
Newfoundland & Labrador

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

REFERENCE TO THE BOARD

**RATE MITIGATION OPTIONS AND IMPACTS
MUSKRAT FALLS PROJECT**

INTERIM REPORT

FEBRUARY 15, 2019

BEFORE:

**Darlene Whalen, P. Eng., FEC
Chair and CEO**

**Dwanda Newman, LL.B.
Vice Chair**

**John O'Brien, FCPA, FCA, CISA
Commissioner**



NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES
120 Torbay Road, P.O. Box 21040, St. John's, Newfoundland and Labrador, Canada, A1A 5B2

2019-02-15

The Honourable Siobhan Coady
Minister of Natural Resources
Provincial Office
100 Prince Philip Drive
Government of Newfoundland and Labrador
P.O. Box 8700
St. John's, NL A1B 4J6

Dear Minister:

On September 5, 2018 Government issued a Reference directing the Board to review and report on options to reduce the impact of the Muskrat Falls Project costs on electricity rates up to the year 2030. The Reference set out three questions to be addressed by the Board and directed the Board to provide an interim report by February 15, 2019 of its preliminary findings for Questions 1 and 2.

The enclosed report is submitted in accordance with the requirements of the Reference.

Respectfully submitted,

Darlene Whalen, P. Eng., FEC
Chair and CEO

Dwanda Newman, LL.B.
Vice Chair

John O'Brien, FCPA, FCA, CISA
Commissioner

EXECUTIVE SUMMARY

On September 5, 2018 Government issued a Reference directing the Board to review and report on options to reduce the impacts of the Muskrat Falls Project costs on electricity rates. The Board was directed to provide an interim report of its preliminary findings by February 15, 2019 and a final report by January 31, 2020. Dennis Browne, Q. C. was appointed as the Consumer Advocate.

The Board engaged the services of two expert consultants to assist with the review: The Liberty Consulting Group and Synapse Energy Economics Inc. Interim reports setting out the preliminary findings of these consultants were filed on December 31, 2018. Nalcor filed its response to both reports on January 9, 2019. Submissions and comments were filed by January 18, 2019.

This report sets out the Board's preliminary findings for Questions 1 and 2 of the Reference with respect to options to reduce the impact of Muskrat Falls Project costs on electricity rates up to the year 2030, as well as the amount of energy and capacity from the Muskrat Falls Project required to meet Island Interconnected load and the remaining surplus energy and capacity available for other uses such as export and load growth.

Upon commissioning of the Muskrat Falls Project rates for retail customers of Newfoundland Power are forecast to increase from 12.26 cents per kWh to 22.89 cents per kWh in 2021 if no mitigating actions are taken. The estimated annual shortfall which would have to be covered to maintain current rates or alternatively, average Atlantic Canadian rates, is in the range of \$744 million to \$342 million.

Through this interim process a number of initiatives were identified which offer opportunities to mitigate these rate increases. Potential initiatives relate to financing, returns and dividends, Nalcor restructuring, the transfer of certain responsibilities to Newfoundland Power, operating and maintenance costs for the Muskrat Falls Project, electrification and export sales revenue. Based on the work to date it is not possible to conclude as to the magnitude of the potential rate mitigation offered by these initiatives or whether potential constraints and barriers can be addressed. It is clear, however, that no one rate mitigation initiative would generate enough cost savings or revenue to meet the shortfall.

In the coming weeks the Board will establish the next steps in this review. Notice will be published to invite submissions from interested persons for standing. Information gathering will continue through the spring and summer and the Board's consultants are expected to file their final reports by late summer 2019. A hearing will be held in the fall.

While the Board continues its work Government may wish to consider policy issues related to Muskrat Falls Project financing, the planned treatment of returns and dividends as well as export sales revenues, Hydro's return, and regulatory oversight with respect to Nalcor and the Muskrat Falls Project.

