A Report to the

Board of Commissioners of Public Utilities

2015 Capital Projects Overview

newfoundland labrador hydro
a nalcor energy company

INTRODUCTION

Hydro is required to provide reliable service to its customers, through the provisions of the Hydro Corporation Act, 2007, the Electrical Power Control Act, 1994, and the Public Utilities Act. The provision of a safe, reliable, least cost supply of electricity requires that Hydro continuously maintain, refurbish, renew, and expand its generation, transmission and distribution assets, and the assets that support those systems. Hydro must also address changing environmental and other regulatory requirements, challenges which often require the acquisition of new assets or improvement to existing assets. Hydro's long term planning initiatives are framed in the context of the following key drivers: the interconnection between Labrador and the Island via the HVdc link, the interconnection with Nova Scotia system via the Maritime link, the startup of a nickel processing facility, and continued load growth on the Avalon Peninsula. This Overview will discuss the projects proposed for 2015. Discussion of the five year plan is contained in the section entitled "2015 Capital Plan".

2015 PLAN CONSIDERATIONS

Maintaining Hydro's systems in reliable operating condition is accomplished through a combination of planned maintenance, rehabilitation of existing assets, and replacement of assets which have reached the end of their useful lives. Assets may also be replaced by ones which will result in lower life cycle costs or improved operational characteristics or as required for load growth or reliability criteria violations.

The majority of Hydro's installed assets are more than forty years old. This is true of Hydro's largest hydroelectric installation at Bay d'Espoir, the Holyrood Thermal Generating Station, and much of Hydro's transmission and distribution systems. In addition, many other generation assets, such as the Stephenville Gas Turbine, the Hardwoods Gas Turbine and the Hinds Lake Generating Station are more than thirty years old.

The sustaining capital proposals contained in this and previous capital budget applications appropriately consider both the age and condition of Hydro's existing assets in determining whether to renew or replace them. The number of these sustaining capital proposals can be expected to increase as the assets age and their condition continues to be assessed. In other cases, the introduction of newer, more efficient technologies justifies the replacement of equipment.

The age of Hydro's assets also has implications for efficient operating methods and safety. Some of Hydro's generating plants were constructed at a time when most systems and auxiliary equipment were manually

operated. Today, most equipment is automated or remotely controlled which permits the operators to spend more time focused on maximizing efficiency and equipment monitoring. This Application contains proposals to improve the safety of Hydro's workplaces and to implement automation or improvements in the control of equipment that enable the safe and efficient operation of assets.

Consideration in the development of a capital proposal is given to:

- System performance and reliability criteria;
- Long term asset management strategy;
- Load growth and system planning criteria;
- Maintenance history;
- Condition assessment;
- Performance assessment;
- Legislative requirements;
- Cost efficiencies;
- Operating experience;
- Changing operating conditions;
- Familiarity with equipment;
- Operating and Maintenance cost; and
- Professional judgment.

There are three broad categories of replacement criteria:

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

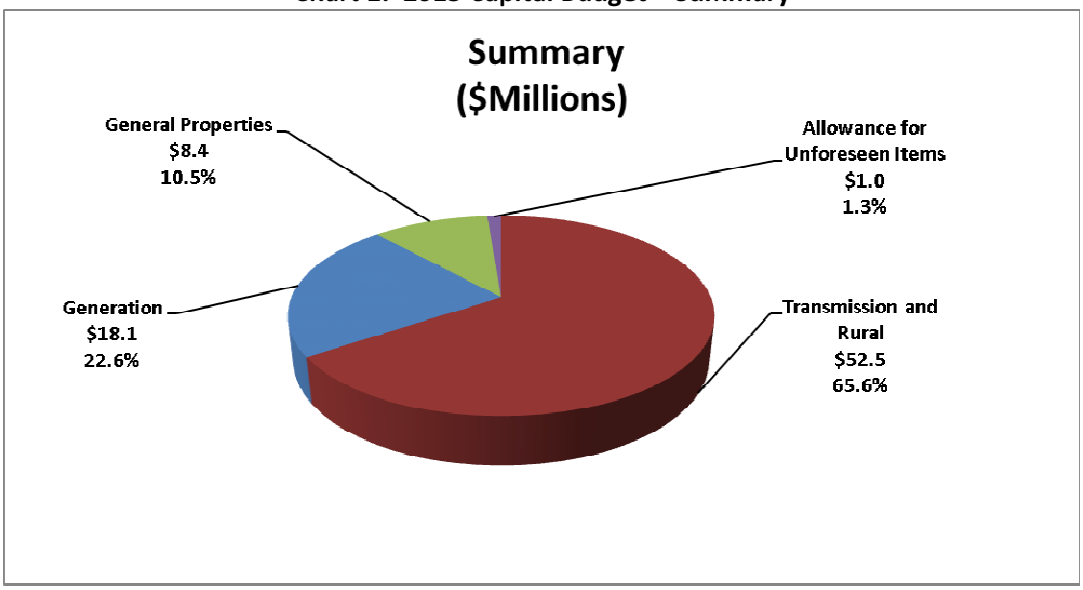
2015 CAPITAL BUDGET

This Application contains a capital plan in which the overriding consideration is least cost and reliable generation, transmission and distribution of electricity while maintaining and enhancing safety and environmental performance.

Hydro's 2015 capital budget application contains 109 projects, requiring expenditures totaling $79,931,000, addressing both the need to sustain the existing asset base and to grow the asset base in response to growing customer demand. This overview does not include 7 additional projects with expenditures in 2015 totaling $194.0 million as shown on page A2 of the 2015 Capital Plan.

Chart 1 shows the 2015 Capital Budget by major classification. The classifications, other than the Allowance for Unforeseen Items, which represents 1.3% of the 2015 budget, are then discussed further.

