

1 Q. Please provide Hydro's current 10-year generation and transmission expansion plan
2 for the Island Interconnected System base case scenario showing all additions, in-
3 service dates, project costs and estimated impact on rates.

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6 A. A schedule of capital expenditures, including those for generation and transmission
7 assets, for the Island Interconnected System for the period between 2015 and 2019
8 has been filed with the Board as Appendix A to Hydro's 2015 Capital Budget
9 Application (attached as CA-NLH-026 Attachment 1). To date, no significant
10 generation or transmission additions have been identified for the period between
11 2020 and 2024.

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13 While estimated and individual rate impacts are not available for each project filed
14 with Hydro's 2015 Capital Budget Application, the estimated impact on rates
15 associated with the new 120 MW combustion turbine for Holyrood, with a project
16 cost of \$118.9 million and an in-service date of December 2014, is an increase of
17 between one and two percent. The estimated impact on rates associated with the
18 third 230 kV circuit between Bay d'Espoir and Western Avalon, with a project cost
19 of \$291.7 million and an in-service date of May 2018, is an increase of between two
20 and three percent.

21

22 The actual effect on rates from these and other projects is subject to future Board
23 decisions, including approval of capital expenditures and approval of general rate
24 applications.

1 The Muskrat Falls Generating Plant, the Labrador-Island Link and Labrador
2 Transmission Assets have a total project cost of \$6.99 billion with first power in
3 December 2017 and full power in June 2018.

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5 In 2018, following full commissioning of the Muskrat Falls assets, electricity rates
6 for average residential customers on the island are projected to be 16.4 cents per
7 kilowatt hour (kWh) or \$249 for an average monthly bill. In 2020, electricity rates
8 for the same customer, are currently estimated to be 17.3 cents/kWh or \$262.

9 These projected electricity costs for customers include anticipated rate increases
10 with Muskrat Falls in service and all planned capital projects by Hydro for the Island
11 Interconnected System as referenced above. Rates and monthly bills also include
12 taxes, basic monthly service charge and assume an average consumption of 1,517
13 kWh/month.

APPENDIX A

Five-Year Capital Plan

	Expended to 2014	2015	2016	2017 (\$000)	2018	2019	Total
GENERATION	111,096.2	27,805.1	36,063.2	23,853.4	12,222.0	12,111.4	223,151.3
TRANSMISSION AND RURAL OPERATIONS	59,127.7	237,042.6	266,384.9	182,786.8	144,767.0	45,844.5	935,953.5
GENERAL PROPERTIES	3,041.9	8,401.6	10,192.1	15,730.3	11,719.3	7,747.8	56,833.0
CONTINGENCY FUND		1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	5,000.0
TOTAL CAPITAL BUDGET	173,265.8	274,249.3	313,640.2	223,370.5	169,708.3	66,703.7	1,220,937.8
Projects Filed Separately therefore not Included in the 2015 Capital Budget Application:¹							
Construct Labrador West Transmission Line	37,484.2	163,145.3	128,962.6				
Purchase and Install 100 MW Combustion Turbine - Holyrood	109,677.0	9,323.0					
Construct 230 kV Transmission Line - Bay d'Espoir to Western Avalon	2,412.6	18,964.7	77,225.6	110,064.0	82,991.0		
Replace Transformer - Sunnyside	7,197.8	1,226.4					
Replace Excitation Transformers - Bay d'Espoir	636.7	360.0					
Replace Air Compressor - Holyrood	247.6	61.1					
Voltage Conversion - Labrador City	808.9	1,237.8					
Total Projects filed separately		194,318.3					
Total 2015 Capital Budget Application (as per Schedule A)		79,931.0					

¹ Includes projects already filed but not yet approved as well as projects soon to be filed.

