Newfoundland & Labrador

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

IN THE MATTER OF THE

2016 CAPITAL BUDGET APPLICATION

FILED BY

NEWFOUNDLAND AND LABRADOR HYDRO

DECISION AND ORDER OF THE BOARD

ORDER NO. P.U. 33(2015)

BEFORE:

Andy Wells
Chair and Chief Executive Officer

Darlene Whalen, P.Eng.
Vice-Chair

Dwanda Newman, LL.B
Commissioner

James Oxford
Commissioner

NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

AN ORDER OF THE BOARD

NO. P.U. 33(2015)

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* approving:

(a) its 2016 capital purchases and construction projects in excess of $50,000;
(b) its 2016 Capital Budget; and
(c) its estimated contributions in aid of construction for 2016.

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I BACKGROUND

1. The Application

Newfoundland and Labrador Hydro ("Hydro") filed its 2016 Capital Budget Application (the "Application") with the Board of Commissioners of Public Utilities (the "Board") on July 31, 2015, requesting the Board make an Order approving:

(i) its 2016 capital purchases and construction projects in excess of $50,000;
(ii) its 2016 Capital Budget of $183,698,000; and
(iii) its estimated contributions in aid of construction for 2016.

Notice of the Application, including an invitation to participate, was published on August 12, 2015. The Application and related documentation was made available on the Board's website.

Intervenor submissions were received from: i) the Consumer Advocate Mr. Thomas Johnson; ii) Newfoundland Power Inc. ("Newfoundland Power"); and iii) Corner Brook Pulp and Paper Inc., North Atlantic Refining Ltd, and Teck Resources Limited (the "Industrial Customer Group").

A total of 169 Requests for Information ("RFIs") were issued to Hydro by the Consumer Advocate, Newfoundland Power, the Industrial Customer Group and the Board.

On October 2, 2015 Hydro advised that they were withdrawing two projects: i) the project Upgrade Citrix[1], with an estimated cost of $159,600, which was to be completed in 2016; and ii) the multi-year project to replace the Cartwright diesel unit[2], which was to commence in 2016, with an estimated 2016 expenditure of $455,600 and total project cost of $3,507,900.

The revised proposed 2016 Capital Budget is $183,082,800.

The intervenors did not file additional evidence and did not request a technical conference or oral hearing of the Application. Written submissions were filed by the Consumer Advocate, Newfoundland Power and the Industrial Customer Group on October 14, 2015. Hydro filed its reply submission on October 21, 2015.

2. Board Authority

Section 41 of the *Act* requires a public utility to submit an annual capital budget of proposed improvements or additions to its property for approval of the Board no later than December 15th in each year for the next calendar year. In addition, the utility is required to include an estimate of contributions toward the cost of improvements or additions to its property which the utility intends to demand from its customers. Subsection 41(3) prohibits a utility from proceeding with the construction, purchase or lease of improvements or additions to its property without the prior

[1] Volume I, page E-58.
[2] This project was included in the proposed capital project Replace Diesel Units (Volume I, page C-43). This multi-year project proposed to replace the diesel units at Cartwright and Charlottetown over 2016-2017, with estimated expenditures in 2016 of $1,840,500 and a total project expenditure of $4,938,900.

approval of the Board where (a) the cost of the construction or purchase is in excess of $50,000, or (b) the cost of the lease is in excess of $5,000 in a year of the lease.

II PROPOSED 2016 CAPITAL BUDGET

In accordance with the legislation, regulations and Board guidelines Hydro provided detailed information to support the overall capital budget for 2016 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 2015 capital expenditures, a schedule of capital expenditures for the period 2011-2020, and a five-year capital plan for the period 2016-2020.

The Application includes a status report *Holyrood Overview: Future Operation and Capital Expenditure Requirements* (the "Holyrood Overview Report") as directed in Order No. P.U. 50(2014). The Application also includes a status report *230 kV Transmission Line from Bay d'Espoir to Western Avalon* (the "TL 267 Project Report") as directed in Order No. P.U. 53(2014).[3]

1. Overview

The proposed 2016 capital budget is as follows:

2016 Proposed Capital Budget ($000s)	
2016 Single Year Projects	
Generation	$15,511.1
Transmission and Rural Operations	26,188.7
General Properties	5,605.1
Allowance for Unforeseen Events	1,000.0
Projects under $50,000	954.2
Multi-year (2016 Expenditures)[4]	
Multi-year projects commencing in 2016	27,202.0
Multi-year projects commencing in 2015	104,829.3
Multi-year projects commencing prior to 2015	1,792.4
Total 2016 Capital Budget	**$183,082.8**

The Application requests approval of 50 capital projects over $50,000 to be completed in 2016 and 37 multi-year projects to commence in 2016. Hydro has also included the Phase 1 engineering costs in excess of $1,000 specific to each project in its capital budget project proposals. The total of these costs included in the 2016 capital budget is $367,975 and Hydro

[3] 2016-2020 Capital Plan, Appendix B.

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

proposes that inclusion of these costs be approved. Hydro advises that it proposes no new leases for 2016 in excess of $5,000 per year.

Of the total proposed 2016 capital budget of $183.1 million, 80.3% relates to transmission and rural operations, 13.9% relates to generation, and 5.2% is for general properties. In its *2016 Capital Projects Overview* Hydro highlights its aging asset base, noting that the majority of its installed assets, such as the hydroelectric installation at Bay d'Espoir, the Holyrood Thermal Generating Station, and much of its transmission and distribution systems are more than 40 years old. Hydro also notes that many other generation assets, such as the Stephenville and Hardwoods Gas Turbines and the Hinds Lake Generation Station, are more than 30 years old. Hydro states that all new projects proposed for 2016 address both the need to sustain the existing asset base and to grow the asset base in response to growing customer demand.