Chart 1: 2015 Capital Budget – Summary



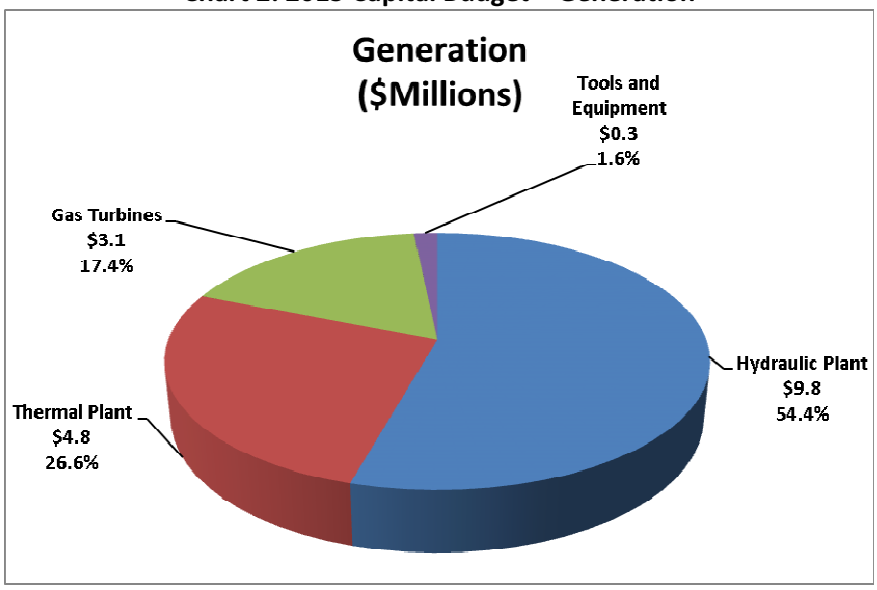
GENERATION

On the Island Interconnected System, power and energy are provided by Hydro through a mix of hydroelectric and fossil-fired generation, supplemented by power purchases. This production, along with the transmission system, is managed by the Energy Control Centre to ensure economic and reliable dispatch of available resources. At the end of 2013, Hydro's Island Interconnected production facilities consisted of 14 generating stations varying in size from 360 kW to 592 MW, with a total 1,507 MW of net capacity.

The Generation classification expenditures account for 22.6% of overall expenditures for 2015 and totals $18.1 million.

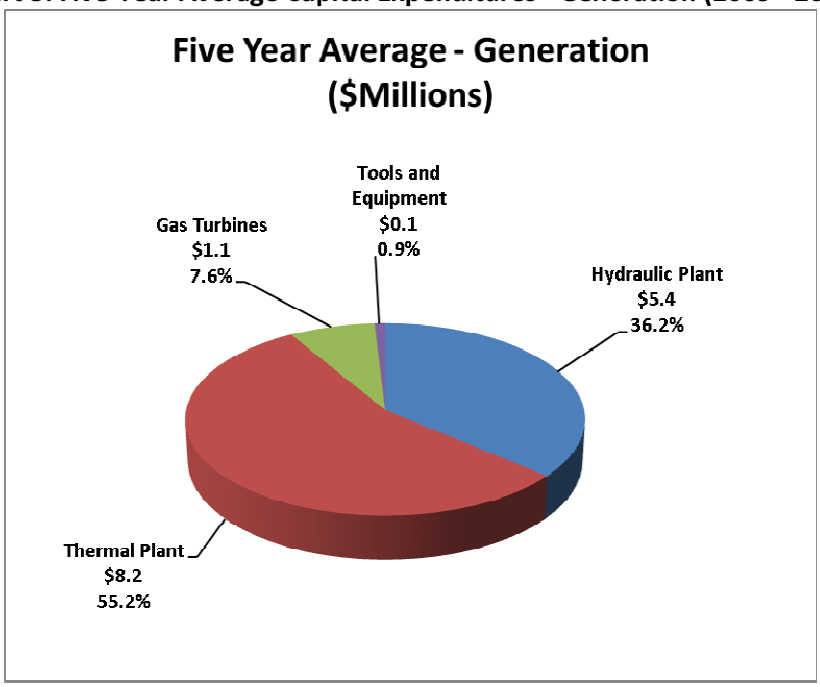
The division of the 2015 Capital Budget for Generation among Hydraulic Plant, Thermal Plant, Gas Turbines and Tools and Equipment expenditures is shown in Chart 2.

Chart 2: 2015 Capital Budget – Generation



The five-year (2009 to 2013) average capital expenditures are shown in Chart 3. For 2015, Thermal Plant represents 26.6% of the Island Interconnected generation capital budget, compared with an average of 55.2% over the past five years. Thermal plant continues to require major capital expenditures as the majority of the equipment and systems have reached the final phase of their life cycle and have undergone life extension in some cases. Significant expenditures are required to ensure that these important generating assets can continue to operate reliably until retired and replaced. Hydraulic Plant represents 54.4% of the 2015 capital budget for generation, compared with an average of 36.2% over the past five years. Expenditures for Gas Turbines and Tools and Equipment represent 17.4% and 1.6% of the total budgeted generation expenditures for 2015, compared with five year average expenditures of 7.6% and 0.9%, respectively. The increase in gas turbine expenditures is primarily a result of the need to refurbish aging assets.

Chart 3: Five-Year Average Capital Expenditures - Generation (2009 - 2013)



Hydraulic Plant

Hydro's major hydraulic generating plants range from 11 to 47 years of age. Capital expenditures are required to ensure reliability and to maximize the useful operating lives of these assets, many of the components of which have reached or are nearing the end of their expected service lives. This Application includes a proposal for the refurbishment of the interior of Surge Tank 3 at Bay d'Espoir as well as the refurbishment of the access road for Cat Arm. Additional proposals are included for the upgrade of hydraulic structures, overhaul of generating units at Paradise River and Bay d'Espoir and upgrade of plant auxiliary systems and equipment.