	Expended to 2014	2015	2016	2017	2018	2019	Total
	(\$000)						
<u>GENERATION</u>							
Hydraulic Plant	823.3	10,193.3	12,023.6	14,931.2	8,911.5	8,699.7	55,582.6
Thermal Plant	546.0	4,854.1	21,242.2	8,863.2	3,250.0	2,750.0	41,505.5
Gas Turbines	109,677.0	12,462.6	2,739.5	0.0	0.0	600.0	125,479.1
Tools and Equipment	49.9	295.1	57.9	59.0	60.5	61.7	584.1
TOTAL GENERATION	111,096.2	27,805.1	36,063.2	23,853.4	12,222.0	12,111.4	223,151.3
<u>TRANSMISSION AND RURAL OPERATIONS</u>							
Terminal Stations	14,255.5	20,912.6	19,185.8	14,326.5	19,376.6	17,452.4	105,509.4
Transmission	41,088.5	185,928.8	211,530.9	127,612.3	98,330.9	4,629.2	669,120.6
Distribution	1,291.4	17,945.1	18,307.0	22,297.8	13,108.0	18,536.0	91,485.3
Generation	1,978.6	7,728.0	11,703.3	13,767.0	11,675.7	3,328.7	50,181.3
Properties	156.8	2,313.6	3,543.0	3,815.1	1,484.5	1,515.6	12,828.6
Metering	356.9	1,096.3	599.7	199.6	200.0	197.1	2,649.6
Tools and Equipment	0.0	1,118.2	1,515.2	768.5	591.3	185.5	4,178.7
TOTAL TRANSMISSION AND RURAL OPERATIONS	59,127.7	237,042.6	266,384.9	182,786.8	144,767.0	45,844.5	935,953.5
<u>GENERAL PROPERTIES</u>							
Information Systems	711.6	2,680.0	3,349.1	3,182.7	2,819.9	2,825.2	15,568.5
Telecontrol	521.2	1,273.0	3,017.0	7,235.4	2,815.9	2,122.7	16,985.2
Transportation	1,809.1	3,468.1	2,400.1	3,251.3	5,315.2	2,582.5	18,826.3
Administrative	0.0	980.5	1,425.9	2,060.9	768.3	217.4	5,453.0
TOTAL GENERAL PROPERTIES	3,041.9	8,401.6	10,192.1	15,730.3	11,719.3	7,747.8	56,833.0
<u>CONTINGENCY FUND</u>							
		1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	5,000.0
TOTAL CAPITAL BUDGET	173,265.8	274,249.3	313,640.2	223,370.5	169,708.3	66,703.7	1,220,937.8

PROJECT DESCRIPTION	Expended						Total
	to 2014	2015	2016	2017	2018	2019	
	(\$'000)						
HYDRAULIC PLANT							
Refurbish Burnt Dam Spillway Structure - Bay d'Espoir	110.2	1,201.9					1,312.1
Upgrade Generator Bearings - Bay d'Espoir	18.9	410.7	633.3	190.0	200.0		1,452.9
Replace Spherical By Pass Valves - Bay d'Espoir	57.5	96.3					153.8
Upgrade Public Safety Around Dams and Waterways - Various Sites		483.9	370.1	378.0	385.6	315.5	1,933.1
Replace Automatic Greasing Systems Units 2 and 4 - Bay d'Espoir		254.4					254.4
Automate Generator Deluge Systems Units 3, 5 and 6 - Bay d'Espoir		645.2					645.2
Replace Generator Bearing Coolers - Bay d'Espoir		153.8	193.8				347.6
Replace Interior Coating on Surge Tanks - Bay d'Espoir		1,629.3	425.0	437.2			2,491.5
Install Infrared View Ports - Various Sites		83.7	113.1	112.9			309.7
Replace Site Pump House and Associated Equipment - Bay d'Espoir		22.7	522.5				545.2
Refurbish Access Road - Cat Arm		990.0					990.0
Refurbish Unit Relay Protection - Paradise River		8.7	79.7				88.4
Install Hydrometeorological Stations - Various Sites		377.9	321.2				699.1
Overhaul Turbine/Generator - Various Sites		304.4	478.2	365.0	400.0	408.2	1,955.8
Refurbish Generation Unit - Various Sites		352.9	2,052.8				2,405.7
Replace Station Service Breakers - Cat Arm		644.9	363.4				1,008.3
Replace ABB Exciter Unit 2 - Cat Arm		845.9					845.9
Upgrade Equipment Doors - Various Sites		348.5					348.5
Refurbish Salmon River Spillway - Bay d'Espoir		745.6	556.8	469.5		400.0	2,171.9
Refurbish Intakes - Bay d'Espoir		72.6	262.3				334.9
Replace Excitation Transformers - Bay d'Espoir	636.7	360.0					996.7
Install New Vent Chambers, Units 1 to 6 - Bay d'Espoir			75.0				75.0
Install Exterior Protective Coating on Surge Tanks - Various Sites			725.8	734.7			1,460.5
Refurbish Station Service Water System - Upper Salmon			344.0				344.0
Purchase Generator Bearing Cooler Sets - Cat Arm and Hinds Lake			239.4	572.4			811.8
Purchase 1 Turbine Bearing Cooler Set - Cat Arm			65.8				65.8
Pilot Asset Health Monitoring Template - Upper Salmon			598.7	194.4	103.8		896.9
Replace Penstock and Auxiliaries - Venams Bight			387.9	4,409.2			4,797.1
Upgrade Shoreline Protection - Cat Arm			708.4				708.4
Replace Control Room/Communications Room AC - Hinds Lake			150.0				150.0
Replace Generator Cooling Water Piping - Hinds Lake			153.7				153.7
Refurbish Site Facilities - Bay d'Espoir			797.4	933.0			1,730.4
Refurbish Structures - Various Sites			981.8	456.5		1,355.6	2,793.9
Purchase Spare Transformer - Paradise River		160.0	348.5				508.5
Replace Diesel Generator 2 at Victoria Control Structure - Bay d'Espoir				638.1			638.1
Upgrade Powerhouse 1 and 2 Station Service - Bay d'Espoir				429.8			429.8
Install Permanent Monitoring Vibration System Unit 7 - Bay d'Espoir				124.5			124.5
Upgrade Sump Level System Powerhouse 2 - Bay d'Espoir				185.0			185.0
Replace 6 Slip Rings Assemblies - Various Sites				601.0			601.0

