
Newfoundland & Labrador

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

IN THE MATTER OF THE

2017 CAPITAL BUDGET APPLICATION

FILED BY

NEWFOUNDLAND AND LABRADOR HYDRO

**DECISION AND ORDER
OF THE BOARD**

ORDER NO. P.U. 45(2016)

BEFORE:

**Andy Wells
Chair and Chief Executive Officer**

**Darlene Whalen, P.Eng.
Vice-Chair**

**James Oxford
Commissioner**

**NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES**

AN ORDER OF THE BOARD

NO. P.U. 45(2016)

IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 (the “EPCA”) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the “Act”), as amended, and regulations thereunder; and

IN THE MATTER OF an application by Newfoundland and Labrador Hydro for an Order pursuant to Section 41 of the *Act*:

- (a) its 2017 capital purchases and construction projects in excess of \$50,000;
- (b) its 2017 Capital Budget; and
- (c) its estimated contributions in aid of construction for 2017.

BEFORE:

Andy Wells
Chair & Chief Executive Officer

Darlene Whalen, P. Eng
Vice-Chair

James Oxford
Commissioner

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1 **I BACKGROUND**

2
3 **1. The Application**

4
5 Newfoundland and Labrador Hydro (“Hydro”) filed its 2017 Capital Budget Application (the
6 “Application”) with the Board of Commissioners of Public Utilities (the “Board”) on July 28,
7 2016. In the Application Hydro requests that the Board make an Order approving:

- 8
9 a) its 2017 capital purchases and construction projects in excess of \$50,000;
10 b) its 2017 Capital Budget of \$271,436,400; and
11 c) its estimated contributions in aid of construction for 2017.

12
13 Notice of the Application, including an invitation to participate, was published on August 8,
14 2016. The Application and related documentation was made available on the Board’s website.

15
16 Intervenor submissions were received from: i) the Consumer Advocate, Mr. Thomas Johnson; ii)
17 Newfoundland Power Inc. (“Newfoundland Power”); and, iii) Corner Brook Pulp and Paper
18 Limited and NARL Refining LP (the “Industrial Customer Group”).

19
20 A total of 69 Requests for Information (“RFIs”) were issued to Hydro by the Consumer
21 Advocate, Newfoundland Power, the Industrial Customer Group and the Board.

22
23 On August 31, 2016 Hydro advised that they were withdrawing the Bay d’Espoir component of
24 the 2017 project Overhaul Turbine/Generators – Bay d’Espoir and Cat Arm¹, with an estimated
25 cost of \$170,800.

26
27 The revised proposed 2017 Capital Budget is \$271,265,600.

28
29 The intervenors did not file additional evidence and did not request a technical conference or oral
30 hearing of the Application. Written submissions were filed by Newfoundland Power and the
31 Industrial Customer Group on October 7, 2016. The Consumer Advocate advised that he would
32 not be filing submissions. Hydro filed its reply submission on October 13, 2016.

33
34 **2. Board Authority**

35
36 Section 41 of the *Act* requires a public utility to submit an annual capital budget of proposed
37 improvements or additions to its property for approval of the Board no later than December 15th
38 in each year for the next calendar year. In addition, the utility is also required to include an
39 estimate of contributions toward the cost of improvements or additions to its property which the
40 utility intends to demand from its customers.

41
42 Subsection 41(3) prohibits a utility from proceeding with the construction, purchase or lease of
43 improvements or additions to its property without the prior approval of the Board where (a) the
44 cost of the construction or purchase is in excess of \$50,000, or (b) the cost of the lease is in
45 excess of \$5,000 in a year of the lease.

¹ Volume I, page D-31.

II PROPOSED 2017 CAPITAL BUDGET

In accordance with the legislation, regulations and Board guidelines Hydro provided detailed information to support the overall capital budget for 2017 as well as the proposed individual project expenditures, including a project description, justification, costing methodology and future commitments, if applicable. In compliance with previous Board Orders the Application also includes specific information required to be filed, including a report on 2016 capital expenditures, a schedule of capital expenditures for the period 2012-2021, and a five-year capital plan for the period 2017-2021.