2. Level of Capital Expenditure

Hydro notes that its long-term planning initiatives are framed in the context of the interconnection between Labrador and the island by the HVDc link, the interconnection with the Nova Scotia system via the Maritime link, the startup of a nickel processing facility, and continued growth on the Avalon Peninsula.

The Application sets out the actual capital expenditures from 2011-2014 and the forecast capital expenditures for 2015-2020, as below:

Actual Capital Expenditures (2011-2014)
($000s)

2011	2012	2013	2014
63,116	77,252	84,755	204,728

Forecast Capital Expenditures (2015-2020)
($000s)

2015	2016	2017	2018	2019	2020
274,249	183,083	247,755	218,307	111,136	112,307

Over the period 2011-2014 the average annual capital expenditure was approximately $107.5 million while for the period 2015-2020 the average annual capital expenditure is expected to be in the range of $191.2 million. In total, over the period 2015-2020 Hydro plans to spend in excess of $1.1 billion on plant and equipment. These estimates include expenditures for new transmission assets, specifically for the upgrade of the transmission line corridor between Bay d'Espoir and Western Avalon and the new transmission line between Soldiers Pond and Hardwoods, as well as expenditures in terminal stations, including the expedited replacement of aging circuit breakers. Hydro states that the increase in overall capital expenditure reflects the requirement for projects related to replacement and upgrade of deteriorating facilities, compliance with legislation, additions required to meet load growth, and inflation.

Newfoundland Power submits that the principal question for the Board is whether Hydro's proposed capital expenditures as described in the Application are reasonably required for Hydro to meet its statutory obligation to provide reasonably safe, adequate, least cost service to its customers, including Newfoundland Power.

The Consumer Advocate submits that a utility bears the onus of establishing that the expenditures proposed are necessary for the year for which they are proposed, and that the expenditures represent the least cost alternative for providing electricity service in the Province.

The Industrial Customer Group notes that the proposed 2016 Capital Budget is almost two times the average capital expenditure approved over the period of 2010 to 2014 of $96 million. The Industrial Customer group submits that, in the context of the 2016 Capital Budget Application, the lowest possible cost principle can only be given meaningful effect if Hydro's justifications for its proposed capital expenditures are subjected to rigorous scrutiny. This will, according to the Industrial Customer Group, assure Hydro's customers that they are being provided power in accordance with the power policy of the Province as set out in section 3 of the *EPCA*. In its final submission the Industrial Customer Group states:

> *Implementation of power policy must not only be "consistent with reliable service" but must also ensure that power is produced, transmitted and distributed in the "most efficient" manner at the "lowest possible cost". Focus should not be lost on each of these principles of the power policy and each must be balanced against each other, often requiring the making of difficult decisions by this Board.*

The Board acknowledges the increasing level of capital expenditures beginning in 2014 but notes that new generation and transmission assets, including the new combustion turbine at Holyrood and the construction of the 230 kV transmission line from Bay d'Espoir to the Western Avalon Terminal Station, comprise a significant portion of these increased expenditures. These two projects alone account for over $420 million of expenditures in the 2014-2018 period.[5] The 2016 capital plan includes 32 multi-year projects with associated expenditures of approximately $106 million for which approval was previously granted. The estimated expenditure for new projects beginning in 2016 is approximately $76.5 million, or 42% of the proposed 2016 Capital Budget.

The Board will continue to rigorously review and monitor Hydro's capital expenditures, including requiring Hydro to provide full and detailed justification for proposed expenditures, with a view to ensuring that only those expenditures that are necessary and required for the provision of safe, adequate and reliable service at the lowest possible cost are undertaken.

3. Holyrood Capital Spending

In the updated *Holyrood Overview Report, July 2015* Hydro confirms that Holyrood is still intended to be used for primary generation until the interconnection with Muskrat Falls, and then be fully available for generation in stand-by mode until the 2020-2021 time frame. The specific phases of operation are as follows:

- Phase 1 (2015 through mid-2018): All three units are available for generation with Unit 3 also available for synchronous condenser operation.
- Phase 2 (mid-2018 to the 2020-2021 time frame): Units 1 and 2 are in standby generation mode and Unit 3 is operated in synchronous condenser mode but available for conversion to generation mode as required.

[5] Application Tab I: 2015 Capital Expenditures to June 30, page I-16.

- Phase 3 (Post 2020-2021 time frame): Unit 3 continues to operate as a synchronous condenser only to the end of its service life.

In Order No. P.U. 50(2014) the Board acknowledged the high level of forecast capital expenditures for the Holyrood Thermal Generating Facility over the next number of years, as well as the critical but changing role of the facility until the full integration of Muskrat Falls and the Labrador-Island Link. Hydro states that it has been concentrating on condition assessments and the formulation of requirements to get Holyrood to the end of its life as a generating facility, and for Unit 3 to operate in synchronous condenser mode beyond that time. The 2016 capital plan for Holyrood identifies expenditures of approximately $12,200,000 which, according to Hydro, are required to ensure that the Holyrood facility is available to operate at full production through the construction and commissioning of the Muskrat Falls development and the Labrador-Island Link.

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

4. Project Status – Transmission Line Upgrade from Bay d'Espoir to Western Avalon (TL 267 Project)

As directed by the Board in Order No. P.U. 53(2014) Hydro filed the *TL 267 Project Report* on the status of the $291.7 million project to construct a 230 kV line from the Bay d'Espoir Generating Facility to the Western Avalon Terminal Station. The report includes an update on work progress, the expenditure and budget status, and an explanation for any deviations from the project scope and budget.