PROJECT DESCRIPTION	Expended to 2014 (\$000)	2015	2016	2017	2018	2019	Total
HYDRAULIC PLANT (cont'd.)							
Install Automated Fuel Monitoring - Various Sites				267.4	500.0		767.4
Upgrade Roads - Various Sites				776.8	800.0	498.5	2,075.3
Replace Spherical Valve Control System - Cat Arm				883.0			883.0
Install Partial Discharge Monitors - Paradise River				197.0			197.0
Replace Rectifier Transformers - Various Sites			75.0	740.5	433.9		1,249.4
Replace Plant HP Compressor 1 - Upper Salmon				142.7			142.7
Replace Shaft Seal System - Upper Salmon				150.0			150.0
Upgrade Domestic Water System - Cat Arm				242.6			242.6
Replace Main Generator Bearing - Upper Salmon				300.0			300.0
Replace Dry Air Compressor 1 and 2 Powerhouse 1 - Bay d'Espoir					320.6		320.6
Replace Main Roof on Powerhouse 1 - Bay d'Espoir					534.3		534.3
Make Improvements to Powerhouse 1 Ventilation - Bay d'Espoir					739.5		739.5
Refurbish Relay Protection Units 5 to 7 - Bay d'Espoir					434.4		434.4
Replace Underground Oily Water Separator - Bay d'Espoir					300.0		300.0
Replace Sump Pumps - Various Sites					317.9	109.9	427.8
Replace Cooling Water Pumps Unit 7 - Bay d'Espoir					150.0		150.0
Replace Firewater Pumps - Upper Salmon					280.0		280.0
Install Dynamic Air Gap Monitoring System - Upper Salmon and Hinds Lake					1,160.0		1,160.0
Refurbish Generator Rotor - Hinds Lake					1,701.5		1,701.5
Install New Septic System - Snooks Arm					150.0		150.0
Replace PH #1 Wet Air Compressors 3 and 4 - Bay d'Espoir						500.4	500.4
Replace Data Acquisition System Units 1-7 (include AHM) - Bay d'Espoir						174.6	174.6
Replace Plant HP Compressor 2 - Upper Salmon						275.1	275.1
Replace Units 1-7 Flow Measuring Devices - Bay d'Espoir						251.1	251.1
Replace Unit Relay Protection - Upper Salmon						275.8	275.8
Replace Dual Fuel Tank - Bay d'Espoir						75.0	75.0
Upgrade Units 1- 6 Gen. Floor Annunciator (Year 1 of 4) (Unit 1) - Bay d'Espoir						249.9	249.9
Replace T/G Cooling Water Pump and Strainer - Hinds Lake						120.0	120.0
Replace Drainage Pumps - Hinds Lake						90.1	90.1
Purchase Set of Turbine Head Cover and Bottom Ring Bushings - Hinds Lake						250.0	250.0
Major Overhaul Oper. rings, wicket gates, linkages and head covers - Bay d'Espoir						750.0	750.0
Replace Exciters on 2 Units - Bay d'Espoir						1,400.0	1,400.0
Replace Site Domestic Water Piping - Bay d'Espoir						350.0	350.0
Stabilize PH Slope (Phase 1) - Cat Arm						400.0	400.0
Refurbish Draft Tube Deck Phase 1 - Bay d'Espoir						450.0	450.0
TOTAL HYDRAULIC PLANT	823.3	10,193.3	12,023.6	14,931.2	8,911.5	8,699.7	55,582.6