The Application includes a status report *Holyrood Overview: Future Operation and Capital Expenditure Requirements July 2016* (the “Holyrood Overview Report”) as directed in Order No. P.U. 50(2014). The Application also includes a status report *TL 267 Project - 230 kV Transmission Line from Bay d’Espoir to Western Avalon Report* (the “TL 267 Project Report”) as directed in Order No. P.U. 33(2015).²

1. Overview

The revised proposed 2017 capital budget is as follows:

2017 Proposed Capital Budget (\$000s)	
2017 Single Year Projects	
Generation	\$8,520.4
Transmission and Rural Operations	20,875.7
General Properties	2,268.1
Allowance for Unforeseen Events	1,000
Projects under \$50,000	777.1
Multi-year (2017 Expenditures)³	
Multi-year projects commencing in 2017	23,561.6
Multi-year projects commencing in 2016	62,748.4
Multi-year projects commencing prior to 2016	151,514.3
Total 2017 Capital Budget	271,265.6

2. Evidence

Hydro provided detailed information supporting the overall capital budget for 2017 as well as the proposed purchase and construction of improvements or additions to its property. The supporting information for each of the projects is comprehensive and consistent with the level of information filed in recent capital budget applications and in accordance with the Board’s Capital Budget Guidelines.

Of the total proposed 2017 capital budget of \$271.3 million, 86.8% relates to transmission and rural operations, 9.4% relates to generation, and 3.4% is for general properties. Multi-year

² 2017-2021 Capital Plan, Appendix B.

³ This includes 37 multi-year projects proposed to start in 2017 filed for approval in the Application (page B-5), 30 multi-year projects previously approved by the Board and commencing in 2016 (page B-6), and two multi-year projects previously approved by the Board and commencing prior to 2015 (page B-6).

1 projects account for \$237.8 million (87.7%) of the budget and \$214.2 million (79%) relates to
2 multi-year projects which commenced in 2016 or prior years. The total new capital expenditure
3 for 2017 is \$57,002,900. In its *2017 Capital Projects Overview* Hydro continues to highlight its
4 aging asset base, noting that the majority of its installed assets, such as the hydroelectric
5 installation at Bay d'Espoir, the Holyrood Thermal Generating Station, and much of its
6 transmission and distribution systems are more than 40 years old. Hydro also noted that many
7 other generation assets, such as the Stephenville and Hardwoods Gas Turbines and the Hinds
8 Lake Generation Station, are more than 30 years old. Hydro stated that all new projects proposed
9 for 2017 address both the need to sustain the existing asset base and to grow the asset base in
10 response to growing customer demand.

11
12 According to the 2017 Capital Plan, Hydro plans to invest \$0.97 billion in plant and equipment
13 over the 2017 to 2021 period. Annual capital expenditures are forecast to average approximately
14 \$194 million, with a low of \$129 million in 2021 and a high of \$271 million in 2017. Hydro
15 stated that the growth in overall capital expenditure reflects the requirement for projects related
16 to replacement and upgrade of deteriorating facilities, ensuring compliance with legislation,
17 additions required to meet load growth, and inflation.

18 19 **3. Holyrood Capital Spending**

20
21 In the updated *Holyrood Overview Report* Hydro confirmed that the Holyrood Thermal
22 Generating Station is still intended to be used for primary generation until the interconnection
23 with Muskrat Falls, and then be fully available for generation in stand-by mode until the 2020-
24 2021 time frame. The specific phases of operation are as follows:

- 25
26 - Phase 1 (2016 through to second quarter 2018): All three units are available for
27 generation with Unit 3 also available for synchronous condenser operation.
- 28 - Phase 2 (second quarter 2018 to the end of winter 2021): Units 1 and 2 are in standby
29 generation mode as off-Island firm capacity is made available from recall power and Unit
30 3 is operated in synchronous condenser mode but available for conversion to generation
31 mode as required.
- 32 - Phase 3 (Post winter 2021): Unit 3 continues to operate as a synchronous condenser only.
33