In the *TL 267 Project Report* Hydro describes the project as comprised of three distinct projects and two sub-projects. The three distinct projects include: (i) the addition of breakers, disconnect switches and associated electrical and protection and control equipment in the Bay d'Espoir Terminal Station; (ii) the addition of gas insulated switchgear ring bus at Chapel Arm; and (iii) a new 230 kV transmission line 188 km in length linking the two stations. The two sub-projects include: (i) modifications to allow for independent isolation of TL 206; and (ii) modifications to connect TL 208 to the new station expansion. Due to limited outage opportunities, the two sub-projects will be executed after TL 267 goes in service, and as outage coordination and limitations permit.

Hydro reports that engineering for both the transmission line and terminal stations has commenced and is on schedule. Design for the new tower family commenced in January 2015 and foundation design began in May 2015. Hydro states that all towers are being fully designed in-house. The line route remains preliminary as the environmental assessment has not yet been completed.

Given the size and nature of the project registration for environmental assessment under the *Environmental Protection Act* is required. Hydro advises that it has consulted with key

stakeholders and the environmental assessment process is on schedule. No construction can proceed prior to release from the environmental assessment process.

Procurement activities reflect the early stage of the project with the bulk of equipment purchases scheduled to occur in 2015 and 2016. Construction has not yet commenced and is scheduled for 2016 to 2018. Costs are tracking as planned with a significant portion of the expenditure scheduled for 2016 and 2017. Hydro reports that the TL 267 Project is on target for completion on budget, with a scheduled in-service date of May 1, 2018.

5. Capital Projects Over $50,000

The Board's Capital Budget Guidelines set out detailed requirements with respect to projects over $50,000. Each of these projects must be classified and segmented by materiality. They must also be defined as clustered, pooled or other, and classified as mandatory, normal or justifiable. A project classified as mandatory is one which the utility is obliged to carry out as the result of legislation, Board Order, safety issues or environmental risk. A normal capital expenditure is one that is required based on identified need or historical patterns of repair and replacement. Justifiable expenditures are proposed based on the positive impact the project will have on the utility's operations.

In final submission the Consumer Advocate identified concerns regarding two projects: i) replacement of the roof on the service building at Bishop's Falls; and ii) replacement of light duty mobile equipment.

The Industrial Customer Group raised concerns regarding two projects: i) the proposed 2016 expenditures to install hydrometeorological equipment; and ii) Hydro's plans to refresh security software at Hydro Place.

The following sections set out the Board's considerations and findings for Hydro's proposed capital projects to be completed in 2016 and Hydro's proposed multi-year projects to commence in 2016, as well the concerns and objections raised by the intervenors for specific projects.

i. Projects to be completed in 2016

The Board has reviewed the proposed 2016 capital projects in excess of $50,000, the reports filed in support, the additional information filed by Hydro in response to RFIs, and the final submissions. Based on its review the Board is satisfied that all the projects in the 2016 capital budget, with the exception of those projects addressed specifically below, are adequately justified and are appropriate and necessary in the circumstances.

Replace Light Duty Mobile Equipment (D-353: $348,000)

Hydro proposes to replace 13 all-terrain vehicles, eight snowmobiles and six light duty trailers. Hydro justifies this project on the basis that it operates in many diverse locations across the province and that it is critical that employees are provided with safe and reliable equipment. Hydro explains that information obtained from other Canadian utilities through participation on the Canadian Utility Fleet Council supports its established mobile equipment replacement guidelines, which consider the age and operating conditions of the equipment.

In his submission the Consumer Advocate notes that Hydro's 5-7 year assessment range for replacement consideration for non-transmission line ATVs and snowmobiles is not in line with the 10-year cycle used by the other Atlantic utility for which information is provided. The Consumer Advocate also notes that the vehicles being replaced are all less than 10 years of age and that Hydro has not provided any reason as to why it should not, or cannot, meet the same 10-year replacement assessment criteria. The Consumer Advocate submits that the replacement of any all-terrain vehicle or snowmobile not used for transmission line crews should be deferred and Hydro should adjust its assessment age to 10 years for these vehicles to line its practice up with the other Atlantic utility surveyed.

Newfoundland Power and the Industrial Customer Group did not make submissions on this project.

Hydro notes in its submission that the concern raised by the Consumer Advocate with respect to this project is restricted to the age of assessment for non-transmission work vehicles. Hydro submits that differences between lives of assets amongst Atlantic utilities may well result from the differences in the geography in which they are used. Hydro further states that the age and kilometer criteria is used to determine when a vehicle is considered for replacement, and other factors are then evaluated based on an actual assessment, such as the condition of the equipment and maintenance cost, to determine whether a vehicle should be replaced.

The Board notes that the age of the equipment being replaced ranges from 4.7 to 7.7 years in the case of the snowmobiles, and 5.1 to 9.1 years in the case of the ATVs. This is generally within Hydro's age replacement criteria. The Board also notes that the age replacement criteria is used as a guideline only and that decisions for replacement are based on actual assessment of the vehicle at that time. The Board accepts that the operating conditions for this type of equipment will vary depending on where and how it is being used and that a decision to replace a certain vehicle should be based on Hydro's own experience and assessment of the expected dependable service life of the vehicle in the expected operating conditions. In the Board's view Hydro's condition-based approach to replacement is reasonable and appropriate and there is no basis on which to substitute a longer replacement assessment age criteria used in another jurisdiction as recommended by the Consumer Advocate. This project will be approved.