Thermal Plant

The three units of the Holyrood Thermal Generating Station have now reached or exceeded their generally expected service life of 30 years. Continued condition assessment and selective life extension will permit them to operate reliably until the 2020 -2021 timeframe. Holyrood remains critical to the reliable supply of power to the Island Interconnected System, as it serves the base load of the system and will be required to do so in the short to medium term. The long term operational plan for this facility has been developed in the context of the development of Muskrat Falls with a high voltage direct current transmission link to the Island. Holyrood will remain a critically important facility during construction and commissioning. Following completion of Muskrat Falls and the Labrador Island Transmission Link, the Holyrood plant will

continue to be an essential component of the Provincial electrical grid. Initially, the plant will function as a fully capable standby facility during the early years of operation of the Muskrat Falls Generating Plant and the HVdc link between Labrador and Newfoundland, until the 2020-2021 timeframe. After this period thermal assets will be decommissioned and the facility will be partially converted to a synchronous condensing configuration.

The challenges faced by Hydro are complex because circumstances require that Holyrood must operate in a manner quite different than the norm for thermal plants. Conventional practice is that a thermal plant is base loaded throughout its life until it reaches maturity and is then operated as a peaking or standby facility in its final years, operating at a very low capacity factor, often less than 10%. The Holyrood thermal plant has passed the age at which other utilities have performed condition assessment and life extension studies, similar to Hydro's approach, and have either retired their facilities or have initiated major life extension projects. However, until the Muskrat Falls Generating Plant is completed and power is brought to the Island Interconnected System via an HVdc link, the Holyrood plant must continue to operate at or near its historical levels with annual capacity factor in the range of 35 to 45% and at higher levels through the winter period when availability is critical to meet peak demand. When the nickel processing plant at Long Harbour begins operation, demand on Holyrood will increase. This is in addition to general growth due to the favourable economy of the province which drives growth in the residential and commercial sectors. The Holyrood capital projects contained in this application are necessary to refurbish and renew assets which are at the end of their useful lives, and which must be replaced to maintain reliability through to the completion of the Muskrat Falls development. Additionally, proposals are included for upgrade of plant auxiliary systems, overhaul of major equipment, and upgrade of plant monitoring and fire protection systems.

Please see the Holyrood Overview section for further discussion pertaining to the 2015 Holyrood projects.

Gas Turbines

Hydro's gas turbine plants at Stephenville and Hardwoods are more than thirty years old. The generally accepted life expectancy for gas turbine plants is between twenty-five and thirty years. A complicating factor in Hydro's case is that the manufacturer of the power turbines, one of the key components at the Stephenville and Hardwoods plants, is no longer in business, eliminating the availability of factory technical support and spare parts. Also, the gas generators (jet engines) utilized at the Stephenville and Hardwoods plants are no longer manufactured and the supply of spare parts and availability of technical support and repair facilities continues to diminish.

During 2007, Hydro engaged a consultant to perform a condition assessment of the Hardwoods and Stephenville gas turbines. Their findings and recommendations were used to prepare plans for refurbishment of these facilities to ensure that they continue to operate reliably and that their useful service lives can be extended as long as can be financially justified. The refurbishment of the Hardwoods Gas Turbine is now completed and the refurbishment of the Stephenville Gas Turbine was started in 2014 with a scheduled completion date of 2016. Along with the new 100 MW (nominal) combustion turbine, Hydro's older gas turbine facilities will continue to play an important role within Hydro's integrated generation plan until their expected retirement in 2025 and 2028 for Hardwoods and Stephenville, respectively.

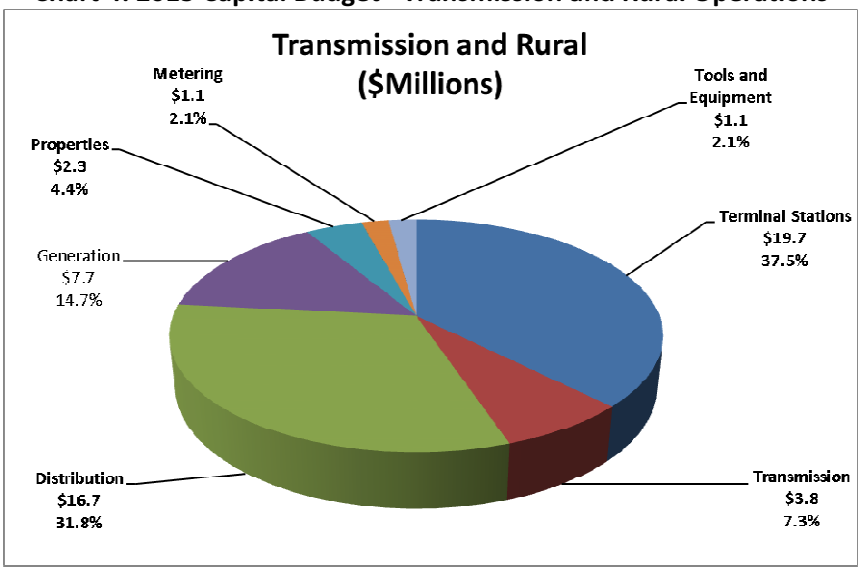
TRANSMISSION AND RURAL OPERATIONS

Hydro owns and operates diesel and gas turbine generation with 32.1 MW of net capacity on the Labrador Interconnected system; 14.7 MW of diesel generation on the Island Interconnected system; and diesel generation assets with 32.8 MW of net capacity in 21 isolated rural systems. On the Island Interconnected system, Hydro owns and operates 3,473 kilometers of transmission lines and more than 50 high voltage terminal stations operating at voltages of 230, 138 and 69/66 kV. On the Labrador Interconnected system, Hydro owns and operates 269 kilometers of 138 kV transmission line and the associated terminal stations interconnecting Happy Valley/Goose Bay to Churchill Falls. In addition, Hydro owns and operates approximately 3,397 kilometers of distribution lines, principally in rural Newfoundland and Labrador.

