		675	Oct. 07	B-5
Upgrade Access Road - Burnt Dam		309		309	Oct. 07	B-6
Upgrade Cooling Water System Unit 1 & 2 - Bay d'Espoir		112		112	Jul. 07	B-7
Replace Station Service Control - Bay d'Espoir		105		105	May.07	B-8
Replace Air Dryer - Cat Arm		76		76	Oct. 07	B-9
Replace Bridge - Paradise River		66		66	Aug. 07	B-10
Stator Windings Design Review - Bay d'Espoir		49		49	Nov. 07	
TOTAL CONSTRUCTION PROJECTS	0	1,392	0	1,392		
Purchase & Replace T & E Less than $ 50,000	0	83	0	83		
TOTAL TOOLS & EQUIPMENT	0	83	0	83		
TOTAL HYDRO PLANTS	0	1,475	0	1,475		

NEWFOUNDLAND & LABRADOR HYDRO
GENERATION
2007 CAPITAL BUDGET - DETAIL
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
THERMAL PLANT - Holyrood						
CONSTRUCTION PROJECTS						
Condition Assessment Study		3,335		3,335	Dec. 07	B-14
Replace Superheater Unit 2	319	2,818		3,137	Oct. 07	B-114(2)
Addition of Disconnecting Means to 600 Volt MCC Branch Feeders	1,472	750		2,222	Dec. 07	B-114(3)
Fire Protection Upgrades	369	1,456		1,825	Dec. 07	B-114(4)
Upgrade Turbine & Generator Unit 3		1,654		1,654	Aug. 07	B-16
Contaminated Water Treatment Pilot Plant		276	62	338	Jun. 07	B-18
UPS Battery Monitoring Program		79		79	Dec. 07	B-20
TOTAL CONSTRUCTION PROJECTS	2,160	10,368	62	12,590		
PROPERTY ADDITIONS						
Air Preheater Steam Condenser Pumps Unit 3		599		599	Nov. 07	B-22
TOTAL PROPERTY ADDITIONS	0	599	0	599		
TOOLS & EQUIPMENT						
Purchase & Replace T & E Less than $ 50,000	0	42	0	42		
TOTAL TOOLS & EQUIPMENT	0	42	0	42		
TOTAL THERMAL PLANTS	2,160	11,009	62	13,231		
GAS TURBINES						
CONSTRUCTION PROJECTS						
Replace Fuel Piping - Hardwoods, Stephenville		530		530	Oct. 07	B-23
Gas Turbine Assessments - Hardwoods, Stephenville		307		307	Dec. 07	B-24
TOTAL CONSTRUCTION PROJECTS	0	837	0	837		
TOTAL GENERATION	2,303	13,354	62	15,719		

NEWFOUNDLAND & LABRADOR HYDRO
TRANSMISSION & RURAL OPERATIONS
2007 CAPITAL BUDGET - DETAIL
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
TRANSMISSION						
Replace Wood Poles - Various Sites		2,148		2,148	Dec. 07	B-25
Replace Insulators - TL251, TL252 & TL234		2,118		2,118	Oct. 07	B-27
Upgrade Corner Brook Frequency Converter		1,320		1,320	Oct. 07	B-29
Construct Transmission Line Equip. Off-Loading Areas		402		402	Nov. 07	B-32
Supply & Install Bridge - South West River		212		212	Oct. 07	B-35
Install Disconnect Switch - Conne River		94		94	Aug. 07	B-37
TOTAL TRANSMISSION	0	6,294	0	6,294		
SYSTEM PERFORMANCE & PROTECTION						
Upgrade 138kV Protection - Springdale, Howley, Indian River		215		215	Nov. 07	B-38
Upgrade Breaker Controls - OPD/SSD Terminal Station		40		40	Aug. 07	
TOTAL SYSTEM PERFORMANCE & PROTECTION	0	255	0	255		
TERMINALS						
Safety & Reliability Upgrade - Hawkes Bay		349		349	Oct. 07	B-40
Replace Insulators - Various Stations		313		313	Nov. 07	B-42
Upgrade Circuit Breakers - Various Stations		258		258	Dec. 07	B-44
Replace Breaker B7C1 - Hardwoods		136		136	Oct. 07	B-45
Replace Instrument Transformers - Various Stations		80		80	Nov. 07	B-47
Replace Compressors - Hardwoods		78		78	Aug. 07	B-49
Replace Battery Banks - Stoney Brook, Western Avalon		72		72	Sep. 07	B-50
Replace Battery Chargers - Various Stations		72		72	Sep. 07	B-51
Replace Surge Arrestors - Various Stations		71		71	Nov. 07	B-52
Install Remote Ice Growth Detection Beam - Various Stations		30		30	Dec. 07	
TOTAL TERMINALS	0	1,459	0	1,459		
DISTRIBUTION						
Provide Service Extensions		2,085		2,085	Dec. 07	B-54
Upgrade Distribution Systems		2,035		2,035	Dec. 07	B-56
Upgrade Distribution Feeders - Various Systems		1,383		1,383	Oct. 07	B-58
Upgrade Distribution Poles - Various Systems		744		744	Oct. 07	B-61
Replace Distribution Lines - South Brook, Hr. Breton		741		741	Oct. 07	B-63
Replace Unit 290 & Upgrade Fuel Storage - William's Hr		479		479	Oct. 07	B-65
Upgrade Exhaust Stacks - Grey River		151		151	Sep. 07	B-67
TOTAL DISTRIBUTION	0	7,618	0	7,618		

NEWFOUNDLAND & LABRADOR HYDRO
TRANSMISSION & RURAL OPERATIONS
2007 CAPITAL BUDGET - DETAIL
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
GENERATION						
Purchase Spare Transformer - Upper Salmon		1,366		1,366	Oct. 07	B-68
Replace Diesel Unit Breakers - Mary's Harbour		114		114	Sep. 07	B-70
TOTAL GENERATION	0	1,480	0	1,480		
GENERAL						
METERING						
Automatic Meter Reading		696		696	Oct. 07	B-71
Purchase Meters & Equipment - All Service Areas		94		94	Dec. 07	B-74
Purchase Metering Spares		21		21	Dec. 07	
TOTAL METERING	0	811	0	811		
PROPERTIES						
Installation of Fall Arrest Equipment - Various Locations		251		251	Dec. 07	B-75
Replace Fuel Storage - Norman Bay		222		222	Oct. 07	B-77
Install Card Access System - Bishop's Falls & Whitbourne		131		131	Dec. 07	B-78
Legal Survey of Distribution Line Right-of-Ways		51		51	Oct. 07	B-79
TOTAL PROPERTY ADDITIONS	0	655	0	655		
TOOLS & EQUIPMENT						
Replace Off Road Track Vehicle (7696) - Cow Head		307		307	Dec. 07	B-80
Replace Light Duty Mobile Equipment Less than $ 50,000		241		241	Dec. 07	B-81
Replace Doble Relay Test Equipment - St. Anthony, Happy Valley		174		174	Oct. 07	B-83
Replace Off Road Track Vehicle (7734) - Flowers Cove		139		139	Dec. 07	B-84
Purchase & Replace T & E Less than $ 50,000		111		111		
TOTAL TOOLS & EQUIPMENT	0	972	0	972		
TOTAL GENERAL	0	2,438	0	2,438		

NEWFOUNDLAND & LABRADOR HYDRO
GENERAL PROPERTIES
2007 CAPITAL BUDGET - DETAIL
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
INFORMATION SYSTEMS						
SOFTWARE APPLICATIONS						
New Infrastructure						
Applications Enhancements		149		149	Nov. 07	B-85
Cost Recovery CF(L)Co		(27)		(27)		
Upgrade of Technology						
Corporate Application Environment		377		377	Oct. 07	B-87
Cost Recovery CF(L)Co		(75)		(75)		
TOTAL SOFTWARE APPLICATIONS	0	424	0	424		
COMPUTER OPERATIONS						
Infrastructure Replacement						
Enterprise Storage Capacity Upgrade		186		186	Oct. 07	B-89
Cost Recovery CF(L)Co		(37)		(37)		
End User Infrastructure Evergreen Program		395		395	Dec. 07	B-90
New Infrastructure						
Peripheral Infrastructure Replacement		139		139	Oct. 07	B-92
Security Information Management System		73		73	Dec. 07	B-93
Cost Recovery CF(L)Co		(15)		(15)		
Upgrade of Technology						
Server Technology Program		82		82	Oct. 07	B-95
TOTAL COMPUTER OPERATIONS	0	823	0	823		
TOTAL INFORMATION SYSTEMS	0	1,247	0	1,247		

NEWFOUNDLAND & LABRADOR HYDRO
GENERAL PROPERTIES
2007 CAPITAL BUDGET - DETAIL
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
TELECONTROL						
Infrastructure Replacement						
Replace VHF Mobile Radio System	5,971	1,697		7,668	Mar. 07	B-115(5)
Cost Recovery - Department of Transportation and Works	(1,796)	(1,680)		(3,476)		
Replace Battery System - Various Locations		485		485	Dec. 07	B-97
Microwave Site Refurbishing - Godaleich Hill		364		364	Dec. 07	B-98
Replace Remote Terminal Units - Various Locations		321		321	Dec. 07	B-99
Replace VHF Radio - Burnt Dam, Granite Canal Hill		226		226	Dec. 07	B-100
Replace Radomes - Multiple Sites		27		27	Dec. 07	
Network Infrastructure						
Install PC Device Time Synchronization - Various Locations		103		103	Dec. 07	B-101
Refresh Communications Network Technology		102		102	Oct. 07	B-103
Test Equipment		49		49	Aug. 07	
Hydro Place Wireless		44		44	Dec. 07	
Upgrade of Technology						
Upgrade Microwave Quad - Diversity		114		114	May. 07	B-105
Network Management Tools		49		49	Oct. 07	
Upgrade Site Facilities		49		49	Dec. 07	
TOTAL TELECONTROL	4,175	1,950	0	6,125		
TRANSPORTATION						
Replace Vehicles and Aerial Devices - Various Locations		2,686		2,686	Dec. 07	B-107
Purchase Trucks, Snowmobiles - Labrador Coast		842		842	Oct. 07	B-108
TOTAL TRANSPORTATION	0	3,528	0	3,528		
ADMINISTRATION						
Upgrade System Security - Various Sites		668		668	Dec. 07	B-109
Replace Storage Ramp - Bishop's Falls		62		62	Sep. 07	B-111
Purch/Replace Admin Office Equip Less than $50,000	0	68	0	68		
TOTAL ADMINISTRATION	0	798	0	798		
TOTAL GENERAL PROPERTIES	4,175	7,523	0	11,698		

SECTION B

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - OVERVIEW PROJECTS OVER $50,000
($,000)

	Exp To 2006	2007	Future Years	Total
GENERATION	2,303	13,180	62	15,545
TRANSMISSION & RURAL OPERATIONS	0	19,342	0	19,342
GENERAL PROPERTIES	4,175	7,237	0	11,412
ALLOWANCE FOR UNFORESEEN EVENTS	0	1,000	0	1,000
TOTAL CAPITAL BUDGET	6,478	40,759	62	47,299

NEWFOUNDLAND & LABRADOR HYDRO
GENERATION
2007 CAPITAL BUDGET - PROJECTS OVER $50,000 BY CATEGORY
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
Wind Generation Inventory Study	143	33		176	Jul. 07	B-114(1)
Upgrade Access Road - Upper Salmon		675		675	Oct. 07	B-5
Upgrade Access Road - Burnt Dam		309		309	Oct. 07	B-6
Upgrade Cooling Water System Unit 1 & 2 - Bay d'Espoir		112		112	Jul. 07	B-7
Replace Station Service Control - Bay d'Espoir		105		105	May.07	B-8
Replace Air Dryer - Cat Arm		76		76	Oct. 07	B-9
Replace Bridge - Paradise River		66		66	Aug. 07	B-10
Condition Assessment Study - Holyrood		3,335		3,335	Dec. 07	B-14
Replace Superheater Unit 2 - Holyrood	319	2,818		3,137	Oct. 07	B-114(2)
Addition of Disconnecting Means - Holyrood	1,472	750		2,222	Dec. 07	B-114(3)
Fire Protection Upgrades - Holyrood	369	1,456		1,825	Dec. 07	B-114(4)
Upgrade Turbine & Generator Unit 3 - Holyrood		1,654		1,654	Aug. 07	B-16
Contaminated Water Treatment - Holyrood		276	62	338	Jun. 07	B-18
UPS Battery Monitoring Program - Holyrood		79		79	Dec. 07	B-20
Air Preheater Steam Condenser Pumps Unit 3 - Holyrood		599		599	Nov. 07	B-22
Replace Fuel Piping - Hardwoods, Stephenville		530		530	Oct. 07	B-23
Gas Turbine Assessments - Hardwoods, Stephenville		307		307	Dec. 07	B-24
TOTAL GENERATION	2,303	13,180	62	15,545		

NEWFOUNDLAND & LABRADOR HYDRO
TRANSMISSION & RURAL OPERATIONS
2007 CAPITAL BUDGET - PROJECTS OVER $50,000 BY CATEGORY
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
Replace Wood Poles - Various Sites		2,148		2,148	Dec. 07	B-25
Replace Insulators - TL251, TL252 & TL234		2,118		2,118	Oct. 07	B-27
Upgrade Corner Brook Frequency Converter		1,320		1,320	Oct. 07	B-29
Construct Transmission Line Equip. Off-Loading Areas		402		402	Nov. 07	B-32
Supply & Install Bridge - South West River		212		212	Oct. 07	B-35
Install Disconnect Switch - Conne River		94		94	Aug. 07	B-37
Upgrade 138kV Protection - Springdale, Howley, Indian River		215		215	Nov. 07	B-38
Safety & Reliability Upgrade - Hawkes Bay		349		349	Oct. 07	B-40
Replace Insulators - Various Stations		313		313	Nov. 07	B-42
Upgrade Circuit Breakers - Various Stations		258		258	Dec. 07	B-44
Replace Breaker B7C1 - Hardwoods		136		136	Oct. 07	B-45
Replace Instrument Transformers - Various Stations		80		80	Nov. 07	B-47
Replace Compressors - Hardwoods		78		78	Aug. 07	B-49
Replace Battery Banks - Stoney Brook, Western Avalon		72		72	Sep. 07	B-50
Replace Battery Chargers - Various Stations		72		72	Sep. 07	B-51
Replace Surge Arrestors - Various Stations		71		71	Nov. 07	B-52
Provide Service Extensions		2,085		2,085	Dec. 07	B-54
Upgrade Distribution Systems		2,035		2,035	Dec. 07	B-56
Upgrade Distribution Feeders - Various Systems		1,383		1,383	Oct. 07	B-58
Upgrade Distribution Poles - Various Systems		744		744	Oct. 07	B-61
Replace Distribution Lines - South Brook, Hr. Breton		741		741	Oct. 07	B-63
Replace Unit 290 & Upgrade Fuel Storage - William's Hr		479		479	Oct. 07	B-65
Upgrade Exhaust Stacks - Grey River		151		151	Sep. 07	B-67
Purchase Spare Transformer - Upper Salmon		1,366		1,366	Oct. 07	B-68
Replace Diesel Unit Breakers - Mary's Harbour		114		114	Sep. 07	B-70
Automatic Meter Reading		696		696	Oct. 07	B-71
Purchase Meters & Equipment - All Service Areas		94		94	Dec. 07	B-74
Installation of Fall Arrest Equipment - Various Locations		251		251	Dec. 07	B-75
Replace Fuel Storage - Norman Bay		222		222	Oct. 07	B-77
Install Card Access System - Bishop's Falls & Whitbourne		131		131	Dec. 07	B-78
Legal Survey of Distribution Line Right-of-Ways		51		51	Oct. 07	B-79
Replace Off Road Track Vehicle (7696) - Cow Head		307		307	Dec. 07	B-80
Replace Light Duty Mobile Equipment Less than $ 50,000		241		241	Dec. 07	B-81
Replace Doble Relay Test Equipment - St. Anthony, Happy Valley		174		174	Oct. 07	B-83
Replace Off Road Track Vehicle (7734) - Flowers Cove		139		139	Dec. 07	B-84
TOTAL TRANSMISSION & RURAL OPERATIONS	**0**	**19,342**	**0**	**19,342**		

NEWFOUNDLAND & LABRADOR HYDRO
GENERAL PROPERTIES
2007 CAPITAL BUDGET - PROJECTS OVER $50,000 BY CATEGORY
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Page Ref
Applications Enhancements		149		149	Nov. 07	B-85
Cost Recovery CF(L)Co		(27)		(27)		
Corporate Application Environment		377		377	Oct. 07	B-87
Cost Recovery CF(L)Co		(75)		(75)		
Enterprise Storage Capacity Upgrade		186		186	Oct. 07	B-89
Cost Recovery CF(L)Co		(37)		(37)		
End User Infrastructure Evergreen Program		395		395	Dec. 07	B-90
Peripheral Infrastructure Replacement		139		139	Oct. 07	B-92
Security Information Management System		73		73	Dec. 07	B-93
Cost Recovery CF(L)Co		(15)		(15)		
Server Technology Program		82		82	Oct. 07	B-95
Replace VHF Mobile Radio System	5,971	1,697		7,668	Mar. 07	B-115(5)
Cost Recovery - Department of Transportation and Works	(1,796)	(1,680)		(3,476)		
Replace Battery System - Various Locations		485		485	Dec. 07	B-97
Microwave Site Refurbishing - Godaleich Hill		364		364	Dec. 07	B-98
Replace Remote Terminal Units - Various Locations		321		321	Dec. 07	B-99
Replace VHF Radio - Burnt Dam, Granite Canal Hill		226		226	Dec. 07	B-100
Install PC Device Time Synchronization - Various Locations		103		103	Dec. 07	B-101
Refresh Communications Network Technology		102		102	Oct. 07	B-103
Upgrade Microwave Quad - Diversity		114		114	May. 07	B-105
Replace Vehicles and Aerial Devices - Various Locations		2,686		2,686	Dec. 07	B-107
Purchase Trucks, Snowmobiles - Labrador Coast		842		842	Oct. 07	B-108
Upgrade System Security - Various Sites		668		668	Dec. 07	B-109
Replace Storage Ramp - Bishop's Falls		62		62	Sep. 07	B-111
TOTAL GENERAL PROPERTIES	4,175	7,237	0	11,412		

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Access Road

Location: Upper Salmon

Category: Generation - Hydro Construction

Type: Other

Classification: Normal

Project Description:

This project involves the preparation and placement of an estimated 52,000 tonnes of road gravel on 48 kilometers of the Upper Salmon Access Road. The material will be placed in a 100 mm thick layer using standard road construction techniques. The average width of the road is 6 m. Suitable material will have to be processed at 3 locations along the route. Placement is expected to be done over a two-month period.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	36.0	0.0	0.0	36.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	520.0	0.0	0.0	520.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	62.9	0.0	0.0	62.9
Contingency	55.6	0.0	0.0	55.6
Total	**674.5**	**0.0**	**0.0**	**674.5**

Operating Experience:

This road is used on a daily basis to access an 86 MW hydro plant and several critical structures (North and West Salmon Spillways, Intake Structure, and several dykes and dams). Operators are required to travel to the site to ensure plant reliability and inspectors are required to travel to the site to complete dam safety reviews.

Project Justification:

The plant and spillways are equipped with diesel generators which require fuel deliveries on an annual basis. The road is essential for operations and maintenance of the plant structures and for the delivery of fuel. The road must be kept in a safe and passable condition to ensure both employee and public safety, and to avoid the potential for major uncontrolled releases of fuel. After 25 years of continuous use and regular maintenance, the road requires significant upgrades to extend its service life and provide safe and reliable access.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Burnt Dam Access Road

Location: Burnt Dam Spillway

Category: Generation - Hydro Construction

Type: Other

Classification: Normal

Project Description:

This project involves ditching, replacement of approximately twenty culverts, upgrading of three low areas that are subject to flooding annually and the installation of 22,000 tonnes of road gravel. The road gravel will be taken from two existing stockpiles located at Burnt Dam and Granite Canal. No processing of road gravel will be required at this time but replacement of stockpiles may be considered in the future.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	44.0	0.0	0.0	44.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	210.0	0.0	0.0	210.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	29.8	0.0	0.0	29.8
Contingency	25.4	0.0	0.0	25.4
Total	**309.2**	**0.0**	**0.0**	**309.2**

Operating Experience:

The Burnt Dam Access Road is the only road access to critical spillway and control structures (Burnt Spillway and Victoria Control) and a number of dams and dykes that help form Granite Lake, Burnt Pond and Victoria Reservoirs.

Project Justification:

Burnt Spillway and Victoria Control Structures currently are staffed year round. The facilities are powered by diesel generators which have an associated fuel storage capacity of 64,000 litres. In addition, these remote sites are supported by helicopters which have an associated fuel storage capacity of 18,000 litres. The storage facilities are filled annually by tanker trucks that travel to the site over this road. In order to ensure this fuel supply, the roads must be safe and passable. Poor road conditions contribute to the potential for major uncontrolled release of these fuels during transport and increase the potential for accidents and loss of life.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Cooling Water System Units No's 1 and 2

Location: Bay d'Espoir

Category: Generation Hydro Construction

Type: Other

Classification: Normal

Project Description:

This project will involve replacement of all surface air-cooling supply and discharge piping and its components including the system cooling water strainers. The piping will be replaced with stainless steel equipment with quick release fittings to allow ease of inspection and maintenance.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	36.0	0.0	0.0	36.0
Labour	55.0	0.0	0.0	55.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	12.1	0.0	0.0	12.1
Contingency	9.1	0.0	0.0	9.1
Total	**112.2**	**0.0**	**0.0**	**112.2**

Operating Experience:

This system has been in service since 1966 and since that time there have been no upgrades, only regular corrective and preventive maintenance. There have been numerous instances of fouled and leaking piping and it is prudent to replace the piping to prevent unit outages during the time of peak generation.

Project Justification:

The piping and its components, as confirmed by preventive maintenance inspections, are extensively fouled and corroded to the extent that the only option is to replace the system with new components. This has to be done to avoid forced outages and/or derating of the plant output.

Future Plans:

Similar upgrades for other units will be proposed in future budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Station Service Control Replacement

Location: Bay d'Espoir

Category: Generation - Hydro Construction

Type: Other

Classification: Normal

Project Description:

This project involves the purchase, installation and commissioning of a new dual Programmable Logic Controller (PLC) system configured to provide hot standby, in the case of a failure of one PLC. The existing PLC is now obsolete and has limited spares in the event of its failure. The existing PLC and associated inverter will be utilized as spares for the Cat Arm station service PLC. A review of the existing PLC control program will be conducted to identify any potential improvements.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	36.0	0.0	0.0	36.0
Labour	45.5	0.0	0.0	45.5
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	5.9	0.0	0.0	5.9
O/H, AFUDC & Escalation	9.0	0.0	0.0	9.0
Contingency	8.8	0.0	0.0	8.8
Total	**105.2**	**0.0**	**0.0**	**105.2**

Operating Experience:

The existing PLC system has been in place since 1989 and is obsolete. The PLC's inverter was replaced in September, 2003 following a failure that caused a loss of PLC control and resulted in a loss of station service to the powerhouse. This eventually led to the unavailability of five generating units.

Project Justification:

A high degree of reliability of the Bay d'Espoir plant is required to contribute to a reliable supply of electricity to the Island portion of Newfoundland and Labrador. The plant's station service must be controlled using equipment that provides high reliability to ensure the generating units stay on-line when a station service source is lost.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Air Dryer

Location: Cat Arm Generating Station

Category: Generation - Hydro Construction

Type: Other

Classification: Normal

Project Description:

This dryer will replace the existing original dryer that has been in continuous operation since 1986.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	28.5	0.0	0.0	28.5
Labour	23.0	0.0	0.0	23.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	9.6	0.0	0.0	9.6
O/H, AFUDC & Escalation	8.7	0.0	0.0	8.7
Contingency	6.1	0.0	0.0	6.1
Total	**75.9**	**0.0**	**0.0**	**75.9**

Operating Experience:

There has been an increase in the degree of corrective maintenance required to maintain the reliability of the existing air dryer. The equipment is no longer operating at a high efficiency which results in damage to components that require dry air.

Project Justification:

The dry air is used to supply critical control valves throughout the plant, in particular for the penstock water supply, and the flow control valves on the cooling water systems for the two units. The air system also supplies heating and ventilating system dampers, sump level control systems, and the unit brakes. Loss of the dry air, or admission of wet air into the plant systems could cause production loss. In the case of failure of the braking system this would mean the inability to stop the unit potentially causing damage to the bearing(s), resulting in significant downtime and high corrective maintenance costs.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Paradise River Bridge Replacement

Location: Paradise River

Category: Generation - Hydro Construction

Type: Other

Classification: Normal

Project Description:

The scope of work involves the removal of an existing local timber crib bridge, including abutments, decking running boards and railings, on the Paradise River Access Road and replacement with new squared timber bridge.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	15.0	0.0	0.0	15.0
Labour	40.0	0.0	0.0	40.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	5.8	0.0	0.0	5.8
Contingency	5.5	0.0	0.0	5.5
Total	**66.3**	**0.0**	**0.0**	**66.3**

Operating Experience:

The bridge provides access to the Paradise River Generating Station. This bridge was originally constructed as a short-term access bridge, constructed of local round timber. Repairs have been made to the abutments over the years to maintain the life of the bridge, but these temporary repairs are no longer effective. It has now reached the point that complete replacement is required. The attached photographs further illustrate the condition of the bridge.

Project Justification:

The bridge is now 20 years old and has reached the end of its useful life. This replacement is required to maintain access to the Paradise River Generating Station.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Figure 1: Bridge Abutment

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Figure 2:
Bridge

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Figure 3: Under Bridge

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Holyrood Condition Assessment

Location: Holyrood Generation Station

Category: Generation - Thermal Construction

Type: Other

Classification: Normal

Project Description:

Assess the condition of the components of the Holyrood Generating Station and investigate the redevelopment options for this site. The study will include: 1) life assessment of the entire Holyrood site to determine what must be done to ensure that it can be operated at an acceptable level of reliability to 2043; 2) preparation of a feasibility study for conversion of the existing units to dual firing (#6 oil/natural gas); 3) preparation of a feasibility study for conversion of the existing units to combined cycle operation; and 4) preparation of a feasibility study for installing scrubbers and precipitators on the existing units.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	95.0	0.0	0.0	95.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	2,850.0	0.0	0.0	2,850.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	95.4	0.0	0.0	95.4
Contingency	294.5	0.0	0.0	294.5
Total	**3,334.9**	**0.0**	**0.0**	**3,334.9**

Operating Experience:

Units 1 and 2 were commissioned in 1969 and Unit 3 in 1980. These units typically operate 4,000 to 5,000 hours per year. The frequency and severity of operating problems and failures have been increasing in recent years, as the plant continues to operate beyond its original design life in terms of age. However as the capacity factor is less than the design, it is anticipated that the useful life can be extended with some capital investment.