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017 (\$000)	2018	2019	Total
<u>THERMAL PLANT</u>							
Replace Economizer Inlet Valves, Units 1 and 2 - Holyrood	192.0	329.1					521.1
Install Cold-Reheat Condensate Drains and High Pressure Heater Trip Level Unit 3 - Holyrood	49.8	467.4					517.2
Install Fire Protection Upgrades - Holyrood	56.6	312.5					369.1
Upgrade Powerhouse Roofing - Holyrood		1,047.8	1,280.0	1,239.2			3,567.0
Replace DC Distribution Panels and Breakers - Holyrood		127.9					127.9
Upgrade Fire Protection (Main Warehouse) - Holyrood		46.2	197.6				243.8
Upgrade Quarry Brook Dam Equipment - Holyrood		498.7					498.7
Overhaul Turbine Valves - Holyrood		1,577.5		1,456.2			3,033.7
Upgrade Waste Water Basin Building - Holyrood			3,470.1				3,470.1
Replace Air Compressor - Holyrood	247.6	61.1					308.7
Rewind Unit 3 Generator Rotor and Install Rotor Flux Probe - Holyrood			8,402.4				8,402.4
Upgrade Cranes and Hoists - Holyrood			600.0				600.0
Install Auxiliary Boiler - Holyrood			500.0	2,500.0			3,000.0
Upgrade UPS - Holyrood			254.1	266.7			520.8
Upgrade Underground Plant Drainage System - Holyrood			1,364.1				1,364.1
Overhaul Steam Turbine Generators - Holyrood			4,810.1				4,810.1
Overhaul Cooling Water Pump - Holyrood			88.9	89.9			178.8
Overhaul Extraction Pump - Holyrood		189.6	88.9	89.9			368.4
Overhaul Boiler Feed Pump - Holyrood		196.3	186.0	188.1			570.4
Upgrade Plant Access Road - Holyrood				807.8			807.8
Install Visible Isolation for 600 V HVAC System Admin Area - Holyrood				76.3			76.3
Replace Stage 2 Diesel - Holyrood				443.2			443.2
Replace 600 V Switchgear and Transformers Unit 3 - Holyrood				1,705.9			1,705.9
Revisit Condition Assessment Level 1 - Holyrood					250.0		250.0
Install New Raw Water Line - Holyrood					2,000.0		2,000.0
Install New Lube Oil / Seal Oil Systems Unit 3 - Holyrood					1,000.0		1,000.0
Replace Stage 1 4169 kV Breakers - Holyrood						1,000.0	1,000.0
Replace 258 V DC Battery Charger and Batteries Unit 3 - Holyrood						750.0	750.0
Upgrade MCC for Sync Condenser Unit 3 - Holyrood						1,000.0	1,000.0
TOTAL THERMAL PLANT	546.0	4,854.1	21,242.2	8,863.2	3,250.0	2,750.0	41,505.5

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017 (\$000)	2018	2019	Total
GAS TURBINES							
Upgrade Gas Turbine Plant Life Extension - Stephenville		2,655.2	2,525.4				5,180.6
Perform Alternator Inspection - Happy Valley		484.4					484.4
Purchase and Install 100 MW Combustion Turbine - Holyrood	109,677.0	9,323.0					119,000.0
Install Diesel Automation and Charger System - Happy Valley			214.1				214.1
Install Infrared Scanning Ports - Hardwoods						250.0	250.0
Refurbish Bus Duct - Hardwoods						150.0	150.0
Upgrade Control System - Hardwoods						100.0	100.0
Overhaul Engine - Happy Valley						100.0	100.0
TOTAL GAS TURBINE PLANTS	109,677.0	12,462.6	2,739.5	0.0	0.0	600.0	125,479.1
TOOLS AND EQUIPMENT							
Install Handheld Pendant to Overhead Crane - Bay d 'Espoir	49.9	170.8					220.7
Purchase Tools and Equipment \$50,000		124.3	57.9	59.0	60.5	61.7	363.4
TOTAL TOOLS AND EQUIPMENT	49.9	295.1	57.9	59.0	60.5	61.7	584.1
TOTAL GENERATION	111,096.2	27,805.1	36,063.2	23,853.4	12,222.0	12,111.4	223,151.3