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**EXHIBIT 1 Reference Questions to the Board of Commissioners of Public Utilities
Rate Mitigation Options and Impacts****EXHIBIT 2 Public Comments/Submissions Received**

1.0 BACKGROUND

The Muskrat Falls Project was sanctioned in 2012 and is currently under construction by Nalcor Energy and certain of its subsidiaries (Nalcor). The project is comprised of the following which collectively in this report will be referred to as the Muskrat Falls Project:

- the Muskrat Falls Generating Station, an 824 hydroelectric generating facility in Labrador;
- the Labrador Transmission Assets (LTA), two 250 km High Voltage alternating current (HVac) transmission lines between Muskrat Falls and Churchill Falls; and
- the Labrador Island Link (LIL), an 1,100 kilometer High Voltage (HVdc) transmission line from Muskrat Falls to Soldier's Pond on the Island, including a subsea cable across the Strait of Belle Isle.

The most recent update on the project on June 23, 2017 indicated that the capital cost and during-construction financing costs is forecast to be \$12.7 billion with the electricity rates for domestic customers on the Island Interconnected system required to recover the related costs increasing to 22.89 cents per kilowatt hour in 2021. There will also be rate increases required for other customers.

The Muskrat Falls Project has been exempted from the jurisdiction of the Board. Nalcor is fully exempt from any regulation by the Board under section 17(2) of the *Energy Corporation Act*.¹ While Newfoundland and Labrador Hydro (Hydro) is subject to regulation, the Board's jurisdiction may be limited by direction of the Government of Newfoundland and Labrador (Government) issued under section 5.1 of the *Electrical Power Control Act (EPCA)*.² The Muskrat Falls Project Exemption Order issued under Order-in-Council 2013-342 exempted the project from the Board's review. The Board's jurisdiction to review the costs Hydro incurs in relation to the project was restricted by Order-in-Council 2013-343 which directs the Board to allow the recovery of the Muskrat Falls Project costs in the electricity rates of Island Interconnected customers without disallowance, reduction or alteration.

On September 5, 2018 Government issued a Reference under section 5 of the *EPCA* directing the Board to review and report on options to reduce the impact of Muskrat Falls Project costs on electricity rates and setting out three Reference Questions to be addressed. A copy of the Reference is provided in Exhibit 1.

The Reference requires an interim report to be submitted to Government by February 15, 2019 on the Board's preliminary findings from Questions 1 and 2, with a final report to be submitted by January 31, 2020.

This report is the interim report required by the Reference.

¹ *Energy Corporation Act*, SNL 2007, c.E-11.01.

² *Electrical Power Control Act*, SNL 1994, c.E-5.1.

2.0 REVIEW PROCESS

Following receipt of the Reference on September 5, 2018 the Board determined, given the requirement to file an interim report by February 15, 2019, to approach the review in two phases with the first phase focusing on the identification of potential rate mitigation options, cost savings, revenue enhancement opportunities and the load requirements of the Island Interconnected system required to answer Questions 1 and 2. The Board also decided that experts would be retained to provide preliminary findings and that an invitation for formal participation by parties, other than Nalcor, would occur in the next phase.

2.1 Consumer Advocate

In accordance with the Reference on September 5, 2018 Dennis Browne, Q.C. was appointed by Government as the Consumer Advocate for the purpose of participating in the Reference.

2.2 Consultants

The Board retained two expert consultants, The Liberty Consulting Group (Liberty) and Synapse Energy Economics, Inc. (Synapse), to assist with answering the Reference Questions.

Liberty has extensive experience in management and operation audits of utilities and has provided consulting services to the Board on a variety of matters including the investigation into the 2014 power outages, the 2015 review of the prudence of certain Hydro expenditures, and the ongoing review of the impact of the Muskrat Falls Project on the reliability of the Island Interconnected system. Liberty's scope of work includes:

- determining the total revenue required to recover the cost of the Muskrat Falls Project with no rate mitigation applied;
- examining the structure of Nalcor and its subsidiaries and identifying cost savings and revenue opportunities associated with their activities, including opportunities to find efficiencies and reduce duplications;
- examining the forecast operating and maintenance costs for the Muskrat Falls Project to identify cost savings and efficiencies;
- identification of the impacts of various rate mitigation options; and
- reviewing industry best practices related to external market purchases and sales of electricity.