Project Justification:

Utilities have found that it is financially viable to extend the lives of existing thermal assets rather than decommissioning existing sites and developing new ones. In order to determine the cost of a long-term plan for a mature thermal plant, detailed inspection and condition assessment tests are required to identify expenditures required to maintain the plant in reliable operating condition.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Holyrood Condition Assessment **(cont'd.)**

Future Plans:

The study will identify future expenditures required to maintain this facility in reliable operating condition, from which a long-term capital program will be developed.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Unit No. 3 Turbine/Generator

Location: Holyrood

Category: Generation - Thermal Construction

Type: Other

Classification: Justifiable

Project Description:

This project consists of a general upgrade to the Unit No. 3 turbine/generator. This upgrade will include: upgrade turbine nozzle block; upgrade lower valve assembly; upgrade high and intermediate diaphragm spill pressure strips; upgrade 7th stage blades; upgrade 7th stage diaphragms; rewedge generator; boroscope inspection ports and monitoring equipment; and upgrade turbine seals.

This upgrade will permit the extension of the six-year overhaul period to nine years.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	1,300.0	0.0	0.0	1,300.0
Labour	40.0	0.0	0.0	40.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	180.3	0.0	0.0	180.3
Contingency	134.0	0.0	0.0	134.0
Total	**1,654.3**	**0.0**	**0.0**	**1,654.3**

Operating Experience:

Major overhaul outages have been performed since 1979 as per schedule. Initially the overhaul interval was four years and is currently six years. Experience has indicated that performing the correct maintenance overhaul during outage periods allows for reliable operation of both turbine and generator until the next scheduled overhaul. There has not been a situation where either the turbine or generator had to undergo an unscheduled overhaul during the past twenty-six years of operation. This complies with the observations and recommendations of Hartford Steam & Boiler to extend the major overhaul interval to the nine-year period provided that these upgrades are performed in 2007. During periods of major overhaul, the unit availability for voltage support on the east coast is also limited due to the extended down time, thus, imposing additional constraints and cost on the power system generation.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Unit No. 3 Turbine/Generator **(cont'd.)**

Project Justification:

The major overhaul on Unit No. 3 turbine/generator in 2001 was completed at a cost of $2.39 million. The 2007 major overhaul is projected to cost $2.4 million. Upgrading Unit No. 3 to a condition that would extend the overhaul period from the current six-year schedule (2007 - 2013) to a nine-year schedule (2007 - 2016) would result in significant savings to the Holyrood operating budget in future years and other savings to Hydro. This upgrade would be a one-time capital expenditure that would defer the currently scheduled major overhaul in 2013 at a cost of $2.4 million (today's dollars) to 2016. Subsequent Unit No. 3 major overhaul costs beyond 2016 would occur on a nine-year schedule with similar escalated savings.

Unit No. 3 turbine/ generator has two modes of operation, generation mode or synchronous condenser mode. Eliminating the 2013 overhaul will increase the unit availability for an extra six weeks of generation or twelve weeks of synchronous condenser operation depending on the systems requirements at the time. Please refer to report titled "Holyrood Unit No. 3 Turbine & Generator Upgrade" in Section H, Tab 1 which includes a net present value of alternates.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Construct Contaminated Water Treatment Pilot Plant

Location: Holyrood

Category: Generation -Thermal Construction

Type: Other

Classification: Mandatory

Project Description:

This project consists of the construction, testing and optimization of a pilot scale treatment plant to treat ammoniated wastewater produced by the regeneration of condensate polisher resins. The pilot plant will be used to optimize the design and operation of the process, prepare preliminary designs and detailed capital and operating cost estimates for the production scale facility.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	75.0	0.0	0.0	75.0
Labour	50.0	10.0	0.0	60.0
Consultant	95.0	10.0	0.0	105.0
Contract Work	25.0	0.0	0.0	25.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	31.1	15.9	0.0	47.0
Contingency	0.0	26.5	0.0	26.5
Total	**276.1**	**62.4**	**0.0**	**338.5**

Operating Experience:

Wastewater streams have been discharged to the environment since the plant was constructed in the 1960's. Beginning in the early 1990's, Hydro began diverting the wastewater streams to a containment and treatment facility. Only two waste streams remain and the treatment of one stream, condensate polisher regeneration wastewater, poses the greatest challenge. The goal of this project is to develop and optimize a method to treat this waste stream in an environmentally acceptable manner so that the discharge into Conception Bay meets all environmental regulations.

Project Justification:

The current practice of discharging wastewater streams to the environment violates the Environmental Control Water and Sewage Regulations, of the Water Resources Act of the Province of Newfoundland and Labrador.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Contaminated Water Treatment **(cont'd.)**

Future Plans:

Once the design of a treatment methodology has been established, a capital budget proposal for the modification of the existing treatment plant to treat regeneration wastewater will be submitted for approval.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Purchase and Install UPS Battery Monitoring System

Location: Holyrood

Category: Generation - Thermal Construction

Type: Other

Classification: Normal

Project Description:

This project consists of the purchase and installation of a battery monitoring system for all four Holyrood Uninterruptible Power Supply (UPS).

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	36.0	0.0	0.0	36.0
Labour	27.7	0.0	0.0	27.7
Consultant	0.0	0.0	0.0	0.0
Contract Work	32.5	0.0	0.0	32.5
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	8,9.4	0.0	0.0	89.4
Contingency	64.0	0.0	0.0	64.0
Total	**79.1**	**0.0**	**0.0**	**79.1**

Operating Experience:

An open-circuit failure of one battery in the bank is an operational failure of the entire bank. There have been multiple occurrences of failed batteries in the past five years. These failed batteries are identified through regular maintenance inspections. UPS batteries have a typical life expectancy of five to twenty years, depending on the type, but Holyrood has typically experienced battery failures prior to this time period.

Project Justification:

Implementation of this system is required to improve generation reliability. Although battery failures have not caused a unit production failure to-date, the high occurrence of battery failures shows that without quick identification, unit production failure is highly probable. The latest incident occurred on March 29, 2006, when a failed battery resulted in the failure of UPS#4, causing the Station Service 600V breakers to default to the open position, thus causing isolated power outages in the Plant. Had this occurred on either of the remaining UPSs then there would have been a Unit outage and possible under-frequency load shedding. This monitoring system will monitor the batteries and be able to detect a degrading battery. This early detection will allow for battery replacement before it fails. If one battery

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Holyrood UPS Battery Monitoring Program **(cont'd.)**

Project Justification: (cont'd.)

fails and the main source of power is interrupted, the UPS will not be able to maintain uninterrupted power as it is intended.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Unit 3 Air Preheater Steam Condensate System

Location: Holyrood

Category: Generation - Thermal Property Additions

Type: Other

Classification: Normal

Project Description:

This project consists of a general upgrade to the steam condensate system on Unit No. 3 to provide for pumped condensate to the deaerator. The current system will be retired. Generally the new system will be the same as that presently in service on Units No. 1 and 2 where similar modifications were made about ten years ago. Those units have performed well since that time.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	55.0	0.0	0.0	55.0
Labour	93.0	0.0	0.0	93.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	342.0	0.0	0.0	342.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	59.5	0.0	0.0	59.5
Contingency	49.0	0.0	0.0	49.0
Total	**598.5**	**0.0**	**0.0**	**598.5**

Operating Experience:

Operators have to maintain a large amount of steam in the air preheaters in order to force condensate up to the deaerator. This results in a high boiler exhaust gas temperature which causes an efficiency reduction. Sometimes the quantity of steam admitted to the preheater is uneven which causes condensate stagnation and then water hammer. This has sometimes resulted in damage to the piping system which necessitated boiler shut down for repairs. On occasion, stagnant condensate has had to be drained to prevent damage, contributing to a loss of thermal efficiency.

Project Justification

The proposed pumped condensate system will result in a fuel savings estimated to be $160,000 per year, and avoidance of equipment damages due to water hammer.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Fuel Piping

Location: Hardwoods and Stephenville

Category: Generation - Gas Turbines

Type: Pooled

Classification: Normal

Project Description:

This project consists of the replacement of the main fuel forwarding lines for the Hardwoods and Stephenville Gas Turbines.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	1.0	0.0	0.0	1.0
Labour	213.5	0.0	0.0	213.5
Consultant	0.0	0.0	0.0	0.0
Contract Work	386.0	0.0	0.0	386.0
Other Direct Costs	3.0	0.0	0.0	3.0
O/H, AFUDC & Escalation	63.9	0.0	0.0	63.9
Contingency	42.4	0.0	0.0	42.4
Total	**529.8**	**0.0**	**0.0**	**529.8**

Operating Experience:

In 2005 underground fuel pipes running between the fuel forwarding module and the gas engines at the Hardwoods gas turbine developed leaks caused by corrosion. Soil contamination resulted, along with an unscheduled production outage. Stephenville is one year older than Hardwoods and is therefore considered to be generally of the same condition.

Project Justification:

A fuel leak in an underground pipe could result in an unplanned outage and disruption to customer service. Environmental damage would result in the form of soil contamination. The cost to repair/ replace the failed pipes and remediate the contaminated soil would be significant.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Gas Turbine Condition Assessments

Location: Hardwoods and Stephenville

Category: Generation - Gas Turbines

Type: Other

Classification: Normal

Project Description:

This project consists of a detailed assessment of the condition of the Hardwoods and Stephenville gas turbines. The study will identify potential problems and estimate costs to correct. The work will include preliminary cost estimates for the redevelopment of both sites, and evaluating the options of replacing one site and using the components for spares for the other.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	60.0	0.0	0.0	60.0
Consultant	200.0	0.0	0.0	200.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	5.0	0.0	0.0	5.0
O/H, AFUDC & Escalation	15.6	0.0	0.0	15.6
Contingency	26.5	0.0	0.0	26.5
Total	**307.1**	**0.0**	**0.0**	**307.1**

Operating Experience:

In recent years the number of operating problems with these two generating plants have increased dramatically. The plants have reached the end of the design life for gas turbine plants (thirty years) which is evidenced by the increasing number of operating problems. The original equipment manufacturer has stopped manufacturing some components and is only providing limited servicing on this equipment.

Project Justification:

These two gas turbine plants are used for voltage support and supplying peak loads on the transmission system. In order to maintain system reliability and performance levels, this assessment, and subsequent upgrades are required.

Future Plans:

Upgrades identified in this study will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Wood Pole Line Management Program

Location: Various Sites

Category: Transmission

Type: Pooled

Classification: Normal

Project Description:

The project is the third year of an ongoing program of inspection, treatment and replacement of line components (poles, conductor and hardware) on Hydro's transmission system.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	306.0	0.0	0.0	306.0
Labour	1,102.7	0.0	0.0	1,102.7
Consultant	50.0	0.0	0.0	50.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	282.0	0.0	0.0	282.0
O/H, AFUDC & Escalation	232.7	0.0	0.0	232.7
Contingency	174.1	0.0	0.0	174.1
Total	**2,147.8**	**0.0**	**0.0**	**2,147.8**

Operating Experience:

Hydro operates approximately 2800 km (26,000 poles) of wood pole transmission lines operating at 69, 138 and 230 kV. Historically, Hydro's pole inspection and maintenance practices followed the traditional utility approach of sounding inspections, only. In 1998, Hydro took core samples on selected poles to test for preservative retention levels and pole decay. The results of these additional tests raised concerns regarding the general preservative retention levels in wood poles. Between 1998 and 2003, additional coring and preservative testing confirmed that there were a significant number of poles which had a preservative level below what was required to maintain the design criteria for the lines. During this period, certain poles were replaced because the preservative level had lowered to the point that decay had advanced and the pole was no longer structurally sound. These inspections and analysis confirmed that a more formal wood pole line management program was required.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Wood Pole Line Management Program **(cont'd.)**

Project Justification:

A report titled "Wood Pole Line Management Using RCM Principles" was filed with Hydro's 2005 Capital Budget Application under Section G: Appendix 2. This report recommended that a formal program be established to manage wood pole line assets. The program consists of visual inspection, non-destructive testing and selected treatment of the wood poles. Poles that are deteriorated beyond the point where treatment could extend the life are identified for replacement. Field data is collected and stored electronically, and a comprehensive database of the program results is maintained. The program will extend the life of the wood pole assets by an average of ten years with a net benefit of $4.5 million in deferred replacement costs over that same period.

An Executive Summary Report is included in Section H, Tab 2, of the Application which provides an update of the 2005 program, a progress report of 2006 work and a forecast of the proposed objectives for 2007 and beyond.

Future Plans:

This is an ongoing program that will provide for all poles to be inspected and treated and any poles rejected will be replaced.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Insulators

Location: TL234, TL251 and TL252

Category: Transmission

Type: Pooled

Classification: Normal

Project Description:

TL234 is a 230 kV radial transmission line running from Upper Salmon to Bay d'Espoir - a distance of 51.5 km. It consists of H-Frame wooden pole structures and steel towers. The line was constructed in 1981 to connect the Upper Salmon Generating Station. TL251 and TL252 are 69 kV radial transmission lines that run from Howley to Hampden, a distance of 48 km and from the Hampden to Jackson's Arm, a distance of 53 km respectively. Both are single wood pole lines which were constructed in 1981. This project consists of the replacement of all remaining Canadian Ohio Brass (COB) insulators on the three lines.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	717.0	0.0	0.0	717.0
Labour	23.7	0.0	0.0	23.7
Consultant	20.0	0.0	0.0	20.0
Contract Work	698.0	0.0	0.0	698.0
Other Direct Costs	49.0	0.0	0.0	49.0
O/H, AFUDC & Escalation	224.7	0.0	0.0	224.7
Contingency	172.1	0.0	0.0	172.1
Total	**2,117.8**	**0.0**	**0.0**	**2,117.8**

Operating Experience:

Each year of the annual preventive maintenance cycle, approximately 20% of the lines undergo insulator testing and defective COB insulators are detected. Over a five-year cycle, the number of structures with defective insulators averages 13%. This failure rate is typical of the COB insulators failing in a random manner and thus insulators tend to fail without warning. As has been seen with other lines on the system, this trend is expected to continue with each inspection cycle making the replacement of only the defective insulators cost prohibitive and a poor long-term strategy.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Insulators **(cont'd.)**

Project Justification:

The insulators presently in-service on the lines were manufactured by COB and were installed during the original construction. These COB insulators are a part of a group of insulators that have experienced industry wide failures due to cement growth causing radial cracks that result in moisture intrusion. Given the industry wide failure rates for COB insulators of this vintage, replacing them at this time represents the least customer impact as well as the most cost effective strategy and will result in the increased reliability of this system.

On TL234, the combined generation capacity of 125 MW from Upper Salmon and Granite Canal, is critical to system reliability, especially during periods of peak loading. Loss of this line during periods of generation would have system-wide ramifications through the Under-Frequency Load Shedding Scheme or possibly spilling water around plants which could ultimately have to be replaced through oil at Holyrood.

On TL251 and TL252 outages impact approximately 811 customers on the Jackson's Arm, Hampden, and Coney Arm Distribution Systems and the Rattle Brook Generating Station.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Reliability Upgrades - Frequency Converter

Location: Corner Brook Frequency Converter

Category: Transmission

Type: Clustered

Classification: Normal

Project Description:

This project consists of the rewinding of the 50 Hz machine rotor, installation of an oil spill containment and fire protection system around the main transformers, general upgrades of wall trusses, and doors; replacement of the unit auto-synchronizer; the replacement of the lube oil pump; and replacement of 69kV entrance bushings.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	352.4	0.0	0.0	352.4
Labour	83.5	0.0	0.0	83.5
Consultant	0.0	0.0	0.0	0.0
Contract Work	645.0	0.0	0.0	645.0
Other Direct Costs	2.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	129.0	0.0	0.0	129.0
Contingency	108.3	0.0	0.0	108.3
Total	**1,320.2**	**0.0**	**0.0**	**1,320.2**

Operating Experience:

In the past five years there have been significant problems with regard to operating and maintaining the Corner Brook Frequency Converter. All of the equipment is 1960's vintage and as it ages, more maintenance and operational problems arise. Currently there are known problems within the controls, synchronizing equipment, ventilation system and insulators. The building requires significant repairs, and the rotating parts of the converter are suspect.

Project Justification:

This work is part of an overall upgrade program recommended in an internal Hydro report entitled "Engineering Condition Assessment of the Corner Brook Frequency Converter - April 7, 2005". This report consisted of a review of the general condition of the converter and the facility and a comparison of the present condition of the facility to that which was stated by Acres Engineering in their report titled the "Condition Assessment of 50/60 Cycle Frequency Final Report", which was prepared for Hydro in September 1998.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Reliability Upgrades - Frequency Converter **(cont'd.)**

Project Justification: (cont'd.)

The condition of the insulation of the rotors (especially the 50 Hz rotor) was identified by Acres as very low. This issue has not been addressed. Readings of the insulation values of the 50 Hz rotor since 1998 remain very low (approximately 200 to 3000 kilo-ohms). These low values are indicative of a failure within the next few years, but failure could occur at any time. As a result, a rewind of the 50 Hz rotor is required.

The oil spill containment and drainage system around the main transformer requires improvements in order to contain a spill, and the transformers located inside the building have no fire protection system. For environmental compliance and to protect the assets the oil spill containment and fire protection systems must be installed.

Numerous building cracks have allowed wood debris, associated with operation of the paper mill, to enter the converter building. As a temporary repair, caulking has been applied to building cracks, where possible, to decrease the ingress of dirt and dust. Permanent upgrades to the concrete and masonry must be done as soon as possible to minimize the contaminants building up on the rotating equipment, and jeopardizing the equipment reliability and performance.

From an operational perspective, the failure of the auto-synchronizer makes it difficult to synchronize the 50 Hz side of the converter to the 50 Hz Deer Lake Power system and to synchronize the 60 Hz side of the converter to the 60 Hz Hydro system. The auto-synchronizer requires replacement.

The condition of the doors throughout the facility is poor. These doors must be replaced to prevent the accumulation of dust and debris inside the facility.

The lube oil pump is nearing the end of its service life and has shown operational problems in recent years and must be replaced.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Reliability Upgrades - Frequency Converter **(cont'd.)**

Project Justification: (cont'd.)

The current age of the 69 kV entrance insulators at the Corner Brook frequency converter is forty years. During this time, falling ice and snow from the roof of the building has damaged the insulators beyond repair. The manufacturer of this type of insulator has been out of business for more than twenty years, therefore, identical replacement units are no longer available. Due to the deteriorated condition, it is necessary that these insulators be replaced in order to ensure a reliable energy supply for Corner Brook Pulp and Paper.

Future Plans:

Further upgrades will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Construct Transmission Line Equipment Off-Loading Ramps

Location: Various Sites

Category: Transmission

Type: Other

Classification: Normal

Project Description:

This work involves the construction or upgrading of off-loading/access ramps for transmission line maintenance vehicles along the provincial highways. This proposal represents 30 of the approximately 150 locations to be upgraded over a five-year period, starting in 2006. The work will consist of widening the existing highway shoulder to 6 m for a length of 25 m in each location and may require the installation of culverts and the sloping of embankments.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	36.0	0.0	0.0	36.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	270.0	0.0	0.0	270.0
Other Direct Costs	21.0	0.0	0.0	21.0
O/H, AFUDC & Escalation	42.3	0.0	0.0	42.3
Contingency	32.7	0.0	0.0	32.7
Total	**402.0**	**0.0**	**0.0**	**402.0**

Operating Experience:

The transmission line crews are, in many locations, currently unloading mobile equipment at roadsides and then parking the transporting vehicles at another safe location which can be a considerable distance away (see attached photographs). The development of off-loading ramps would provide an increased level of safety for employees and the general public. In addition, efficiency would be increased as the transporting vehicles could remain at the off-loading areas.

Project Justification:

The installation of highway off-loading ramps will permit the safe off-loading of equipment required for the maintenance of transmission lines and will re-establish access to approved trails in areas where access has been removed because of highway upgrading. In areas where crews are presently able to gain access to approved trails they frequently need to block traffic lanes, and after off-loading, are required to travel long distances to safely and legally park their vehicles. This process is unsafe for

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Construct Transmission Line Equipment Off-Loading Ramps **(cont'd.)**

Project Justification: (cont'd.)

employees and traveling public. It is time-consuming and requires additional personnel for traffic control and return transportation to the work site. If access to an approved trail is not possible, crews may be required to travel long distances along transmission line right-of-ways to gain access to work locations. The installation of these sites would permit a faster response time during forced outages by minimizing travel time.

Future Plans:

Further upgrades will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Supply and Installation of Bridge

Location: TL233 at South West River

Category: Transmission

Type: Other

Classification: Normal

Project Description:

This project involves the supply of all material, equipment and labor necessary to construct an approximately 25 m long by 5 m wide pre-engineered steel panel-type bridge, on South West River.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	20.0	0.0	0.0	20.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	147.0	0.0	0.0	147.0
Other Direct Costs	7.0	0.0	0.0	7.0
O/H, AFUDC & Escalation	20.5	0.0	0.0	20.5
Contingency	17.4	0.0	0.0	17.4
Total	**211.9**	**0.0**	**0.0**	**211.9**

Operating Experience:

The original bridge over South West River was owned by Abitibi Consolidated Inc. and used by Hydro for 32 years to access Transmission Line TL233. Due to its unsafe condition, Abitibi removed the bridge in the fall of 2004. Abitibi has confirmed they have no plans to access this area under their current operating plan and will not be replacing the bridge.

Project Justification:

Although TL233 has performed well to-date, it is now 32 years old and with every passing year the probability of problems associated with the transmission line increases. There have been no major upgrades completed over its lifetime.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: South West River - Supply and Installation of a Bridge **(cont'd.)**

Project Justification: (cont'd.)

Four options to access the transmission line were investigated.

1) Traveling along a forest access road starting at the Bottom Brook Terminal Station (Structure #577), approximately 38 km from the old bridge site,
2) Fording the Southwest River in the vicinity of Structure #410,
3) Fording the Southwest River at a site approximately 500 meters west of the original bridge site, and
4) Install a new bridge installed at the site previously occupied by the old bridge.

The problems associated with the first option included an approximate 20 to 24 hour travel time in summer by a tracked vehicle to reach the section of TL233 in the vicinity of the old bridge location. In winter the travel time could be doubled or tripled. Poles get damaged when dragged along this route.

The problems associated with the options 2 and 3 are as follows:

1) Environmental issues associated with crossing a scheduled salmon river. It is unlikely permission would be given to ford other than on an emergency basis.

2) It is physically impossible for a tracked vehicle to cross the river for approximately two months each year when the river is in full flood during spring breakup.

The fourth option would be to build a new bridge in the same location as the old Abitibi bridge. This bridge would be a pre-engineered panel type which can be constructed on one side and pushed across avoiding work in the river. This would be environmentally acceptable, eliminate the need for fording and would provide year around access for maintenance requirements on the TL233 transmission line.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Install Disconnect Switch

Location: Transmission System TL220

Category: Transmission

Type: Other

Classification: Normal

Project Description:

This project consists of the construction of a 69 kV structure and the installation of a High Voltage Disconnect switch, downstream of the Conne River tap.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	34.0	0.0	0.0	34.0
Labour	11.0	0.0	0.0	11.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	30.0	0.0	0.0	30.0
Other Direct Costs	3.0	0.0	0.0	3.0
O/H, AFUDC & Escalation	8.5	0.0	0.0	8.5
Contingency	7.8	0.0	0.0	7.8
Total	**94.3**	**0.0**	**0.0**	**94.3**

Operating Experience:

TL220 is a 69 kV radial transmission line that runs from Bay d'Espoir to Barachoix substation, to serve the Connaigre Peninsula.

Project Justification:

When outages occur on the TL220 downstream of Conne River, and the repair time is extensive, service to the community of Conne River is affected. The line cannot be sectionalized therefore the community cannot be restored to service until the whole line is repaired and re-energized. Installation of this disconnect switch will significantly reduce the duration of outages to Conne River.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: 138 kV Protection Upgrades

Location: Springdale, Indian River and Howley Terminal Stations

Category: Transmission - System Performance & Protection

Type: Other

Classification: Normal

Project Description:

This project consists of an upgrade of the 138 kV line protection on TL223 between Springdale and Indian River, lines TL224, TL243 and TL245 at Howley and line 363L at Indian River. The work involves the replacement of the old electro-mechanical relays with microprocessor based relays.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	78.5	0.0	0.0	78.5
Labour	96.0	0.0	0.0	96.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	1.0	0.0	0.0	1.0
O/H, AFUDC & Escalation	21.8	0.0	0.0	21.8
Contingency	17.6	0.0	0.0	17.6
Total	**214.9**	**0.0**	**0.0**	**214.9**

Operating Experience:

The existing line protection relays are approximately thirty years old and are difficult to maintain and calibrate. These new relays will be more compatible with the newer relays used on the 230 kV system.

Project Justification:

This project will improve the protection on targeted 138 kV lines which presently have electromechanical relays for both phase and ground protection. Critical clearing time issues will be addressed, and the upgrades will enhance ground protection capability and the provision for a third zone of protection for remote backup requirements on the 138 kV loop. The new relays will be self-monitoring so that if there are problems with a relay it will be alarmed and functionally blocked. The problem can then be investigated and corrected.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: 138 kV Protection Upgrades **(cont'd.)**

Project Justification: (cont'd.)

The upgrades will also provide fault distance location, remotely retrievable where accessible, assisting in the location of any problems on the line which are intermittent or permanent. This upgrade is an improvement to line reliability by enabling better and timelier analysis of problems on the line.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Safety and Reliability Upgrade

Location: Hawkes Bay Terminal Station

Category: Transmission - Terminals

Type: Clustered

Classification: Normal

Project Description:

This project consists of general upgrades to the Hawkes Bay terminal station involving: re-insulation of the 66 kV bus; replacement of poles and crossarms; fence upgrades; relocation of 66 kV potential transformers; upgrade of the 12.5 kV bus arrangement and relocation of the station service supply; upgrade of metering circuits; and construction of a second equipment access to the station.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	86.0	0.0	0.0	86.0
Labour	790.0	0.0	0.0	790.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	107.0	0.0	0.0	107.0
Other Direct Costs	8.0	0.0	0.0	8.0
O/H, AFUDC & Escalation	41.2	0.0	0.0	41.2
Contingency	28.0	0.0	0.0	28.0
Total	**349.2**	**0.0**	**0.0**	**349.2**

Operating Experience:

This station is the only transmission terminal station serving the general area of Hawkes Bay, Port Saunders, Port aux Choix and neighboring communities. The operating experience has been generally good, and the major equipment provides reliable cost effective service. However, the buswork, structures and hardware, etc., are in poor condition and present safety and maintenance problems for operating personnel.

Project Justification:

Insulators and Structures: All equipment is original to the station and is approximately thirty years old. Recent inspections confirmed that 25-30% of all insulator strings had two or more discs fail under standard meggar tests. The glass is fractured or cracked and there are signs of cement growth. The crossarms on the 66 kV side of the station, show signs of decay and/or organic growth. On the 12.5 kV side of the station, the condition of the wood structures presents a climbing hazard to Operational and Maintenance staff for normal maintenance work the insulators and crossarms presents a safety hazard for employees working in the station.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Safety and Reliability Upgrade **(cont'd.)**

Project Justification: (cont'd.)

Station Fence: The fence is not built to Hydro's present standard. This fence is only four feet high in some locations and does not provide security for the property or public safety.