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
	(\$'000)						
<u>TERMINAL STATIONS</u>							
Perform Grounding Upgrades - Various Sites	1,311.3	345.4	338.2	341.5		300.0	2,636.4
Replace Instrument Transformers - Various Sites	1,146.0	538.4	1,511.7	471.9	1,100.4	650.1	5,418.5
Upgrade Circuit Breakers - Various Sites	3,695.4	10,510.4	5,452.7	3,973.2	4,000.0	4,137.0	31,768.7
Replace Disconnects - Various Sites	815.9	1,153.2	642.9	1,040.3	983.3	990.3	5,625.9
Replace Transformer - Sunnyside	7,197.8	1,226.4					8,424.2
Replace Optimho Relays on East Coast - Various Sites	89.1	96.9					186.0
Replace Surge Arrestors - Various Sites		198.1	250.7	148.7	195.4	202.6	995.5
Upgrade Power Transformers - Various Sites		4,440.4	7,002.3	1,988.9	2,036.8	2,085.1	17,553.5
Upgrade Terminal Station Foundations - Various Sites		302.3	310.7	319.4	328.2	337.3	1,597.9
Upgrade Control Wiring to Terminal Stations - Bay d 'Espoir		301.0	100.0	390.9			791.9
Perform Site Work for Mobile Substation - Various Sites		489.3	350.3	192.8			1,032.4
Upgrade Transformer Differential Protection - Grandy Brook		154.0					154.0
Supply and Install Fire Protection in 230 kV Station - Various Sites		67.6	424.3	650.0	650.0	650.0	2,441.9
Upgrade Terminal Station Protection and Control - Various Sites		172.7	307.2	631.0	631.0		1,741.9
Install Transformer On line Gas Monitoring - Various Sites		700.5	975.7				1,676.2
Install Support Structures C2 Capacitor Bank - Hardwoods		199.3					199.3
Replace Station Lighting - Bay d 'Espoir		16.7	160.3				177.0
Upgrade Control Building - Indian River			405.6				405.6
Upgrade Terminal Station for Mobile Substation - Various Sites			224.9	175.0		250.0	649.9
Install Remote Control Sectionalizer TL251(2)(3) - Hampden			334.0				334.0
Replace Terminal Station Compressors - Corner Brook			139.5				139.5
Replace Telecontrol Building and Upgrade Equipment - Daniels Harbour			57.0	769.5			826.5
Replace 66 kV S/S Cable Feed to Plant - Holyrood			197.8				197.8
Replace Compressed Air Systems - Western Avalon				200.0	500.0		700.0
Construct 138 kV Terminal Station - Hawkes Bay				2,280.0	5,013.0		7,293.0
Replace Transformer - Sally's Cove				100.0			100.0
Upgrade Control Building for Staff Working Spaces - Various Sites				453.4	773.5		1,226.9
Upgrade Station Service for Oil Reclaimer - Oxen Pond					200.0		200.0
Replace Outside Service - Holyrood					750.0		750.0
Install Drainage to Stop Surface Flooding - Various Sites					500.0		500.0
Upgrade Station Service - Sunnyside					150.0		150.0
Upgrade Access Road with New Topping - Buchans					250.0		250.0
Install 66 kV Breaker By-Pass Switches - Various Sites					515.0		515.0
Replace T1 2.5 MVA Transformer - Conne River					800.0		800.0

PROJECT DESCRIPTION	Expended to 2014 (\$000)	2015	2016	2017	2018	2019	Total
TERMINAL STATIONS (cont'd.)							
Upgrade Protection and Control - Various Sites						500.0	500.0
Replace Equipment Foundations - Various Sites						500.0	500.0
Upgrade Transformers - Various Sites						2,000.0	2,000.0
Replace Transformer - Various Sites						2,600.0	2,600.0
Install Fire Barriers Between T10 and T12 and Between T10 and T11 - Bay d'Espoir						400.0	400.0
Install Data Acquisition and Trending - Corner Brook						500.0	500.0
Install Alternate Station Service - Grand Falls						100.0	100.0
Purchase New Mobile Substation - Bishops Falls						100.0	100.0
Construct Fire Separation Wall Between Power Transformers - Happy Valley						400.0	400.0
Replace Capacitor Banks - Various Sites						400.0	400.0
Upgrade DC Station Service - Various Sites				200.0		100.0	300.0
Replace Insulators - Various Sites						250.0	250.0
TOTAL TERMINAL STATIONS	14,255.5	20,912.6	19,185.8	14,326.5	19,376.6	17,452.4	105,509.4

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
	(\$000)						
TRANSMISSION							
Refurbish Anchors and Footings TL202 and TL206 - Bay d'Espoir to Sunnyside	1,191.7	988.2					2,179.9
Perform Wood Pole Line Management Program - Various Sites		2,830.6	2,903.9	2,706.8	2,734.2	2,833.4	14,008.9
Replace Transmission Line - TL218			525.8	5,651.8	8,540.0		14,717.6
Construct Transmission Line Equipment Off-Loading Areas - Various Sites			887.8	506.4			1,394.2
Install 138 kV Transmission Line Cross Braces - Various Sites			71.0	637.9			708.9
Upgrade Transmission Lines - Various Sites			332.3	6,894.0	3,773.7	235.6	11,235.6
Replace Aircraft Markers at Grand Lake Crossing - TL228			621.9	867.5			1,489.4
Conduct LIDAR Surveys - Various Sites				283.9	292.0	560.2	1,136.1
Construct 230 kV Transmission Line - Bay d'Espoir to Western Avalon	2,412.6	18,964.7	77,225.6	110,064.0	82,991.0		291,657.9
Construct Labrador West Transmission Line	37,484.2	163,145.3	128,962.6				329,592.1
Upgrade Tower Foundations - Various Sites						1,000.0	1,000.0
TOTAL TRANSMISSION	41,088.5	185,928.8	211,530.9	127,612.3	98,330.9	4,629.2	669,120.6