Replace Roof on Service Building, Bishop Falls (C-79: $612,800)

Hydro proposes to replace the roofing system for the Bishop's Falls service building with a new mechanically fastened roofing system. This 1,100 m^2 building was constructed in 1989 and provides maintenance, storage and administrative space for its central and northern operating groups. Hydro justifies this proposal on the basis of an independent condition assessment completed in 2013, which noted that the existing roofing system was nearing the end of its service life and recommended replacement. Hydro states:[6]

> *Given the roofing systems age and noted condition, the occurrence of leaks is imminent and the probability of a "blow off", whereby the roofing system could become completely detached from the structure during periods of high wind, is greatly increased. While spot repairs can be enacted to address the occurrence of leaks, any repairs completed on the*

[6] *Replace Roof on Services Building – Bishop's Falls. July 2015.* Application, Volume III – Tab 27.

> *roof would be topical in nature and will not address the risk associated with the complete failure of the membrane. Detachment of the roofing membrane could prove disastrous, leaving the building contents fully exposed and/or resulting in significant damage to persons and/or equipment. A proactive approach is required to ensure that the roof replacement can be completed prior to the failure of the roofing membrane system.*

In his submission the Consumer Advocate questions Hydro's decision, on the basis of cost and safety, to use a cold applied roofing system as opposed to a hot applied system. The Consumer Advocate notes that, in response to CA-NLH-39, Hydro indicated that, while it had not completed a detailed estimate of a hot applied roofing system, generally cold applied systems cost approximately 30% more to install. The Consumer Advocate further notes the safety benefits which are cited by Hydro include the lack of an open flame heat source and the reduction of fumes and pollution. The Consumer Advocate submits that Hydro has not presented any evidence indicating that a hot applied roofing system, which is still being used in residential and commercial buildings, cannot be used for the Bishop's Falls service building. The Consumer Advocate further submits that this low ranking project should be deferred and that a hot applied roofing system should be considered by Hydro and the project resubmitted for review.

Newfoundland Power and the Industrial Customer Group did not make submissions on this project.

In its reply submission Hydro notes that, while a hot applied roofing system would avoid a 30% additional installation cost, this savings would only apply to the "Contract" portion of the budget and would result in less than a 20% reduction in overall project cost. Hydro states that there is sometimes an unavoidable cost premium associated with safer work and construction methods. Hydro submits that use of the safer, cold applied roofing system is prudent and reasonable.

The Board notes that the existing roof is original to the facility and has not received any major upgrades since installation. The Board also notes the findings of the independent assessment, which recommended replacement based on the age and condition of the existing roof system. In light of these factors the Board accepts the need for this project. The Consumer Advocate suggests that Hydro should undertake a cost-benefit analysis of using a hot applied roofing system instead of the cold-applied roofing system. The Board notes that, according to CA-NLH-41, hot applied roofing systems are no longer considered by Hydro when completing roofing upgrades:

> *The decision to utilize cold applied roofing systems is driven by Hydro's commitment to safety and the protection of its assets. The removal of an open flame from the roofing system installation process eliminates the risk of fire and, consequently, provides for the safety and protection of both persons and property alike, making them the ideal choice for use in occupied buildings. An added benefit of cold applied is the reduction of fumes and pollution.*

The Board acknowledges Hydro's safety concerns with respect to hot applied roofing systems. Similar roof replacement projects using cold applied roofing systems were proposed by Hydro in its 2015 Capital Budget Application[7] and were approved by the Board in Order No. P.U. 50(2014). Based on the evidence the Board is satisfied that Hydro's decision to proceed with the

[7] Replace Roof – Hydro Place ($671,900) and Upgrade Powerhouse Roofing – Holyrood ($1,047,800).

cold applied roofing system for this project is appropriate and justified. This project will be approved.

Install Hydrometeorological Equipment (D-248: $314,100)

Hydro proposes to install four new snow water equivalent sensors in the Victoria, Hinds Lake, Granite and Cat Arm watersheds. This project is the continuation of a program started in 2008 to improve the hydrometeorological network in Hydro's reservoir basins. Temperature and precipitation gauges are being installed in these watersheds as part of the 2015 capital program. Seven stations, either hydrometric, meteorological or both are currently in operation under the program. Hydro states that the proposed 2016 program will broaden the coverage of its hydrometeorological program to better predict the inflow into its watersheds and will provide real-time, critical information about snow pack to help ensure the reservoirs are operated in such a fashion as to prepare for spring runoff and reduce spillage.. Hydro justifies this project on the basis of its requirement to effectively manage its water resources in order to avoid spilling at its reservoirs and therefore minimize the use of thermal generation.

The Industrial Customer Group submits that the project should not be approved as Hydro has not yet demonstrated that the snow water equivalent sensor it has selected is the most cost effective. The Industrial Customer Group referenced the article provided by Hydro in its response to IC-NLH-58 which summarized the various types of snow measurement devices and advantages of each, and which also stated that the choice measurement technique "often comes down to cost."[8] The Industrial Customers submit that Hydro has not completed a comparative cost estimate for the alternative snow water equivalent sensors and that the project is not of an urgent nature as Hydro currently has facilities in place to collect snow water equivalent information.

Newfoundland Power and the Consumer Advocate did not make submissions on this project.