Station Access: The structure guys and general layout of the station makes equipment access restrictive. The second access is required to enable equipment to be moved into certain parts of the station to facilitate maintenance and repair thus improving overall service.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Insulators
Location: Various Stations
Category: Transmission - Terminals
Type: Pooled
Classification: Normal

Project Description:

This project involves the purchase and installation of 230, 138, 69 and 25 kV, station post and suspension insulators, at various terminal stations in the Central Region. Due to the quantity of insulators to be replaced and the number of outages required to complete the work, the plan is to complete the replacements over a five-year period. This capital budget proposal is for year two of the five-year plan.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	120.0	0.0	0.0	120.0
Labour	114.0	0.0	0.0	114.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	14.0	0.0	0.0	14.0
O/H, AFUDC & Escalation	40.2	0.0	0.0	40.2
Contingency	24.8	0.0	0.0	24.8
Total	**313.0**	**0.0**	**0.0**	**313.0**

Operating Experience:

Canadian Ohio Brass (COB), multicone and cap and pin insulators are known to have cement growth problems which result in insulator failures causing bus or station outages. Cement growth occurs when moisture is absorbed in the cement and through the thermal cycle process pressure is applied to the porcelain resulting in cracks in the insulator. Such cracks will reduce the electrical and mechanical strength of the insulator. This problem has been well documented in the utility industry and as a result, Hydro has been replacing COB insulators on its transmission lines for several years. In terminal stations, there has been several in-service failures causing major outages to customers. An example of this was the failure of a cap and pin insulator on Bus 4 disconnect at Massey Drive Terminal Station in 2002 which resulted in process interruptions for Corner Brook Pulp and Paper. Also, insulators have broken off while crews have been performing maintenance, creating unsafe conditions for workers.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Insulators **(cont'd.)**

Project Justification:

Insulators provide electrical insulation between energized and de-energized equipment and ground. When insulators fail they provide a short circuit to ground, which could result in an outage to customers. To help prevent such outages from occurring, Hydro plans to replace all COB, multicone and cap and pin insulators in all of its terminal stations within the next five years. Year one of this five-year plan began in 2006 with the replacement of 20% of the problem insulators.

Future Plans:

Future replacements will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Circuit Breakers
Location: Various Terminal Stations
Category: Transmission - Terminals
Type: Pooled
Classification: Normal

Project Description:

This project consists of an upgrading program to refurbish all Brown Boveri DCVF, DCF, and DLF styles of air blast breakers. The upgrade consists of replacement of all seals and gaskets as well as overhauls of all valves, interrupters and contacts assemblies. This project is the first year of a long-term plan to upgrade all air blast breakers on this system. During 2007 Hydro will upgrade four air blast breakers.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	100.0	0.0	0.0	100.0
Labour	87.0	0.0	0.0	87.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	15.5	0.0	0.0	15.5
O/H, AFUDC & Escalation	35.0	0.0	0.0	35.0
Contingency	20.3	0.0	0.0	20.3
Total	**257.8**	**0.0**	**0.0**	**257.8**

Operating Experience:

The first generation of Air Blast breakers on Hydro's system is approaching forty years of service. In recent years problems have occurred with air leaks, valves sticking, etc. resulting in increased maintenance cost as well as breaker unavailability. In particular there have been numerous problems with the unit breakers at Bay d'Espoir resulting in generating units being unavailable. These problems are common with other utilities and owners of DCF/DCVF Breakers. There are sixty-six breakers of this type in service on the Hydro system and they are critical to maintain reliable system operations.

Project Justification:

Upgrading these breakers will provide a life extension which is considered more cost effective than a replacement program. The upgrades will restore the full level of reliability and performance that is necessary for these breakers.

Future Plans:

Upgrades of breakers in future years will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Breaker B7C1

Location: Hardwoods Terminal Station

Category: Transmission - Terminals

Type: Other

Classification: Normal

Project Description:

Purchase and install a new 69 kV breaker to replace B7C1 at Hardwoods Terminal Station. The new breaker will be designed to fit the existing foundation. Existing control cables will be reused. The old breaker will be returned to Salvage Stores in Bishop's Falls for disposal.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	70.0	0.0	0.0	70.0
Labour	40.0	0.0	0.0	40.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	15.0	0.0	0.0	15.0
Contingency	11.0	0.0	0.0	11.0
Total	**136.0**	**0.0**	**0.0**	**136.0**

Operating Experience:

Maintenance records indicate extensive maintenance work has been completed on breaker B7C1 since 1999. Insulating gas was added to the breaker interrupters on eleven occasions, repair and replacement of latching relays and trip coils was required six times, and repairs were made to the compressor on several occasions. In 2004, the compressor became unrepairable and had to be replaced. The operating mechanism tie bar had also failed on four occasions since the early 1990's, the latest occurring in 2005. After the tie bar failure in 2000, a manufacturer's representative was on-site to oversee the repairs and confirm the breakers integrity but the tie bar failed again in 2005. This breaker is subject to significant vibration during operation and maintenance personnel have indicated the vibration is the primary cause of the repeated failures. This breaker has operated on average 250 times a year since 1981.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Breaker B7C1 **(cont'd.)**

Project Justification:

Breaker B7C1 is a Westinghouse SF6 type 690SP2500 circuit breaker manufactured in 1981. It is used to switch a capacitor bank at Hardwoods Terminal Station which provides voltage support to the Eastern Avalon and is critical in maintaining acceptable system voltages.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Instrument Transformers

Location: Various Terminal Stations

Category: Transmission - Terminals

Type: Pooled

Classification: Normal

Project Description:

This project involves the purchase and installation of replacement instrument transformers (potential transformers, capacitive voltage transformers and current transformers) at various terminal stations.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	60.0	0.0	0.0	60.0
Labour	4.5	0.0	0.0	4.5
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.6	0.0	0.0	0.6
O/H, AFUDC & Escalation	8.1	0.0	0.0	8.1
Contingency	6.5	0.0	0.0	6.5
Total	**79.7**	**0.0**	**0.0**	**79.7**

Operating Experience:

Instrument transformers have a typical service life of thirty - forty years, depending on the service conditions. Units are inspected and tested regularly and replacements are made based on these maintenance assessments or in-service failures. The maintenance assessments for instrument transformers are visual inspection and voltage/current checks of the secondary circuits. In the last two years there were fourteen instrument transformers replaced and as the remaining instrument transformers age it is expected the number of failures will increase. As a result, in future years, the capital budget for instrument transformer replacements may increase. This proposal provides for an allowance of capital dollars for replacements on an 'as required' basis.

Project Justification:

Instrument transformers provide critical inputs to protection, control and metering equipment required for the reliable operation and protection of the electrical system. Instrument transformers which fail in-service can result in faults on the electrical system and outages to customers.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Instrument Transformers **(cont'd.)**

Project Justification: (cont'd.)

Replacement of instrument transformers is the only option available. When these units fail, they are not repairable and require replacement. The normal utility practice in North America is to hold a reserve inventory and replace units as they fail. Project estimates are based on an equal number of units in each voltage class failing, or requiring replacement. It has also been identified that older vintage instrument transformers may contain PCBs, and Hydro has a program in place to reduce PCBs in its system of assets, requiring PCB filled instrument transformers to be replaced.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Compressors

Location: Hardwoods

Category: Transmission - Terminals

Type: Other

Classification: Normal

Project Description:

This project consists of the replacement of two Ingersoll Rand 15T2 model T30, three-stage high pressure compressors at the Hardwoods Terminal Station complete with condensate oil/water separator.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	45.0	0.0	0.0	45.0
Labour	15.8	0.0	0.0	15.8
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	2.6	0.0	0.0	2.6
O/H, AFUDC & Escalation	8.6	0.0	0.0	8.6
Contingency	6.3	0.0	0.0	6.3
Total	**78.3**	**0.0**	**0.0**	**78.3**

Operating Experience:

In recent years corrective maintenance costs for the compressors at the Hardwoods Terminal Station have been significant. These compressors have been in service since the early 1970's and each has approximately 14,000 operating hours. Since late 1999, there have been forty-one corrective maintenance interventions on these compressors resulting in significant maintenance costs.

Project Justification:

As noted in the operating experience, there has been a high failure rate and increased maintenance costs associated with these compressors. By comparison, an installation at Stoney Brook with new compressors installed in 1999 has seen only three corrective maintenance interventions completed to-date at a cost of $2,500 versus forty-one corrective maintenance interventions at a cost of $40,250 at Hardwoods. This illustrates that improved reliability and significantly lower operating costs will result from complete replacement of compressors.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Battery Banks

Location: Stony Brook and Western Avalon Terminal Stations

Category: Transmission - Terminals

Type: Pooled

Classification: Normal

Project Description:

This project consists of the Purchase and installation of a new lead calcium flooded cell station battery bank at each station. Batteries will be designed to be mounted on the existing battery racks. The old batteries will be removed from service and will be disposed of at an approved disposal site. The replacement batteries will be the same size and rating of the existing units as the station DC load requirements have not changed. The new batteries will be designed to be compatible with the existing chargers.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	40.0	0.0	0.0	40.0
Labour	18.0	0.0	0.0	18.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	7.9	0.0	0.0	7.9
Contingency	5.8	0.0	0.0	5.8
Total	**71.7**	**0.0**	**0.0**	**71.7**

Operating Experience:

The station batteries targeted for replacement under this Capital Budget Proposal are approaching or beyond the normal expected service life. In Stoney Brook, the Valve Regulated batteries installed in 1995 will be at the end of the expected service life of ten to twelve years in 2007. In Western Avalon, the flooded cell batteries installed in 1987 have shown signs of deterioration and will be at the limit of the expected eighteen to twenty year service life in 2007.

Project Justification:

The station battery banks provide the DC supply for the station protection and controls, and equipment operation. This DC source is an integral component to the relay protection systems for the station equipment, the transmission lines and the Energy Management System. Routine maintenance tests and inspections are done on an annual basis. These tests and inspections have confirmed a deterioration in the battery cell condition to the point that system reliability and integrity will be compromised if the batteries are not replaced.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Battery Chargers

Location: Various Terminal Stations

Category: Transmission - Terminals

Type: Pooled

Classification: Normal

Project Description:

Purchase and installation of new battery chargers for Howley, Sunnyside and Long Harbour Terminal Stations. The battery chargers will be designed to be compatible with the existing battery banks.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	38.0	0.0	0.0	38.0
Labour	20.0	0.0	0.0	20.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	7.8	0.0	0.0	7.8
Contingency	5.8	0.0	0.0	5.8
Total	**71.6**	**0.0**	**0.0**	**71.6**

Operating Experience:

Due to higher than normal instances of battery charger failures at these terminal stations in recent years, a review of the maintenance history on battery chargers was completed. This review indicated that a significant number of the problems recorded were caused by Staticon and Cigentic chargers which were fifteen years old or greater. The Cigentic charger in Howley was installed in 1981. The Staticon Chargers in Long Harbour and Sunnyside were installed in 1979 and 1985 respectively. These units have required recent repairs and are approaching or are beyond the normal expected service life.

Project Justification:

The DC station service system consists of a battery charger, battery bank and DC distribution panel. This DC source provides the control voltage for the station protection, remote and local controls, event logging, and annunciation. With the loss of the charger, the battery bank will discharge such that station protection and control and information to the Energy Control Centre would be unavailable. Given the criticality of the battery chargers to the system reliability, it is necessary to replace the chargers.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Surge Arrestors

Location: Various Terminal Stations

Category: Transmission - Terminals

Type: Pooled

Classification: Normal

Project Description:

This project involves the purchase and installation of replacement surge arrestors at various terminal stations across the three operating regions of Hydro.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	48.0	0.0	0.0	48.0
Labour	10.0	0.0	0.0	10.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	7.5	0.0	0.0	7.5
Contingency	5.8	0.0	0.0	5.8
Total	**71.3**	**0.0**	**0.0**	**71.8**

Operating Experience:

The operating experience for surge arrestors is that they fail because of lightning strikes and switching surges, and generally these failures are unpredictable. An exception to these failures is for the older gap type arrestors which have an expected useful life of approximately twenty to twenty-five years. In these cases, the manufacturer's recommendation is that the arrestors be replaced with the new gapless type arrestor. Typically, across the system, there has been an average of fourteen surge arrestors replaced each year.

Project Justification:

Surge arrestors provide critical over voltage protection of power system equipment from lightning and switching surges. Units that fail are not repairable and the only option available is to replace them. Surge arrestors are inspected and tested regularly and replacements are made based on maintenance assessments as well as in-service failures. This capital proposal provides for the replacement of the units that fail in service as well as those identified during testing as needing to be replaced.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Surge Arrestors **(cont'd.)**

Project Justification: (cont'd.)

Due to the wide variety of service conditions it is difficult to estimate the useful life or predict failures in surge arrestors. However, manufacturers recommend twenty years as a suitable replacement period depending on the service conditions and the lightning activity in the area.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Provide Service Extensions
Location: All Service Areas
Category: Distribution
Type: Pooled
Classification: Normal

Project Description:

This project is an annual allotment based on past expenditures to provide for service connections (including street lights) to new customers. This summary identifies the total budget for all three operating regions.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	886.0	0.0	0.0	886.0
Labour	851.0	0.0	0.0	851.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	159.0	0.0	0.0	159.0
Contingency	189.0	0.0	0.0	189.0
Total	**2,085.0**	**0.0**	**0.0**	**2,085.0**

Operating Experience:

An analysis of average historical expenditure (i.e. 2001 - 2005) on new customer connections is shown in the following table. All historical dollars were converted to 2005 dollars using the GDP Implicit Price Deflator and a 5-year average was calculated.

Region	**Avg. Annual Expenditures (2001 - 2005) (2005 $Thousands)**
Central	$ 812
Northern	$ 595
Labrador	$ 598
Total	$ 2,005

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Provide Service Extensions **(cont'd.)**

Project Justification:

Based on the five-year average of service extension expenditures for the period 2001 - 2005 the following budget was developed assuming escalation in 2006 and 2007 of approximately 2.0%.

Region	**2007 Budget ($000)**
Central	$ 844
Northern	$ 618
Labrador	$ 622
Total	$ 2,085

Future Plans:

This is an annual allotment, which is adjusted from year to year depending on historical expenditures.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Distribution Systems

Location: All Service Areas

Category: Distribution

Type: Pooled

Classification: Normal

Project Description:

This project is an annual allotment based on past expenditures to provide for the replacement of deteriorated poles, substandard structures, corroded and damaged conductors, rusty and overloaded transformers/street lights/reclosers and other associated equipment. This upgrading is identified through preventive maintenance inspections or damage caused by storms and adverse weather conditions and salt contamination. This summarizes the total budget for all three regions.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	865.0	0.0	0.0	865.0
Labour	830.0	0.0	0.0	830.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	154.0	0.0	0.0	154.0
Contingency	186.0	0.0	0.0	186.0
Total	**2,035.0**	**0.0**	**0.0**	**2,035.0**

Operating Experience:

An analysis of historical expenditures (i.e. 2001 - 2005) on distribution upgrades is shown in the following table. All historical dollars (table below) were converted to 2005 dollars using the GDP Implicit Price Deflator and 5-year average calculated.

Region	**Avg. Annual Expenditures (2001 - 2005) (2005 $Thousands)**
Central	$ 775
Northern	$ 839
Labrador	$ 342
Total	$ 1,957

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Distribution Systems **(cont'd.)**

Project Justification:

Based on this five-year average for distribution system upgrades for the period 2001 - 2005 the following budget was developed using an escalation in 2006 and 2007 of approximately 2.0%.

Region	**2007 Budget ($000)**
Central	$ 806
Northern	$ 873
Labrador	$ 356
Total	$ 2,035

Future Plans:

This is an annual allotment which is adjusted from year to year depending on historical expenditures.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Distribution Feeders
Location: Various Systems
Category: Distribution
Type: Pooled
Classification: Normal

Project Description:

The project consists of general upgrades to the following distribution systems:

1. Hr. Breton System: Barachoix feeder L4 serving the community of Hr. Breton.
2. Farewell Head System: Feeders L2 and L3 serving the communities on Change Islands.
3. Rocky Hr. System: Feeders L1 and L2 serving the communities of Rocky Hr. and Norris Point.
4. St. Anthony System: Feeder L1 serving a total of fifteen communities from St. Anthony to Boat Hr.

For the Hr. Breton system the work involves the replacement of the Canadian Ohio Brass (COB) insulators.

On the Farewell Head system, the work involves the replacement of all the old pin type and suspension insulators; #4 copper primary conductor and #4 and #6 secondary conductor. This equipment is all original equipment installed in the mid 1960's.

The work on the Rocky Hr. and St. Anthony systems covers replacement of blackjack poles, pin type and suspension type insulators, cut-out disconnects, and crossarms.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	446.0	0.0	0.0	446.0
Labour	157.0	0.0	0.0	157.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	468.0	0.0	0.0	468.0
Other Direct Costs	47.7	0.0	0.0	47.7
O/H, AFUDC & Escalation	163.5	0.0	0.0	163.5
Contingency	111.5	0.0	0.0	111.5
Total	**1,383.2**	**0.0**	**0.0**	**1,383.2**

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Distribution Feeders **(cont'd.)**

Project Description: (cont'd.)

The breakdown of costs by individual systems is as follows:

Project Cost: *($ x1,000)*	**Hr. Breton System**	**Farewell Hd. System**	**Rocky Hr. System**	**St. Anthony System**
Material Supply	33.5	117.0	175.0	120.5
Labour	18.0	70.0	46.0	23.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	40.0	100.0	175.0	143.0
Other Direct Costs	6.5	22.2	12.5	6.5
O/H, AFUDC & Escalation	12.2	45.2	64.1	42.0
Contingency	9.9	30.9	40.9	29.3
Total	**120.1**	**385.3**	**513.5**	**364.3**

Operating Experience:

For all these systems, the poles, conductors, hardware, etc. is the original equipment, and has been in service for approximately 30 years or more. The systems are in coastal regions where they are regularly subjected to extreme winds and salt spray off the ocean. Over the years, numerous outages have occurred due to long spans, salt contamination and insulator failures. Past upgrading has included midspan pole installations and some insulator and cross arm replacements which have improved feeder performance.

The systems have a high number of blackjack poles that have been in place since the original construction and have been identified as "B" condition (one - five years life remaining). The insulators are the original equipment that have a history of failure due to cement growth and hairline cracks of the porcelain which results in electrical and mechanical breakdown. The conductor is the original and in many cases has a steel core which is corroded. The cutouts are prone to porcelain failure when being opened or closed and are a safety hazard to employees.

Project Justification:

The deteriorated poles on these systems create climbing hazards for line personnel due to spur kick out and/or pole failure which is more prevalent with the blackjack species. The insulators have been identified as a problem throughout the Hydro system and have been targeted for replacement due to the undesirable impact they have on the system performance. Safety Alerts have been issued on these insulators due to the possibility of insulator failure while a worker is climbing the pole. This could create a flash incident, or possible injury from falling porcelain. The cutouts are prone to failure

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Distribution Feeders **(cont'd.)**

Project Justification:

of the porcelain when opened or closed and are a safety risk to employees. Falling shards of the broken porcelain pose a risk to the worker and the dangling energized lead could contact other equipment putting the worker at risk of electrical contact. In summary, this project is proposed in order to improve distribution feeder performance and to eliminate the safety hazards caused by old and worn equipment.

Hydro conducts a yearly review of its isolated and interconnected distribution feeders to determine which systems should be targeted for reliability improvements. These reliability improvements are prioritized to justify capital spending in future years. The performance indices for all feeders are analyzed and improvement targets for the poor performers are established. Based on these targets, upgrades to specific feeders or groups of feeders are defined and scheduled to be completed over a five-year period. These upgrades are intended to bring the indices to the target values identified for each of the systems.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Distribution Poles

Location: Hr. Breton, St. Brendan's and Farewell Head Systems

Category: Distribution

Type: Pooled

Classification: Normal

Project Description:

The project consists of pole replacements on the following distribution systems:

1. Hr. Breton: Barachoix feeders L1, L2 and L4 serving the communities of Hr. Breton, Hermitage, Seal Cove and Gaultois.
2. St. Brendan's: Feeder L1 serving the community of St. Brendan's.
3. Farewell Head: Feeders L2 and L3 serving the communities on Change Islands.

The project consists of the replacement of fifty poles, on the Barachoix system, thirty poles in St. Brendan's and seventy-five poles on the Farewell Head (Change Islands) system.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	182.0	0.0	0.0	182.0
Labour	150.0	0.0	0.0	150.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	236.0	0.0	0.0	236.0
Other Direct Costs	35.0	0.0	0.0	35.0
O/H, AFUDC & Escalation	80.5	0.0	0.0	80.5
Contingency	60.5	0.0	0.0	60.5
Total	**744.0**	**0.0**	**0.0**	**744.0**

The breakdown of costs by individual systems is as follows:

Project Cost: *($ x1,000)*	**Barachoix System**	**St. Brendans System**	**Farewell Hd. System**
Material Supply	58.0	36.0	88.0
Labour	45.0	38.0	67.0
Consultant	0.0	0.0	0.0
Contract Work	75.0	46.0	115.0
Other Direct Costs	10.0	10.0	15.0
O/H, AFUDC & Escalation	23.0	16.0	41.5
Contingency	18.9	13.1	28.5
Total	**229.9**	**159.1**	**355.0**

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Distribution Poles **(cont'd.)**

Operating Experience:

The distribution systems were constructed in the mid 1960's, and the poles proposed to be replaced are part of the original systems. The systems have been operating satisfactorily, however, when deteriorated poles fail, customer outages occur and repair crews are dispatched to execute repairs. Extensive outages occur on these occasions where the repair site is a significant distance from the crew dispatch point or difficult to access.

Project Justification:

Preventative maintenance inspections identified poles on these distribution systems to be of substandard quality due to age deterioration. The existing poles are over thirty-five years old and were identified as being "B" condition which indicates that they be replaced in one to five years. These poles create climbing hazards for the line personnel. In the interest of safety, system reliability and to minimize the outage duration, it is recommended the work be completed under planned conditions rather than emergency call out conditions. Failure to complete this work could result in significant interruptions of power supply to Hydro's customers in these communities and continue to pose a safety hazard to employees.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Distribution Lines

Location: South Brook and Hr. Breton Systems

Category: Distribution

Type: Pooled

Classification: Normal

Project Description:

The project consists of replacement of sections of lines on the following systems:

1. South Brook: Replacement of the 2.5 km section of line L5 from the Triton Substation to the community of Brighton.
2. Hr. Breton System: Replacement of the 11.5 km section of line L5 from the community of Seal Cove to the Pass Island Aerial Crossing.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	176.5	0.0	0.0	176.5
Labour	118.2	0.0	0.0	118.2
Consultant	0.0	0.0	0.0	0.0
Contract Work	279.0	0.0	0.0	279.0
Other Direct Costs	33.5	0.0	0.0	33.5
O/H, AFUDC & Escalation	74.8	0.0	0.0	74.8
Contingency	60.7	0.0	0.0	60.7
Total	**740.5**	**0.0**	**0.0**	**740.5**

The breakdown of costs by individual systems is as follows:

Project Cost: *($ x1,000)*	**South Brook System**	**Hr. Breton System**
Material Supply	44.5	132.0
Labour	37.0	81.0
Consultant	0.0	0.0
Contract Work	64.0	215.0
Other Direct Costs	12.5	21.0
O/H, AFUDC & Escalation	19.1	53.7
Contingency	15.8	44.9
Total	**192.9**	**547.6**

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Distribution Lines **(cont'd.)**

Operating Experience:

On the South Brook system, the section of line L5 serving the community of Brighton was built in 1968 in an inaccessible, rough terrain area. Since construction, the community has been linked by road and a bridge to the Island. The line is in a deteriorated condition and prone to failure due to age, ice loading and salt contamination from the seacoast. Repairs are hampered by poor weather conditions and inaccessibility.

On the Hr. Breton system, the line serving the Pass Island system was built in 1969. Similar to Brighton, this line is also in a deteriorated condition and located mostly in inaccessible areas. Recent inspections identified most of the poles as class "B" (i.e. replace in five years) and several poles as class "C" (i.e. replace in one year). Replacement of the line had been postponed pending Canadian Coast Guard's review of the Pass Island lighthouse site and they have decided to continue to operate this site.

Project Justification:

In both cases, the lines are so significantly deteriorated that most poles, conductor and hardware need replacement. The poles show severe decay and large vertical cracks rendering them unsafe to climb. Inaccessibility of the lines results in extensive outages in order to execute repairs.

In the interest of safety to Hydro personnel, system reliability and to minimize outage duration, it is required that these lines be relocated to a more accessible location.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Diesel Unit 290 & Upgrade Fuel Storage System

Location: Williams Harbour Diesel Plant

Category: Rural Systems - Construction - Generation

Type: Pooled

Classification: Normal

Project Description:

This project consists of the replacement of existing diesel unit #290 (136kW, Catepillar D3303, 1976) with a new unit of the same size. The existing switchgear will be upgraded to meet controls requirements of the new generating unit.

This project also consists of replacement of the existing fuel storage tanks, and earthen dyke, with two new 55,000 litre capacity, double walled, vacuum sealed fuel storage tanks, and modifications to the existing fuel header system to accommodate the new tanks.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	244.0	0.0	0.0	244.0
Labour	106.2	0.0	0.0	106.2
Consultant	0.0	0.0	0.0	0.0
Contract Work	21.0	0.0	0.0	21.0
Other Direct Costs	16.3	0.0	0.0	16.3
O/H, AFUDC & Escalation	50.8	0.0	0.0	50.8
Contingency	39.0	0.0	0.0	39.0
Total	**479.3**	**0.0**	**0.0**	**479.3**

Operating Experience:

The diesel unit #290 is operating satisfactorily and parts for minor repairs are available in 2 - 3 days, but parts for major repairs require long delivery times. The fuel storage system is also operating satisfactorily but does not comply with environmental regulations.

Project Justification:

The generating unit No. 290 is scheduled for its sixth major overhaul in 2007. At next overhaul, the unit will have accumulated in excess of 80,000 operating hours. Based on age and operating hours the unit should be replaced instead of overhauled. A new replacement unit will offer improved fuel efficiency, lower emissions, and reduced maintenance costs thus improving the plant's overall performance and reliability.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Diesel Unit 290 & Upgrade Fuel Storage System **(cont'd.)**

Project Justification: (cont'd.)