Hydro's Transmission and Rural Operations assets are replaced based on age and condition, and require ongoing capital expenditures to maintain reliable service, to comply with environmental regulations, and to ensure the safety of employees, contractors, and the general public. As well, capital expenditures to provide service extensions are significant in many areas, particularly on the Labrador Interconnected system, the highest customer growth areas in Hydro's distribution system.

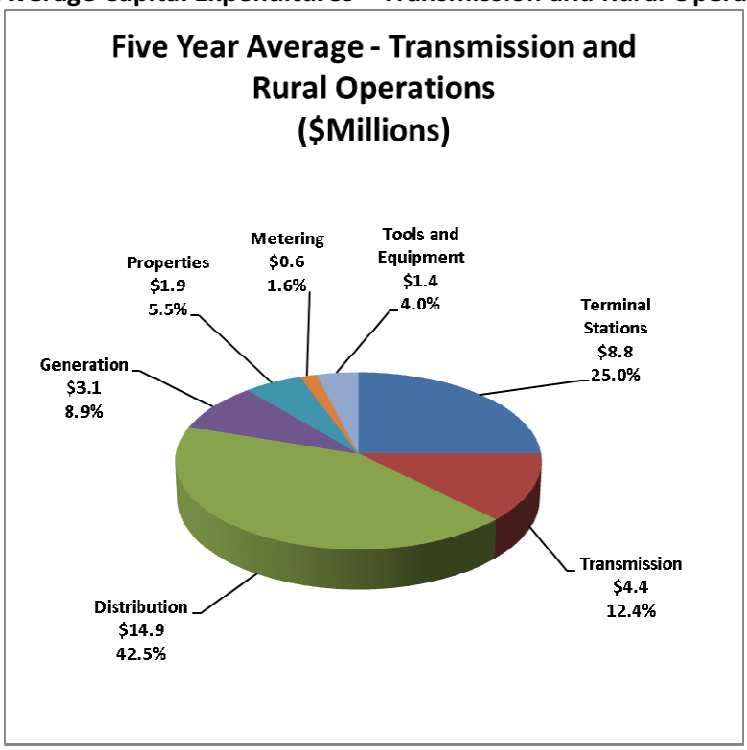
The Transmission and Rural Operations classification expenditures account for 65.6% of overall expenditures for 2015 and total $52.5 million.

Chart 4: 2015 Capital Budget - Transmission and Rural Operations



The division of the 2015 Capital Budget for Transmission and Rural Operations is shown in Chart 4. These expenditures are generally consistent with the five-year (2009 - 2013) average as shown in Chart 5, below. The increase in expenditure related to terminal stations in 2015 over the five year average expenditures is mainly attributable to the replacement and refurbishment of air blast circuit breakers on an accelerated schedule and additional upgrades on power transformers. The increase in generation is mainly attributable to the inspection of fuel storage tanks and the increase in fuel storage for Rigolet.

Chart 5: Five-Year Average Capital Expenditures – Transmission and Rural Operations (2009 - 2013)



Terminal Stations and Transmission

Many of Hydro's transmission lines and terminal stations were constructed in the 1960s with expected useful lives in the 40 year range. Annual reconstruction and general upgrades are needed to ensure that Hydro can continue to provide customers with reliable electrical service. Within the 2015 submission, projects are proposed for the upgrade of power transformers and circuit breakers, as well as the replacement of surge arrestors, instrument transformers and disconnect switches. Transmission line projects proposed include the continuation of the wood pole line management program, and the upgrade of tower foundations.

Distribution and Rural Generation

The 21 remote electrical systems along the coasts of Labrador and the Island are primarily served by diesel generation. Providing service to customers in these communities requires that the fuel storage, diesel generating units, facilities, and distribution systems all be kept in safe, reliable and environmentally responsible working order. This application includes projects specifically directed towards meeting load growth requirements, such as the construction of a second distribution feeder in Nain and increased fuel storage for Rigolet. In addition, engine overhauls and replacements will be completed in various diesel plants.

Hydro also provides service to residential and general service customers on the Island and Labrador Interconnected Systems. Hydro has included projects in this application that are intended to ensure that distribution lines and equipment that require replacement due to age are replaced prior to failure, thereby reducing the probability of interrupting service to customers. These projects include upgrading of distribution systems. This Application also includes projects to provide service extensions to new customers throughout Hydro's service area.

GENERAL PROPERTIES

The General Properties classification expenditures account for 10.5% of overall expenditures for 2015 and total $8.4 million.

The General Properties classification includes projects related to Hydro's information systems, where technology is strategically deployed in a wide variety of business applications. This section of the Application also includes proposals for vehicle replacements and telecommunications system replacements which are all necessary for the provision of reliable and cost effective service to customers.

Charts 6 and 7 show the breakdown of the General Properties Capital Budget for 2015 and the previous five year average, respectively.