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
	(\$000)						
DISTRIBUTION							
Replace Recloser Control Panels - Various Sites	111.3	84.4					195.7
Provide Service Extensions - All Service Areas		6,080.0	6,200.0	5,850.0	5,960.0	6,080.0	30,170.0
Upgrade Distribution Systems - All Service Areas		3,340.0	3,170.0	3,240.0	3,310.0	3,370.0	16,430.0
Replace Hendrix Insulators - Farewell Head		500.0					500.0
Relocate Voltage Regulator - Hawkes Bay		166.4					166.4
Construct 2nd Distribution Feeder - Nain		1,050.3					1,050.3
Convert Section of Robert's Arm (L3) to 25 kV - South Brook			569.6				569.6
Automate Reclosers - Various Sites			46.3	409.5			455.8
Additions for Load Growth - Labrador South Interconnection - Various Sites			5,628.5	7,782.0			13,410.5
Implement Geographical Information System - Various Sites			90.6				90.6
Upgrade Distribution Systems - Various Sites	370.2	5,486.2	1,297.9	4,542.3	2,379.0	3,805.0	17,880.6
Additions for Load Growth - Distribution Systems - Various Sites			1,304.1		1,000.0		2,304.1
Voltage Conversion - Labrador City	809.9	1,237.8					2,047.7
Extend Three Phase to St. Paul's - Cow Head				474.0			474.0
Replace Submarine Cable - Various Sites					400.0	4,750.0	5,150.0
Replace L4 #4 Copper Wire Primary - Farewell Head					59.0	531.0	590.0
TOTAL DISTRIBUTION	1,291.4	17,945.1	18,307.0	22,297.8	13,108.0	18,536.0	91,485.3

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
	(\$000)						
<u>GENERATION</u>							
Perform Arc Flash Remediation - Various Sites	1,602.6	413.1					2,015.7
Inspect Fuel Storage Tanks - Various Sites		1,761.1	780.1	802.3	824.6	847.7	5,015.8
Overhaul Diesel Units - Various Sites		1,199.2	1,470.4	1,503.4	1,535.7		5,708.7
Install Disconnect Switches for Mobile Generator - Various Sites		10.0	189.3				199.3
Replace Diesel Units - Various Sites		170.3	1,760.8	1,380.0	1,270.0		4,581.1
Purchase Diesel Plant Production Data Equipment - Various Sites	268.9	269.8	280.7				819.4
Upgrade Ventilation Systems - Various Sites		175.9	317.3				493.2
Upgrade Building Exterior - Makkovik		309.5					309.5
Replace Programmable Logic Controllers - Various Sites		366.9	346.0	245.1			958.0
Increase Fuel Storage - Rigolet		1,666.8					1,666.8
Increase Generation Capacity - Makkovik		272.6		397.1	461.7		1,131.4
Upgrade Fuel Storage - Little Bay Islands			125.3				125.3
Upgrade Station Service - Grey River			130.9				130.9
Upgrade Lighting System - Various Sites			157.9				157.9
Install Fire Protection in Diesel Plants - Various Sites	107.1	1,112.8	1,126.2	500.0	500.0		3,346.1
Purchase Accommodations Trailers - Various Sites			120.0				120.0
Perform Plant Improvements as Per 2012 FEED Project - Various Sites			1,700.0	250.0	250.0		2,200.0
Additions for Load Growth - Labrador South Generation			3,198.4	7,546.8	4,023.8		14,769.0
Replace Underground Glycol Line - Francois				100.0			100.0
Insulate Diesel Plant - St. Anthony				63.5			63.5
Install Fire Detection System - Norman Bay				100.0			100.0
Replace Human Machine Interface - Various Sites				200.0	200.0	200.0	600.0
Install Mobile Diesel Quick Connect/Disconnect - Various Sites				178.8			178.8
Install Unit Fuel Metering - Various Sites					600.0		600.0
Install Sectionalizing for Cold Load Pickup - Port Hope Simpson					250.0		250.0
Install Nox Monitors at 2 Sites - Various Sites					302.7		302.7
Build Roadway for Freight Delivery - Norman Bay					307.2		307.2
Upgrade Site Facilities - Various Sites					450.0		450.0
Replace Radiators - Various Sites				500.0	500.0		1,000.0
Replace Diesel Plant - Rigolet					200.0	2,000.0	2,200.0
Install Sequence of Events Monitor in Diesel Plants - Various Sites						281.0	281.0
TOTAL GENERATION	1,978.6	7,728.0	11,703.3	13,767.0	11,675.7	3,328.7	50,181.3