The four existing 45,000 litre capacity tanks are not ULC compliant. Any repair work on a ULC certified tank has to be completed by a ULC certified contractor and then inspected by a ULC representative. In addition, the tanks need to be painted and upgraded to make them compliant with new fall arrest and travel restraint legislation and need new water drain valves installed. As well, the earthen dyke will require permeability tests to ensure it meets GAP regulations. It is estimated that the cost of repairs to the system will be more than the replacements. Therefore to meet environmental regulations, the tanks and dykes should replaced.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Exhaust Stacks

Location: Grey River

Category: Distribution

Type: Other

Classification: Normal

Project Description:

This project involves the upgrade of the existing exhaust stacks at the Grey River Diesel Plant. Two new mufflers, expansion joints, and stack piping will be installed. The effective stack length will be reduced, and the exhaust will be sized to minimize soot emissions. The stacks will be insulated for noise control.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	77.2	0.0	0.0	77.2
Labour	40.9	0.0	0.0	40.9
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	6.0	0.0	0.0	6.0
O/H, AFUDC & Escalation	14.2	0.0	0.0	14.2
Contingency	12.4	0.0	0.0	12.4
Total	**150.7**	**0.0**	**0.0**	**150.7**

Operating Experience:

Accumulations of soot in the stacks require that they be disassembled and cleaned every 1,500 operating hours, which equates to approximately four person days per year. Despite this regular manually cleaning, soot releases persist in the community of Grey River. The process of cleaning the stacks reduces but does not eliminate soot discharge. In recent years, Hydro has completed repairs to personal property such as painting of siding and decks due to such soot releases.

Project Justification:

Upgrading the stacks will reduce the amount of soot emissions and noise levels in the community to acceptable levels. It will eliminate future damage claims and cleaning costs, and shorten required engine downtime thus improving plant reliability and improving service to customers.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Purchase Spare Transformer

Location: Upper Salmon Generation Station

Category: Transmission - Generation

Type: Other

Classification: Normal

Project Description:

Purchase a new 230 - 13.8 kV, wye-delta, 64/84/95 MVA, transformer, to be used as a spare for generating transformer at Upper Salmon. The unit will also be suitable as a spare for Bay d'Espoir and Granite Canal. The transformer will be partially assembled and commissioned and stored on a newly constructed concrete pad.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	1,050.0	0.0	0.0	1,050.0
Labour	63.5	0.0	0.0	63.5
Consultant	7.9	0.0	0.0	7.9
Contract Work	7.4	0.0	0.0	7.4
Other Direct Costs	4.2	0.0	0.0	4.2
O/H, AFUDC & Escalation	119.4	0.0	0.0	119.4
Contingency	113.3	0.0	0.0	113.3
Total	**1,365.7**	**0.0**	**0.0**	**1,365.7**

Operating Experience:

The transformer at the Upper Salmon Generation Plant has continuously shown higher than normal operating temperatures. Inspections show the operating temperature to be consistently 8 - 10ºC higher than other similar transformers.

Project Justification:

The existing transformer is twenty-two years old and is exhibiting operating characteristics of a much older unit. The operating temperature is 8ºC - 10ºC higher than expected and oil analysis indicate deterioration. The present condition of this transformer is much poorer than similar transformers located at Bay d'Espoir, that have been in service for thirty-six years.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Purchase Spare Transformer **(cont'd.)**

Justification: (cont'd.)

The failure of the Upper Salmon transformer would result in a total plant shutdown until the failed transformer can be repaired or replaced. Without a spare transformer, the plant shutdown could be of twelve-month or more duration. During an outage at Upper Salmon, water is diverted around the plant resulting in lost production which must be replaced with energy generated at Holyrood. Based on a ten-year average reservoir levels, assuming a fuel cost of $55/bbl and an efficiency of 630 kWh/bbl at Holyrood, it is estimated that a twelve-month outage at Upper Salmon would cost an additional $37-45 million.

As stated previously, the majority of unit transformers throughout the system are aging and the probability of failure is increasing with time. This budget proposal is targeting a spare unit transformer for Upper Salmon because of its condition and the substantial financial impact of a failure. This spare transformer can also serve as a spare for Bay d'Espoir Units 1, 2, 3, 4, 5, 6 and 7 (with unit at reduced output) and Granite Canal.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Obsolete Diesel Unit Breakers

Location: Mary's Harbour

Category: Transmission - Generation

Type: Other

Classification: Normal

Project Description:

This project consists of the replacement of the obsolete "Unelec" breakers on diesel units 2037, 2038 and 2048. It is proposed to replace the existing breakers with the standard draw-out type breaker.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	44.0	0.0	0.0	44.0
Labour	39.0	0.0	0.0	39.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	11.0	0.0	0.0	11.0
O/H, AFUDC & Escalation	10.4	0.0	0.0	10.4
Contingency	9.4	0.0	0.0	9.4
Total	**113.8**	**0.0**	**0.0**	**113.8**

Operating Experience:

The existing breakers are operating satisfactorily, but parts and servicing are unavailable.

Project Justification:

The existing model S 800 Unelec breakers are obsolete and Alsthom Unelec is no longer guaranteeing any type of support. Alsthom Unelec has moved all representation out of North America. If there was a component failure on any of these breakers there would be lengthy delays while trying to find the part(s) required for repairs with no assurance that these parts would be available. Any delays in breaker repairs could mean power interruptions if there was a failure on either of the other generating units at the same time. In order to maintain reliability and continuity of supply, the breakers must be replaced.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Automatic Meter Reading

Location: St. Anthony, Bay d'Espoir

Category: Transmission - Metering

Type: Other

Classification: Justifiable

Project Description:

This project is to implement a one-way automatic meter reading (AMR) system in the Bay d'Espoir and St. Anthony service areas. The proposed system utilizes a one-way power line carrier communications system that is designed for rural area applications. It includes telephone communications to head office from local substations and computer applications to interface with Hydro's customer billing systems.

This proposal is for the first year of multi-year program executed on a system by system basis considering such factors, as staffing, reading cost per meter, etc.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	383.2	0.0	0.0	383.2
Labour	187.1	0.0	0.0	187.1
Consultant	0.0	0.0	0.0	0.0
Contract Work	52.1	0.0	0.0	52.1
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	42.4	0.0	0.0	42.4
Contingency	31.1	0.0	0.0	31.1
Total	**695.9**	**0.0**	**0.0**	**695.9**

Operating Experience:

This system will replace manual handheld devices and local supporting infrastructure (computers and modems). The head office supporting infrastructure for handheld devices will remain in place for all remaining service areas.

The system being implemented was piloted in the St. Brendan's service area in 2003/04 and proved to be reliable and accurate.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Automatic Meter Reading **(cont'd.)**

Project Justification:

In these areas Hydro's present operating cost for meter reading is $32/meter per year. The implementation of this project will lower this cost to $9/meter per year. The cumulative present worth analysis of AMR and the current system has a positive net present value starting in 2016 (10 years), and totals approach $260,000 in 2022, as per the attached table.

In addition to the financial justification, implementing AMR will result in the following customer benefits:

1. Eliminate meter reading errors;
2. Eliminate requirement for estimated readings;
3. Provide more detailed consumption reporting (daily and monthly); and
4. Provide more flexible billing options such as consolidated bills and customer selected bill dates.

Future Plans:

Further expansions of the AMR program will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Automatic Meter Reading - 2007
One-way AMR vs Existing Manual Handheld System

Study Discount Rate: 8.40%

	Alternative 1 - One-way AMR							Alternative 2 - Handheld Manual Read						NPV Comparison (Alt. 2 - Alt. 1)
Year	Capital Costs	O&M AMR	O&M Internal	Service Agreement	Total	Cost / Customer	CPW to 2007	Capital Costs	O&M Costs	Total	Cost / Customer	CPW to 2007		CPW to 2007
2006			27734	5000					121581					
2007	$ 695,886	0	28,288	5,100	729,275		729,275		124,013	124,013		124,013		$ (605,262)
2008		978	28,854	5,202	35,034	8.77	761,594		126,493	126,493	31.66	240,704		$ (520,890)
2009		998	29,489	5,316	35,803	8.96	792,063		129,276	129,276	32.36	350,721		$ (441,342)
2010		1,017	30,138	5,433	36,589	9.16	820,788		132,120	132,120	33.07	454,445		$ (366,343)
2011		1,038	30,801	5,553	37,391	9.36	847,868		135,027	135,027	33.80	552,237		$ (295,631)
2012		1,059	31,478	5,675	38,212	9.56	873,399		137,997	137,997	34.54	644,436		$ (228,963)
2013		1,080	32,187	5,803	39,069	9.78	897,479	7,533	141,102	148,635	37.21	736,047		$ (161,432)
2014		1,101	32,879	5,928	39,908	9.99	920,169		144,136	144,136	36.08	818,000		$ (102,169)
2015		1,123	33,569	6,052	40,744	10.20	941,541		147,163	147,163	36.84	895,191	>>>	$ (46,350)
2016		1,146	34,308	6,185	41,639	10.42	961,689		150,400	150,400	37.65	967,966		$ 6,277
2017		1,169	35,097	6,327	42,593	10.66	980,702		153,860	153,860	38.51	1,036,646		$ 55,945
2018		20,845	35,904	6,473	63,222	15.83	1,006,736		157,398	157,398	39.40	1,101,462		$ 94,726
2019		1,216	36,730	6,622	44,567	11.16	1,023,666	8,596	161,019	169,615	42.46	1,165,895		$ 142,229
2020		1,240	37,574	6,774	45,589	11.41	1,039,643		164,722	164,722	41.23	1,223,621		$ 183,979
2021		1,265	38,420	6,927	46,612	11.67	1,054,712		168,428	168,428	42.16	1,278,072		$ 223,360
2022		1,290	39,265	7,079	47,634	11.92	1,068,918		172,134	172,134	43.09	1,329,409		$ 260,491

Note: Handheld System Capital Costs based on a 6 year life of devices
Cost / Customer based on 3,995 customers

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Meter Shop - Purchase Meters and Equipment

Location: Hydro Place

Category: Transmission - Metering

Type: Other

Classification: Normal

Project Description:

This project consists of the purchase of demand/energy meters, current and potential transformers, metering cable and associated hardware, and release of residential meters and instrument transformers from inventory for use throughout the system as required.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	90.0	0.0	0.0	90.0
Labour	0.0	0.0	0.0	0.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	3.7	0.0	0.0	3.7
Contingency	0.0	0.0	0.0	0.0
Total	**93.7**	**0.0**	**0.0**	**93.7**

Operating Experience:

Meters and associated equipment are required for new customer services and the replacement of old, worn, damaged or vandalized equipment.

Project Justification:

For revenue metering of new and upgraded customer services and replacement of worn or obsolete meters and metering equipment. A minimum and uninterrupted inventory of all types of revenue meters must be maintained to ensure the availability of equipment required to meter customers' services for revenue purposes.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Install Fall Protection/Travel Restraint Systems

Location: Various Locations

Category: Transmission - Properties

Type: Other

Classification: Mandatory

Project Description:

The work consists of the design, supply and installation of fall protection systems at all locations where required. These locations include fuel storage tanks, powerhouses, office buildings, terminal station control buildings, accommodation trailers, water control structures, power transformers and any auxiliary buildings or structures. The installations will be prioritized upon approval to proceed.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	30.0	0.0	0.0	30.0
Labour	40.0	0.0	0.0	40.0
Consultant	3.0	0.0	0.0	3.0
Contract Work	130.0	0.0	0.0	130.0
Other Direct Costs	6.0	0.0	0.0	6.0
O/H, AFUDC & Escalation	41.9	0.0	0.0	41.9
Contingency	0.0	0.0	0.0	0.0
Total	**250.9**	**0.0**	**0.0**	**250.9**

Operating Experience:

Accessing structures where there are no fall protection/travel restraint systems in place has been deferred, if possible. Where not possible to defer, temporary measures have been taken to comply with regulations.

Project Justification:

Provincial legislation requires fall arrest/travel restraint systems be used by all workers when accessing an elevated surface which is 3 m above the next lower level. Personnel need to access building roofs, fuel storage tank roofs, water control structures and elevated equipment to perform operational and maintenance tasks. Some of these tasks, such as measuring depth of fuel via a roof top vent for reconciliation of fuel use records, are required by legislation. The intention is to provide fall arrest/travel

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Install Fall Protection/Travel Restraint Systems **(cont'd.)**

Project Justification: (cont'd.)

restraint systems to protect workers during performance of core duties, i.e. those performed on a regular basis, and to outline procedures/measures to be put in place for work which is performed on an infrequent basis.

Future Plans:

Review and revise the priority list on a yearly basis.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Fuel Storage

Location: Norman Bay

Category: Transmission - Property Additions

Type: Other

Classification: Normal

Project Description:

This project involves the purchase and installation of two new 31,800 litres, double walled fuel storage tanks at the diesel plant site in Norman Bay, Labrador. Work shall include, cleaning and relocating existing tanks to the rear of site, installing new tanks on timber foundations, remedial work to the existing fuel header system to accommodate new tanks, new pipe stands, connecting up piping to plant, pressure testing and painting.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	95.0	0.0	0.0	95.0
Labour	70.0	0.0	0.0	70.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	17.0	0.0	0.0	17.0
O/H, AFUDC & Escalation	22.0	0.0	0.0	22.0
Contingency	18.2	0.0	0.0	18.0
Total	**222.2**	**0.0**	**0.0**	**222.2**

Operating Experience:

The Norman's Bay Diesel Plant average monthly fuel consumption is 6500 litres. Marine fuel deliveries are twice per year and usually occur in June and December.

Project Justification:

Both tanks were cleaned and inspected in July of 2002 revealing heavy interior rusting and contamination. With an increase in filter blockage and failed fuel pumps, an operating budget proposal was prepared in 2005 to have both tanks cleaned and inspected again in 2006. Due to the age, harsh weather conditions and salt contamination, the exterior paint is in deteriorating condition. Considering the condition of both tanks, i.e. age, exterior condition, interior corrosion, remote location and that one tank cannot be recertified and registered, it is recommended that the fuel storage system be replaced.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Card Access Security Systems

Location: Bishop's Falls & Whitbourne

Category: Transmission - Property Additions

Type: Pooled

Classification: Normal

Project Description:

This project consists of the upgrade of the card access security systems at the Whitbourne and Bishop's Falls Offices. The work in Whitbourne will involve the installation of two long-range card readers, and a new motorized vehicle access gate for general site security. The work in Bishop's Falls will involve the installation of eight card readers, eight electronic door locks, and two large network panels, one of which will be available for future security requirements.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	5.8	0.0	0.0	5.8
Labour	11.0	0.0	0.0	11.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	88.4	0.0	0.0	88.4
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	14.6	0.0	0.0	14.6
Contingency	10.6	0.0	0.0	10.6
Total	**131.0**	**0.0**	**0.0**	**131.0**

Operating Experience:

At Whitbourne, there is no fenced secured area and keyed building locks. At Bishop's Falls, there is limited card access to the building and the site has security fencing with card operated gate controls.

Project Justification:

The upgrade of the electronic security systems will provide complete control of access to Hydro property and monitor traffic on a continuous basis. Each employee will be issued a photo ID card which will allow the employee access to only those areas identified as required. All cards will be personal issue and can be upgraded or rejected at any time by the system controller. With the new electronic security system, lost cards can be immediately disabled, whereas the present system, requires replacement of the lock whenever a key is misplaced.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Survey of Hydro's Primary Distribution Line Right of Way

Location: Various Locations

Category: Transmission - Property Additions

Type: Other

Classification: Normal

Project Description:

This project consists of legal surveys and preparation of documentation to acquire Crown Lands easements for approximately 500 kilometers of primary distribution line in operation throughout the Province.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	35.0	0.0	0.0	35.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	5.0	0.0	0.0	5.0
O/H, AFUDC & Escalation	6.8	0.0	0.0	6.8
Contingency	4.0	0.0	0.0	4.0
Total	**50.8**	**0.0**	**0.0**	**50.8**

Operating Experience:

Many of the older distribution lines were constructed without obtaining easements. The effort to obtain easement title to the primary distribution lines on Crown Land began in 2004. Assuming continued funding, title for the distribution systems located on Crown Land will be in place by the end of 2010.

Project Justification:

The distribution lines occupy Crown Land contrary to the Crown Lands Act and lack of adequate title is a significant risk to the operation should competing requirements for the land arise. In addition, maintenance and upgrading of the lines is cumbersome and costly without appropriate legal easements.

Future Plans:

Capital funding for legal surveys for future years will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Off-Road Tracked Vehicle (7696)

Location: Cow Head

Category: Transmission - Tools & Equipment

Type: Other

Classification: Normal

Project Description:

This project involves the replacement of Unit No. V7696, a 1987 model heavy-duty off-road tracked vehicle, at Cow Head. The unit being replaced is a muskeg/dump combination and will be replaced with a muskeg/boom/dump configured unit as recommended in the 2003 fleet review.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	276.0	0.0	0.0	276.0
Labour	0.0	0.0	0.0	0.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	8.0	0.0	0.0	8.0
Contingency	23.0	0.0	0.0	23.0
Total	**307.0**	**0.0**	**0.0**	**307.0**

Operating Experience:

The unit will be twenty years old at the time of replacement. Normal life expectancy for this type equipment is from fifteen to twenty years depending on location and usage. Experience demonstrates that the heavy-duty off-road tracked equipment is subject to rapid escalation in downtime as it ages.

Project Justification:

The replacement criteria for heavy-duty off-road tracked equipment is fifteen-twenty years, depending on condition, the extent of repairs needed and the level of compliance with current safety and health standards. The 2003 fleet review recommended that the transmission line maintenance crews be equipped with a boom/dump combination unit as opposed to dump only units. This would provide the least cost alternative where maintenance crews need material handling (boom) capability as well as material carrying (dump) capability.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Light Duty Mobile Equipment

Location: Various Locations

Category: Transmission - Tools & Equipment

Type: Other

Classification: Normal

Project Description:

This project consists of the replacement of nineteen snowmobiles; fourteen ATVs; one snowmobile trailer and one pole trailer.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	213.3	0.0	0.0	213.3
Labour	0.0	0.0	0.0	0.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	6.2	0.0	0.0	6.2
Contingency	21.3	0.0	0.0	21.3
Total	**240.8**	**0.0**	**0.0**	**240.8**

Operating Experience:

Operation and maintenance staff regularly use snowmobiles and ATV's to access remote areas for maintenance, repair and operation of the transmission system. The equipment being used requires regular replacement.

Project Justification:

This equipment is at the end of its life cycle and is no longer dependable. The units being replaced meet or exceed replacement criteria. The light-duty mobile equipment being replaced is comprised of nineteen snowmobiles (Average age 6 years); fourteen ATVs (Average age 7 years); one Snowmobile trailer (Age 12 years); one pole trailer (Age 18 years).

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Light Duty Mobile Equipment **(cont'd.)**

Project Justification: (cont'd.)

The life expectancy of light duty mobile equipment varies significantly dependant on a number of factors, including location, annual utilization and the conditions under which the equipment is used. This type of equipment is assessed for replacement as it reaches the established replacement criteria;

Snowmobiles:	Line Crews*	-	3-5 years, condition
	Others	-	5-7 years, condition
ATVs:	Line Crews*	-	3-5 years, condition
	Others	-	5-7 years, condition
Trailers:	Light	-	8-10 years, condition
	Heavy	-	10-20 years, condition
Attachments:		-	10-20 years, condition.

*The lower life for line crew snowmobiles and ATVs is a reflection of the extensive use of the equipment over very harsh terrain.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Doble Relay Test Equipment

Location: Northern and Labrador Regional Operations

Category: Transmission - Tools & Equipment

Type: Pooled

Classification: Normal

Project Description:

This project consists of the purchase of two 3-phase Doble test sets: one for use in the Northern Region and one for use in the Labrador Region. The new Doble test set is a 3-phase unit which can fully test multifunction relays. All tests are downloadable from a PC and the results are stored.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	145.0	0.0	0.0	145.0
Labour	0.0	0.0	0.0	0.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	14.1	0.0	0.0	14.1
Contingency	14.5	0.0	0.0	14.5
Total	**173.6**	**0.0**	**0.0**	**173.6**

Operating Experience:

Doble relay test units are used to test relays used in the protection of major terminal station and diesel plant equipment as well as testing transducers, meters and any electrical equipment requiring an AC or DC current or voltage input.

Project Justification:

Northern Region is presently using an older version of Doble test equipment for testing, troubleshooting and commissioning high voltage terminal stations and diesel plants. Doble cannot commit to repairs and software support after December 31, 2006 because the test equipment is considered obsolete and has been replaced by a new series. The Labrador Region does not have any Doble test equipment and must borrow it from Central Regional Operations, thus relay testing is often delayed or cancelled due to unavailability of equipment. This test equipment is required to assist system operations investigate outages and ensure protection systems are tested regularly to verify that they operate properly ensuring that the faults and internal problems are properly cleared before a catastrophic failure occurs.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Heavy-Duty Off-Road Tracked Vehicle

Location: Flower's Cove

Category: Transmission - Tools & Equipment

Type: Other

Classification: Normal

Project Description:

This project involves the replacement of Unit No. 7734, a 1991 model heavy-duty off-road tracked vehicle, at Flower's Cove. The muskeg/backhoe/boom unit currently in service is being replaced with an excavator as recommended in the 2003 fleet review.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	126.0	0.0	0.0	126.0
Labour	0.0	0.0	0.0	0.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	2.3	0.0	0.0	2.3
Contingency	11.0	0.0	0.0	11.0
Total	**139.0**	**0.0**	**0.0**	**139.0**

Operating Experience:

This unit will be sixteen years old at the time of replacement. Normal life expectancy for this type equipment is from fifteen to twenty years dependant on location and usage. Experience shows that heavy off-road tracked equipment is subject to rapid escalation in downtime as it ages.

Project Justification:

The replacement criteria for heavy-duty off-road tracked equipment is fifteen to twenty years, depending on its condition, the extent of repairs needed and the level of compliance with current standard safety and ergonomic features. Safety improvements in the newer units include interlocks on the doors to prevent operation of the unit with the doors open and an automatic braking system. The 2003 fleet review recommended that the distribution crews be equipped with one muskeg and one excavator. This would provide the least cost alternative where crews require two off-road tracked vehicles.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Application Enhancements

Location: St. John's

Category: General Properties - Information Systems

Type: Pooled

Classification: Normal

Project Description:

The application enhancement projects proposed are as follows:

- Minor enhancements to applications in response to unforeseen requirements such as legislative and changing business requirements.
- Ltrax has been used for the past eight years to predict and track lightning patterns across Newfoundland and has been very effective in minimizing the effects of lightening related trips of equipment. This application is presently available on only one of the two control room operator consoles. This proposal will enable both operators to have this data readily available.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	10.0	0.0	0.0	10.0
Labour	21.8	0.0	0.0	21.8
Consultant	0.0	0.0	0.0	0.0
Contract Work	99.5	0.0	0.0	99.5
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	4.1	0.0	0.0	4.1
Contingency	13.1	0.0	0.0	13.1
Sub-Total	**148.5**	**0.0**	**0.0**	**148.5**
Cost Recoveries	(27.0)	0.0	0.0	(27.0)
Total	**121.5**	**0.0**	**0.0**	**121.5**

Operating Experience:

In order to maintain and improve efficiency Hydro must continue to leverage its applications portfolio. The applications allow Hydro to achieve operating efficiencies and improve customer service. When Hydro selects application enhancement projects it uses the following criteria:

(1) existing solutions and services will be considered first before seeking alternatives; and

(2) if business needs are not adequately satisfied, purchased solutions and services will be evaluated before building solutions or services unless there is a compelling business reason to do so.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Application Enhancements **(cont'd.)**

Project Justification:

1) **Minor Enhancements**

Total: $135,000 CF(L)Co: $27,000 Net: $109,000

Minor enhancements are justified on the basis of meeting business requirements during the year. The focus of these enhancements is to increase operational efficiencies and improve customer service. This project has been used in the past to create enhancements to safety, environmental compliance and audit applications as well as to fulfill Board directed initiatives such as equalized billing.

2) **Ltrax System Total: $13,500**

This project is to expand the Ltrax lightning monitor system to allow it to be used by both operators in the control system. This system allows for the tracking of lightning storm patterns to allow for planning of the elimination of electrical supply outages due to lighting strikes on transmission lines.

Future Plans:

Application enhancements are a continuing requirement in order for Hydro to ensure efficiencies.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Corporate Application Environment

Location: St. John's

Category: General Properties - Information Systems

Type: Pooled

Classification: Normal

Project Description:

This project includes upgrades to enterprise applications software to realize the benefits in performance and functionality. The projects which are pooled under this proposal are:

- Enterprise Resource Planning technology upgrade to the next available version; and
- iSeries Operating System upgrade.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	118.5	0.0	0.0	118.5
Labour	136.4	0.0	0.0	136.4
Consultant	0.0	0.0	0.0	0.0
Contract Work	72.5	0.0	0.0	72.5
Other Direct Costs	5.0	0.0	0.0	5.0
O/H, AFUDC & Escalation	10.9	0.0	0.0	10.9
Contingency	33.2	0.0	0.0	33.2
Sub-Total	376.5	0.0	0.0	376.5
Cost Recoveries	(75.3)	0.0	0.0	(75.3)
Total	**301.2**	**0.0**	**0.0**	**301.2**

Operating Experience:

There are approximately 43 applications and supporting systems that enable Hydro to operate and provide least cost and reliable power to customers. In order to accomplish this, upgrades to application environments through their life cycle is a normal and necessary requirement. Each year, Hydro reviews its application portfolio and uses two main criteria to determine if an upgrade to an environment is warranted. First, the status of vendor support for all applications is reviewed. Next, any functionality improvements are reviewed in the context of providing business value either in terms of efficiencies gained through improved functionality or improvements in service.

Project Justification:

Continued growth of the application environment provides the flexibility to meet new business requirements.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Corporate Application Environment **(cont'd.)**

Project Justification: (cont'd.)

1) **iSeries Operating System upgrade**
Total: $109,700 CF(L)Co: $22,000 Net: $87,700

The iSeries computer hosts the JD Edwards software. The operating system on the iSeries computer was last upgraded in 2006. This operating system upgrade allows for the ongoing support of the operating system and enhancements to the system.

2) **JD Edwards upgrade**
Total: $266,800 CF(L)Co: $53,400 Net: $213,400

This software is used by Hydro employees on a day-to-day basis from the accounting department to field personnel. Keeping this software up to date allows for high availability of these systems, support from the software vendors and increased functionality**.**

Future Plans:
Application enhancements and upgrades are an ongoing life cycle based on business demands and vendor support levels.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Upgrade Enterprise Storage

Location: Multiple Sites

Category: General Properties - Computer Operations

Type: Pooled

Classification: Normal

Project Description:

This project is for the implementation of software that will help manage existing disk storage that resides in the SAN (Storage Area Network). The SAN was installed in 2003 to provide the efficient management and growth of the disk storage for the iSeries and Intel Servers.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	125.3	0.0	0.0	125.3
Labour	4.2	0.0	0.0	4.2
Consultant	35.7	0.0	0.0	35.7
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	4.0	0.0	0.0	4.0
Contingency	16.5	0.0	0.0	16.5
Sub-Total	185.7	0.0	0.0	185.7
Cost Recoveries	(37.1)	0.0	0.0	(37.1)
Total	**148.6**	**0.0**	**0.0**	**148.6**

Operating Experience:

Disk capacity has grown at a rate of 30% per year over the last 5 years and is projected to grow at this rate in the future. Operating experience has been to add more disks as the existing space is used up. The implementation of this tool will allow Hydro to manage and allocate the usage of disk space to reduce the growth requirement into the future.