Chart 6: 2015 Capital Budget - General Properties

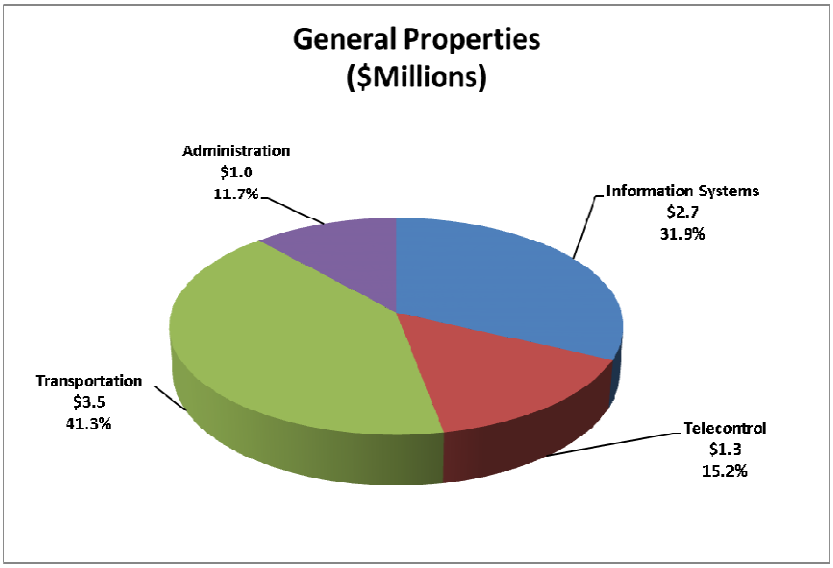
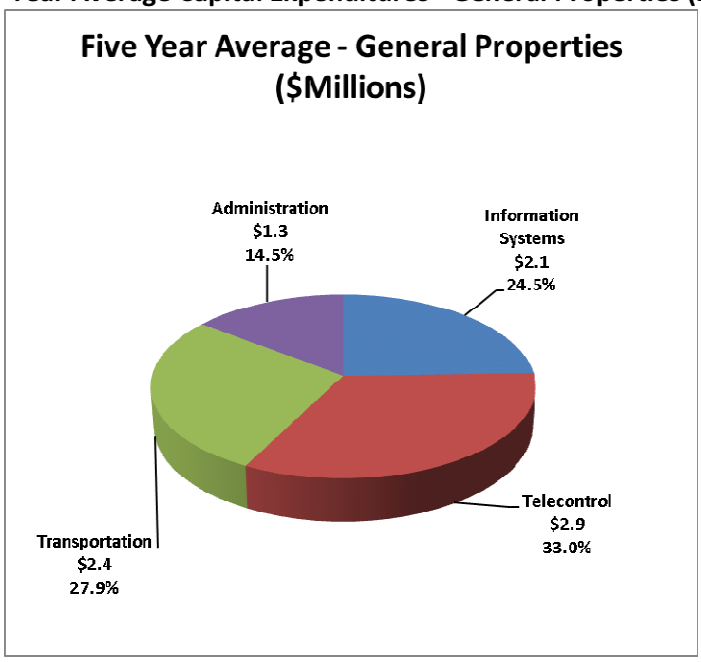


Chart 7: Five-Year Average Capital Expenditures - General Properties (2009 – 2013)



Information Systems

The Information Systems proposals are directed towards maintaining Hydro's computing capacity and associated infrastructure, ensuring that it remains current and reliable. Projects include upgrades to the software applications used throughout Hydro, as well as the replacement of personal computers and peripheral infrastructure.

Telecontrol

Operating an integrated electrical system requires reliable communication systems across Hydro's province-wide facilities both to control equipment and to support employee communications, many of whom work in remote locations. The 2015 capital budget proposals in this category include infrastructure replacements, ongoing replacement or refurbishment programs for such items as battery banks and chargers and network communications equipment.

General

Project Prioritization and Ranking

An overall ranking of 2015 projects is attached as Appendix A.

Phase 1 Engineering Costs

Hydro has advanced the Phase 1 engineering activities in 2014 to improve the quality of its 2015 capital budget submission. Hydro has tracked these Phase 1 engineering costs specific to each project and these

costs form part of the 2015 capital budget submission. Therefore, Hydro's 2015 capital projects include Phase 1 engineering costs incurred in 2014 in association with those 2015 capital projects and Hydro proposes that the inclusion of those costs be approved.

Hydro has included Phase 1 costs in its capital budget proposals only in those cases in which the Phase 1 costs exceed $1,000 for that specific project. Phase 1 costs related to any specific project not receiving Board approval will not be capitalized. The total of these costs included in the 2015 capital budget submission is $270,800.

APPENDIX A

2015 Project Prioritization

PRIORITIZATION EXPLANATIONS

The following table shows the ranking of Hydro's 2015 capital projects. Rank 1 indicates the projects of the highest importance and in 2015, no projects with a ranking of more than 50 were included in the Application. The total of the projects included is determined based on balancing unit load, overall budget, and other logistical considerations. Projects that received the same score through the prioritization process have the same ranking. The nine projects which are Rank 1 are considered high priority projects required to address safety, mandatory or system load issues. Please note that the non-prioritized projects in the table are multi-year projects and necessary programs.