34 Hydro stated that it has been concentrating on condition assessments and the formulation of
35 requirements to get the Holyrood facility to the end of its life as a generating facility, and for
36 Unit 3 to operate in synchronous condenser mode beyond that time. The 2017 capital plan for the
37 Holyrood facility identified expenditures of approximately \$11 million which, according to
38 Hydro, are required to ensure that the Holyrood facility is available to meet the energy and
39 capacity requirements of the Island portion of the province through the construction and
40 commissioning of the Muskrat Falls development and the Labrador-Island Link. Hydro noted
41 that it is also managing several degrading pieces of infrastructure outside of the capital plan in an
42 attempt to reach end of generation life with minimal refurbishment cost.

43
44 Given the significance of the Holyrood facility on the Island Interconnected system the Board
45 will continue to require Hydro to file an updated *Holyrood Overview Report* with future capital
46 budgets, at least until the Holyrood Thermal Generating Station enters the Phase 3 operational
47 stage, and to fully justify all capital projects proposed for the facility.

1 **4. Project Status – Transmission Line Upgrade from Bay d’Espoir to Western Avalon**
2 **(TL 267 Project)**
3

4 As directed by the Board in Order No. P.U. 33(2015) Hydro filed the *TL 267 Project Report* on
5 the status of the \$291.7 million project to construct a 230 kV line from the Bay d’Espoir
6 Generating Facility to the Western Avalon Terminal Station. The report includes an update on
7 work progress, the expenditure and budget status, and an explanation for any deviations from the
8 project scope and budget.
9

10 In the *TL 267 Project Report* Hydro explained that, as TL 267 has a material impact on system
11 reliability and eliminates system constraints relating to power flow to the Avalon Peninsula, the
12 schedule has been accelerated to be in service by October 31, 2017.
13

14 Hydro reported that engineering for both the transmission line and terminal stations is ongoing
15 and is on schedule. Tower designs are 100% complete. The contract for the supply of the towers
16 and tower foundations has been awarded and work is well underway. The project has been
17 released from the environmental assessment which allowed the line route to be finalized and
18 construction to proceed.
19

20 Procurement activities are well advanced and remain on track to support the 2017 in-service
21 date. Construction has started with commencement of the line clearing, with the first tree cut on
22 June 27, 2016. Costs are tracking as planned with a significant portion of the expenditure
23 scheduled for 2016 and 2017. A re-baseline of the cash flow was completed based on the revised
24 in-service date but the project is forecast to be on budget at \$291,658,000.
25

26 In a letter dated July 19, 2016 the Board requested Hydro provide monthly status reports,
27 beginning September 15, 2016 and continuing through to the energization date of October 31,
28 2017.
29

30 **5. Submissions**
31

32 In final submission Newfoundland Power identified concerns regarding the expenditures in
33 relation to Stephenville and Hardwoods gas turbines. Newfoundland Power supports approval of
34 the expenditures.
35

36 The Industrial Customer Group raised concerns regarding the project to upgrade the Corner
37 Brook frequency converter but did not object to the project.
38

39 Gas Turbine Life Extension - Stephenville and Hardwoods and Purchase Critical Spares (C- 19,
40 C-26 and E-2: 2017 – 1,707,800 and 2018 – 787,100)
41

42 Hydro proposes to replace the filtration system and upgrade instrumentation on both gas turbines
43 and to replace the alternator bed heater and associated cabling and conduits on the Stephenville
44 gas turbine. Hydro stated that it will continue to assess life extension requirements and propose
45 additional projects in future capital budget applications. Hydro has also completed its critical
46 spares assessment and identified parts that should be readily available in the event of a forced
47 outage at the gas turbine generating stations.

1 Newfoundland Power submitted that the Board should go further than simply approving the
2 proposed expenditures for the Stephenville and Hardwoods gas turbines. Newfoundland Power
3 submitted that the gas turbines are critical to ensuring reliability of the electrical system in both
4 the short and the long term. Newfoundland Power states that the Board should order Hydro to
5 complete a comprehensive analysis of short and long term options related to Stephenville and
6 Hardwoods gas turbines as part of the report to be filed on November 30, 2016.