In its reply submission Hydro notes that the justification provided for this project clearly establishes the need and monetary savings associated with gaining accurate hydrometeorological data in order to minimize spill. In particular, Hydro cites an example of a single one-day spill event at Cat Arm which could potentially cost $164,000 in Holyrood fuel. Hydro also submits that its chosen sensor technology is preferred in the absence of a cost comparison as alternative technologies were judged to be unsuitable due to environmental risks and lack of robustness for use in Hydro's remote regions. Hydro states:

> *Due to the potentially very high cost of spill events, the importance of the acquiring reliable data from these instruments, and the relatively low cost of acquiring these data from any these of technologies, Hydro focused on the technology which appears to be best able to provide Hydro with reliable data without causing environmental risks or suffering from in-service failures. Hydro submits that this project should not be rejected or deferred pending a comparative cost analysis that would include unsuitable technologies.*

The Board notes that approval for the installation of meteorological stations has been granted in several capital budget orders since the first station installations under this program were

[8] IC-NLH-058, Attachment 1.

approved by the Board in Order No. P.U. 30(2007). The Board also notes that the objection raised by the Industrial Customer Group for this project is not based on the merits of the program but on whether the chosen technology is the least-cost option. The Board accepts the evidence that alternatives were considered by Hydro but were deemed to be unsuitable based on the associated environmental and/or operational risks. The selected gauge was chosen on the basis of proven experience in this province.[9] When considered with the information provided by Hydro in response to IC-NLH-58, which acknowledges that there is not yet a single ideal method for measuring snow water equivalent, Hydro's proposed approach appears to be reasonable. This project will be approved.

Refresh Security Software (E-71: $123,500)

Hydro proposes to refresh its information security and cyber safety tools and improve its threat detection and mitigation capabilities. Security software tools and hardware are maintained to mitigate threats to computer systems and networks and are used by information security staff daily. Hydro justifies this project on the basis that the increasing reliance on information systems and expanding data networks increases exposure to information security threats to critical infrastructure. Hydro states that a serious incident involving information security could negatively affect Hydro's financial results, reputation, and the province's power grid.

The Industrial Customer Group submits that only the components of the project which have not been refreshed or updated since 2010 should be approved for 2016. The Industrial Customer Group questions the request to refresh the remaining components as, according to the maintenance schedules provided in IC-NLH-73, they were previously refreshed throughout 2013 and/or 2014 and further work may not be necessary or cost efficient at this time. The Industrial Customer Group submits that to allow the approval of all components without further information on this issue would not ensure that the project aligns with the power policy set out in the *EPCA* of providing power at the lowest possible cost.

Newfoundland Power and the Consumer Advocate did not make submissions on this project.

In its reply submission Hydro states that it would not be a prudent course of action to accept the rationale that only those systems that have not been refreshed since 2010 ought to be considered. Hydro suggests it is common knowledge that constant vigilance is needed to ensure that an organization maintains secure computer systems that are free from threats. Hydro submits that business information systems and software are critical to the secure operations of the utility and this project is critical to the safe, secure operation of the provincial electrical grid.

The Board recognizes Hydro's increasing reliance on information systems and data networks and accepts the need to mitigate potential exposures through timely software and hardware updates and improvements as necessary. The Board is satisfied that the proposed program to refresh security software provides a benefit to the system and ratepayers at a relatively low capital cost and is reasonable in the circumstances. This project will be approved.

[9] Application, page D-253.

ii. Multi-year projects to commence in 2016

The Board's Capital Budget Guidelines allow a utility to apply for approval of a capital project with expenditures over a multi-year period. The project and the multi-year expenditures are considered by the Board as part of the capital budget approval in the initial year of the project. Multi-year projects may be proposed where the scope of work and associated expenditure for a project is so large that it cannot be completed in one year, or where discrete projects are proposed together because of similar justification and need or because doing the work together is more efficient.

In 2014 Hydro proposed 21 multi-year projects and in 2015 29 multi-year projects were proposed. In this Application Hydro proposes 37 multi-year projects to commence in 2016. With the exception of three projects[10] all are scheduled to be completed in 2017. The capital expenditure associated with these multi-year projects totals $27,202,000 in 2016, $64,045,800 in 2017, $27,097,400 in 2018, $15,247,300 in 2019 and $13,026,700 in 2020 for a total expenditure of $146,619,200 over a five-year period.

The Board has reviewed the documentation and evidence on the record and is satisfied that the proposed multi-year purchase and construction projects in excess of $50,000 commencing in 2016 are adequately justified and are appropriate and necessary in the circumstances.

6. Other Matters

In its submission Newfoundland Power expressed concerns about whether the expenditures of two particular projects should be included in Hydro's rate base. The first concern was with the reasonableness of the final project costs for the supply and installation of the 100 MW (nominal) combustion turbine at Holyrood, and the second was with Hydro's approach to project management, engineering and construction management services for the TL 267 project.

i. Holyrood Combustion Turbine Project Costs

Newfoundland Power notes that, in Hyrdo's 2015 Capital Expenditures Overview, the project to install the new 100 MW (nominal) combustion turbine at Holyrood is $10.5 million higher than its original estimate of approximately $119 million, which amounts to approximately 8.8% of the estimated capital cost. Hydro attributes the variance to a higher than budgeted cost for the turbine building enclosure. Newfoundland Power acknowledges that the Capital Budget Guidelines require detailed explanations for expenditure variances of more than $100,000 and 10% and submits that, while not in excess of the 10% reporting threshold, the current estimated variance of $10.5 million above the approved expenditure for the Holyrood combustion turbine is significant. Newfoundland Power states that, due to the limited information provided by Hydro with respect to the variance and uncertainty on the record as to when this project will be fully completed, it is not clear whether the projected capital expenditure of $129.5 million is reasonable. Newfoundland Power submits that Hydro has not demonstrated that its projected expenditure on this project is consistent with the least cost provision of service to Hydro's

[10] *Upgrade Circuit breakers – Various Sites (2016-2020)* is a 5-year project scheduled to be completed in 2020. The projects *Construct 230kV Transmission Line – Soldiers Pond to Hardwoods* and *Replace Site Facilities – Bay d'Espoir* are both 3-year projects scheduled to be completed in 2018.

customers. Newfoundland Power requests that, unless better information and justification is provided by Hydro during the prudence review, Hydro should be required, prior to approval of inclusion of the Holyrood Combustion Turbine Project assets in Hydro's rate base, to provide the Board with a detailed report of all costs and justification for variances from the approved expenditures.