Project Justification:

The servers that are attached to the storage area network are used by Hydro employees to run the business on a daily basis. Loss of the performance of these servers due to disk space unavailability would have a negative effect on employee productivity and customer service. The current capacity growth rate can be lowered by using tools to manage the existing disk space more efficiently. This will free up existing disk space to be used for future growth.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: End User Evergreening Program

Location: Multiple Sites

Category: General Properties - Computer Operations

Type: Pooled

Classification: Normal

Project Description:

This project consists of the replacement of 127 personal computers that were deployed in 2003.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	280.0	0.0	0.0	280.0
Labour	20.0	0.0	0.0	20.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	50.0	0.0	0.0	50.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	10.0	0.0	0.0	10.0
Contingency	35.0	0.0	0.0	35.0
Total	**395.0**	**0.0**	**0.0**	**395.0**

Operating Experience:

Hydro's end-user computer equipment consists of a mixture of notebooks, desktops and thin-client devices. Hydro is able to achieve a four to six year life cycle with its end user equipment.
(Note: a thin-client is a networked computer without a hard disk drive, where the data processing occurs on a server or multiple servers. This allows the end-user to access files and application software without the need to install them locally.)

Minimum specifications for replacement of personal computers are reviewed on an annual basis to ensure that the equipment in service continues to remain effective. Industry best practices, technology and application trends are taken into consideration when specifications for computer devices are decided for the current year.

Project Justification:

Hydro has over 800 end-user personal computers in service. It is important to refresh this equipment on a regular cycle to keep the technology current to maintain an efficient and productive workforce.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: End User Evergreening Program **(cont'd)**

Project Justification: (cont'd.)

The North American industry standard life cycle for end user devices is 2-3 years for notebooks, 3-4 years for desktops and 4-5 years for thin clients. Hydro's 4, 5 and 6 year evergreen plan exceeds these guidelines and has proven a reliable and cost effective solution.

Future Plans:

The personal computer infrastructure will be refreshed on an ongoing basis.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Peripheral Infrastructure Replacement

Location: Hydro Place

Category: General Properties - Computer Operations

Type: Pooled

Classification: Normal

Project Description:

This project consists of the replacement of four Multi-Function Devices used for printing, copying and scanning.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	112.0	0.0	0.0	112.0
Labour	12.0	0.0	0.0	12.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	3.0	0.0	0.0	3.0
Contingency	12.4	0.0	0.0	12.4
Total	**139.4**	**0.0**	**0.0**	**139.4**

Operating Experience:

The units scheduled for replacement have been in service for six years and have exceeded 500,000 copies with an average volume of 20,000 copies per month. As the devices reach and exceed their rated capacity, they require more maintenance and service time resulting in loss of reliability and productivity. Industry best practices indicate that the typical service life for a peripheral device is five years.

Project Justification:

This is the continuation of the evergreen program to replace peripheral devices as they reach the end of their useful life. Hydro's infrastructure is supported by the manufacturer's maintenance agreement that covers the cost of consumables (except paper) and maintenance based on a monthly price per page. It is economical to replace the older, higher cost units with new lower cost ones. The ongoing plan involves a coordinated effort to keep Hydro's peripheral infrastructure in good working order; using current technologies while delivering a cost effective solution to the end-user.

Future Plans:

Further replacements will be proposed in future capital budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Security Information Management System
Location: Hydro Place
Category: General Properties - Computer Operations
Type: Pooled
Classification: Normal

Project Description:

The Security Information Management System will provide the means to perform threat and vulnerability assessments, enforce policy directives and integrate log and audit files. The system will be able to work with the existing intrusion detection/intrusion prevention systems to ensure infrastructure security. Mitigation and remediation techniques will be used to address any security concerns before they become threats to our architecture and other corporate IT services. This project will be staged over two years.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	47.2	42.6	0.0	89.8
Labour	17.9	17.6	0.0	35.5
Consultant	4.2	2.2	0.0	6.4
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	2.1	3.2	0.0	5.3
O/H, AFUDC & Escalation	1.8	3.7	0.0	5.5
Contingency	0.0	13.7	0.0	13.7
Sub-Total	73.2	83.0	0.0	156.2
Cost Recoveries	(14.6)	(16.6)	0.0	(31.2)
Total	**58.6**	**66.4**	**0.0**	**125.0**

Operating Experience:

Hydro's administration and operational network infrastructures are growing and becoming more sophisticated. These systems support employees, customers and vendors and take advantage of web-enabled technologies and the enhanced functionality offered by remote access capabilities. In order to ensure the integrity, accessibility and availability of these features, a security information management system will be designed and implemented.

Currently, Hydro has many devices and applications that produce very detailed logs and audit trails. These reports give detailed descriptions of the activity within the networks. The amount of data produced by these reports is currently unmanageable simply because there is no effective way of filtering, aggregating, and analyzing the huge volumes of data produced. Any advantage gained by

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Security Information Management System **(cont'd.)**

Operating Experience: (cont'd)

having these security devices installed and positioned is degraded by not having an effective management system in place.

Project Justification:

In order to ensure secure operations in a heterogeneous environment, a management tool is required to aggregate, filter, and then normalize the data and produce useful information. Currently data from key infrastructure devices (firewalls, routers, IDS, etc.) is being produced in massive amounts. The data is not reviewed in a timely manner.

Consolidating and analyzing the data and then presenting it in a timely fashion that will ensure any potential threat is dealt with in a pro-active manner. Key security devices will be monitored in the customer network including firewalls, routers, switches, Windows servers, AS/400, etc. The extensive reporting capabilities for operators and administrators will enable them to understand changes in traffic patterns and to detect emerging attacks that may not be evident from a single venue.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Server Technology Program

Location: Multiple Sites

Category: General Properties - Computer Operations

Type: Pooled

Classification: Normal

Project Description:

This project is a part of Hydro's evergreen program and involves the replacement, addition and upgrade of hardware components and software related to the Corporation's shared server infrastructure and upgrades to the server-based office productivity tools. Based on the age of existing servers, each year an appropriate number of servers will be refreshed. This infrastructure ensures that the Corporation has a reliable secure infrastructure environment required to support efficient operations.

The scope of the proposed Server and Operating System Evergreen Program includes the replacement of four (4) servers within the Hydro System.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	36.0	0.0	0.0	36.0
Labour	14.0	0.0	0.0	14.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	21.0	0.0	0.0	21.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	3.7	0.0	0.0	3.7
Contingency	7.1	0.0	0.0	7.1
Total	**81.8**	**0.0**	**0.0**	**81.8**

Operating Experience:

Hydro's server infrastructure supports the applications that are used by its employees in carrying out its day-to-day business. This project is necessary to maintain current performance on its servers. Hydro uses its existing servers for office productivity tools e.g. Word, Excel, email, Intranet/Internet and various database systems as well as software tools required to monitor and manage servers and its infrastructure.

Project Justification:

Hydro needs to keep its server and operating systems current in order to adequately support and protect the IT infrastructure required to operate its business. Failure to keep this infrastructure

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Server Technology Program **(cont'd.)**

Project Justification: (cont'd)

current will put Hydro at risk. The replacement, addition and upgrading of hardware components to achieve this goal requires investment over the lifecycle of the infrastructure.

Hydro needs to replace and upgrade its server environment so that it can:

- Address obsolescence/maintaining vendor support;
- Provide security/managing the infrastructure;
- Support current versions of applications; and,
- Exploit technology advances.

Obsolescence/Vendor Support - Without vendor support, the functions and services reliant on the server infrastructure are at risk as security and support patches for the operating system will no longer be available. As a result, Hydro's ability to support and ensure continuation of the functions and services is impeded.

Servers - Industry standards indicate that due to technical and physical obsolescence, server devices have a useful life of 5 years and beyond that timeframe, reliability and continued support become issues. At this time the Vendor support and inventory of spare parts are discontinued. As the servers are used to provide support in running the business on a daily basis, loss of availability of these servers would have a negative effect on employee productivity by not allowing access to software applications that are used by them to run the business.

Future Plans:

This proposal is part of an ongoing refresh program to maintain server performance.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Battery Replacements

Location: Various Locations

Category: General Properties - Telecontrol

Type: Other

Classification: Normal

Project Description:

This project consists of the supply and installation of six battery banks at West Salmon Spillway, Gull Pond Hill (2), Mary March Hill, Blue Grass Hill and Sandy Brook Hill. For West Salmon Spillway, the battery charging and power distribution equipment will be replaced as well.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	225.7	0.0	0.0	225.7
Labour	108.7	0.0	0.0	108.7
Consultant	0.0	0.0	0.0	0.0
Contract Work	33.9	0.0	0.0	33.9
Other Direct Costs	27.0	0.0	0.0	27.0
O/H, AFUDC & Escalation	50.2	0.0	0.0	50.2
Contingency	39.5	0.0	0.0	39.5
Total	**485.0**	**0.0**	**0.0**	**485.0**

Operating Experience:

The Blue Grass Hill and Mary March Hill batteries were capacity tested in 2004 and were both below 80% capacity. The West Salmon Spillway battery capacity test in 2005 passed; however, the bank was installed in 1987 and is nearing the end of its twenty-year design life. The batteries at Gull Pond Hill, in a critical cycle-charge site, are showing signs of deterioration. The 48 V battery at West Salmon Spillway is also being replaced, as this type of equipment has recorded significant numbers of failures in recent years.

Project Justification:

The battery replacements required at this time are based on observation and testing. The batteries have met or exceeded their design life.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Microwave Site Refurbishing

Location: Godaleich Hill

Category: General Properties - Telecontrol

Type: Other

Classification: Normal

Project Description:

This project involves the refurbishing of a microwave site located at Godaleich Hill including: ice protection installation; foundation refurbishment; anti-climb system installation; electrical upgrades; and other associated infrastructure refurbishing.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	5.0	0.0	0.0	5.0
Labour	72.0	0.0	0.0	72.0
Consultant	19.2	0.0	0.0	19.2
Contract Work	180.0	0.0	0.0	180.0
Other Direct Costs	20.0	0.0	0.0	20.0
O/H, AFUDC & Escalation	38.4	0.0	0.0	38.4
Contingency	29.6	0.0	0.0	29.6
Total	**364.2**	**0.0**	**0.0**	**364.2**

Operating Experience:

The Godaleich Hill Microwave site has been in operation since 1982 with no major refurbishing conducted although minor maintenance has been completed annually. This project will extend the useful life of the site.

Project Justification:

The microwave system is a major component of the power system. It is required to aid the reliable generation and transmission of electricity across the province. Without this work, the Godaleich Hill microwave site will deteriorate to a level where catastrophic structural failure could occur, resulting in a loss of power grid control by the Energy Control Center (ECC) and possibly causing or extending power outages. As well, the loss of teleprotection signals on the transmission lines could cause severe damage to equipment and further extend power outages.

Future Plans:

This project is part of a program to refurbish the West Coast Microwave sites infrastructure. Upgrades to other sites will be proposed in future budget applications.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Remote Terminal Unit Replacement

Location: Various Locations

Category: General Properties - Telecontrol

Type: Other

Classification: Normal

Project Description:

The project consists of the replacement of four RTUs at Paradise River Generating Station, Bear Cove Terminal Station, Berry Hill Terminal Station and Cow Head Terminal Station.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	153.8	0.0	0.0	153.8
Labour	89.6	0.0	0.0	89.6
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	15.6	0.0	0.0	15.6
O/H, AFUDC & Escalation	35.9	0.0	0.0	35.9
Contingency	25.9	0.0	0.0	25.9
Total	**320.8**	**0.0**	**0.0**	**320.8**

Operating Experience:

The RTUs being replaced are 18-20 years old. Each location has had parts replaced in the past due to failures.

Project Justification:

Failure to replace this equipment may result in an impact on service to our customers in either reduced reliability or extended customer outages. The RTUs being replaced are critical to the operation of the Island power grid.

Future Plans:

This is year eight of a nine-year program to replace all obsolete RTUs.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Radio Replacement

Location: Burnt Dam and Granite Canal Hill

Category: General Properties - Telecontrol

Type: Other

Classification: Normal

Project Description:

This project consists of the replacement of the point-to-point radio link between the Burnt Dam site and Granite Canal Hill. The radio system provides voice communications between Burnt Dam and the Bay d'Espoir Hydro Generating Plant.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	95.0	0.0	0.0	95.0
Labour	52.9	0.0	0.0	52.9
Consultant	0.0	0.0	0.0	0.0
Contract Work	3.0	0.0	0.0	3.0
Other Direct Costs	31.1	0.0	0.0	31.1
O/H, AFUDC & Escalation	25.4	0.0	0.0	25.4
Contingency	18.2	0.0	0.0	18.2
Total	**225.6**	**0.0**	**0.0**	**225.6**

Operating Experience:

The existing radio has been in service since 1991 and is the only radio of this type currently in operation within Hydro. The manufacturer has replaced this model and spare parts are not readily obtainable. The radio provides essential voice communications to this remote location. The radio has experienced several module failures in the past.

Project Justification:

The Burnt Dam site is critical to the control of water into the Bay d'Espoir reservoir system, a system utilized by the Granite Canal, Upper Salmon, and Bay d'Espoir Hydro Plants. This radio link provides direct voice communications to personnel located at Burnt Dam and is essential In providing reliable voice communications to control flooding and the flow of water into the reservoir system.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Install PC Device Time Synchronization
Location: Various Locations
Category: General Properties - Telecontrol
Type: Other
Classification: Normal

Project Description:

This project will provide a facility to ensure that substation devices are synchronized, allowing comparison of records between devices, both within the same location and between different locations. This equipment will allow existing Global Positioning System (GPS) in these stations to be distributed to these devices. This project will supply and install all cabling and distribution modules needed to provide the time source at the following twenty-one locations; Bay d'Espoir Plant, Bay d'Espoir Terminal Station #2, Bottom Brook, Buchans, Cat Arm Plant, Come-By-Chance, Daniels Harbour, Deer Lake, Hardwoods, Hinds Lake Plant, Holyrood Terminal Station, Indian River, Massey Drive, Peter's Barren, Oxen Pond, Plum Point, Springdale, Stony Brook, Sunnyside, Upper Salmon Plant and Western Avalon.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	14.6	0.0	0.0	14.6
Labour	44.7	0.0	0.0	44.7
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	24.1	0.0	0.0	24.1
O/H, AFUDC & Escalation	11.2	0.0	0.0	11.2
Contingency	8.3	0.0	0.0	8.3
Total	**102.9**	**0.0**	**0.0**	**102.9**

Operating Experience:

When System Operations prepares a report on an outage they gather the GPS time stamped Sequence of Events (SOE) data from the SCADA system and send it to System Performance and Protection (SP&P) for analysis. SP&P then retrieves event data in the protection relays and fault recorders from the plants or terminal stations for the time of the outage. The protection relays and fault recorders are not GPS time stamped, therefore the events do not correlate with the SCADA SOE therefore preventing proper event analysis.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Install PC Device Time Synchronization **(cont'd.)**

Project Justification:

This project is justified because of the need for common time stamps on all events that are collected. By synchronizing all information gathered, engineering time for surge and trouble analysis and completing reports will be reduced and the accuracy of the analysis guaranteed.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Communications Network Technology Refresh

Location: Various Locations

Category: General Properties - Telecontrol

Type: Other

Classification: Normal

Project Description:

This project consists of the replacement of several obsolete network components. In addition, the project includes the installation of facilities required to extend network access as well as upgrade technology due to unforeseen circumstances.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	24.3	0.0	0.0	24.3
Labour	58.8	0.0	0.0	58.8
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	10.4	0.0	0.0	10.4
Contingency	8.3	0.0	0.0	8.3
Total	**101.8**	**0.0**	**0.0**	**101.8**

Operating Experience:

Hydro's refresh life cycle for network devices is eight years. The network components being replaced under this project have reached the end of their useful lives and are now obsolete. As well, the devices are not able to support desired expanded functionality including security and performance improvements.

Project Justification:

The networking devices are obsolete and do not meet current functionality requirements. As the data network expands into the more remote sites (offices, terminal stations, power plants and repeater sites), and provides access to more services by more employees, infrastructure upgrades will be required at various sites to accommodate the extra traffic and maintain reliability. The demand for new services includes a mixture of office automation traffic such as e-mail, work requests and database

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Communications Network Technology Refresh **(cont'd.)**

Project Justification: (cont'd.)

access to substation automation functions such as remote high-speed access to meters and Intelligent Electronic Devices (IEDs). Low speed data access or no data access at all into remote sites is no longer an efficient communications means for the industry.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Microwave Quad-Diversity Upgrade
Location: Various
Category: General Properties - Telecontrol
Type: Other
Classification: Normal

Project Description:

This project will upgrade the current diversity configuration of the microwave radio system between Square Pond Hill and Sunnyside to quad diversity with split transmitters. It will include modifications to the existing microwave radio equipment at each end of the radio hop. The objective of this project is to improve the availability of the microwave radio, with success determined by a decrease in the number of outage events and the related unavailable time.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	0.0	0.0	0.0	0.0
Labour	13.6	0.0	0.0	13.6
Consultant	0.0	0.0	0.0	0.0
Contract Work	77.3	0.0	0.0	77.3
Other Direct Costs	2.1	0.0	0.0	2.1
O/H, AFUDC & Escalation	11.9	0.0	0.0	11.9
Contingency	9.3	0.0	0.0	9.3
Total	**114.2**	**0.0**	**0.0**	**114.2**

Operating Experience:

When designing microwave radio systems, atmospheric models are used to estimate radio performance. After a number of years with the microwave radio system in service, the effects of atmospheric ducting and multipath propagation of the radio signal have manifested themselves much more than were anticipated in the design, especially in the summer months. As such, intermittent outages to the microwave radio system have been experienced to a degree that is unacceptable for SCADA and teleprotection signals.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Microwave Quad-Diversity Upgrade **(cont'd.)**

Project Justification:

This is an essential project that must be completed as soon as possible so as not to jeopardize operation and control of the electrical power system. Failure to address this issue can result in a situation where signal fading condition could occur at a time when control of the power system is essential for system restoration or generation control. In the case of the former, customers would be without power longer than required. For the latter case, the inability to control generation could result in load shedding and the eventual loss of power to customers.

Future Plans:

Other sites requiring upgrades may be identified in future years.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Vehicles and Aerial Devices

Location: Various Locations

Category: General Properties - Transportation

Type: Other

Classification: Normal

Project Description:

This project involves replacing twenty-four transportation vehicles (cars, pick-ups and vans) and eleven work vehicles (line trucks and boom trucks).

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	2,371.0	0.0	0.0	2,371.0
Labour	0.0	0.0	0.0	0.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	77.8	0.0	0.0	77.8
Contingency	237.1	0.0	0.0	237.1
Total	**2,685.9**	**0.0**	**0.0**	**2,685.9**

Operating Experience:

The vehicles being replaced have become unreliable and are uneconomical to maintain. These vehicles fall within the established replacement criteria for age and kilometers as follows:

Transportation Vehicles: 5 - 7 years or 150,000 kms

Work Vehicles: 7 - 10 years or 200,000 kms

Project Justification:

Newfoundland and Labrador Hydro requires reliable vehicles for efficient delivery of its service. The vehicles being replaced are at the end of their life cycle and are no longer dependable. The transportation vehicles being replaced have an average of seven years service and 173,000 kms. The work vehicles have an average age of ten years and 210,000 kms. Vehicles being replaced meet or exceed the replacement criteria guidelines.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Purchase Pick-Ups and Snowmobiles

Location: Various Locations

Category: General Properties - Transportation

Type: Clustered

Classification: Normal

Project Description:

To supply seven pick-ups, fourteen snowmobiles, and storage buildings for use at Nain, Makkovik, Postville, Hopedale, Cartwright, Rigolet and Black Tickle.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	575.0	0.0	0.0	575.0
Labour	147.0	0.0	0.0	147.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	21.0	0.0	0.0	21.0
O/H, AFUDC & Escalation	24.9	0.0	0.0	24.9
Contingency	74.3	0.0	0.0	74.3
Total	**842.2**	**0.0**	**0.0**	**842.2**

Operating Experience:

Maintenance crews are required to transport tools and equipment to work sites in remote isolated communities. Items that are left outside are subject to security risks, damage and theft. Private citizens are often reluctant to rent their vehicles and equipment for transportation of Hydro equipment.

Project Justification:

The North Coast Isolated Communities do not have a transportation system that will allow Hydro to move tools and equipment. These pick-ups and snowmobiles will be used by maintenance staff and other Hydro employees working in these communities. Reliability of service to the customer will be greatly improved in response time, by having vehicles and snowmobiles available at all times. As well there will be a decrease in the risk of musculoskeletal injuries resulting from the handling of heavy tools and equipment. To protect and secure these vehicles, buildings are required and are included in this proposal. These buildings will require an electrical service for lighting and to plug in the vehicles during the winter.

Future Plans:

None.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: System Security Upgrades
Location: Various Sites
Category: General Properties - General Administration
Type: Other
Classification: Normal

Project Description:

This project is the first year of a three-year program to upgrade Hydro's physical security systems. The project will consist of the installations of additional security fences/gates, outdoor lighting systems, closed circuit cameras, cards access systems, property key - locking systems, secured file systems (electronic and hard copy) intrusion alarms, and anti climbing devices, etc. The various sites across the systems will be prioritized and appropriate security upgrades will be installed.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	250.0	0.0	0.0	250.0
Labour	250.0	0.0	0.0	250.0
Consultant	65.0	0.0	0.0	65.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	27.0	0.0	0.0	27.0
O/H, AFUDC & Escalation	75.9	0.0	0.0	75.9
Contingency	0.0	0.0	0.0	0.0
Total	**667.9**	**0.0**	**0.0**	**667.9**

Operating Experience:

Following Sept 11, 2001, the Canadian Electrical Association established as Critical Infrastructure Protection group (CIP). The CIP mandate was to promote initiatives to strengthen the protection of Canada's critical energy infrastructure and to provide a network of liaison within the utility industry to deal with issues related to emergency preparedness, safety and security. It was through Hydro's involvement in CIP that it recognized the need for assessing and upgrading major infrastructure and property security. In 2003 and 2005 Hydro commissioned consultant managed studies of several of its facilities. These studies resulted in general recommendations for security upgrades. These general recommendations will be developed into specific security upgrades over a three-year period beginning in 2007.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: System Security Upgrades **(cont'd.)**

Project Justification:

Since Sept 11, 2001, the role of security has changed dramatically. A properly structured and deployed security program will reduce the possibility and possibly eliminate some preventable losses by implementation of crime control, opportunity reduction and security awareness training programs. There are a several established professional and legal standards that set an industry specific standard of care precedent. In order for Hydro to reduce its liability, it is imperative that Hydro's security program meet or exceed industry's practices in policy, procedure, physical and technical security countermeasures. Hydro considers these security upgrades on a corporate wide basis as being vital to maintaining reliable service to its customers.

Future Plans:

This proposal is for the first year of a three-year program to upgrade security systems across the Hydro system.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Project Title: Replace Storage Ramp

Location: Bishop's Falls

Category: General Properties - General Administration

Type: Other

Classification: Normal

Project Description:

This project consists of the construction of a 3.0 m x 60.0 m storage ramp to replace an existing ramp at Bishop's Falls. The ramp will be a steel frame with a treated timber platform.

Project Cost: *($ x1,000)*	**2007**	**2008**	**Beyond**	**Total**
Material Supply	25.0	0.0	0.0	25.0
Labour	25.0	0.0	0.0	25.0
Consultant	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	0.0	0.0
Other Direct Costs	0.0	0.0	0.0	0.0
O/H, AFUDC & Escalation	7.3	0.0	0.0	7.3
Contingency	5.0	0.0	0.0	5.0
Total	**62.3**	**0.0**	**0.0**	**62.3**

Operating Experience:

The existing storage ramp is approximately 30 years old and is constructed from concrete, steel and wood. The ramp is subjected to rough use and sudden shock loads from mobile equipment when storing and retrieving heavy materials and equipment. The concrete piers have deteriorated at the ground level and have also been subject to damage by snow clearing equipment.

Project Justification:

The existing ramp, built on concrete pillars with steel "I" beam supports and decked with wood is in a deteriorated condition. A ramp in similar conditions failed in 2004 and it is prudent to replace this ramp before it fails and possibly damages equipment stored on it or injures personnel. See attached photographs.

Future Plans:

As the condition of other similar storage ramps at the Bishop's Falls facility deteriorate, proposals for their replacement will be submitted for approval.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Multi-Year Projects

The following projects are multi-year projects and have been reviewed by the Board at previous Capital budget applications. The projects are underway and have not had a material change in either scope, nature or forecast cost of the project from that contained in the original approval (as defined on Page 7 of the Provisional Capital Budget Application Guidelines - June 2, 2005).

1. **Wind Generation Inventory Study**

   This project was included in an application filed with the Board on August 1, 2005 and which the Board approved in Order No. P. U. 31 (2005). The schedule is to have monitoring towers installed by November 2006 and environmental data collected until November 2007. The consultant will evaluate the data and produce a report by the end of December 2007. The project is proceeding as planned with no change in scope or forecast cost.

2. **Replace Superheater Unit 2 - Holyrood**

   This project was included in an application filed with the Board on August 1, 2005 and which the Board approved in Order No. P. U. 31 (2005). A contract will be awarded in July for the supply and installation of the superheater. Installation will occur during the summer outage season in 2007 and the project is currently on schedule and within budget.

3. **Addition of Disconnecting Means to 600 Volt MCC Branch Feeders - Holyrood**

   This project was included in an application filed with the Board on May 2, 2005 and which the Board approved in Order No. P.U. 14 (2005). This project is proceeding as planned with no change in scope, nature or forecast cost.

4. **Fire Protection Upgrades - Holyrood**

   This project was included in an application filed with the Board on August 1, 2005 and which the Board approved in Order No. P. U. 31 (2005). This project is on budget and on schedule however a higher portion of the work will be completed in 2007 than originally planned and as a result a larger portion of the budget will be spent in that year.

2007 CAPITAL PROJECTS OVER $50,000
EXPLANATIONS

Multi-Year Projects (cont'd.)

5. **Replace VHF Mobile Radio System**

   This project was included in Hydro's 2005 Budget Application (please refer to Section B, page B-137) and received the Board's approval in Order No. P.U. 53 (2004). Due to delays associated with completing the Tender Evaluation and subsequent contract negotiations, this project is delayed by approximately 3 months.