7
8 Hydro submitted that, in Order No. P.U. 22(2016), the Board has already ordered Hydro to
9 perform an analysis and report on the Stephenville and Hardwoods gas turbines and that it is
10 currently completing this work. Hydro submitted that there is no need for the Board to order
11 Hydro to provide any further report at this time.

12
13 The Board is satisfied that the current reporting requirements for the Stephenville and
14 Hardwoods gas turbines should address the issues and concerns raised by Newfoundland Power.
15 The Board expects the report to be filed by Hydro on November 30, 2016 will be a
16 comprehensive review which will address the reliability of the units and impacts on the system
17 for both the short and longer term.

18
19 Upgrade Corner Brook Frequency Converter (C-53: \$2,943,800)

20
21 Hydro proposes to upgrade the Corner Brook frequency converter at an estimated cost of
22 \$2,943,800 over a two-year period. Hydro stated that the frequency converter has been in
23 operation since the mid-1960s and has proven very reliable during this period. The stator
24 windings and exciters have reached the end of their reliable service life and were recommended
25 for refurbishment in a July 2015 condition assessment. The condition assessment also
26 recommended that the converter not be operated at its maximum output until the synchronous
27 machines had been upgraded.

28
29 The Industrial Customer Group did not object to approval of the project, but noted that they are
30 in ongoing discussions with Hydro regarding the timing of specific elements of the project to
31 ensure the optimal schedule.

32
33 The issue for the Industrial Customer Group is specifically assigned charges. Under the current
34 Board approved methodology, capital expenditures on the frequency converter are specifically
35 assigned to Corner Brook Pulp and Paper Limited. The parties had agreed in the 2015 Settlement
36 Agreement for Hydro's general rate application that the cost of service methodology review
37 would include a review of whether assets are specifically assigned. The Industrial Customer
38 Group reserved their right to object to the costs of this project being specifically assigned to
39 Corner Brook Pulp and Paper Limited when cost of service issues are next considered by the
40 Board.

41
42 Hydro acknowledged that it continues to work with Corner Brook Pulp and Paper Limited to
43 determine the optimal schedule for the project, taking into account Hydro's requirement to
44 provide safe and adequate, low cost and reliable service while attempting to address the concerns
45 of the customer.

46
47 The Board notes that a cost of service review will be completed prior to the commissioning of
48 Muskrat Falls. The timing of this review is still uncertain. Certain cost of service issues,
49 including issues related to the methodology for calculating specifically assigned charges, will

1 need to be addressed as part of Hydro's next general rate application to be filed by March 30,
2 2017. The Industrial Customer Group may present its position on the assignment of the
3 specifically assigned charges for the frequency converter at that time.
4

5 **6. Board Findings - Capital Projects Over \$50,000**
6

7 The Board has reviewed the proposed 2017 capital projects in excess of \$50,000, the reports
8 filed in support, the additional information filed by Hydro in response to RFIs, and the final
9 submissions. The Board notes that no objections were expressed to the Board in relation to
10 Hydro's proposed 2017 Capital Budget. Based on the evidence the Board is satisfied that Hydro
11 has demonstrated that the proposed capital expenditures are necessary to maintain its assets and
12 respond to customer growth and requirements. The Board finds that the proposed purchases and
13 construction projects in excess of \$50,000, including the multi-year projects proposed to start in
14 2017, are prudent, reasonable and necessary for Hydro to continue to provide safe and reliable
15 service and should be approved. The Board also finds that the proposed total capital budget for
16 2017 is prudent and reasonable and will, therefore, approve Hydro's 2017 Capital Budget in the
17 amount of \$271,265,600.