In its reply submission Hydro notes that this project is not presented for review as part of the 2016 Capital Budget Application. Hydro also states that it is confident that the Board will find this project to be a prudently chosen and properly executed project, until the full amount properly included in rate base.

The Board acknowledges Newfoundland Power's concern but notes that Hydro has not applied for approval of its 2014 or 2015 rate base in this Application. The Board also notes that the costs of this project are being reviewed as part of the prudence review proceedings currently underway as part of Hydro's general rate application. The matter of recovery of the costs of this project and whether any further information will be required from Hydro will be addressed as part of the Board's findings arising from the prudence review. No decision or action is required at this time.

ii. TL 267 Project – Project Execution

Newfoundland Power also questions whether Hydro has demonstrated that its approach to undertake the TL 267 Project is consistent with the provision of least cost service. Newfoundland Power notes that, according to the *TL 267 Project Report*, Hydro is using the Lower Churchill Management Corporation for all project management, engineering and construction management services on the project. Newfoundland Power states that Hydro is undertaking a similar, but smaller, transmission line using its internal project management and engineering resources. Newfoundland Power also states that Hydro did not issue a public tender to obtain competitive bids for the project management, engineering and construction management services being provided by the Lower Churchill Management Corporation for the TL 267 Project. Newfoundland Power submits that it does not appear that Hydro has completed an analysis confirming that provision of these services by the Lower Churchill Management Corporation will result in the project being completed at the lowest possible cost consistent with safe, reliable electric service and further submits that, prior to approval of inclusion of the TL 267 Project assets in Hydro's rate base, Hydro should be required to provide the Board with such a detailed analysis.

According to Hydro the decision to use the Lower Churchill Management Corporation was based on the synergies between the execution of the TL 267 Project and the Lower Churchill Project. In response to NP-NLH-002 Hydro estimates the cost of having the Lower Churchill Management Corporation, a Nalcor affiliate, provide all project management, engineering and construction management services for the TL 267 Project to be $23 million. In its final submission Hydro notes that, unlike a number of other recent projects approved by the Board, the Board did not put in place a specific separate requirement for a further proceeding or process for this project to be included in rate base. Hydro submits that there is no impediment to utilizing the services of an affiliate in carrying out this or any other project and states that it is confident that fulfilling the reporting requirements of the Board will provide sufficient information that the project complies with least cost principles.

The Board again notes that Hydro has not applied for approval of its 2014 or 2015 rate base in this Application. Any issues relating to this expenditure being recovered in rate base will be addressed in the context of an application for approval of rate base. Newfoundland Power may raise its concerns at that time and Hydro will have to demonstrate that its costs for this project were prudently incurred.

7. Conclusion

The Board finds that the proposed purchases and construction projects in excess of $50,000, including the multi-year projects proposed to start in 2016, are prudent, reasonable and necessary for Hydro to continue to provide safe and reliable service and should be approved. The Board also finds that the capital budget proposed in this Application for 2016 is prudent and reasonable and will, therefore, approve Hydro's 2016 Capital Budget in the amount of $183,082,800.

III ORDER

IT IS THEREFORE ORDERED THAT:

1. **Hydro's proposed construction and purchase of improvements or additions to its property in excess of $50,000 to be completed in 2016, as set out in Schedule A to this Order, are approved.**

2. **Hydro's proposed multi-year construction and purchase of improvements or additions to its property in excess of $50,000 to begin in 2016, as set out in Schedule B to this Order, are approved.**

3. **Hydro's proposed contributions in aid of construction for 2016 are approved.**

4. **Hydro's proposed 2016 Capital Budget for improvements or additions to its property in an amount of $183,082,800, as set out in Schedule C to this Order, is approved.**

5. **Unless otherwise directed by the Board Hydro shall file, with the 2017 Capital Budget Application, an updated overview in relation to the proposed capital expenditures for the Holyrood Thermal Generating Station.**

6. **Unless otherwise directed by the Board Hydro shall file, in conjunction with the 2017 Capital Budget Application, a status report on the 2016 capital expenditures.**

7. **Unless otherwise directed by the Board Hydro shall file an annual report with the Board in relation to its 2016 capital expenditures by March 1, 2017.**

8. **Unless otherwise directed by the Board Hydro shall file, with the 2017 Capital Budget Application, a report on the construction of the TL 267 Project, addressing the work progress, the expenditure and budget status, and an explanation for any deviation from the project scope and budget.**

9. **Hydro shall pay all costs and expenses of the Board incurred in connection with the Application.**

DATED at St. John's, Newfoundland and Labrador this 2nd day of December 2015.