PROJECT DESCRIPTION	Expended	2015	2016	2017	2018	2019	Total
	to 2014						
(\$000)							
<u>PROPERTIES</u>							
Legal Survey of Primary Distribution Lines and Right of Ways - Various Sites	156.8	198.9	40.3				396.0
Install Fall Protection Equipment - Various Sites		198.9	198.2	198.7	198.8	198.9	993.5
Install Additional Washrooms - Various Sites		259.3	265.2	271.1	277.2	283.2	1,356.0
Replace Accommodations and Septic System - Ebbegunbaeg		489.4	1,061.4				1,550.8
Upgrade Line Depots - Various Sites		953.3	960.1	983.7	1,008.5	1,033.5	4,939.1
Upgrade HVAC System - Port Saunders		137.0					137.0
Reshingle Roof - Stephenville		76.8					76.8
Upgrade Warehouse Lighting - Bishops Falls			94.9				94.9
Install Pole Storage Ramps - Various Sites			603.8	507.2			1,111.0
Perform Condition Assessment of Buildings - Various Sites			319.1				319.1
Upgrade Classroom and Boardroom in Main Office - Bishops Falls				77.4			77.4
Construct Storage Buildings - Various Sites				549.0			549.0
Replace Warehouse - Bay d'Espoir				1,228.0			1,228.0
TOTAL PROPERTIES	156.8	2,313.6	3,543.0	3,815.1	1,484.5	1,515.6	12,828.6
<u>METERING</u>							
Install Automated Meter Reading - Various Sites	356.9	900.1	401.8				1,658.8
Purchase Meters, Equipment and Tanks - Various Sites		196.2	197.9	199.6	200.0	197.1	990.8
TOTAL METERING	356.9	1,096.3	599.7	199.6	200.0	197.1	2,649.6
<u>TOOLS AND EQUIPMENT</u>							
Purchase Tools and Equipment Less than \$50,000		622.7	299.0	273.7	181.3	185.5	1,562.2
Replace Light Duty Mobile Equipment - Various Sites		494.4	489.3	494.8			1,478.5
Replace Off Road Track Vehicle Unit No. 7861 - Stephenville		1.1	397.8				398.9
Replace Bulldozer Unit No. 7657 - Bishops Falls			329.1				329.1
Replace Off Road Track Vehicle Unit No. 7565 - Stephenville					410.0		410.0
TOTAL TOOLS AND EQUIPMENT	0.0	1,118.2	1,515.2	768.5	591.3	185.5	4,178.7
TOTAL TRANSMISSION AND RURAL OPERATIONS	59,127.7	237,042.6	266,384.9	182,786.8	144,767.0	45,844.5	935,953.5

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
(\$000)							
<u>INFORMATION SYSTEMS</u>							
<u>SOFTWARE APPLICATIONS</u>							
<u>New Infrastructure</u>							
Perform Minor Application Enhancements - Hydro Place		329.5	338.9	348.3	358.0	368.0	1,742.7
Cost Recoveries		(141.6)	(145.7)	(149.7)	(153.9)	(158.2)	(749.1)
<u>Upgrade of Technology</u>							
Upgrade Microsoft Office Products - Hydro Place	1,111.8	465.2	1,116.6	1,141.1	1,166.1	1,192.5	6,193.3
Cost Recoveries	(400.2)	(167.5)	(480.1)	(490.7)	(501.4)	(512.8)	(2,552.7)
Upgrade Energy Management Systems - Hydro Place		194.9	200.5	206.0	231.5	217.8	1,050.7
Replace Customer Care System - Hydro Place		134.9					134.9
Upgrade Lotus Notes - Hydro Place		635.4					635.4
Cost Recoveries		(273.1)					(273.1)
Upgrade Citrix - Hydro Place			262.2				262.2
Cost Recoveries			(97.0)				(97.0)
Upgrade Sharepoint/ Document Repository - Hydro Place			91.6				91.6
Cost Recoveries			(33.9)				(33.9)
Upgrade Meter Reading Software - Hydro Place			134.3				134.3
Upgrade Safety Reporting System Safety Code - Hydro Place			325.8				325.8
Cost Recoveries			(120.5)				(120.5)
Refresh Security Software - Hydro Place			132.5	136.2	140.1	144.2	553.0
Cost Recoveries			(57.0)	(58.6)	(60.2)	(62.0)	(237.8)
Implement Industrial Billing Software MV-PBS - Hydro Place			336.7				336.7
Upgrade ERP System (JDE) - Hydro Place				866.4			866.4
Cost Recoveries				(320.6)			(320.6)
Implement Industrial Billing Software MV90xi - Hydro Place				63.1			63.1
Upgrade Showcase Reporting System				195.3			195.3
Cost Recoveries				(72.3)			(72.3)
Upgrade Business Intelligence and Disclosure Management - Hydro Place					414.1		414.1
Cost Recoveries					(153.2)		(153.2)
Upgrade Database Environment - Hydro Place					209.3		209.3
Cost Recoveries					(77.4)		(77.4)
Refresh Security Card System - Hydro Place					172.2		172.2
Cost Recoveries					(73.7)		(73.7)
Upgrade Electronic Mail System - Hydro Place					592.5	709.5	1,302.0
Cost Recoveries					(219.2)	(305.0)	(524.2)
TOTAL SOFTWARE APPLICATIONS	711.6	1,177.7	2,004.9	1,864.5	2,044.8	1,594.0	9,397.5