2015 Capital Budget and Five Year Plan **2015 Project Prioritization** **Project Description**	**Cost ($000)**	**Rank**	**Cumulative Project Costs ($000)**
Multi-Year Projects (2015 is 2nd or 3rd Year) (Non Prioritized)	14,599.4	*****	14,599.4
TRO Service Extensions and Upgrades (Non Prioritized)	9,420.0	*****	24,019.4
Transportation (Non Prioritized)	3,963.6	*****	27,983.0
Tools & Equipment (Non Prioritized)	1,056.8	*****	29,039.8
Upgrade Public Safety Around Dams and Waterways - Bay d'Espoir	483.9	1	29,523.7
Relocate Voltage Regulator - Hawke's Bay	166.4	1	29,690.1
Construct 2nd Distribution Feeder - Nain	1,050.3	1	30,740.4
Increase Generation Capacity - Makkovik	272.6	1	31,013.0
Install Additional Washrooms - Various Sites	259.3	1	31,272.3
Remove Safety Hazards - Various Sites	194.9	1	31,467.2
Install Fall Protection Equipment - Various Sites	198.9	1	31,666.1
Upgrade Equipment Doors - Various Sites	348.5	1	32,014.6
Inspect Fuel Storage Tanks - Various Sites	1,761.1	1	33,775.7
Increase Fuel Storage - Rigolet	1,666.8	1	35,442.5
Install Automated Meter Reading - Various Sites (2015-2016)	559.9	2	36,002.4
Replace Generator Bearing Coolers - Bay d'Espoir	153.8	3	36,156.2
Overhaul Turbine/Generator - Various Sites	304.4	4	36,460.6
Install Hydrometeorological Stations - Various Sites	377.9	5	36,838.5
Replace Interior Coating on Surge Tank 3 - Bay d'Espoir	1,629.3	6	38,467.8
Upgrade Powerhouse Roofing - Holyrood	1,047.8	7	39,515.6
Overhaul Diesel Units - Various Sites	1,199.2	7	40,714.8
Overhaul Extraction Pumps - Holyrood	189.6	7	40,904.4
Overhaul Boiler Feed Pump East Unit 1 - Holyrood	196.3	7	41,100.7

2015 Capital Budget and Five Year Plan **2015 Project Prioritization** **Project Description**	**Cost ($000)**	**Rank**	**Cumulative Project Costs ($000)**
Overhaul Turbine Valves Unit 1 - Holyrood	1,577.5	7	42,678.2
Upgrade Power Transformers - Various Sites	4,440.4	8	47,118.6
Perform Wood Pole Line Management Program - Various Sites	2,830.6	9	49,949.2
Upgrade Circuit Breakers - Various Sites (2015-16)	8,867.9	10	58,817.1
Replace Surge Arrestors - Various Sites	198.1	11	59,015.2
Replace Disconnect Switches - Various Sites	963.7	12	59,978.9
Legal Survey of Primary Distribution Line Right of Ways - Various Sites (2015-16)	158.6	13	60,137.5
Retrofit HVAC System - Port Saunders	137.0	14	60,274.5
Reshingle Roof - Stephenville	76.8	14	60,351.3
Upgrade Customer Care System - Hydro Place	134.9	15	60,486.2
Upgrade Lotus Notes - Hydro Place	362.3	15	60,848.5
Perform Minor Application Enhancements - Hydro place	187.9	16	61,036.4
Upgrade Energy Management System - Hydro Place	194.9	16	61,231.3
Replace Personal Computers - Various Sites	573.3	16	61,804.6
Replace Peripheral Infrastructure - Various Sites	200.5	16	62,005.1
Upgrade Enterprise Storage Capacity - Hydro Place	354.3	16	62,359.4
Upgrade Server Technology Program - Hydro Place	374.2	16	62,733.6
Replace Network Communications Equipment - Hydro Place	169.5	17	62,903.1
Upgrade Site Facilities - Various Sites	48.3	17	62,951.4
Replace Telephone Systems - Springdale	132.7	17	63,084.1
Replace Cooling Tower and Auxiliaries - Hydro Place	45.7	18	63,129.8
Replace Roof - Hydro Place	671.9	18	63,801.7
Rehabilitate Salmon River Spillway - Bay d'Espoir	745.6	19	64,547.3
Refurbish Intakes - Bay d'Espoir	72.6	19	64,619.9
Replace ABB Exciter Unit 2 - Cat Arm	845.9	20	65,465.8
Install Fire Protection System - L'Anse au Loup	220.6	21	65,686.4
Refurbish Generation Unit - Snook's Arm	352.9	22	66,039.3
Replace Station Service Breakers - Cat Arm	644.9	23	66,684.2
Upgrade Gas Turbine Plant Life Extension - Stephenville	2,655.2	24	69,339.4
Purchase Spare Transformer - Paradise River	160.0	25	69,499.4
Automate Generator Deluge Systems - Bay d'Espoir	645.2	26	70,144.6
Refurbish Access Road - Cat Arm	990.0	27	71,134.6
Install Infrared Viewports - Various Sites	83.7	28	71,218.3
Replace DC Distribution Panels and Breakers - Holyrood	127.9	28	71,346.2
Refurbish Unit Relay Protection - Paradise River	8.7	29	71,354.9
Replace Automatic Greasing Systems Units 2 and 4 - Bay d'Espoir	254.4	30	71,609.3
Upgrade Generator Bearings Unit 1 and 3 - Bay d'Espoir	14.7	30	71,624.0