Andy Wells
Chair & Chief Executive Officer

Darlene Whalen, P.Eng.
Vice-Chair

Dwanda Newman, LL.B
Commissioner

James Oxford
Commissioner

Cheryl Blundon
Board Secretary

Schedule A
Order No. P.U. 33(2015)
Single Year Projects over $50,000
Issued: December 2, 2015

NEWFOUNDLAND AND LABRADOR HYDRO
2016 CAPITAL BUDGET
SINGLE YEAR PROJECTS OVER $50,000
($000)

PROJECT DESCRIPTION		2016
GENERATION		
HYDRAULIC PLANT		
Replace Interior and Exterior Protective Coating on Surge Tank 2 - Bay d'Espoir	2,959.6	
Overhaul Turbine/Generator Units 6 and 7 - Bay d'Espoir	1,345.6	
Upgrade Public Safety Around Dams and Waterways - Bay d'Espoir	477.6	
Replace Vibration Monitoring System Unit 7 - Bay d'Espoir	366.0	
Perform Condition Assessment of Control Structure - Hinds Lake	323.4	
Install Hydrometeorological Equipment - Various Sites	314.1	
Replace Generator Cooling Water Piping - Hinds Lake	181.7	
Assess Vent Chambers Units 1 to 6 - Bay d'Espoir	85.7	
TOTAL HYDRAULIC PLANT		6,053.7
THERMAL PLANT		
Overhaul Steam Turbine Generator Unit 3 - Holyrood	5,868.6	
Rewind Rotor and Install Flux Probe Unit 3 - Holyrood	2,755.5	
Overhaul Pumps - Holyrood	536.2	
Study of Auxiliary Steam and Space Heating Requirements - Holyrood	148.7	
TOTAL THERMAL PLANT		9,309.0
GAS TURBINES		
Install Transfer Switches for Diesel Automation - Happy Valley	148.4	
TOTAL GAS TURBINES		148.4
TOTAL GENERATION		15,511.1

PROJECT DESCRIPTION		2016
TRANSMISSION AND RURAL OPERATIONS		
TERMINAL STATIONS		
Install Spare Transformer - Happy Valley	2,040.9	
Upgrade Aluminum Support Structure - Holyrood	401.1	
Upgrade Terminal Station Equipment Foundations - Various Sites	319.9	
Replace Air Receivers and Compressors - St. Anthony	120.7	
TOTAL TERMINAL STATIONS		2,882.6
TRANSMISSION		
Perform Wood Pole Line Management Program - Various Sites	2,919.0	
Replace Insulators - TL203	1,985.6	
TOTAL TRANSMISSION		4,904.6
DISTRIBUTION		
Provide Service Extensions - All Service Areas	5,150.0	
Upgrade Distribution Systems - All Service Areas	3,890.0	
Construct Overhead Distribution Line - Pilley's Island to Long Island	1,239.9	
Additions for Load Growth - Happy Valley	593.7	
TOTAL DISTRIBUTION		10,873.6
GENERATION		
Overhaul Diesel Units - Various Sites	2,078.4	
Inspect Fuel Storage Tanks - Various Sites	1,326.9	
Upgrade Transformers - Cartwright and Postville	465.2	
TOTAL GENERATION		3,870.5
PROPERTIES		
Upgrade Office Facilities and Control Buildings - Various Sites	1,134.0	
Upgrade Line Depots - Various Sites	861.4	
Replace Roof on Services Building - Bishop's Falls	612.8	
Install Fall Protection Equipment - Various Sites	198.8	
TOTAL PROPERTIES		2,807.0
METERING		
Purchase Meters and Metering Equipment - Various Sites	190.4	
TOTAL METERING		190.4
TOOLS AND EQUIPMENT		
Replace Light Duty Mobile Equipment - Various Sites	348.0	
Purchase Excavator - Bay d'Espoir	312.0	
TOTAL TOOLS AND EQUIPMENT		660.0
TOTAL TRANSMISSION AND RURAL OPERATIONS		26,188.7

PROJECT DESCRIPTION		2016
GENERAL PROPERTIES		
INFORMATION SYSTEMS		
SOFTWARE APPLICATIONS		
New infrastructure		
Perform Minor Application Enhancements - Hydro Place	346.7	
Cost Recovery	(148.8)	
Upgrade of Technology		
Implement Industrial Billing Software - Hydro Place	443.1	
Upgrade Energy Management System - Hydro Place	246.2	
Upgrade Sharepoint Document Repository - Hydro Place	267.6	
Cost Recovery	(124.1)	
Refresh Security Software - Hydro Place	230.4	
Cost Recovery	(106.9)	
TOTAL SOFTWARE APPLICATIONS		1,154.2
COMPUTER OPERATIONS		
Infrastructure Replacement		
Replace Personal Computers - Various Sites	861.7	
Replace Peripheral Infrastructure - Various Sites	611.3	
Cost Recovery	(186.8)	
Upgrade Enterprise Storage Capacity - Hydro Place	628.8	
Cost Recovery	(291.6)	
Upgrade of Technology		
Upgrade Server Technology Program - Hydro Place	492.5	
Cost Recovery	(228.5)	
TOTAL COMPUTER OPERATIONS		1,887.4
TOTAL INFORMATION SYSTEMS		3,041.6
TELECONTROL		
NETWORK SERVICES		
Replace UPS Systems - Hydro Place	889.8	
Replace Radomes - Various Sites	235.2	
Replace Network Communications Equipment - Various Sites	186.4	
Replace Video Conferencing Bridge - Hydro Place	182.6	
Upgrade Access Roads to Microwave Sites - Gull Pond Hill and Sandy Hill	141.1	
Upgrade Remote Terminal Units - Various Sites	89.6	
TOTAL TELECONTROL		1,724.7
ADMINISTRATION		
Remove Safety Hazards - Various Sites	199.3	
Replace Roof - Hydro Place	639.5	
TOTAL ADMINISTRATION		838.8
TOTAL GENERAL PROPERTIES		5,605.1
TOTAL SINGLE YEAR PROJECTS OVER $50,000		**47,304.9**

Schedule B
Order No. P.U. 33(2015)
Multi-Year Projects over $50,000
Issued: December 2, 2015