Synapse has extensive experience in the electric power sector in the Maritimes and northeast region of the United States. It regularly reviews utility load forecasts, provides rate design expertise, and has assessed demand-side resource economics on behalf of regulators in Ontario, Nova Scotia, New Brunswick and Prince Edward Island. It also has expertise in the valuation of export market opportunities. The scope of work for Synapse includes:

- determining the amount of energy and capacity required to meet load on the Island Interconnected system and the amount available from the Muskrat Falls Project to serve the existing and future Island Interconnected system load;
- examining the impact of increasing prices on elasticity demand and the impacts on the Island Interconnected system load;

- determining the amount of energy and capacity available for export and export market opportunities;
- examining the potential for energy efficiency alternatives and their impact on the Island Interconnected system load forecast;
- examining the potential for electrification and its impacts on the Island Interconnected system load forecast; and
- determining rate design alternatives to support rate mitigation approaches and potential policy decisions on energy efficiency alternatives and electrification opportunities.

The terms of engagement for both Liberty and Synapse are available on the Board's website.

On December 31, 2018 Liberty's *Final Report on Phase One of Muskrat Falls Project Potential Rate Mitigation Opportunities* and Synapse's report *Phase 1 Findings on Muskrat Falls Project Rate Mitigation* were filed with the Board.

2.3 Notices and Submissions

A media release was issued on October 16, 2018 advising that the Board had commenced the review and that Liberty and Synapse had been retained and would file interim reports by the end of the year.

The Board issued a second media release on January 2, 2019 advising that Liberty and Synapse had filed their preliminary reports and inviting other submissions and comments for the consideration of the Board in completing its interim report.

Nalcor filed its submission on January 9, 2019. Sixteen other submissions and comments were subsequently received, including submissions from the Consumer Advocate; Newfoundland Power Inc. (Newfoundland Power); the Island Industrial Customer Group (Corner Brook Pulp & Paper Limited, NARL Refining LP and Vale Newfoundland and Labrador Limited); and the Labrador Interconnected Customer Group (Sheshatshiu Innu First Nation, Happy-Valley-Goose Bay, Wabush and the Town of Labrador City). Exhibit 2 lists the comments and submissions filed.

The consultants' reports as well as the submissions and comments received are available on the Board's website.

2.4 Scope of Interim Report

As required by the Reference this report sets out preliminary findings for Questions 1 and 2 with respect to reasonably anticipated cost savings and reasonably anticipated revenue from surplus energy and capacity. Section 3 sets out the options that have been identified at this preliminary stage which, if implemented, may reduce or offset increases in electricity rates attributable to the Muskrat Falls Project. The Board's comments on these preliminary findings are contained in Section 4, along with the next steps to be undertaken.

3.0 PRELIMINARY FINDINGS

3.1 Reference Questions

The Board was directed to review and report on the following Reference Questions:

- 1) Options to reduce the impact of the Muskrat Falls Project costs on electricity rates up to the year 2030, or such shorter period as the Board sees fit, including cost savings and revenue opportunities with respect to electricity, including generation, transmission, distribution, sales, and marketing assets and activities of Nalcor Energy and its Subsidiaries, including NLH, Labrador Island Link Holding Corporation, LIL General Partner Corporation, LIL Operating Corporation, Lower Churchill Management Corporation, Muskrat Falls Corporation, Labrador Transmission Corporation, Nalcor Energy Marketing Corporation, and the Gull Island Power Company.
- 2) The amount of energy and capacity from the Muskrat Falls Project required to meet Island interconnected load and the remaining surplus energy and capacity available for other uses such as export and load growth.
- 3) The potential electricity rate impacts of the options identified in Question 1, based on the most recent Muskrat Falls Project cost estimates.

In answering the Reference Questions the Board was directed to consider the power policy in the *EPCA* and the following:

- new and existing sources of Nalcor income that could be put towards reducing rate increases, including income from:
 - Nalcor power exports, including those from generation assets it owns or controls, the Muskrat Falls Project, and Churchill Falls recapture power, taking into account any export-related costs such as those relating to Nalcor Energy Marketing; and
 - any other effective opportunities to find synergies, efficiencies and reduce duplication and costs within Nalcor and its subsidiaries.
- whether it is more advantageous to ratepayers to maximize domestic load or maximize exports. Depending on the Board's recommendation, provide options for:
 - increasing domestic load, such as:
 - the electrification of industrial facilities and oil-fired boilers in heating plants; and
 - incentives for increased electrification and usage by NL ratepayers, including increasing number of ratepayers, electric vehicles and electric heating; or
 - increasing exports, such as:
 - incentives for energy conservation, including for lowering system peak demand to maximize system capacity reserves, in order to increase availability of energy and capacity for export.
- forward-looking cost savings and opportunities for increased efficiency related to operating and maintenance of the Muskrat Falls Project.