2015 Capital Budget and Five Year Plan **2015 Project Prioritization** **Project Description**	**Cost ($000)**	**Rank**	**Cumulative Project Costs ($000)**
Replace Alternator Shaft - Happy Valley	484.4	31	72,108.4
Replace WIFI Network - Various Sites	126.3	32	72,234.7
Upgrade Terminal Station Equipment Foundations - Various Sites	302.3	33	72,537.0
Install Fire Protection in 230 kV Stations - Various Sites	67.6	34	72,604.6
Upgrade Distribution System - Various Sites (2015 - 2016)	1,136.1	35	73,740.7
Upgrade Control Wiring Phase 1 to Terminal Station 1 - Bay d'Espoir	301.0	36	74,041.7
Upgrade Terminal Station Protection and Control - Various Sites	172.7	36	74,214.4
Replace Accommodations and Septic System - Ebbegunbaeg	489.4	37	74,703.8
Replace Diesel Unit 254 - Paradise River	66.8	38	74,770.6
Replace Unit 2038 - Mary's Harbour	103.5	38	74,874.1
Perform Site Work for Mobile Substation - Barachoix	489.3	39	75,363.4
Upgrade Quarry Brook Dam Equipment - Holyrood	498.7	40	75,862.1
Replace DTI Phone Turrets Energy Control Center - Hydro Place	44.7	40	75,906.8
Upgrade Building Exterior - Makkovik	309.5	41	76,216.3
Upgrade Ventilation Systems - Various Sites	175.9	41	76,392.2
Replace Programmable Logic Controllers - Various Sites	366.9	42	76,759.1
Replace Pumphouse and Associated Equipment- Bay d'Espoir	22.7	43	76,781.8
Upgrade Line Depots - Various Sites	953.3	44	77,735.1
Install Disconnect Switches for Mobile Generators - Various Sites	10.0	45	77,745.1
Replace Station Lighting - Bay d'Espoir	16.7	46	77,761.8
Upgrade Transformer Differential Protection - Grandy Brook	154.0	47	77,915.8
Install Transformer On line Gas Monitoring - Various Sites	700.5	48	78,616.3
Upgrade Fire Protection (Main Warehouse) - Holyrood	46.2	49	78,662.5
Replace GDC Metroplex - Various Sites	69.2	49	78,731.7
Install Support Structures C2 Capacitor Bank - Hardwoods	199.3	50	78,931.0

The table below presents the prioritization criteria and the assigned weights.

Criteria		Factors	Factor Weights
1	Work Classification (maximum weight = 85)	Normal Justifiable: Payback (70) Justifiable: Payback (40) Justifiable: Payback (10)	5 15 45 85
2	Net present Value (maximum weight = 85)	NPV ($0) NPV (<$100K) NPV (<$500K) NPV (<1M) NPV (>1M)	0 5 15 45 85
3	Goal 1: Safety (maximum weight = 100)	Minor Treatment Lost Time Disability	10 50 80 100
4	Goal 2: Environment (maximum weight = 100)	None Minor Moderate Significant	10 50 80 100
5	Goals 3-5: Alignment (maximum weight = 65)	None Maps but no documentation Maps but with documentation	15 40 65
6	Schedule Risk (maximum weight = 65)	External and internal conflicts Externals affecting completion No external but internal conflicts No conflicts	10 20 40 65
7	Continue service to customers (maximum weight = 70)	Can Can but with high costs Cannot	20 50 70
8	Number of customers impacted (maximum weight = 70)	<100 <1000 <10,000 >10,000	10 30 50 70
9	System Impact: Critical to … (maximum weight = 90)	None specific System with standby unit Plant or station Entire system	5 50 70 90
10	Impact intensity (maximum weight = 90)	Minor Moderate Significant High	4 40 70 90
11	Loss Type: Loss of …	No type	5

Criteria		Factors	Factor Weights
	(maximum weight = 90)	Equipment Facility Production Customer delivery	40 50 70 90
12	Loss mitigation (maximum weight = 90)	Redundant unit Backup option Nothing	30 60 90

A. Level 1

Immediate HIGH Priority Projects

- **Extreme Safety**

The project is required to prevent an incident that could cause a fatality or correct a condition that otherwise left unattended may lead to a fatality.

- **Mandatory**

A capital expenditure that Hydro is obliged to carry out as a result of Legislation, Board Order, Environmental or Safety risk.

- **Load Driven**

The project is needed to meet load requirements determined by Hydro's latest load forecasts. Without the project, Hydro's firm load and/or reliability criteria will be compromised.

B. Level 2

1. Work Classification

- **Normal**

A capital expenditure which is required based on an identified need or historical patterns of repair and replacement.

- **Justifiable**

A capital expenditure which is justified based on a positive cost savings for Hydro. A cost-benefit analysis is required for the project.

- **Payback (70)**

A cost-benefit analysis indicates that the payback period for the project is within 70% of the anticipated life of the project.

- **Payback (40)**

A cost-benefit analysis indicates that the payback period for the project is within 40% of the anticipated life of the project.

- **Payback (10)**

A cost-benefit analysis indicates that the payback period for the project is within 10% of the anticipated life of the project.

2. Net Present Value

- **NPV ($0)**

The capital proposal generates $0 cost savings to Hydro.

- **NPV (<$100K)**

A cost-benefit analysis indicates that the capital proposal generates a positive cost savings of less than $100K for Hydro.

- **NPV (<$500K)**

A cost-benefit analysis indicates that the capital proposal generates a positive cost savings of less than $500K for Hydro.

- **NPV (<$1M)**

A cost-benefit analysis indicates that the capital proposal generates a positive cost savings of less than $1M for Hydro.

- **NPV (>$1M)**

A cost-benefit analysis indicates that the capital proposal generates a positive cost savings of more than $1M for Hydro.

3. Goal 1: Safety

- **Minor**

The project has no or minor safety issues that are insignificant in impact.

- **Treatment**

The project is required to prevent an incident or correct a condition that otherwise left unattended may result in the need for medical treatment.

- **Lost Time**

The project is required to prevent an incident or correct a condition that otherwise left unattended may result in worker(s) incurring lost time for a short duration.

- **Disability**

The project is required to prevent an incident or correct a condition that otherwise left unattended may result in worker(s) incurring long time leave due to inability to continue working on the job.

4. Goal 2: Environment

- **None**

The project has no environmental issues.

- **Minor**

The project is required to prevent an incident or correct a condition that otherwise left unattended may result in an environmental impact that:

- Is irreversible within 2 years; and/or
- Will cost more than $10,000 to mitigate; and/or
- Has aspects observed on Hydro's property (at point of impact); and/or
- Is perceived as in conflict with specific individuals in the local community.