NEWFOUNDLAND AND LABRADOR HYDRO
2016 CAPITAL BUDGET
MULTI-YEAR YEAR PROJECTS OVER $50,000
($000)

Multi-year Projects Commencing in 2016

PROJECT DESCRIPTION	2016	2017	2018	2019	2020	Total
Upgrade Circuit Breakers - Various Sites (2016-2020)	6,969.1	10,808.7	15,408.6	15,247.3	13,026.7	61,460.4
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	3,754.0				6,477.8
Additions for Load Growth - L'Anse au Loup and Postville	883.4	4,746.0				5,629.4
Replace Diesel Units - Cartwright and Charlottetown	1,384.9	46.1				1,431.0
Install Fire Protection Systems - Nain 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
Upgrade Microsoft Office Products - Hydro Place	366.6	1,024.5				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	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**	**64,045.8**	**27,097.4**	**15,247.3**	**13,026.7**	**146,619.2**

NEWFOUNDLAND AND LABRADOR HYDRO
2016 CAPITAL BUDGET
MULTI-YEAR YEAR PROJECTS OVER $50,000
($000)

Multi-year Projects Commencing in 2015 (Previously Approved)

PROJECT DESCRIPTION	2015	2016	2017	2018	2019	Total
Construct 230 kV Transmission Line - Bay d'Espoir to Western Avalon	4,403.0	75,284.3	123,739.6	88,231.1		291,658.0
Upgrade Circuit Breakers - Various Sites (2015-2016)	6,189.1	6,873.8				13,062.9
Upgrade Power Transformers - Various Sites	4,440.4	7,002.3				11,442.7
Upgrade Gas Turbine Plant Life Extension - Stephenville	2,655.2	2,525.4				5,180.6
Replace Vehicles and Aerial Devices - Various Sites (2015-2016)	2,377.1	225.3				2,602.4
Refurbish Anchors and Footings TL202 and TL206 - Bay d'Espoir to Sunnyside	239.9	1,038.4	901.6			2,179.9
Upgrade Distribution System - Various Sites (2015-2016)	1,136.1	818.8				1,954.9
Install Transformer On line Gas Monitoring - Various Sites	700.5	975.7				1,676.2
Replace Disconnect Switches - Various Sites	963.7	642.9				1,606.6
Replace Accommodations/Septic System - Ebbegunbaeg	489.4	1,061.4				1,550.8
Install Fire Protection - Lanse Au Loup	220.6	1,126.2				1,346.8
Replace Unit 2038 - Mary's Harbour	103.5	1,241.5				1,345.0
Rehabilitate Salmon River Spillway - Bay d'Espoir	745.6	556.8				1,302.4
Replace Station Service Breakers - Cat Arm	644.9	363.4				1,008.3
Install Automated Meter Reading - Various Sites (2015-2016)	559.9	401.8				961.7
Replace Programmable Logic Controllers - Various Sites	366.9	346.0	245.1			958.0
Upgrade Generator Bearings Units 1 and 3 - Bay d'Espoir	14.7	633.3				648.0
Replace Pump House and Associated Equipment - Bay d'Espoir	22.7	522.5				545.2
Replace Diesel Unit 254 - Paradise River	66.8	429.3				496.1
Upgrade Ventilation Systems - Various Sites	175.9	317.3				493.2
Design and Install Fire Protection in 230 kV Station - Various Sites	67.6	424.3				491.9
Upgrade Terminal Station Protection and Control - Various Sites	172.7	307.2				479.9
Replace Off Road Track Vehicle Unit 7861 - Stephenville	1.1	397.8				398.9
Replace Cooling Tower and Auxiliaries - Hydro Place	45.7	311.3				357.0
Refurbish Intakes - Bay d'Espoir	72.6	262.3				334.9
Upgrade Fire Protection (Main Warehouse) - Holyrood	46.2	197.6				243.8
Install Disconnect Switches for Mobile Generators - Various Sites	10.0	189.3				199.3
Install Infrared View Ports - Various Sites	83.7	113.1				196.8
Replace Station Lighting - Bay d'Espoir	16.7	160.3				177.0
Refurbish Unit Relay Protection - Paradise River	8.7	79.7				88.4
TOTAL MULTI-YEAR PROJECTS OVER $50,000 COMMENCING 2015	**27,040.9**	**104,829.3**	**124,886.3**	**88,231.1**	**0.0**	**344,987.6**

NEWFOUNDLAND AND LABRADOR HYDRO
2016 CAPITAL BUDGET
MULTI-YEAR YEAR PROJECTS OVER $50,000
($000)

Multi-year Projects Commencing Prior to 2015 (Previously Approved)

PROJECT DESCRIPTION	2016
Replace Instrument Transformers - Various Sites	1,511.7
Purchase Diesel Plant Production Data Collection Equipment - Various Sites	280.7
TOTAL MULTI-YEAR PROJECTS OVER $50,000 COMMENCING PRIOR TO 2015	**1,792.4**

Schedule C
Order No. P.U. 33(2015)
2016 Capital Budget
Issued: December 2, 2015

NEWFOUNDLAND AND LABRADOR HYDRO
2016 CAPITAL BUDGET

Projects Over $50,000 to be completed in 2016	$	47,304,900
Multi-Year Projects over $50,000 commencing in 2016		27,202,000
Multi-Year Project over $50,000 commencing prior to 2016 (previously approved)		106,621,700
Projects under $50,000[1]		954,200
Allowance for Unforeseen Items		1,000,000
Approved 2015 Capital Budget	**$**	**183,082,800**

[1] Approval of projects under $50,000 is not required but these expenditures are part of the total 2015 Capital Budget

Newfoundland & Labrador
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