1 **IV ORDER**

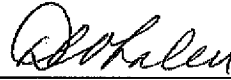
2
3 **IT IS THEREFORE ORDERED THAT:**

- 4
- 5 1. Hydro's proposed construction and purchase of improvements or additions to its
6 property in excess of \$50,000 to be completed in 2017, as set out in Schedule A to this
7 Order, are approved.
- 8
- 9 2. Hydro's proposed multi-year construction and purchase of improvements or additions
10 to its property in excess of \$50,000 to begin in 2017, as set out in Schedule B to this
11 Order, are approved.
- 12
- 13 3. Hydro's proposed contributions in aid of construction for 2017 are approved.
- 14
- 15 4. Hydro's 2017 Capital Budget for improvements or additions to its property in an
16 amount of \$271,265,600, as set out in Schedule C to this Order, is approved.
- 17
- 18 5. Unless otherwise directed by the Board Hydro shall file, with the 2018 Capital Budget
19 Application, an updated overview in relation to the proposed capital expenditures for
20 the Holyrood Thermal Generating Station.
- 21
- 22 6. Unless otherwise directed by the Board Hydro shall file an annual report to the Board
23 on its 2017 capital expenditures by March 1, 2018.
- 24
- 25 7. Unless otherwise directed by the Board, Hydro shall provide, in conjunction with the
26 2018 Capital Budget Application, a status report on the 2017 capital budget
27 expenditures showing for each project:
- 28
- 29 (i) the approved budget for 2017;
- 30 (ii) the expenditures prior to 2017;
- 31 (iii) the 2017 expenditures to the date of the application;
- 32 (iv) the remaining projected expenditures for 2017;
- 33 (v) the variance between the projected total expenditures and the approved
34 budget; and
- 35 (vi) an explanation of the variance.
- 36
- 37 8. Hydro shall pay all costs and expenses of the Board incurred in connection with the
38 Application.

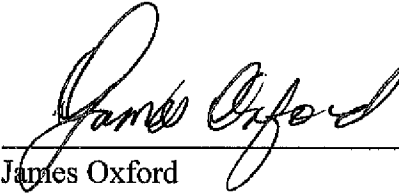
DATED at St. John's, Newfoundland and Labrador this 8th day of November, 2016.



Andy Wells
Chair & Chief Executive Officer



Darlene Whalen, P.Eng.
Vice-Chair



James Oxford
Commissioner



Cheryl Blundon
Board Secretary

Schedule A
Order No. P.U. 45(2016)
Single Year Projects over \$50,000
Issued: November 8, 2016

NEWFOUNDLAND AND LABRADOR HYDRO
 2017 CAPITAL BUDGET
 SINGLE YEAR PROJECTS OVER \$50,000
 (\$000)

PROJECT DESCRIPTION	2017
<u>GENERATION</u>	
<u>HYDRAULIC PLANT</u>	
Upgrade Public Safety Around Dams and Waterways - Bay d'Espoir	489.0
Purchase Capital Spares - Hydraulic	487.4
Overhaul Turbine/Generators - Cat Arm	305.4
Refurbish Main Generator Breaker - Upper Salmon	271.1
Install Wind Monitoring Station North Salmon Dam SD-2 - Bay d'Espoir	165.5
TOTAL HYDRAULIC PLANT	<u>1,718.4</u>
<u>THERMAL PLANT</u>	
Condition Assessment and Miscellaneous Upgrades- Holyrood	2,437.3
Overhaul Turbine Valves Unit 2 - Holyrood	2,302.1
Upgrade Underground Plant Drainage System - Holyrood	923.1
Overhaul Pumps - Holyrood	633.0
Purchase Capital Spares - Holyrood	321.5
TOTAL THERMAL PLANT	<u>6,617.0</u>
<u>GAS TURBINES</u>	
Purchase Capital Spares - Gas Turbines	185.0
TOTAL GAS TURBINES	<u>185.0</u>
TOTAL GENERATION	<u><u>8,520.4</u></u>