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017 (\$000)	2018	2019	Total
COMPUTER OPERATIONS							
Infrastructure Replacement							
Replace Personal Computers - Various Sites		573.3	600.7	387.2	386.3	568.2	2,515.7
Replace Peripheral Infrastructure - Various Sites		200.5	190.3	177.3	223.5	213.9	1,005.5
Upgrade Enterprise Storage Capacity - Hydro Place		621.3	550.2	553.6	169.2	456.0	2,350.3
Cost Recovery Nalcor		(267.0)	(236.5)	(237.9)	(72.7)	(196.0)	(1,010.1)
Upgrade of Technology							
Upgrade Server Technology Program - Hydro Place		601.3	420.0	768.2	120.7	331.6	2,241.8
Cost Recovery Nalcor		(227.1)	(180.5)	(330.2)	(51.9)	(142.5)	(932.2)
TOTAL COMPUTER OPERATIONS		1,502.3	1,344.2	1,318.2	775.1	1,231.2	6,171.0
TOTAL INFORMATION SYSTEMS	711.6	2,680.0	3,349.1	3,182.7	2,819.9	2,825.2	15,568.5

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
	(\$000)						
<u>TELECONTROL</u>							
<u>NETWORK SERVICES</u>							
<u>Infrastructure Replacement</u>							
Purchase Tools and Equipment Less than \$50,000		45.6	46.4	47.6	48.7	49.7	238.0
Replace Radomes - Various Sites			192.0	196.0	196.0	180.0	764.0
Replace Standby Generator - Sandy Brook Hill			237.3				237.3
Replace MDR Microwave Radios - Various Sites			539.0	920.0	86.2	825.0	2,370.2
Refurbish Microwave Shelters - Various Sites			92.1	90.0	90.0		272.1
Replace Power Line Carriers - Various Sites			857.0	4,438.2	1,720.0		7,015.2
Build Communications Shelters - Various Sites				360.0		90.0	450.0
Replace GPS Clocks - Various Sites				52.8			52.8
Replace UPS - Hopedale						300.0	300.0
Refurbish Communication Towers - Various Sites						200.0	200.0
<u>Network Infrastructure</u>							
Replace Battery Banks and Chargers - Various Sites	267.0	398.0	302.0	305.0	250.0	250.0	1,772.0
Replace Network Communications Equipment - Various Sites		169.5	174.0	180.0	185.0	180.0	888.5
Install Substation Communications Management - Various Sites				237.8			237.8
<u>Upgrade of Technology</u>							
Upgrade IP Scada Network - Various Sites	254.2	238.7					492.9
Replace PBX Phone Systems - Various Sites			480.0	360.0	240.0		1,080.0
Replace Telephone Systems - Springdale		132.7					132.7
Replace DTI Phone Turrets in Energy control Center - Hydro Place		44.7					44.7
Replace WIFI Access Points - Various Sites		126.3					126.3
Upgrade Site Facilities - Various Sites		48.3	48.0	48.0		48.0	192.3
Replace Wescom Transceivers - Various Sites			49.2				49.2
Replace GDC Metroplex - Various Sites		69.2					69.2
TOTAL TELECONTROL	521.2	1,273.0	3,017.0	7,235.4	2,815.9	2,122.7	16,985.2

PROJECT DESCRIPTION	Expended to 2014	2015	2016	2017	2018	2019	Total
				(\$000)			
<u>TRANSPORTATION</u>							
Replace Vehicles and Aerial Devices - Various Sites	1,809.1	3,468.1	2,400.1	3,251.3	5,315.2	2,582.5	18,826.3
TOTAL TRANSPORTATION	1,809.1	3,468.1	2,400.1	3,251.3	5,315.2	2,582.5	18,826.3
<u>ADMINISTRATION</u>							
Purchase Office Equipment		68.0	131.0	71.1			270.1
Remove Safety Hazards - Various Sites		194.9	200.3	205.9	211.6	217.4	1,030.1
Replace Cooling Tower and Auxiliaries - Hydro Place		45.7	311.3				357.0
Replace Roof - Hydro Place		671.9	568.7	749.5			1,990.1
Replace AC Unit 12A and Unit 14 - Hydro Place			214.6				214.6
Upgrade Outside Property - Various Sites				234.8			234.8
Upgrade Fire System - Bishops Falls				799.6	556.7		1,356.3
TOTAL ADMINISTRATION	0.0	980.5	1,425.9	2,060.9	768.3	217.4	5,453.0
TOTAL GENERAL PROPERTIES	3,041.9	8,401.6	10,192.1	15,730.3	11,719.3	7,747.8	56,833.0