- what are industry best practices related to external market purchases and sales of electricity.

The sections below set out the preliminary findings of both Liberty and Synapse in response to Questions 1 and 2 as well as the comments and submissions received on these findings.

3.2 Question 1 - Cost Savings and Revenue Opportunities

Based on their preliminary work Liberty and Synapse identified a number of potential options which may reduce the impact of the Muskrat Falls Project costs on rates, including cost savings and revenue opportunities in relation to Muskrat Falls financing, organizational and operating efficiencies, electrification, conservation and demand management potential and maximizing and allocation of export sales revenue.

3.2.1 Muskrat Falls Project Financing

The Muskrat Falls Project financing consists of debt and equity components. Two federal loan guarantees (FLG1 and FLG2) have been issued totalling approximately \$7.9 billion to provide debt financing to the project. These federal loan guarantees lower the debt service cost of these borrowings since they reduce the risk to the lenders. The Nalcor/Province equity funding is projected to be \$3.7 billion at completion of the project. These equity contributions by the province and Nalcor will earn substantial returns under the current terms of the financing arrangements. An entity of Emera will provide equity financing for the LIL in the amount of \$0.6 billion.

The capital structure for the Muskrat Falls Project was initially developed as a commercial project financing arrangement. With the Government of Canada loan guarantees, the debt was more marketable and placed the Muskrat Falls Project financing in more of a “government project” financing mode rather than a commercial project financing mode. The maximum debt/equity capital structure permitted under the FLG1 and FLG2 issuances was 65% debt and 35% equity for the corporate entities associated with the Muskrat Falls Generating Station and the LTA (MF/LTA) and 75% debt and 25% equity for the LIL. The MF/LTA is currently projected to have 59% debt financing and 41% equity financing and the LIL will have 70% debt with 30% equity financing once these projects are complete.

Liberty noted that financing costs incurred to fund construction of the Muskrat Falls Project account for more than 50% of Hydro’s total revenue requirement in the years following project commissioning. According to Liberty the primary drivers of these costs are:

- Sinking fund payments on the Muskrat Falls Project debt principal
- Interest on the Muskrat Falls Project debt payable to bondholders
- Nalcor dividends produced by its return of and on the Muskrat Falls Project capital cost equity component

Because of the significant contribution of these costs to the total project costs Liberty suggests these are a primary area to examine for potential cost savings. Changes to the financing structure, specifically the sinking fund payments, interest payments associated with the federal loan

guarantees and the project debt structure, and the returns and dividends associated with the project were identified as areas which could reduce costs to be recovered from ratepayers.

i) Sinking Fund Payments

A sinking fund arises from a term of a bond indenture that requires the issuer to regularly set money aside in a separate account for the exclusive purpose of redeeming the bonds. In the case of the Muskrat Falls Project the sinking fund cash requirements comprise a large portion of the revenue requirement associated with the project debt. The reduction or deferral of sinking fund payments could lower Hydro's revenue requirement significantly in the early years.

Liberty noted that sinking fund payments apply to the \$5.0 billion FLG1 and debt amortization payments applying to FLG2. Any changes to these requirements will require the agreement of the parties to these agreements including the Government of Canada. Internal project financing agreements require sinking fund payments on all six of the FLG1 bond series. Liberty noted that no requirement for sinking fund payments exists in the external financing agreements with bond holders. However, if the sinking fund payments are reduced, a plan to fund the retirement of the debt at maturity would need to be considered.

ii) Interest Payments

An additional opportunity to reduce the revenue requirement relates to reducing or deferring the interest payments on the Muskrat Falls Project debt payable to bondholders. Since this debt has a federal loan guarantee with Canada's AAA credit rating, it has the benefit of a lower interest rate in the market which has already reduced the debt service costs of the Muskrat Falls Project. The federal loan guarantee has reduced the potential impact upon electricity rates by an estimated 1.5 cents per kWh.³ While further reductions in the debt service costs would aid in reducing the revenue requirements, the bondholders would still be required to be paid interest payments. Therefore, options on deferring or reducing the interest rate would need to be explored further.

iii) Project Debt Structure

According to Liberty a potential source of mitigation could be the issuance of new debt, given the level of equity projected to exist after commissioning of the Muskrat Falls Project. Since each of the projects has significant "headroom" to increase debt the capital structure of the Muskrat Falls Project could be modified to reduce the equity component of the capital structure and to increase the debt financing. The new debt could reduce payments in the earlier years with repayment structured in the later years as other sources of mitigation become available.