PROJECT DESCRIPTION	2017
<u>TRANSMISSION AND RURAL OPERATIONS</u>	
<u>TERMINAL STATIONS</u>	
In-Service Failures - Various Sites	1,000.0
Purchase Capital Spares - Terminal Stations	495.8
Upgrade Aluminum Support Structures - Holyrood	352.9
Purchase Backup Diesel for Station Service - Grand Falls and Buchans	188.9
TOTAL TERMINAL STATIONS	2,037.6
<u>TRANSMISSION</u>	
Wood Pole Line Management Program - Various Sites	2,404.1
TOTAL TRANSMISSION	2,404.1
<u>DISTRIBUTION</u>	
Upgrade Distribution Systems - All Service Areas	3,810.0
Provide Service Extensions - All Service Areas	4,330.0
Replace Recloser - Wabush	199.2
Install Demand Metering - Various Sites	89.7
TOTAL DISTRIBUTION	8,428.9
<u>GENERATION</u>	
Overhaul Diesel Units - Various Sites	2,095.9
Inspect Fuel Storage Tanks - Various Sites	1,058.8
Replace Fuel Tank 22E - St. Anthony	199.8
TOTAL GENERATION	3,354.5
<u>PROPERTIES</u>	
Upgrade Office Facilities and Control Buildings - Various Sites	2,197.3
Line Depot Condition Assessment and Refurbishment Program - Various Sites	1,458.8
Install Fall Protection Equipment - Various Sites	194.7
TOTAL PROPERTIES	3,850.8
<u>METERING</u>	
Purchase Meters and Metering Equipment - Various Sites	198.8
Purchase New Meter Calibration Test Console - Hydro Place	196.9
TOTAL METERING	395.7
<u>TOOLS AND EQUIPMENT</u>	
Replace Light Duty Mobile Equipment - Various Sites	270.9
Purchase Front End Loader with Backhoe - Wabush	133.2
TOTAL TOOLS AND EQUIPMENT	404.1
TOTAL TRANSMISSION AND RURAL OPERATIONS	20,875.7

PROJECT DESCRIPTION	2017
<u>GENERAL PROPERTIES</u>	
<u>INFORMATION SYSTEMS</u>	
<u>SOFTWARE APPLICATIONS</u>	
<u>Upgrade of Technology</u>	
Upgrade Energy Management System - Hydro Place	427.0
TOTAL SOFTWARE APPLICATIONS	<u>427.0</u>
<u>COMPUTER OPERATIONS</u>	
<u>Infrastructure Replacement</u>	
Replace Personal Computers - Hydro Place	401.4
TOTAL COMPUTER OPERATIONS	<u>401.4</u>
TOTAL INFORMATION SYSTEMS	<u>828.4</u>
<u>TELECONTROL</u>	
<u>NETWORK SERVICES</u>	
Replace Network Communications Equipment - Various Sites	199.3
Upgrade Access Roads to Microwave Sites - Various Sites	118.4
TOTAL TELECONTROL	<u>317.7</u>
<u>ADMINISTRATION</u>	
Replace Roof - Hydro Place	923.4
Remove Safety Hazards - Various Sites	198.6
TOTAL ADMINISTRATION	<u>1,122.0</u>
TOTAL GENERAL PROPERTIES	<u>2,268.1</u>
TOTAL SINGLE YEAR PROJECTS OVER \$50,000	<u>31,664.2</u>

Schedule B
Order No. P.U. 45(2016)
Multi-Year Projects over \$50,000
Issued: November 8, 2016

NEWFOUNDLAND AND LABRADOR HYDRO
2017 CAPITAL BUDGET
MULTI-YEAR YEAR PROJECTS OVER \$50,000
(\$000)