SECTION C

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - PROJECTS OVER $500,000
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Type	Page Ref
MANDATORY PROJECTS							
Replace Superheater Unit 2 - Holyrood	319	2,818		3,137	Oct. 07	Other	B-114(2)
Addition of Disconnecting Means - Holyrood	1,472	750		2,222	Dec. 07	Other	B-114(3)
TOTAL MANDATORY PROJECTS	1,791	3,568	0	5,359			
NORMAL PROJECTS							
Replace VHF Mobile Radio System	5,971	1,697		7,668	Mar. 07	Other	B-115(5)
Cost Recovery - Department of Transportation and Works	(1,796)	(1,680)		(3,476)			
Condition Assessment Study - Holyrood		3,335		3,335	Dec. 07	Other	B-14
Replace Vehicles and Aerial Devices - Various Locations		2,686		2,686	Dec. 07	Other	B-107
Replace Wood Poles - Various Sites		2,148		2,148	Dec. 07	Pooled	B-25
Replace Insulators - TL251, TL252 & TL234		2,118		2,118	Oct. 07	Pooled	B-27
Provide Service Extensions		2,085		2,085	Dec. 07	Pooled	B-54
Upgrade Distribution Systems		2,035		2,035	Dec. 07	Pooled	B-56
Fire Protection Upgrades - Holyrood	369	1,456		1,825	Dec. 07	Other	B-114(4)
Upgrade Distribution Feeders - Various Systems		1,383		1,383	Oct. 07	Pooled	B-58
Purchase Spare Transformer - Upper Salmon		1,366		1,366	Oct. 07	Other	B-68
Upgrade Corner Brook Frequency Converter		1,320		1,320	Oct. 07	Clustered	B-29
Purchase Trucks, Snowmobiles - Labrador Coast		842		842	Oct. 07	Clustered	B-108
Upgrade Distribution Poles - Various Systems		744		744	Oct. 07	Pooled	B-61
Replace Distribution Lines - South Brook, Hr. Breton		741		741	Oct. 07	Pooled	B-63
Upgrade Access Road - Upper Salmon		675		675	Oct. 07	Other	B-5
Upgrade System Security - Various Sites		668		668	Dec. 07	Other	B-109
Air Preheater Steam Condenser Pumps Unit 3 - Holyrood		599		599	Nov. 07	Other	B-22
Replace Fuel Piping - Hardwoods, Stephenville		530		530	Oct. 07	Pooled	B-23
TOTAL NORMAL PROJECTS	4,544	24,748	0	29,292			
JUSTIFIABLE PROJECTS							
Upgrade Turbine & Generator Unit 3 - Holyrood		1,654		1,654	Aug. 07	Other	B-16
Automatic Meter Reading		696		696	Oct. 07	Other	B-71
TOTAL JUSTIFIABLE PROJECTS	0	2,350	0	2,350			

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - PROJECTS OVER $200,000 BUT LESS THAN $500,000
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Type	Page Ref
MANDATORY PROJECTS							
Contaminated Water Treatment - Holyrood		276	62	338	Jun. 07	Other	B-18
Installation of Fall Arrest Equipment - Various Locations		251		251	Dec. 07	Other	B-75
TOTAL MANDATORY PROJECTS	0	527	62	589			
NORMAL PROJECTS							
Replace Battery System - Various Locations		485		485	Dec. 07	Other	B-97
Replace Unit 290 & Upgrade Fuel Storage - William's Hr		479		479	Oct. 07	Pooled	B-65
Construct Transmission Line Equip. Off-Loading Areas		402		402	Nov. 07	Other	B-32
End User Infrastructure Evergreen Program		395		395	Dec. 07	Pooled	B-90
Microwave Site Refurbishing - Godaleich Hill		364		364	Dec. 07	Other	B-98
Safety & Reliability Upgrade - Hawkes Bay		349		349	Oct. 07	Clustered	B-40
Replace Remote Terminal Units - Various Locations		321		321	Dec. 07	Other	B-99
Replace Insulators - Various Stations		313		313	Nov. 07	Pooled	B-42
Upgrade Access Road - Burnt Dam		309		309	Oct. 07	Other	B-6
Gas Turbine Assessments - Hardwoods, Stephenville		307		307	Dec. 07	Other	B-24
Replace Off Road Track Vehicle (7696) - Cow Head		307		307	Dec. 07	Other	B-80
Corporate Application Environment		377		377	Oct. 07	Pooled	B-87
Cost Recovery CF(L)Co		(75)		(75)			
Upgrade Circuit Breakers - Various Stations		258		258	Dec. 07	Pooled	B-44
Replace Light Duty Mobile Equipment Less than $ 50,000		241		241	Dec. 07	Other	B-81
Replace VHF Radio - Burnt Dam, Granite Canal Hill		226		226	Dec. 07	Other	B-100
Replace Fuel Storage - Norman Bay		222		222	Oct. 07	Other	B-77
Upgrade 138kV Protection - Springdale, Howley, Indian River		215		215	Nov. 07	Other	B-38
Supply & Install Bridge - South West River		212		212	Oct. 07	Other	B-35
TOTAL NORMAL PROJECTS	0	5,707	0	5,707			

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - PROJECTS OVER $50,000 BUT LESS THAN $200,000
($,000)

PROJECT DESCRIPTION	Exp To 2006	2007	Future Years	Total	In-Ser Date	Type	Page Ref
NORMAL PROJECTS							
Wind Generation Inventory Study	143	33		176	Jul. 07	Other	B-114(1)
Replace Doble Relay Test Equipment - St. Anthony, Happy Valley		174		174	Oct. 07	Pooled	B-83
Upgrade Exhaust Stacks - Grey River		151		151	Sep. 07	Other	B-67
Enterprise Storage Capacity Upgrade		186		186	Oct. 07	Pooled	B-89
Cost Recovery CF(L)Co		(37)		(37)			
Replace Off Road Track Vehicle (7734) - Flowers Cove		139		139	Dec. 07	Other	B-84
Peripheral Infrastructure Replacement		139		139	Oct. 07	Pooled	B-92
Replace Breaker B7C1 - Hardwoods		136		136	Oct. 07	Other	B-45
Install Card Access System - Bishop's Falls & Whitbourne		131		131	Dec. 07	Pooled	B-78
Applications Enhancements		149		149	Nov. 07	Pooled	B-85
Cost Recovery CF(L)Co		(27)		(27)			
Replace Diesel Unit Breakers - Mary's Harbour		114		114	Sep. 07	Other	B-70
Upgrade Microwave Quad - Diversity		114		114	May. 07	Other	B-105
Upgrade Cooling Water System Unit 1 & 2 - Bay d'Espoir		112		112	Jul. 07	Other	B-7
Replace Station Service Control - Bay d'Espoir		105		105	May.07	Other	B-8
Install PC Device Time Synchronization - Various Locations		103		103	Dec. 07	Other	B-101
Refresh Communications Network Technology		102		102	Oct. 07	Other	B-103
Install Disconnect Switch - Conne River		94		94	Aug. 07	Other	B-37
Purchase Meters & Equipment - All Service Areas		94		94	Dec. 07	Other	B-74
Server Technology Program		82		82	Oct. 07	Pooled	B-95
Replace Instrument Transformers - Various Stations		80		80	Nov. 07	Pooled	B-47
UPS Battery Monitoring Program - Holyrood		79		79	Dec. 07	Other	B-20
Replace Compressors - Hardwoods		78		78	Aug. 07	Other	B-49
Replace Air Dryer - Cat Arm		76		76	Oct. 07	Other	B-9
Replace Battery Banks - Stoney Brook, Western Avalon		72		72	Sep. 07	Pooled	B-50
Replace Battery Chargers - Various Stations		72		72	Sep. 07	Pooled	B-51
Replace Surge Arrestors - Various Stations		71		71	Nov. 07	Pooled	B-52
Replace Bridge - Paradise River		66		66	Aug. 07	Other	B-10
Replace Storage Ramp - Bishop's Falls		62		62	Sep. 07	Other	B-111
Security Information Management System		73		73	Dec. 07	Pooled	B-93
Cost Recovery CF(L)Co		(15)		(15)			
Legal Survey of Distribution Line Right-of-Ways		51		51	Oct. 07	Other	B-79
TOTAL NORMAL PROJECTS	143	2,859	0	3,002			
TOTALS	6,478	39,759	62	46,299			

NEWFOUNDLAND & LABRADOR HYDRO
2007 CAPITAL BUDGET - PROJECTS OVER $50,000
BY TYPE*

Type	No.	($,000)
Clustered	3	2,511
Pooled	24	14,681
Other	44	29,107
Total	71	46,299

* Includes multi-year projects

SECTION D

NEWFOUNDLAND & LABRADOR HYDRO

2007 LEASING COSTS

THERE ARE NO ITEMS FOR THIS SECTION

SECTION E

NEWFOUNDLAND & LABRADOR HYDRO

Capital Expenditures/Budgets 2001 - 2010

($000)

	ACTUALS 2001	ACTUALS 2002	ACTUALS 2003	ACTUALS 2004	ACTUALS 2005	BUDGET 2006	BUDGET 2007	BUDGET 2008	BUDGET 2009	BUDGET 2010
GENERATION	3,956	5,233	5,572	4,443	9,352	10,339	13,516	12,448	14,126	8,208
TRANSMISSION & RURAL OPERATIONS	28,929	29,560	9,961	14,678	16,691	21,051	18,732	22,926	17,983	11,598
GENERAL PROPERTIES	14,616	5,424	16,973	8,863	7,909	17,532	9,550	11,235	12,105	21,573
TOTAL CAPITAL EXPENDITURES	47,501	40,217	32,506	27,984	33,952	48,922	41,798	46,609	44,214	41,379

SECTION F

NEWFOUNDLAND & LABRADOR HYDRO
2006 CAPITAL EXPENDITURES - OVERVIEW
FOR THE QUARTER ENDING June 30, 2006
($,000)

	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.
GENERATION	974	10,106	1,121	10,090	(16)
TRANSMISSION & RURAL OPERATIONS	2,007	19,992	6,602	20,161	169
GENERAL PROPERTIES	4,208	17,229	4,077	15,836	(1,393)
ALLOWANCE FOR UNFORESEEN EVENTS	0	1,000	227	1,008	8
PROJECTS APPROVED BY PUB	191	471	506	474	3
NEW PROJECTS LESS THAN $50,000 APPROVED BY HYDRO	0	124	27	130	6
TOTAL CAPITAL BUDGET	7,380	48,922	12,560	47,699	(1,223)

Approved P.U. # 31 (2005) 2006 Capital Budget	42,636
Carryover Projects 2005 to 2006	5,876
Carryover Projects 2005 to 2006	(72)
Approved P.U. # 10 (2006)	184
Approved P.U. # 12 (2006)	174
New Projects under $50,000 Approved by Hydro	124
TOTAL APPROVED CAPITAL BUDGET	48,922

NEWFOUNDLAND & LABRADOR HYDRO
2006 CAPITAL EXPENDITURES - OVERVIEW
FOR THE QUARTER ENDING June 30, 2006
($,000)

	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.
GENERATION					
NEW GENERATION SOURCE					
Generation Projects	0	1,937	9	1,937	0
HYDRO PLANTS					
Construction Projects	91	3,231	216	3,438	207
Tools & Equipment	0	63	39	50	(13)
THERMAL PLANT					
Construction Projects	883	4,301	824	4,132	(169)
Property Additions	0	275	0	275	0
Tools & Equipment	0	57	26	57	0
GAS TURBINES					
Construction Projects	0	242	7	201	(41)
TOTAL GENERATION	974	10,106	1,121	10,090	(16)
TRANSMISSION & RURAL OPERATIONS					
TRANSMISSION	0	4,207	979	4,207	0
SYSTEM PERFORMANCE & PROTECTION	30	297	86	305	8
TERMINALS	0	858	123	858	0
DISTRIBUTION	1,804	8,852	4,505	8,852	0
GENERATION	146	3,731	386	3,836	105
GENERAL					
Metering	0	114	43	115	1
Properties	0	134	27	144	10
Tools & Equipment	27	1,799	453	1,844	45
TOTAL TRANSMISSION & RURAL OPERATIONS	2,007	19,992	6,602	20,161	169

NEWFOUNDLAND & LABRADOR HYDRO
2006 CAPITAL EXPENDITURES - OVERVIEW
FOR THE QUARTER ENDING June 30, 2006
($,000)

	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.
GENERAL PROPERTIES					
INFORMATION SYSTEMS	3,904	8,012	3,256	7,267	(745)
TELECOMMUNICATIONS	176	6,449	0	5,817	(632)
ADMINISTRATIVE	128	2,768	821	2,752	(16)
TOTAL GENERAL PROPERTIES	4,208	17,229	4,077	15,836	(1,393)
ALLOWANCE FOR UNFORESEEN EVENTS	0	1,000	227	1,008	8
PROJECTS APPROVED BY PUB	191	471	506	474	3
PROJECTS APPROVED FOR LESS THAN $50,000	0	124	27	130	6
TOTAL CAPITAL BUDGET	7,380	48,922	12,560	47,699	(1,223)

NEWFOUNDLAND & LABRADOR HYDRO
GENERATION
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
NEW GENERATION SOURCE						
GENERATION PROJECTS						
Island Pond Development - Feasibilty Update		998	9	998	0	
Portland Creek Development -Final Feasibility Study		796	0	796	0	
Wind Generation Inventory Study		143	0	143	0	
TOTAL GENERATION PROJECTS	0	1,937	9	1,937	0	
HYDRO PLANTS						
CONSTRUCTION PROJECTS						
Replace Penstock - Snook's Arm Generating Station	78	2,029	35	2,029	0	
Replace Unit 1 Governor Controls - Cat Arm	13	676	23	883	207	1
Upgrade Controls Spherical Valve #6 - Bay d'Espoir		200	143	200	0	
Replace Underground Fuel Tanks - Cat Arm Powerhouse		137	9	137	0	
Provide Remote Operation Fisheries By-Pass - Granite Canal		107	6	107	0	
Install Waste Oil Holding Tanks - BDE, USL, HLK & PRV		82	0	82	0	
TOTAL CONSTRUCTION PROJECTS	91	3,231	216	3,438	207	
TOOLS & EQUIPMENT						
Purchase & Replace Tools & Equipment Less than $50,000		24	11	11	(13)	
Purchase & Replace Tools & Equipment Less than $50,000	0	39	28	39	0	
TOTAL TOOLS & EQUIPMENT	0	63	39	50	(13)	
TOTAL HYDRO PLANTS	91	3,294	255	3,488	194	

NEWFOUNDLAND & LABRADOR HYDRO
GENERATION
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
THERMAL PLANT - HOLYROOD						
CONSTRUCTION PROJECTS						
Upgrade Control System	0	316	185	616	300	2
Purch/Inst Anti-Fouling System for Cooling Water Systems	527	178	239	261	83	
Addition of Disconnecting Means to 600 Volt MCC Branch Feeders	356	1,116	48	1,116	0	
Fire Protection Upgrades		916	0	369	(547)	3
Replace Warm Air Make-Up Units Steam Coil		602	188	600	(2)	
HVAC Replacements - Relay, Control & Exciter Rms		565	133	562	(3)	
Replace Superheater Unit 2		319	4	319	0	
Study of Regeneration Waste Treatment		172	0	172	0	
Modify Boiler Protection and Control		117	27	117	0	
TOTAL CONSTRUCTION PROJECTS	883	4,301	824	4,132	(169)	
PROPERTY ADDITIONS						
Replace Paging System		275	0	275	0	
TOTAL PROPERTY ADDITIONS	0	275	0	275	0	
TOOLS & EQUIPMENT						
Purchase & Replace Tools & Equipment Less than $50,000	0	57	26	57	0	
TOTAL TOOLS & EQUIPMENT	0	57	26	57	0	
TOTAL THERMAL PLANTS	883	4,633	850	4,464	(169)	
GAS TURBINES						
CONSTRUCTION PROJECTS						
Replace Automatic Voltage Regulator - Hardwoods		242	7	201	(41)	
TOTAL GAS TURBINE PLANTS	0	242	7	201	(41)	
TOTAL THERMAL PLANTS	0	484	26	57	0	
TOTAL GENERATION	974	8,411	1,131	8,009	25	

NEWFOUNDLAND & LABRADOR HYDRO
TRANSMISSION & RURAL OPERATIONS
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
TRANSMISSION						
Replace Wood Poles - Transmission - 2005		370	369	370	0	
Replace Wood Poles - Transmission - 2006		2,303	463	2,303	0	
Upgrade Corner Brook Frequency Converter		617	16	617	0	
Replace Insulators TL231 - (230kV Bay d'Espoir - Stoney Brook)		917	131	917	0	
TOTAL TRANSMISSION	0	4,207	979	4,207	0	
SYSTEM PERFORMANCE & PROTECTION						
Upgrade Breaker Controls - BBK/MDR Terminal Station	30	5	5	5	0	
Purch/Install 138Kv & 66Kv Protection Upgrades - Bottom Brook		109	35	117	8	
Replace Data Collection and Monitoring System - Hawke Hill		56	6	56	0	
Install Feeder Backup Protection - Happy Valley		48	14	48	0	
Install Feeder MW Telemetry - Happy Valley		40	14	40	0	
Upgrade Breaker Controls - BDE/BUC Terminal Station		39	12	39	0	
TOTAL SYSTEM PERFORMANCE & PROTECTION	30	297	86	305	8	
TERMINALS						
Replace Insulators - Various Stations		307	27	307	0	
Replace Battery Chargers - BDE, DLK, GFC & WAV		90	10	90	0	
Replace Air Compressor and Dryer - Grand Falls Frequency Converter		80	0	80	0	
Replace Air Compressors - Holyrood T.S.		80	0	80	0	
Replace Instrument Transformers - Various Stations		78	34	78	0	
Replace Battery Bank - Various Stations (GBK,IRV,BDE)		72	1	72	0	
Replace Surge Arrestors - Various Stations		70	51	70	0	
Install Transformer Oil Monitoring System - Upper Salmon		53	0	53	0	
Install RIGD (Remote Ice Growth Detection) Beam - Various Stations		28	0	28	0	
TOTAL TERMINALS	0	858	123	858	0	

NEWFOUNDLAND & LABRADOR HYDRO
TRANSMISSION & RURAL OPERATIONS
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
DISTRIBUTION						
Interconnect - Rencontre East	1,804	1,446	1,178	1,446	0	
Upgrade Distribution Feeders - Various Locations		2,017	1,022	2,017	0	
Service Extensions		1,984	833	1,984	0	
Distribution Upgrades		1,912	955	1,912	0	
Insulator Replacements		1,020	466	1,020	0	
Distribution Line Pole Replacements		332	46	332	0	
Purchase and Install Voltage Regulator L7 - Happy Valley		122	0	122	0	
Install Substation P.T. - Mary's Harbour		19	5	19	0	
TOTAL DISTRIBUTION	1,804	8,852	4,505	8,852	0	
GENERATION						
Increase Generation - L'Anse au Loup		23	(18)	(18)	(41)	
Upgrade Cooling System - Black Tickle	87	20	20	20	0	
Install Day Tank and Fuel Meter - Ramea	41	65	69	65	0	
Purch.& Inst. Digital Metering - Various Locations	4	26	14	26	0	
Install Intermediate Fuel Storage Tank - Charlottetown	13	53	4	53	0	
Modify Heating System - Hopedale	1	53	35	53	0	
Construct New Diesel Plant - St. Lewis		2,227	184	2,373	146	4
Installation of Fall Arrest Equipment - Hydro facilities		24	(6)	24	0	
Installation of Fall Arrest Equipment - Hydro facilities		268	47	268	0	
Replace Diesel Generating Units - Various Locations		663	25	663	0	
Replace Control Panel - Rigolet		135	10	135	0	
Install Nox Monitor - Little Bay Islands		106	0	106	0	
Replace Generating Unit Breakers - Francois,Grey River, Little Bay Islands		68	2	68	0	
TOTAL GENERATION	146	3,731	386	3,836	105	

NEWFOUNDLAND & LABRADOR HYDRO
TRANSMISSION & RURAL OPERATIONS
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
GENERAL						
METERING						
Purchase Meters & Equipment - TRO System 2006		93	21	93	0	
Purchase Metering Spares		21	22	22	1	
TOTAL METERING	0	114	43	115	1	
PROPERTIES						
Legal Survey of Distribution Line Right-of-Ways - 2006		50	18	50	0	
Replace Waste Oil Storage Tank - Ramea		29	5	39	10	
Construct Line Material Storage Shed - Black Tickle		28	3	28	0	
Construct Sewage Disposal Field - Charlottetown		17	0	17	0	
Construct Storage Ramp - L'Anse au Loup		10	1	10	0	
TOTAL PROPERTIES	0	134	27	144	10	
TOOLS & EQUIPMENT						
Purchase Mobile Oil Reclaimation Unit	27	503	4	503	0	
Replace Off-Road Tracked Vehicles - Various Locations		636	83	681	45	
Purchase & Replace Tools & Equipment Less than $ 50,000	0	386	176	386	0	
Replace Light Duty Mobile Equipment Less than $ 50,000		274	190	274	0	
TOTAL TOOLS & EQUIPMENT	27	1,799	453	1,844	45	
TOTAL GENERAL	27	2,047	523	2,103	56	
TOTAL TRANSMISSION & RURAL OPERTIONS	2,007	19,992	6,602	20,161	169	

NEWFOUNDLAND & LABRADOR HYDRO
GENERAL PROPERTIES
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
INFORMATION SYSTEMS						
SOFTWARE APPLICATIONS						
INFRASTRUCTURE REPLACEMENT						
Replace Energy Management System - Energy Control Centre	3904	6,334	2,726	5,980	(354)	5
NEW INFRASTRUCTURE						
Applications Enhancements		946	59	473	(473)	6
Cost Recovery CF(L)Co		(165)	(40)	(83)	82	
Upgrade of Technology						
Corporate Application Environment - 2006		592	337	592	0	
Cost Recovery CF(L)Co		(36)	(19)	(36)	0	
Network Management Tools - 2006		48	0	48	0	
TOTAL SOFTWARE APPLICATIONS	3,904	7,719	3,063	6,974	(745)	
COMPUTER OPERATIONS						
INFRASTRUCTURE REPLACEMENT						
End User Infrastructure Evergreen Program - 2005		19	19	19	0	
NEW INFRASTRUCTURE						
Security - Personal Firewalls		47	0	47	0	
Cost Recovery CF(L)Co		(9)	0	(9)	0	
Security - Scan, Block & Quarantine		46	0	46	0	
Cost Recovery CF(L)Co		(9)	0	(9)	0	
Peripheral Infrastructure Replacement - 2006		199	174	199	0	
TOTAL COMPUTER OPERATIONS	0	293	193	293	0	
TOTAL INFORMATION SYSTEMS	3,904	8,012	3,256	7,267	(745)	

NEWFOUNDLAND & LABRADOR HYDRO
GENERAL PROPERTIES
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
TELECONTROL						
NETWORK SERVICES						
INFRASTRUCTURE REPLACEMENT						
Replace VHF Mobile Radio System	352	8,036	1,495	5,619	(2,417)	7
Cost Recovery - WST	(176)	(3,416)	(1,620)	(1,620)	1,796	
Microwave Site Refurbishing - 2005		40	2	40	0	
Replace Voice and Data Communications - Berry Hill		15	3	15	0	
Replace Power Line Carrier TL240 - Churchill Falls - Goose Bay		189	6	124	(65)	
Microwave Site Refurbishing - Bay D'Espoir Hill & Blue Grass Hill		407	24	407	0	
Replace Battery System - Multiple Sites		404	7	404	0	
Replace Remote Terminal Unit for Hydro		351	10	351	0	
Westcoast Communications System - Study		175	0	175	0	
Replace Telephone Isolation Equipment - Happy Valley		57	0	57	0	
Video Conferencing for Regional Offices - H Valley , P Saunders & Holyrood		49	30	49	0	
Network Infrastructure						
Communications Network Technology		97	42	151	54	
UPGRADE OF TECHNOLOGY						
Upgrade Site Facilities		45	1	45	0	
TOTAL TELECONTROL	176	6,449	0	5,817	(632)	
ADMINISTRATIVE						
VEHICLES						
Replace Vehicles - Hydro System - 2005		118	118	118	0	
Replace Vehicles - Hydro System - 2006		1733	487	1,733	0	
ADMINISTRATION						
Electronic Metering Reading	71	122	64	86	(36)	
Upgrade Standby Diesel Fuel System - Hydro Place	57	33	50	53	20	
Construct New Warehouse - Port Saunders		431	9	431	0	
Replace Storage Ramps - Bishop's Falls		159	2	159	0	
Purchase & Replace Admin Office Equip less than $50,000		172	91	172	0	
TOTAL ADMINISTRATIVE	128	2,768	821	2,752	(16)	
TOTAL GENERAL PROPERTIES	4,208	17,229	4,077	15,836	(1,393)	

NEWFOUNDLAND & LABRADOR HYDRO
OTHER APPROVED FUNDS
2006 CAPITAL EXPENDITURES - DETAIL
FOR THE QUARTER ENDING June 30, 2006
($,000)

PROJECT DESCRIPTION	Exp. Prior To 2006	PUB Approved Budget 2006	2006 Exp. To June 30	Expected Total Exp. 2006	Var. from Approved to Expected Exp.	Variance Explanation Reference
ALLOCATION FOR UNFORESEEN EVENTS						
Replace Breaker B7T2 - Hardwoods Terminal Station		100	108	108	8	
Bishop's Falls Main Office Roof - Structural Steel Upgrade		122	119	122	0	
Allocation for Unforeseen Events		778	0	778	0	
TOTAL ALLOCATION FOR UNFORESEEN EVENTS	0	1,000	227	1,008	8	
PROJECTS APPROVED BY PUB						
CARRYOVER						
New Well and Septic System - Springdale Line Depot	1	42	45	45	3	
Transmission Interconnection - Duck Pond Mine Site	4,594	1,232	834	1,232	0	
Contribution	(4,594)	(1,232)	(834)	(1,232)	0	
Electrical Arc Flash Personal Protection Equipment		42	36	42	0	
Remote Monitoring System - Granite Canal	10	16	17	16	0	
Replace Diesel Generator - Holyrood	180	13	72	13	0	
Dome Mountain Service - Coast Guard		172	50	172	0	
Contribution		(172)	0	(172)	0	
NEW						
Charlottetown Unit # 2060 Engine Replacement		184	112	184	0	
Land Acquisition - Hardwoods Terminal Station		174	174	174	0	
TOTAL PROJECTS APPROVED BY PUB	191	471	506	474	3	
NEW PROJECTS LESS THAN $50,000 APPROVED BY HYDRO						
Meeting Room Furniture - 5th Floor, Hydro Place		22	0	22	0	
Office Furniture - 6th Floor, Hydro Place		14	19	20	6	
Replace Air Dryer Towers - BBK Terminal Station		17	0	17	0	
Purchase Oil Inspection Kit & AUX SW Angle Protractor		7	0	7	0	
Install Oil Water Separators - Various Stations		49	0	49	0	
Replace Disconnect Switch B7C1-1, HWD Terminal Station		15	8	15	0	
TOTAL PROJECTS LESS THAN $50,000 APPROVED BY HYDRO	0	124	27	130	6	

1. Cat Arm Unit 1 Governor Controls Replacement

The original estimate was based on replacing only the electronic controls portion of the unit governor since these electronic cards were no longer supported by the original equipment manufacturer. This would provide a reliable digital governor controller. Although the controller would be reliable there would remain maintenance problems with mechanical equipment on the governor. An inspection of these mechanical devices was done by representatives from General Electric and Hydro. Although the devices could be used with the new controller, maintenance concerns with the existing equipment warranted a complete replacement to ensure overall reliability of the governor control system.

2. Upgrade Control System - Holyrood

Project completion was delayed from 2005 to 2006 because of a lack of Holyrood Plant resources and unavailability of an extended plant outage because of system integrity concerns. This delay resulted in a penalty from Invensys to recover lost revenue. Extra unforeseen commissioning labour by both the Contractor (Invensys) and plant forces contributed to cost overrun. This was attributed to plant equipment unavailability and technical problems with conversion from WDPF to Foxboro.