- **Moderate**

The project is required to prevent an incident or correct a condition that otherwise left unattended may result in an environmental impact that:

- Is irreversible within 4 years; and/or
- Will cost more than $25,000 to mitigate; and/or
- Has aspects observed within a 1 km radius of Hydro's property (from point of impact); and/or
- Is perceived as in conflict with the local community or other industries.

- **Significant**

The project is required to prevent an incident or correct a condition that otherwise left unattended may result in an environmental impact that:

- Is irreversible within the foreseeable future; and/or
- Will cost more than $50,000 to mitigate and/or
- Has aspects observed at more than 5 km radius of Hydro's property (from point of impact); and/or
- Is perceived as in conflict with the local community and the general public and other industries.

5. Goals 3-5 Alignment

- **None**

This project does not align with or support any department or corporate goals or objectives.

- **Maps but no Documentation**

This project does align with or support a department or corporate goal or objective but no documentation exists to describe how it maps to the goal or objective.

- **Maps but with Documentation**

This project does align with or support a department or corporate goal or objective and there is documentation that clearly describes how.

6. Schedule Risk

- **Externals and Internal Conflicts**

The project has external (to Hydro) dependencies that affect the completion of the project on time and on budget and has major interfaces with other internal initiatives. Examples of external dependencies are: non-Hydro projects that interfere with Hydro proceeding with its project; unavailability of external contractors.

- **Externals Affecting Completion**

The project has only external dependencies that affect the completion of the project on time and on budget.

- **NO Externals but Internal Conflicts**

The project conflicts with other internal initiatives that affect the completion of the project on time and on budget.

- **NO Conflicts**

The project will not encounter any external or internal conflicts that affect its completion.

7. Continue Service to Customers

- **Can**

Service to customers can continue whether or not this project proceeds. Customers can be defined as either internal or external to Hydro.

- **Can but with High Costs**

Service to customers can continue whether or not this project proceeds but a delay in the project will result in Hydro incurring costs. Customers can be defined as either internal or external to Hydro.

- **Cannot**

Service to customers cannot continue without this project. Customers can be defined as either internal or external to Hydro.

8. # Customers Impacted

- **<100**

The project will impact up to 100 customers.

- **<1000**

The project will impact up to 1000 customers.

- **<10000**

The project will impact up to 10,000 customers.

- **>10000**

The project will impact more than 10,000 customers.

9. System Impact: Critical to.....

- **None Specific**

The project is not critical to any particular system.

- **System with Standby Unit**

The project is critical to a system that has a standby unit which could be used to maintain operation or support continued service in the event of failure.

- **Plant or Station**

The project is critical to the proper operation of a generating plant or a terminal station.

- **Entire System**

The project is critical to ensure the reliable operation of the Hydro system.

10. Impact Intensity

- **Minor**

If this project does not proceed, the repair time is ***less than half*** the Maximum Acceptable Downtime (MAD) of 830 MWh of unsupplied energy or 2 days (whichever comes first).

- **Moderate**

If this project does not proceed, the repair time is ***greater than the half but less than 90%*** of the Maximum Acceptable Downtime (MAD) of 830 MWh of unsupplied energy or 2 days (whichever is comes first).

- **Significant**

If this project does not proceed, the repair time is ***within plus or minus 10%*** of the Maximum Acceptable Downtime (MAD) of 830 MWh of unsupplied energy or 2 days (whichever is comes first).

- **High**

If this project does not proceed, the repair time ***exceeds by more than 10%*** the Maximum Acceptable Downtime (MAD) of 830 MWh of unsupplied energy or 2 days (whichever is comes first).

11. Loss Type: Loss of.....

- **No Type**

If the project does not proceed, no loss is expected.

- **Equipment**

If the project does not proceed, there exists a risk of the loss of some equipment.

- **Facility**

If the project does not proceed, there exists a risk of the loss of a facility.

- **Production**

If the project does not proceed, there exists a risk of the loss of production at a Hydro generating plant.

- **Customer Delivery**

If the project does not proceed, there exists a risk of being unable to deliver power to Hydro customer(s).

12. Loss Mitigation

- **Redundant Unit**

If the project does not proceed the expected loss will be mitigated by a redundant unit present on the system.

- **Back-up Option**

If the project does not proceed the expected loss will be mitigated by a back-up option which ensures that service continues.

- **Nothing**

This project is required because there is no available means to mitigate the expected loss.

PROBABILITY

- **Not Likely**

The risk of the impact is very low if the project does not proceed. It would be surprising that there is an impact.

- **Low Likelihood**

The risk of the impact is low if the project does not proceed. There is about 30% chance of the impact in the proposal year. It's less likely to happen than not.

- **Likely**

The risk of the impact is possible if the project does not proceed. There is about 50% chance of the impact in the proposal year. It's as likely to happen as not.

- **Highly Likely**

The risk of the impact is considerable if the project does not proceed. There is about 75% chance of the impact in the proposal year. It's more likely to happen than not.

- **Near Certain**

The risk of the impact is almost certain if the project does not proceed. There is more than 90% chance of the impact in the proposal year. It would be surprising if the impact did not occur.

CONFIDENCE LEVEL

- **Low**

The confidence in the assessment of the impact is low. There are some uncertainties that could significantly change the assessment. The projects risks are not well defined.

- **Medium**

The confidence in the assessment of the impact is uncertain but most likely correct. There are some uncertainties that might moderately change the assessment. The project risks are defined but with some uncertainty.

- **High**

The confidence in the assessment of the impact is very high. The uncertainties won't measurably change the assessment. The project risks are well defined and well controlled.