Multi-year Projects Commencing in 2017

PROJECT DESCRIPTION	2017	2018	2019	2020	2021	Total
Terminal Station Refurbishment and Modernization - Various Sites	10,831.3	16,550.8				27,382.1
Diesel Genset Replacements - Port Hope Simpson and Charlottetown	658.8	5,148.0				5,806.8
Refurbish Powerhouse Station Services - Bay d'Espoir	413.2	2,473.3	1,460.6			4,347.1
Replace Exciter Controls Units 1 to 6 - Bay d'Espoir	119.2	921.2	877.0	1,429.6		3,347.0
Upgrade Corner Brook Frequency Converter- Corner Brook	194.6	2,749.2				2,943.8
Water System Replacements - Bay d'Espoir and Cat Arm	265.5	2,288.3				2,553.8
Transmission Line Upgrades - TL212 and TL218	1,378.2	1,133.3				2,511.5
Replace Vehicles and Aerial Devices - Various Sites (2017-2018)	2,001.4	398.8				2,400.2
Control Structure Refurbishments - Various Sites	1,735.3	452.9				2,188.2
Install Automated Meter Reading - Happy Valley (2017-2018)	78.6	1,891.6				1,970.2
Construct New Facilities - Various Sites	422.0	1,034.1				1,456.1
Gas Turbine Life Extension - Stephenville	847.5	505.7				1,353.2
Replace 66 kV Station Service Feed - Holyrood	62.8	1,198.6				1,261.4
Diesel Plant Engine Auxiliary Upgrades - Various Sites	790.6	416.3				1,206.9
Replace Substation - Holyrood	439.4	758.6				1,198.0
Distribution Upgrades - Various Sites (2017-2018)	64.2	1,130.9				1,195.1
Upgrade Holyrood Access Road - Holyrood	579.3	583.4				1,162.7
Replace Power Transformers - Oxen Pond	297.5	850.1				1,147.6
Replace Automation Equipment - Mary's Harbour	120.3	1,021.7				1,142.0
Upgrade Ventilation in Powerhouse 1 and 2 - Bay d'Espoir	134.1	863.8				997.9
Gas Turbine Life Extension - Hardwoods	675.3	281.4				956.7
Replace Battery Banks and Chargers - Various Sites (2017-2018)	379.3	566.2				945.5
Upgrade Telecontrol Facilities - Mary March Hill and Blue Grass Hill	91.2	665.9				757.1
Install Asset Health Monitoring System - Upper Salmon	438.0	203.4				641.4
Replace Slip Rings Units 1-6 - Bay d'Espoir	312.6	159.7				472.3
Install Recloser Remote Control - Bottom Waters	47.1	418.6				465.7
Replace Insulators - TL227	145.6	271.3				416.9
Refurbish Sump Level System for Powerhouse 2 - Bay d'Espoir	38.7	264.5				303.2
TOTAL MULTI-YEAR PROJECTS OVER \$50,000 COMMENCING 2017	23,561.6	45,201.6	2,337.6	1,429.6	0.0	72,530.4

NEWFOUNDLAND AND LABRADOR HYDRO
2017 CAPITAL BUDGET
MULTI-YEAR YEAR PROJECTS OVER \$50,000
(\$000)

Multi-year Projects Commencing in 2016 (Previously Approved)