3. Fire Protection Upgrades - Holyrood

This project is on budget, however a higher portion of the work will be completed in 2007 than originally planned and as a result, less will be spent in 2006.

4. Construct New Diesel Plant - St. Lewis

The original estimate was based on a fully attended plant, however automation was subsequently added so that it could be semi-attended. The building design was also modified to include a separation between the control room and kitchen as well as the construction of a storage room. These modifications resulted in additional costs.

5. Replace Energy Management System - Energy Control Centre

The new Energy Management System went in service on June 9th, 2006. Costs for both software and hardware were less than expected due to minor design changes which arose after detailed engineering was completed and as a result, there was a reduction in contingency as well.

6. Applications Enhancements

This Application Enhancement Project provides for funding to support the Business Process Improvement Project. Since the Business Case for the BPI Enabler Product did not get the approval of Senior Management, the funds are no longer required.

7. Replace VHF Mobile Radio System

Project originally estimated to be completed in 2006. Due to delays associated with completing the Tender Evaluation and subsequent contract negotiations, this project is delayed by approximately 3 months. The forecast final cost for this project has been reduced by $604,000 due to a change in the approach of obtaining the services required. Rather than purchasing the equipment outright, Hydro has determined that purchasing communications capacity from a provider will result in significant overall cost reduction. In addition, the estimate for internal labour costs has been reduced.

SECTION G

Plan of Projected Operating

Maintenance Expenditures

2006 - 2015

For Holyrood Generating Station

Newfoundland & Labrador Hydro

July 2005

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INTRODUCTION

In the Decision and Order No. P. U.14 (2004) of the Board of Commissioners of Public Utilities ("the Board"), dated May 4,2004, (the 'Order) Newfoundland and Labrador Hydro ("Hydro") is required to **"file a ten year plan of maintenance expenditures for the Holyrood Generating Station with its annual capital budget application, until otherwise directed by the Board**" (p. 64 and Paragraph 12, p. 166 of the Order).

This requirement is specifically related to system equipment maintenance costs; therefore, capital expenditures have not been included in the following report. Capital expenditures for Holyrood are submitted annually to the Board with other Hydro capital proposals as part of annual capital budget applications, and vary from year to year.

This report addresses the identified and expected maintenance expenditures for the years 2006 to 2015 inclusive. With respect to these expenditures it must be noted that Unit No's. 1 and 2, as well as two of the main fuel storage tanks and other associated ancillary equipment, are in excess of thirty (30) years old. Unit No. 3 is in excess of twenty (20) years old, along with its associated equipment, including the other two main fuel storage tanks. While many components of this equipment have been replaced and additional items added through the maintenance and capital program over the years, numerous pieces of equipment and components are original.

An accurate ten (10) year plan of system equipment maintenance is difficult to complete given the harsh operating environment, varied production requirements and the age of the units. This report, however, outlines for the next ten (10) years, maintenance items that are anticipated at this time. This plan, of course, will change as time progresses. The operating condition of the equipment will be continuously reviewed and, undoubtedly, events will occur that are not foreseen at this time, which will require changes in the currently anticipated annual

maintenance. As can be seen from this report, there must be variation in annual operating costs for the Holyrood Thermal plant. It is not possible to “levelize” the cost of maintaining a plant such as Holyrood where there are numerous components and systems integrated together to form a fossil fired thermal electric generating system.

MAINTENANCE PHILOSOPHY

The Board, in its Order as related to the Holyrood Thermal Plant, noted at p. 64 that **"The Board will require NLH's10 year plan of maintenance expenditures for the Holyrood Generating Station to be updated annually to reflect changing operating circumstances."**

It would be useful to first review the three main types or categories of maintenance undertaken at Holyrood.

1) Preventive Maintenance

While it is true that any plant will incur greater maintenance costs as it ages, Holyrood has used, and continues to use, up-to-date maintenance techniques and practices to maintain plant efficiency, availability and reliability. These include preventive, predictive and condition-based maintenance techniques, which are usually referred to by the overall term of "Preventive Maintenance". The basic principle underlying this approach to maintenance is timely intervention to prevent imminent or catastrophic failure, which may cause a substantial safety exposure, an increase in cost or an extended unavailability of the unit or system.

Preventive maintenance, in its specific sense, comprises routine inspections, checks and component replacement at specific time intervals, to prevent failures known, or reasonably expected, to occur within a definable time or operating hour interval during the life of the equipment, e.g. generator brush wear, air and oil filter replacements, etc. This also includes discarding equipment or components rather than repairing them when it is less expensive to do so.

Predictive maintenance involves routine testing of equipment to determine deterioration rates and initiating and carrying out repairs in a timely manner before a failure occurs, e.g. ultrasonic thickness checks on fluid

lines to monitor erosion wear rates, non-destructive testing of boiler and turbine components to determine fatigue, wear or corrosion rates and remaining life. Predictive maintenance items include such things as boiler and auxiliary equipment annual overhaul, among other items, wherein an assessment is made of components or subsystems that are only accessible during these overhauls.

There is also regular or continual monitoring of equipment operating parameters with a comparison of the results with optimum conditions to determine the most economic time to intervene and perform remedial work that is intended to return the equipment to optimum performance levels, e.g. air heater washes, generator winding insulation condition, oil sampling and testing, etc.

Turbine major and minor overhauls are, effectively, long-term predictive and preventive maintenance activities. A turbine major overhaul is a major disassembly, inspection and repair of the whole turbine. Since this is a very expensive and time consuming activity, the time between these overhauls is extended to minimize the recurring cost and maximize the equipment operating time, and thus useful life of the internal wearing components. Prior to 1988, these major overhauls were carried out at four-year intervals; a subsequent assessment of the risk and cost savings resulted in extending these overhauls to six-year intervals.

In 2003, a study was undertaken by Hartford Steam Boiler Insurance Company, using their proprietary program called Turbine Overhaul Optimization Program (TOOP). This assesses the causes of failure, the risk of failure and the maintenance history of the Turbines, and then proposes the optimum frequency between major overhauls. This assessment concluded that the Turbine major overhaul interval could be extended to 9 years from the major overhaul of Unit #1 in 2003, the major overhaul of Unit #2 in 2005 and the major overhaul of Unit #3 in 2007,

providing that certain upgrades of internal components are made. These recommendations have been accepted and provision for the required upgrades have been incorporated into this updated 10 year plan, see Appendix 4, 2007, Unit 3 TOOP Project.

Turbine valve overhauls are carried out at three-year intervals, between major overhauls. This has been found necessary, due to the critical nature of the safety and reliability aspects of these valves to the turbine operation and integrity, and will continue to be maintained on this three-year interval between major overhauls.

2) Corrective Maintenance

In addition to the predictive maintenance tactics outlined above, there are also corrective maintenance requirements. These include repairs to equipment as it fails or reaches the point where preventive maintenance has identified that the equipment is approaching the end of its useful service life. E.g. wear and tear on pumps, pipes and valves in the main and auxiliary systems, motor rewinds due to failed or deteriorated winding insulation, or as a result of adverse conditions (humidity, salt laden atmosphere, etc), replacement of corroded piping equipment and boiler tube failure repairs etc. In 2003, Unit #2 suffered 3 Superheater Tube failures and their analysis indicated a common tube failure problem had developed. However, at this stage, no provision had been made for additional tube failure repairs, but future capital refurbishment, has been incorporated in the 2006 Capital Budget.

3) Projects

Operating projects are those major cost repairs and inspections that are required to return structures and equipment to their original or near original condition to maintain structural integrity, possibly extend plant life, improve efficiency, improve availability and prevent or reduce

environmental risks. Such projects include repairs to building structural steel, roof repairs/replacement, fuel oil tank and pipeline inspection and coating, replacement of equipment or components no longer supported by the original manufacturer. A major Asbestos Abatement program commenced in 2005 and will be completed over a three-year period. Due to the significant cost (approaching $9M), Hydro was given approval to treat this as an extraordinary repair, which will mean an annual cost will be recovered over an additional five years, bringing the total cash flow period to eight years, 2005 to 2012.

COST VARIABILITY

Preventive maintenance costs are generally incurred annually at a constant level and do not fluctuate significantly. This does not apply to corrective maintenance costs, which are unavoidable and somewhat unpredictable due to the changing energy production demands on the units from year to year. These changing demands give rise to changes in wear rates, the majority of which cannot be monitored closely enough for reasonably accurate prediction, without incurring excessive inspection costs. Excessive inspection may in itself introduce increased risk of failure and thus additional cost, so all must be considered in balancing the most appropriate amount of inspection with accepted levels of failure. These costs however, generally balance from one year to another.

The turbine and valve overhaul costs are cyclic in nature. With three units in the plant on a nine-year major Turbine overhaul cycle interspersed with a three-year valve overhaul, this component of the system equipment maintenance cost is one of the significant reasons for the observed annual fluctuations that make normalizing annual maintenance costs difficult.

Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
No. 1	Minor			Minor			Major			Minor
No. 2			Minor			Minor			Major	
No. 3		Major			Minor			Minor		
General Cost	↓	↑	↓				↑	↓	↑	↓

Similarly, major operating projects, because of their extended maintenance intervals (years) or non-repeatability also add to the annual fluctuations of the system equipment maintenance costs.

Maintenance projects for the Holyrood Thermal plant are planned on a five-year basis, but as with any plan, it is not 'fixed' or definitive, as other events can cause a shift in the prioritization of such projects. This five-year maintenance plan is regularly updated by Hydro as time progresses.

DETAILED ANALYSIS

Attached are Appendices 1 to 9, which set out the ten-year maintenance plan for the Holyrood Thermal plant, as requested by the Board. Appendix 1 is a summary and indicates the expected expenditures in each of the major equipment groupings containing system equipment maintenance (SEM) costs for the years 2006 to 2015. Appendices 2 to 9, inclusive, show the expected SEM costs categorized according to Preventive, Corrective, Overhauls and Major Operating Projects for each of the major equipment groupings containing SEM costs.

This plan was prepared using the 2006 preventive, corrective and overhaul data and the current 2006 to 2010 operating project lists from Hydro's five-year plan for the Holyrood Thermal Plant as the base data. Considerable judgment of plant personnel had to be used to prepare a ten-year plan.

Hydro does not normally use any escalation in its five-year operating plan at the Plant or regional level. This five-year plan is primarily used for internal purposes and generation of work plans rather than detailed financial planning. However, in the attached ten-year plan, an escalation factor has been used, consistent with the series used for capital project estimates. A single escalation rate was used in this exercise and assumed a 50% weighting of Labour escalation and 50% of Material escalation, and is as follows:-

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
%	2.0	2.0	2.2	2.2	2.2	2.2	2.3	2.2	2.1

Appendices 2 to 9 list the categories of SEM costs for the years 2006 to 2015 in each of the major equipment groupings containing SEM. The categories listed are:

Preventive – Annual	Routine preventive maintenance activities carried out every year
Corrective	Typical but unknown breakdown/ emergency repairs carried out during the year
Turbine – Major	Major overhauls now planned every nine (9) years
Turbine – Minor	Major valve overhauls currently carried out every three (3) years, between major overhauls.
Boiler – Annual	Boiler overhauls carried out annually
Operating Projects	Non-capitalized projects, justified on the basis of Reliability, Safety, Environment or Cost Benefit Analyses.

Appendices 2, 3 and 4 (for Unit No's. 1, 2 and 3 respectively) use all of the foregoing categories. Appendices 5 to 9 are for the remaining equipment groupings of Common Equipment, Building and Grounds, Water Treatment Plant, Waste Water Treatment Plant & Environmental Monitoring and use only Preventive, Corrective and Major Operating Projects.

It must be noted that the Appendices do not itemize preventive and corrective items. The preventive maintenance program consists of approximately 1000 PM's performed on plant equipment annually. Corrective items include a large number of low cost jobs, the majority of which are largely unknown until they happen; thus, it is not practical to provide a breakout of the costs. Projects included in the headings of Operating Projects, Turbine - Major and Turbine - Minor work have been itemized in the year that the work is planned for execution.

Hydro's normal five-year plan identifies specific projects up to 2010. For the period 2011 to 2015, Hydro used an average per unit of the project budgets for

the three units over the years 2006 to 2010 with escalation. This approach was taken, as it is not practical or possible to determine specific work items, which are essentially unknown for the period of 2011 to 2015.

SUMMARY

This Plan presents the best available information at this time for a ten-year forecast of the maintenance projects for the Holyrood Plant and is based on the 2006 system equipment maintenance budget. As with any forecast, it is subject to change depending on the operating demands of the plant, the results of inspections and assessments of changing equipment conditions.

The Plan takes into account up-to-date maintenance tactics and known restoration and inspection work. As can be seen from the Plans, fluctuations in the annual cost cannot be eliminated due to the 9-year Turbine Overhauls and 3-year Valve Overhauls, as well as the large but infrequent Major Operating projects, such as Fuel Oil Storage Tank painting and inspection.

APPENDIX 1

TOTAL HOLYROOD SEM[1] 10 YEAR MAINTENANCE EXPENDITURES ESCALATED (K)

	($000)										
	Base Year 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
UNIT #1 Total SEM	1,956	1,265	1,332	1,671	1,348	1,555	3,121	1,626	1,661	2,097	
UNIT #2 Total SEM	1,248	1,428	1,947	1,319	1,348	1,923	1,589	1,626	3,263	1,696	
UNIT #3 Total SEM	1,260	4,065	1,602	1,319	1,707	1,555	1,589	2,010	1,661	1,696	
Common Equipment Total SEM	2,404	2,260	2,579	4,284	4,081	1,642	1,678	1,716	1,754	1,791	
Buildings and Grounds Total SEM	894	692	581	615	498	687	702	718	734	750	
WT Plant Total SEM	241	161	164	240	297	231	237	242	247	253	
WWT Plant Total SEM	18	5	43	19	6	19	19	19	20	20	
Environmental Monitoring Total SEM	171	175	178	182	186	180	184	188	192	196	
Total Holyrood SEM	8,192	10,051	8,426	9,648	9,469	7,791	9,119	8,145	9,534	8,499	
Total Operating Projects	2,806	3,517	2,822	3,920	3,615	1,809	1,848	1,891	1,933	1,973	

[1] *SEM – System Equipment Maintenance*

APPENDIX 2

HOLYROOD 10 YEAR MAINTENANCE PLAN

	($000)										
Unit No. 1	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly	150	153	156	159	163	167	170	174	178	182	
Corrective	290	296	302	308	315	322	329	337	344	351	
Turbine Major Overhaul							1,532				
Turbine Valve Overhaul	331			352						401	
Boiler Annual Overhaul	800	816	832	851	869	888	908	929	949	969	
Auxiliary Equipment Annual Overhaul											
Operating Projects											
Air Heater Cold End Repairs	160										
Breeching Floor Refractory	40										
Breeching Pant Leg Roof	35										
Upgrade #1 Turbine Emerg. Trip Device	150										
Boiler Feed Pump East			42								
Projects – Lump Sum for Future Years						178	182	186	190	194	
Total - Unit No. 1	**1,956**	**1,265**	**1,332**	**1,671**	**1,348**	**1,555**	**3,121**	**1,626**	**1,661**	**2,097**	
Total Operating Projects Unit 1	385		42			178	182	186	190	194	

(1) 178 - Average Project Cost Per Unit 2006 to 2010 (plus escalation)

APPENDIX 3											
	($000)										
Unit No. 2	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly	150	153	156	160	163	167	170	174	178	182	
Corrective	290	296	302	308	315	322	329	337	344	351	
Turbine Major Overhaul									1,602		
Turbine Valve Overhaul			344			368					
Boiler Annual Overhaul	800	816	832	851	869	888	908	929	949	969	
Auxiliary Equipment Annual Overhaul											
Operating Projects											
Unit 2 Vacuum Pump South	8										
Air Heater Cold End Repairs		163									
Replace Unit 2 Main Boiler Stop Valve			156								
Upgrade Turbine Emerg Trip Device			156								
Projects - Lump Sum for Future Years						178	182	186	190	194	
Total - Unit No. 2	**1,248**	**1,428**	**1,947**	**1,319**	**1,348**	**1,923**	**1,589**	**1,626**	**3,263**	**1,696**	
Total Operating Projects Unit 2	8	163	312			178	182	186	190	194	

[(1)] 178 - Average Project Cost Per Unit 2006 to2010 plus escalation)

APPENDIX 4											
	($000)										
Unit No. 3	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly	150	153	156	160	163	167	170	174	178	182	
Corrective	290	296	302	308	315	322	329	337	344	351	
Turbine Major Overhaul		1,377									
Turbine Valve Overhaul					360			384			
Boiler Annual Overhaul	800	816	832	851	869	888	908	929	949	969	
Auxiliary Equipment Annual Overhaul											
Operating Projects											
7th Stage Bucket Replacement	1										
HP,IP & N1,2,3 Pkg Ring Replacement	1										
Replacement of UPS Batteries	12										
Sootblower System	2										
Cold Water Line	5										
TOOP Recommendations		255									
7th Stage Bucket Replacement		408									
7th Stage Diaphragm – Major Repairs		255									
Boiler Feed Pump East		41									
HP,IP & N1,2,3 Pkg Ring Replacement		51									
HP/IP Diaphragm Spill Strip Repairs		102									
Nozzle Block Repairs		102									
Inspect/Replace Lower Valve Snout Rings		163									
East Circulating Water (CW)Motor Rewind		46									
Replace Unit 2 Major Boiler Stop Valve			156								
Turbine Emergency Trip Device			156								
Projects – Lump Sums for Future Years						178	182	186	190	194	
Total - Unit No. 3	**1,260**	**4,065**	**1,602**	**1,319**	**1,707**	**1,555**	**1,589**	**2,010**	**1,661**	**1,696**	
Total Operating Projects Unit 3	20	1,423	312			178	182	186	190	194	
Total SEM for all Three Units	**4,464**	**6,758**	**4,881**	**4,308**	**4,402**	**5,032**	**6,300**	**5,261**	**6,586**	**5,490**	
Total Project Work for Three Units	413	1,586	666			533	545	557	569	581	

(1) 178 - Average Project Cost Per Unit 2006 to 2010 (plus escalation)

APPENDIX 5											
	($000)										
Common Equipment	2006	2007	2008	2009	2010	2011	2012	2013	2014		
Preventive – Yearly	225	229	234	239	244	250	255	261	267	272	
Corrective	468	478	487	498	509	520	531	544	556	567	
Operating Projects											
Asbestos Abatement	909	1,487	1,806	1,846	1,589						
FO Storage Tank #2 Inspection & Repair	500										
Ground Fault Protection	20										
Inspection of Seal Pits & Piping	5										
Painting Mechanical Equipment	50										
Pipe Surveillance	50										
Plant Color Coding	15										
Replacement of UPS #4 Batteries	12										
Stack Repairs	150										
Pipe Surveillance		51	52								
Plant Color Coding		15									
Fuel Oil Storage Inspection & Repair				1,701	1,739						
Projects – Lump Sum for Future Years						872	891	912	932	951	
Total Common Equipment	**2,404**	**2,260**	**2,579**	**4,284**	**4,081**	**1,642**	**1,678**	**1,716**	**1,754**	**1,791**	
Total Operating Projects Common Equipment	1,711	1,553	1,858	3,547	3,327	872	891	912	932	951	

(1) 872- Average Project Cost 2006 to 2010 (less Asbestos Removal, plus escalation)

APPENDIX 6

	($000)										
Buildings Grounds	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly	230	235	239	245	250	255	261	267	273	279	
Corrective	228	233	237	242	248	253	259	265	271	276	
Operating Projects											
Coat Interior Liner Panels	100	102	104								
Coat Powerhouse/warehouse Floors	66										
Luminaire Replacement	20										
Repair & Repaint Structural Steel	70	92									
Roof Replacement & Restoration	180										
Marine Terminal Fender Repairs		31									
Coat Int. Liner Panels, Pwhse/CW Pumphouse				128							
Projects - Lump Sum for Future Years						178	182	187	191	195	
Total – Buildings and Grounds	**894**	**692**	**581**	**615**	**498**	**687**	**702**	**718**	**734**	**750**	
Total Operating Projects Buildings and Grounds	436	224	104	128		178	182	187	191	195	

(1) 178 - Average Project Cost 2006 to 2010 (plus escalation)

APPENDIX 7											
	($000)										
WT Plant	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly	53	54	55	56	57	59	60	61	63	64	
Corrective	105	107	110	112	114	117	119	122	125	128	
Operating Projects											
Replace Acid Lines on Skids	18										
Unit #2 Condensate Polisher Resin	65										
Unit #1 Condensate Polisher Resin				72							
Unit #3 Condensate Polisher Resin					75						
Water Treatment Plant “A” Train Resin					50						
Projects - Lump Sum for Future Years						56	57	59	60	61	
Total WT Plant and Environmental	**241**	**161**	**164**	**240**	**297**	**231**	**237**	**242**	**247**	**253**	
Total Operating Projects WT Plant	83			72	125	56	57	59	60	61	

(1) 56 - Average Project Cost 2006 to 2010 (plus escalation)

APPENDIX 8											
	($000)										
Waste Water Treatment Plant	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly	1	1	1	1	1	1	1	1	1	1	
Corrective	4	4	4	4	4	4	5	5	5	5	
Operating Projects											
WWTP Periodic Basin Cleaning & Inspection	13		14	14							
110V AC Power Supply to Landfill			18								
Filter Fabric Replacement-Plat Press			6								
Projects - Lump Sum for Future Years						13	13	13	14	14	
Total WWT Plant	**18**	**5**	**43**	**19**	**6**	**19**	**19**	**19**	**20**	**20**	
Total Operating Projects WWT Plant	13		37	14		13	13	13	14	14	

(1) 13 - Average Project Cost 2006 to 2010 (plus escalation)

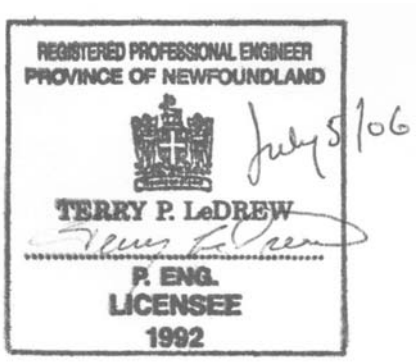
APPENDIX 9											
	($000)										
Environmental Monitoring	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Preventive – Yearly											
Corrective	21	21	22	22	23	23	24	24	25	25	
Operating Projects											
Emissions Monitoring	150	153	156	159	163						
Projects - Lump Sum for Future Years						156	160	163	167	171	
Total Environmental Monitoring	**171**	**175**	**178**	**182**	**186**	**180**	**184**	**188**	**192**	**196**	
Total Operating Projects Env. Monitoring	150	153	156	159	163	156	160	163	167	171	

(1) 156 - Average Project Cost 2006 to 2010 (plus escalation)

SECTION H

Section H
Tab 1

Holyrood Unit No. 3
Turbine & Generator Upgrade



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Regulated Operations
Newfoundland & Labrador Hydro
June 20, 2006

PROJECT WORK JUSTIFICATION

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1. Project Summary

In 2002, a decision was made by Hydro (Holyrood) to investigate the possibility of optimizing the intervals of conducting Major Turbine/Generator outages on Unit No. 3 Unit at the Holyrood Thermal Generating Station. Unit No. 3 is a 150 MW Hitachi unit commissioned in 1979 and was last overhauled in July 2001. The current program is to schedule these 'major' outages on a six-year rotation, with 2007 being the next major for this unit. Based on risk analysis, the power industry over the past ten years has been steadily moving towards extending major Turbine/Generator outages for longer periods, the interval based on both the operating and physical conditions of the unit. The target of this extension is to reduce maintenance expenditures and provide longer periods of unit operation.

In 2003, Hydro (Holyrood) contracted Hartford Steam Boiler Inspection and Insurance Company (HSB) based in Hartford, Connecticut to perform a risk-based analysis of Unit No. 3 Turbine / Generator for the purposes of extending major outages on this unit beyond the current six year cycle. HSB is a leading company in risk ranking and benchmarking and has performed similar analysis for other utilities worldwide.

Their Unit No. 3 analysis was conducted in the following areas:

- High Pressure (HP) Turbine
- Intermediate Pressure (IP) Turbine
- Low Pressure (LP) Turbine
- Generator

In December 2003, HSB presented their findings and recommendations in a report to Hydro. In general the analysis indicated that major outages pertaining to all Unit No. 3 T/G areas above (HP, IP, LP and Generator) could be extended to a nine (9) year interval based on replacements and upgrades recommended and being instituted during the next major outage.

Materials would be purchased in 2007, and the major portion of the work would be performed under an existing partnering arrangement by General Electric. Plant Instrumentation and Electrical will assist when necessary. The project will be managed by Holyrood Engineering. The total project cost $1,654,321.00

2. Background

Unit No. 3 Turbine / Generator was designed, built and commissioned by Hitachi in 1979. It is a 150 MW unit comprised of a steam turbine coupled to an electrical generator. The turbine converts high-energy steam into rotating energy at 3600 rpm and the coupled generator converts this rotary motion into electrical power. The turbine is constructed of three stages: a single flow, high pressure section, a single flow, intermediate section and a separate double flow, low pressure section. Each stage is designed such that it extracts energy from the supplied steam as efficiently as possible converting it into rotating energy. The turbine is constructed of special metal alloys to withstand the extreme temperatures and pressures (2000 psi at 1000 deg. F) and must conform to very close tolerances in order to convert the steam energy as efficiently as possible. The generator itself is a two-pole unit rotating at 3600 rpm to produce three-phase, sixty-cycle, 16,000 volt energy at its stator terminals.

To ensure that this unit operates at peak performance and can provide maximum energy as required on demand, it is necessary that it undergo major outages, currently every six years. The outage period is of a twelve (12) weeks duration and currently performed under a partnering arrangement by General Electric. Approximately 30 employees consisting of a skilled maintenance crew, supervisors, and technical directors working 2 x 10 hr shifts are required until the outage is completed. Hydro's technical employees in particular the Instrumentation and Electrical departments supported the outage work where necessary. Hydro (Holyrood) provides overall Project direction with General Electric providing technical support.

A major outage requires that the turbine / generator be completely dismantled for examination of critical components as well as mechanical clearances to determine the extent of repairs or replacements. From 1979 until 1990, major outages were performed on a four-year rotation. Based on industry direction and overall condition of the equipment during outages, Hydro decided to lengthen the major outage period to six years.

In 2003, Hydro (Holyrood) contracted HSB to perform a risk-based analysis of Unit No. 3 Turbine / Generator for the purposes of extending major outages on this unit in excess of the current six year cycle. HSB used its risk-based analysis tool (TOOP) to: 1) quantify the risks; 2) identify how these risks could be reduced to extend outages; 3) identify how to target outage work to manage the risks; 4) benchmark Hydro's Holyrood Unit No. 3 performance against industry standards; and 5) provide risk-based recommendations for future maintenance. Based on their recommendations, to extend major outages to the nine year period would require upgrades and repairs to both the turbine and generator that would take place during the 2007 major outage.