PROJECT DESCRIPTION	Expended					Total
	to 2016	2017	2018	2019	2020	
Upgrade Circuit Breakers - Various Sites (2016-2020)	6,969.1	10,808.7	15,408.6	15,247.3	13,026.8	61,460.5
Construct 230 kV Transmission Line - Soldiers Pond to Hardwoods	3,699.0	17,489.8	5,372.1			26,560.9
Replace Site Facilities - Bay d'Espoir	928.3	4,736.3	6,316.7			11,981.3
Upgrade Distribution Systems - Various Sites (2016-2017)	285.6	6,350.3				6,635.9
Upgrade Powerhouse Building Envelope - Holyrood	2,723.8	2,969.9	784.1			6,477.8
Additions for Load Growth - L'Anse au Loup and Postville	883.4	4,746.0				5,629.4
Install Fire Protection Systems - Nam and Cartwright	3,030.7	1,376.4				4,407.1
Replace Vehicles and Aerial Devices - Various Sites (2016-2017)	1,443.3	534.2				1,977.5
Replace Disconnect Switches - Various Sites (2016-2017)	646.9	1,320.9				1,967.8
Upgrade Work - Cat Arm	558.3	1,353.0				1,911.3
Replace Protective Relays - Various Sites	700.6	1,156.4				1,857.0
Replace Aircraft Markers at Grand Lake Crossing - TL228	589.6	978.3				1,567.9
Replace Diesel Units - Charlottetown	1,384.9	46.1				1,431.0
Upgrade Microsoft Office Products - Hydro Place	366.6	511.2	513.3			1,391.1
Replace MDR 4000 Microwave Radio East - Various Sites	77.4	1,093.1				1,170.5
Rehabilitate Shoreline Protection - Cat Arm	112.2	1,030.7				1,142.9
Install Automated Meter Reading - Labrador West	433.8	533.4				967.2
Replace Battery Banks and Chargers - Various Sites (2016-2017)	425.0	456.6				881.6
Replace Powerline Carrier - Various Sites	73.4	763.4				836.8
Install Fire Protection in 230 kV Stations - Bay d'Espoir	200.0	566.0				766.0
Upgrade Telecontrol Facilities - Sandy Brook Hill	101.6	462.4				564.0
Purchase Vehicles and Aerial Devices - Various Sites	382.5	172.7				555.2
Upgrade Digital Fault Recorders - Various Sites	197.9	304.6				502.5
Upgrade Terminal Station for Mobile Substation - Cow Head	40.0	444.7				484.7
Replace Human Machine Interface - Various Sites	114.0	320.0				434.0
Replace Powerhouse 1 Station Service Transformer - Bay d'Espoir	46.7	354.5				401.2
Replace Spherical By-Pass Valves Units 1 and 2 - Bay d'Espoir	183.6	167.9				351.5
Replace Fuel Piping - Hardwoods and Stephenville	44.8	267.0				311.8
Upgrade Data Alarm Systems - Stony Brook	74.4	234.1				308.5
Refurbish Station Water System - Upper Salmon	96.6	197.6				294.2
Install Breaker Failure Protection - Various Sites	65.7	211.3				277.0
Replace Air Conditioning Units 8 and 14 - Hydro Place	34.6	229.5				264.1
Replace Surge Arrestors - Various Sites	144.4	53.0				197.4
Upgrade Warehouse Lighting - Bishop's Falls	15.2	180.4				195.6
Replace Air Conditioners - Massey Drive and Happy Valley	39.9	152.0				191.9
Install Variable Frequency Drives - Grey River	46.9	123.0				169.9
Replace Control Room/Communications Room Air Conditioning - Hinds Lake	41.3	53.0				94.3
TOTAL MULTI-YEAR PROJECTS OVER \$50,000 COMMENCING 2016	27,202.0	62,748.4	28,394.8	15,247.3	13,026.8	145,188.3

NEWFOUNDLAND AND LABRADOR HYDRO
2017 CAPITAL BUDGET
MULTI-YEAR YEAR PROJECTS OVER \$50,000
(\$000)

Multi-year Projects Commencing Prior to 2016 (Previously Approved)

PROJECT DESCRIPTION	2016	2017	2018	2019	2020
Construct 230 kV Transmission Line - Bay d'Espoir to Western Avalon	87,444.6	149,895.7	54,317.7		
Replace Instrument Transformers - Various Sites	3,196.1	471.9			
Refurbish Anchors and Footings TL202 and TL206 - Bay d'Espoir to Sunnyside	1,278.3	901.6			
Replace Programmable Logic Controllers - Various Sites	712.9	245.1			
TOTAL MULTI-YEAR PROJECTS OVER \$50,000 COMMENCING PRIOR TO 2016	92,631.9	151,514.3	54,317.7	0.0	0.0

Schedule C
Order No. P.U. 45(2016)
2016 Capital Budget
Issued: November 8, 2016

**NEWFOUNDLAND AND LABRADOR HYDRO
2017 CAPITAL BUDGET**

Projects Over \$50,000 to be completed in 2017	\$	31,664,200
Multi-Year Projects over \$50,000 commencing in 2017		23,561,600
Multi-Year Project over \$50,000 commencing prior to 2017 (previously approved)		214,262,700
Projects under \$50,000 ¹		777,100
Allowance for Unforeseen Items		<u>1,000,000</u>
Approved 2017 Capital Budget	\$	<u><u>271,265,600</u></u>

¹ Approval of projects under \$50,000 is not required but these expenditures are part of the total 2017 Capital Budget

Newfoundland & Labrador

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