3. Operating Experience

Major outages have been performed since 1979 as per schedule - first at four-year intervals and currently at six-year intervals. Experience has indicated that performing the correct maintenance during outage periods does allow for reliable operation of both turbine and generator until the next scheduled event. There has not been a situation where either the turbine or generator had to undergo an unscheduled outage during the past twenty-six years of operation. This would concur with the observations and recommendations of HSB to extend the major outages to the nine-year period provided that the correct maintenance and upgrades are performed in 2007.

4. Overhaul Cost and Other Considerations

A major outage on Unit No. 3 turbine/generator in 2001 was completed at a cost of $2.39 M. The 2007 major outage is projected to cost $2.4 M. Upgrading Unit No. 3 to a condition that would extend the outage period from the current six-year schedule (2007 - 2013) to a nine-year schedule (2007 - 2016) would introduce savings to the Holyrood Operating budget in future years, but require additional capital. This would be an additional one-time capital expenditure that would defer the currently scheduled major outage in 2013 at a cost of $2.4M (today's dollars) to 2016. Subsequent Unit No. 3 major outage beyond 2016 would occur on a nine-year schedule with similar escalated savings.

Unit No. 3 turbine / generator has two modes of operation: 1) Generation mode where electrical power is produced for the island interconnected grid; and, 2) synchronous Condenser mode where no electrical power is produced, but the generator is used for voltage support on the eastern portion of the island grid. Eliminating the 2013 outage period could either provide an extra generation capability or synchronous condenser operation which result in additional savings.

Further benefit will also be realized through an improved efficiency of the steam turbine of at least 0.4%. This has been identified by a steam path audit of the turbine.

5. Alternatives

The alternatives considered in this analysis are simply the current six-year outage schedule or a capital investment to upgrade the turbine in preparation for a nine-year major outage program.

6. Project Description

The objective of the project is to reduce future operating costs and down time related to unit No. 3 major outages and increase turbine efficiency. The following

is proposed in 2007 to upgrade the turbine / generator, in addition to the regular Operating and Maintenance work in preparation for the extended outage period.

- Turbine nozzle block
- Lower valve assembly
- HP/IP diaphragm spill strips
- 7th stage Buckets
- 7th stage diaphragms
- Generator
- Boroscope inspection ports and monitoring equip.
- HP, IP, N1, 2 and 3 Packings

7. Schedule

The work will be completed during the twelve-week major outage scheduled for 2007.

8. Capital Cost

The project will require:

Material Supply	$1,300,000
Plant Labour	$ 20,000
Engineering (internal)	$ 20,000
O/H, AFUDC, Escalation	$ 180,321
Contingency	$ 134,000
TOTAL	$1,654,321

9. Economic Analysis

9.1 Six-year overhaul interval

For continued six-year maintenance intervals the usual major overhaul cost continues (escalated) at each six-year interval. As well, major steam valve overhauls are required at three-year intervals and this occurs mid-cycle of the major overhauls. Those also continue thereafter.

During major overhauls the unit is not available for synchronous condenser operation imposing an additional operating cost as one of the remaining units: (Unit No 1 or 2) will need to operate as a generator to provide voltage support on the eastern portion of the grid. This is estimated to cost approximately $1.35 million each time. Neither Unit No. 1 nor Unit No. 2 has the capability to operate in synchronous condenser mode, necessitating a unit to operate as a generator.

The annual cashflow and cumulative net present worth of this scenario follow as Table 9a.

PROJECT COST / BENEFIT ANALYSIS TEMPLATE

Unit #3 Upgrade for 9-Yr Outage Progra

1. Status Quo - 6 Year Overhaul

Status Quo

Note: Costs are shown as positive values;Benefits as negative values

Current Year	**2006**
Present Worth Year	2007
Number of Years in Study	36
Discount Rate	8.4%
Total In-service Project Cost	
In-service Year	2007
Other Project Cost ***after*** In-service (if applicable)	$ -
Other Project Year (if applicable)	
Replacement Cost (if applicable)	$ -
Replacement Year (if applicable)	
Project cost in Ending (**E**) or Beginning (**B**) Year $$	E
O&M costs - 75% Materials, 25% Labour (**75**) or 50% Materials, 50% Labour (**50**) or User (**U**)	75

A	B	C	D	E	F	G	H	I	J	K	L
Year		Annual O&M Cost $	Annual Fuel Price (if applicable)	Annual Fuel Cost $	Other Cost $	Total Costs $	Benefit 1 *(specify)* $	Benefit 2 *(specify)* $	NET $	P.W. January 2007	Cumulative Present Worth
0	2006	-		-	-	-	-	-	-	-	-
1	2007	2,446,800		-	1,376,325	3,823,125	-	-	3,823,125	3,526,868	3,526,868
2	2008	-		-	-	-	-	-	-	-	3,526,868
3	2009	-		-	-	-	-	-	-	-	3,526,868
4	2010	431,489		-	-	431,489	-	-	431,489	312,502	3,839,370
5	2011	-		-	-	-	-	-	-	-	3,839,370
6	2012	-		-	-	-	-	-	-	-	3,839,370
7	2013	2,739,996		-	1,541,248	4,281,244	-	-	4,281,244	2,434,249	6,273,619
8	2014	-		-	-	-	-	-	-	-	6,273,619
9	2015	-		-	-	-	-	-	-	-	6,273,619
10	2016	483,929		-	-	483,929	-	-	483,929	216,017	6,489,636
11	2017	-		-	-	-	-	-	-	-	6,489,636
12	2018	-		-	-	-	-	-	-	-	6,489,636
13	2019	3,084,014		-	1,734,758	4,818,772	-	-	4,818,772	1,688,712	8,178,349
14	2020	-		-	-	-	-	-	-	-	8,178,349
15	2021	-		-	-	-	-	-	-	-	8,178,349
16	2022	546,427		-	-	546,427	-	-	546,427	150,336	8,328,685
17	2023	-		-	-	-	-	-	-	-	8,328,685
18	2024	-		-	-	-	-	-	-	-	8,328,685
19	2025	3,486,914		-	1,961,389	5,448,302	-	-	5,448,302	1,176,806	9,505,491
20	2026	-		-	-	-	-	-	-	-	9,505,491
21	2027	-		-	-	-	-	-	-	-	9,505,491
22	2028	618,085		-	-	618,085	-	-	618,085	104,810	9,610,301
23	2029	-		-	-	-	-	-	-	-	9,610,301
24	2030	-		-	-	-	-	-	-	-	9,610,301
25	2031	3,944,187		-	2,218,605	6,162,792	-	-	6,162,792	820,437	10,430,739
26	2032	-		-	-	-	-	-	-	-	10,430,739
27	2033	-		-	-	-	-	-	-	-	10,430,739
28	2034	699,140		-	-	699,140	-	-	699,140	73,071	10,503,809
29	2035	-		-	-	-	-	-	-	-	10,503,809
30	2036	-		-	-	-	-	-	-	-	10,503,809
31	2037	4,461,428		-	2,509,553	6,970,981	-	-	6,970,981	571,987	11,075,796
32	2038	-		-	-	-	-	-	-	-	11,075,796
33	2039	-		-	-	-	-	-	-	-	11,075,796
34	2040	790,826		-	-	790,826	-	-	790,826	50,943	11,126,740
35	2041	-		-	-	-	-	-	-	-	11,126,740
36	2042	-		-	-	-	-	-	-	-	11,126,740
						-			-	-	-
						-			-	-	-
						-			-	-	-
						-			-	-	-

Assumptions & Notes:

9.2 Nine-year overhaul interval

For the nine-year overhaul interval the annual overhauls continue at nine-year intervals and, as well, two additional main steam valve overhauls are required between turbine overhauls at year three and year six. The unavailability of the synchronous condenser again occurs at each major overhaul.

In addition to the above the upgrade of the components will result in a minimum 0.4% efficiency increase which will continue through out over the status quo. This 0.4% increase will yield approximately $167,000 in 2007 and continue.

The annual cashflow and cumulative present worth of this scenario follows on ***Table 9b***.

Unit #3 Upgrade for 9-Yr Outage Progra
3. Capital $$ in 2007 (0.4% Eff. Gain)
Capital $$ 2007 (0.4%)

Note: Costs are shown as positive values;Benefits as negative values

Current Year	**2006**
Present Worth Year	2007
Number of Years in Study	36
Discount Rate	8.4%
Total In-service Project Cost	$ 1,654,321
In-service Year	2007
Other Project Cost ***after*** In-service (if applicable)	
Other Project Year (if applicable)	
Replacement Cost (if applicable)	
Replacement Year (if applicable)	
Project cost in Ending (**E**) or Beginning (**B**) Year $$	E
O&M costs - 75% Materials, 25% Labour (**75**) or 50% Materials, 50% Labour (**50**) or User (**U**)	75

A	B	C	D	E	F	G	H	I	J	K	L
Year		Annual O&M Cost $	Annual Fuel Price (if applicable)	Annual Fuel Cost $	Other Cost $	Total Costs $	0.4% Effeiciency *Fuel Savings* $	Benefit 2 *(specify)* $	NET $	P.W. January 2007	Cumulative Present Worth
0	2006	-		-	-	-	-	-	-	-	-
1	2007	2,446,800		-	1,376,325	5,477,446	-	-	5,477,446	5,052,994	5,052,994
2	2008	-		-	-	-	(166,732)	-	(166,732)	(141,893)	4,911,101
3	2009	-		-	-	-	(171,373)	-	(171,373)	(134,541)	4,776,560
4	2010	431,489		-	-	431,489	(176,378)	-	255,111	184,761	4,961,322
5	2011	-		-	-	-	(192,587)	-	(192,587)	(128,671)	4,832,651
6	2012	-		-	-	-	(224,556)	-	(224,556)	(138,404)	4,694,247
7	2013	456,666		-	-	456,666	(226,613)	-	230,053	130,805	4,825,051
8	2014	-		-	-	-	(233,747)	-	(233,747)	(122,606)	4,702,445
9	2015	-		-	-	-	(238,225)	-	(238,225)	(115,272)	4,587,173
10	2016	2,903,573		-	1,633,260	4,536,832	(234,552)	-	4,302,280	1,920,463	6,507,636
11	2017	-		-	-	-	(249,914)	-	(249,914)	(102,913)	6,404,723
12	2018	-		-	-	-	(265,439)	-	(265,439)	(100,835)	6,303,888
13	2019	514,002		-	-	514,002	(266,828)	-	247,174	86,621	6,390,509
14	2020	-		-	-	-	(272,912)	-	(272,912)	(88,229)	6,302,280
15	2021	-		-	-	-	(289,203)	-	(289,203)	(86,251)	6,216,029
16	2022	546,427		-	-	546,427	(307,607)	-	238,819	65,705	6,281,734
17	2023	-		-	-	-	(335,382)	-	(335,382)	(85,122)	6,196,612
18	2024	-		-	-	-	(351,987)	-	(351,987)	(82,414)	6,114,198
19	2025	3,486,914		-	1,961,389	5,448,302	(367,395)	-	5,080,907	1,097,450	7,211,649
20	2026	-		-	-	-	(314,599)	-	(314,599)	(62,686)	7,148,962
21	2027	-		-	-	-	(329,947)	-	(329,947)	(60,650)	7,088,313
22	2028	618,085		-	-	618,085	(347,482)	-	270,603	45,887	7,134,200
23	2029	-		-	-	-	(378,827)	-	(378,827)	(59,261)	7,074,939
24	2030	-		-	-	-	(397,767)	-	(397,767)	(57,402)	7,017,537
25	2031	657,365		-	-	657,365	(415,086)	-	242,278	32,254	7,049,791
26	2032	-		-	-	-	(355,360)	-	(355,360)	(43,642)	7,006,149
27	2033	-		-	-	-	(372,785)	-	(372,785)	(42,234)	6,963,914
28	2034	4,194,843		-	2,359,599	6,554,442	(392,464)	-	6,161,977	644,021	7,607,936
29	2035	-		-	-	-	(427,938)	-	(427,938)	(41,260)	7,566,675
30	2036	-		-	-	-	(449,377)	-	(449,377)	(39,970)	7,526,705
31	2037	743,571		-	-	743,571	(468,929)	-	274,642	22,535	7,549,241
32	2038	-		-	-	-	(401,607)	-	(401,607)	(30,399)	7,518,841
33	2039	-		-	-	-	(421,194)	-	(421,194)	(29,411)	7,489,430
34	2040	790,826		-	-	790,826	(443,503)	-	347,323	22,374	7,511,804
35	2041	-		-	-	-	(483,626)	-	(483,626)	(28,740)	7,483,064
36	2042	-		-	-	-	(507,855)	-	(507,855)	(27,841)	7,455,223
						-			-	-	-
						-			-	-	-
						-			-	-	-
						-			-	-	-

Assumptions & Notes:

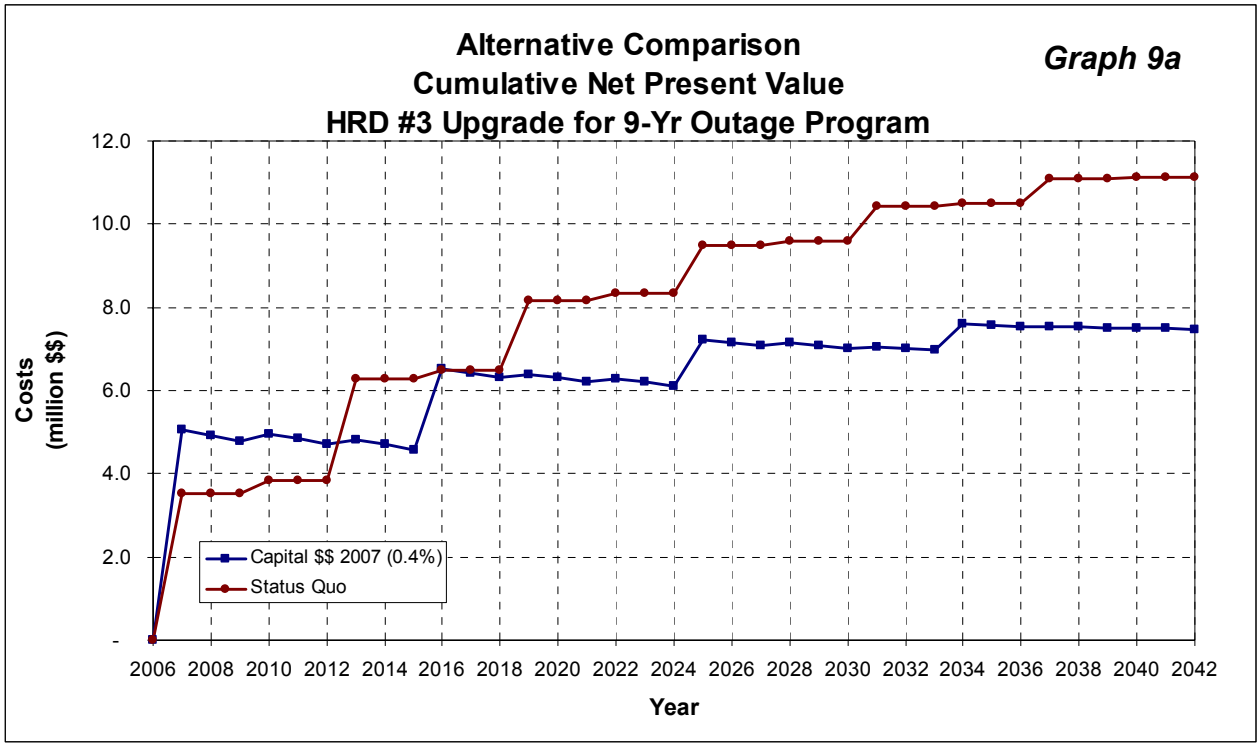
Fuel savings on increased eficiency is 0.4%

9.3 Benefit

The net present value benefit of proceeding with the nine-year major turbine overhaul and upgrade is indicated as follows:

	Net Present Value ($)	Net Present Value ($)	Benefit ($)
	Six-year interval	Nine-year interval	
To 2020	8,178,349	6,302,280	1,876,069
To 2042	11,126,740	7,455,223	3,671,517

The overall summary is presented as ***Graph 9a*** below.



10. Summary

The analysis completed by HSB indicates that there is no significant risk in extending the overhaul intervals for the turbine generator to nine years from the current six years, if recommended work is completed.

The economic analysis presented indicates that there is significant economic benefit in completing this work in terms of reducing future operating and maintenance cost. As well, it provides for greater availability over the study period for the unit to operate in a synchronous condenser.

It is proposed that Hydro complete the upgrade work during the 2007 overhaul and extend the overhaul interval for the turbine generator to nine years.

Section H
Tab 2

Wood Pole Line Management Program
Progress Report
2005 Inspection Program

Prepared By: **Kyle B. Tucker, P. Eng.**
Engineering Services – T&D
Newfoundland & Labrador Hydro
July 5, 2006

Background

Hydro maintains approximately 2400 km of wood pole transmission lines operating at 69, 138 and 230 kV. These lines consist of approximately 26,000 transmission size poles of varying ages, with the maximum age being 41 years. Almost two-thirds of transmission pole plant assets fall into two age categories; approximately 34% are at or over 30 years, and another 31% are 20 to 30 years old. The remaining asset age is less than 20 years old.

Historically, Hydro's pole inspection and maintenance practices followed the traditional utility approach of sounding inspections only. In 1998, Hydro decided to take core samples on selected poles to test for preservative retention levels and pole decay. The results of these tests raised concerns regarding the general preservative retention levels in wood poles. It is well known in the industry that poles become susceptible to fungi and/or insect attack as the preservative levels deplete.

Between 1998 and 2003, Hydro undertook additional coring and preservative testing. This testing confirmed that there were a significant number of poles, which had a preservative level below what was required to maintain the required design criteria. During this period, certain poles were replaced because the preservative level had lowered to the point that decay had advanced and the pole was no longer structurally sound. These inspections and the analysis of the data confirmed that a more rigorous wood pole line management program was required.

Hydro first initiated the Wood Pole Line Management program as a pilot study in 2003. This pilot, lead to the recommendation that the program continue as a long-term asset management and life extension program. The program was presented to the Board of Commissioners of Public Utilities in October 2004 as part of Hydro's ongoing capital program and was titled "Replace Wood Poles – Transmission". The proposal was supported in the application by the Hydro internal report titled "Wood Pole Line management Using RCM Principles" by Dr. Asim Haldar, Ph.D, P.Eng.

The Board found that "This approach (by Hydro) is a more strategic method of managing wood poles and conductors and associated equipment and is persuaded that the new WPLM Program, based on RCM principles, will lead to an extension of the life of the assets, as well as a more reliable method of determining the residual life of each asset. One of the obvious benefits of RCM will be to defer the replacement of these assets thereby resulting in a direct benefit to the ratepayers".

The Board found that the project was justified and prudent and approved the expenditures as submitted in the 2005 Capital Budget. (Ref; Board Order P.U. 53(2004).

As part of its 2005 Capital Budget application process, Hydro committed to provide the Board with an update of the 2004 program work, a progress report of the 2005 work and a forecast of the program objectives for 2006 and beyond. This report would be provided with the 2006 Capital Budget Application.

The Program

The Wood Pole Line Management (WPLM) program is a condition-based program, which uses the basic Reliability Centered Maintenance principles and strategies. Under the program, line inspection data in each year is analyzed by and appropriate recommendations made for necessary refurbishment and/or replacement of line components (poles/structures, hardware, conductor, etc) in the subsequent year. The inspection data and any refurbishment and/or replacement of assets are recorded in a centralized database for easy access and future tracking.

The program is aimed at early detection and treatment of the wood pole before the integrity of the structures is jeopardized. If the deterioration of the structure is not detected early enough then the reliability of the structure will affect the reliability off the line and the system as a whole. It may also create safety issues and hazards for the Hydro personnel and for the general public.

Update of 2005 Work

The first objective of the 2005 program was to inspect, test and treat at least 3900 poles and associated line components. The program is built on the strategy of focusing on the older lines first and working towards the newer lines. The following table summarizes the inspection accomplishments for 2005.

Regions	Line Name	Year In Service	Voltage Level	Target Number of Poles Inspected	Complete	Inspection rate (poles per week)
Eastern	TL 201	1966	230kV	214	100%	36
	TL 218	1983	230kV	221	50%	
Central	TL 210	1969	138kV	468	75%	69
	TL 223	1966	138kV	95	77%	
	TL 234	1981	230kV	272	100%	
Western	TL 243	1978	138kV	175	100%	36
	TL 250	1987	138kV	245	28%	
Northern	TL 226	1970	66kV	271	79%	45
	TL 227	1970	66kV	332	67%	
	TL 241	1983	138kV	146	13%	
Labrador	TL 240	1976	138kV	248	9%	42
Total				2687		

Inspection of the estimated number of poles could not be accomplished. The inspection crew sizes of Eastern and Western regions are small. In addition, other higher priority work in these regions. Therefore, the projected inspection target could not be maintained. For these reasons, and given that all old poles in these regions have already been inspected, future inspection requirements have been reduced to 400 poles per year, down from 800, for the duration of this 10 year cycle. This is not anticipated to have any impact on the effectiveness of the program.

Inspection program in Labrador was hampered by difficulties in acquiring lineworkers, and equipment failures. Steps have been taken to ensure that these problems will not occur in the future, and the target inspection for 800 poles per year should still be possible for future years.

The second objective of the 2005 program was to collect all data electronically for database upload and archiving. Data collection hardware developed in 2004 were to be solely utilized, with paper forms for emergency purposes only.

The data collectors proved to be very successful. In a couple of cases, temporary unit failure created the requirement to have data collected on paper forms for a couple of days. This data was then entered into the data collector when the opportunity arose, and when it would not interfere with inspection.

The third objective was the replacement of defective components identified in 2003/2004 inspections. Hydro crews replaced 75 poles, numerous crossarms, and many smaller components, during the year, as identified in the spring of 2005. A further fifty (50) poles on the Avalon Peninsula (TL 201 & TL 203), scheduled for replacement in the fall of 2005 by contractor were carried over to 2006 because the same contractor was delayed while working on another Hydro project (Duck Pond). Work began in January 2006, however failure of Unit 2 at Holyrood meant no outages were possible on either line, and further delay in the project was unavoidable. Only 25% of the work which did not require line outages could be completed in January. Pole replacement restarted on April 4, with completed on May 11.

Conclusion

In conclusion, the three major objectives for the 2005 program were achieved, with the exception of a few points detailed above. The budget estimate of $2.6M was realized.

The framework for systematically analyzing a large volume of wood pole transmission line inspection data, developed using the reliability based analysis technique, is still under expansion to include additional components. The method uses a hybrid approach where the uncertainties in load and strength values and

the strength deterioration due to aging are taken into account with the condition rating of each pole to develop a condition matrix table.

2006 Work Plans

The proposed inspection and treatment work for 2006 is shown summarized in the following table.

Regions	Line Name	Year In Service	Voltage Levels	Number of Poles to be Inspected	Remarks
Eastern	TL 212	1966	230kV	110	
	TL 218	1983	230kV	112	
	TL 219	1990	138kV	210	
Central	TL 210	1969	138kV	152	
	TL 223	1966	138kV	88	
	TL 232	1981	230kV	189	
	TL 251	1981	69kV	145	
	TL 252	1981	69kV	163	
	TL 253	1982	69kV	47	
Western	TL 250	1987	138kV	321	
Northern	TL 226	1970	69kV	179	
	TL 239	1982	138kV	394	
	TL 241	1983	138kV	163	
	TL 244	1983	138kV	69	
Labrador	TL 240	1976	138kV	792	
Total				3134	

Attached, for additional general information is an inspection sheet for TL 201. This is presented here simply as a typical example of the type of information that is collected for each of the lines. It is provided to give an extra measure of information and understanding of the type and content of information that is being processed in this program.

Inspection Report – TL 201

Report Coverage: 2005 inspection years
Report Issued April 19, 2006

General Line Description:

- Construction Type: Wood Pole H-Frame
- Operating Line Voltage: 230kV
- Geographic Location: Western Avalon Substation (Chapel Arm) to Hardwoods Substation (St. John's)
- Year of Construction: 1966
- Line Length: 80.6km
- Basic Line Loading, Original Design:
  - 1" Radial Glaze
  - 110MPh Gust Wind
  - 0.5" Ice / 55MPh Wind

Construction Summary:

- Total Wood Poles: 811
- Pole Size: CL2 (85%), CL4 (15%)
- Suspension: 85%
- Angles and Deadends: 15%
- Species (based on inspection data)
  - Douglas Fir 36%
  - Southern Pine 32%
  - Western Red Cedar 32%

Pole Length Breakdown (Percent):

30'	50'	55'	60'	65'	70'	75'	80'
0.5%	7%	18%	18%	27%	18%	11%	0.5%

Past Performance:

- Significant Line Failures:
  - 1984 – Section from Structure 115 to Structure 151 collapsed under estimated 50mm glaze ice and 50kph wind
  - 1994 – Collapse of 7 structure just outside Western Avalon station
- Line Upgrades:
  - 1988 – Sections of the line were upgrades to 3" radial glaze ice by the addition of mid span structures, and reconductoring using 795ACSR
  - 1994 – Replacement of the section that collapsed was upgraded using 1192 ACSR 54/19 conductor
- Previous Inspections:
  - Standard preventive maintenance inspections (20% annually) until 2002. No major pole replacements. Many worn eyebolts on suspension structures replaced. COB insulator periodically replaced.
  - 1985 – Entire line inspected. No poles rejected, signs of decay and poor pole preservative retention noted. No retreatment applied.
  - 1998 – Entire line inspected. 45 poles rejected and replaced in 1998. Preservative levels very low. No retreatment applied.
  - 2003/2004 – 597 poles inspected. 9 poles replaced in spring 2006.

Current Inspection (covered by this report)

- 214 poles (26% of total) inspected – Note: Line inspection now complete
- 64 poles (8.2%) recorded as possible rejections by field crew
- 27 poles (3.5%) scheduled for replacement after analysis
- Major pole issue: rot at pole tops and groundline
- Minor pole issues: some carpenter ants and woodpeckers
- 99 poles after 2006 replacement program (including 62 from 2003/2004 inspection) will require periodic monitoring
- Eyebolt wear on suspension structures continues to be an issue
- Preservative retention: average 0.08pcf (minimum required 0.18pcf)

Future Work

- 2006
    - Replace 27 poles, remaining COB insulators, and other noted defects in 2005 using existing WPLM CJC
    - Scheduled inspection complete
- After 2005
    - Periodically monitor 99 poles, numerous other wood items, and eye bolts
    - Schedule next major inspection for 2014

SECTION I

NEWFOUNDLAND & LABRADOR HYDRO
2005 RATE BASE
($000s)

	2004	2005
Capital Assets	1,922,374	1,939,115
Less:		
Accumulated Depreciation	481,801	506,391
Contributions in Aid of Construction	85,081	84,627
Net Assets not in Service/ Non-Regulated	2,153	2,138
Net Capital Assets	1,353,339	1,345,959
Balance Previous Year	1,360,754	1,353,339
Average Capital Assets	1,357,047	1,349,649
Working Capital	2,943	2,711
Fuel	15,611	21,506
Supplies Inventory	18,615	20,084
Average Deferred Charges	82,506	79,809
Average Rate Base	1,476,722	1,473,759