The potential savings arises in the context of where to apply the additional financing such as reducing the sinking fund payments in earlier years of the Muskrat Falls Project operation or shifting the timing of funds available for rate mitigation to earlier periods when less opportunity exists for rate mitigation. Decreasing the level of equity also reduces the return on equity payments. This provides an opportunity especially if the interest rate on the debt financing is lower due to a federal loan guarantee. Any new debt financing would require obtaining a third federal loan guarantee from the Government of Canada and amending applicable financing

³ Hydro 2017 General Rate Application: IC-NLH-122, Attachment 1.

agreements. The application of the debt proceeds could be timed to meet the greatest rate mitigation needs.

Liberty also commented that consideration could be given to higher debt levels than those currently permitted under the financing agreements. For example, the 65% debt level of the MF/LTA could increase to some higher percentage such as 75% or 85%. This would require the approval of the Government of Canada and other parties to the existing agreements.

iv) Returns and Dividends

The costs associated with equity returns and dividends associated with the Muskrat Falls Project arise from both Nalcor and Hydro. Hydro's return is established pursuant to OC2009-063 which requires Hydro to receive the same target return on equity as set for Newfoundland Power.⁴ The returns on equity for Nalcor for the Muskrat Falls Project are established in the various financing agreements and are similar to returns of investor-owned utilities. As a result Liberty noted that, while Nalcor will receive returns largely equivalent to what an investor-owned utility has the opportunity to earn, the actual costs are much lower since the debt portion of the Muskrat Falls Project capital structure is much lower than an investor-owned utility would have and there are no outside equity providers.

The payments Hydro is required to make to Nalcor under the various agreements for purchases from and use of the Muskrat Falls Project assets include an investor-owned equity return. Liberty noted that substantial returns of over \$6 billion to Nalcor are forecast in the first 20 years of operation. These returns will be included in Hydro's revenue requirement and will be recovered from customers in rates. Liberty noted that the returns and dividends will be small in the early years after commissioning but very large annual growth is expected which will eventually offset more than half of the expected increase in rates in later years.

Other "net dividends" from Muskrat Falls Project exports, Churchill Falls, and Hydro regulated, which now includes a return based on Newfoundland Power's equity return as set by the Board, are estimated to be \$27 million to \$33 million per year from 2021 to 2025 which could also be available for rate mitigation.

Liberty concluded that applying the returns and dividends to reduce the revenue requirement that would avoid a very substantial portion of the increase in rates expected in the coming years. This could include the application of the full equity returns at the current rate to the revenue requirement and/or a reduction in the amount of the current return.

v) Submissions and Comments

Nalcor agreed with Liberty that changes to the financing structure and the allocation of dividends from the project would have the "greatest potential" for rate mitigation. Nalcor noted that changes affecting the debt financing structure would require agreement between the existing parties (Nalcor, the Province and the Government of Canada).

⁴ Prior to 2009 the Board determined that Hydro did not operate as an investor owned utility and therefore was not entitled to a return on equity equivalent to that of an investor-owned utility.

Newfoundland Power viewed the financing options identified by Liberty as reasonable and warranting more detailed examination, and noted that refinancing of debt occurs regularly at electric utilities and could achieve cost savings for consumers. With respect to the treatment of Nalcor's dividends Newfoundland Power stated that Hydro's and Nalcor's equity returns were never established according to the Fair Return Standard which requires allowed rates of return on equity to be generally commensurate with the risk of a utility's investments. According to Newfoundland Power Hydro's entitlement to the opportunity to earn a return on equity equivalent to Newfoundland Power is established by Government policy introduced in 2009, and Nalcor's returns on equity appear to be established in a similar fashion. Newfoundland Power commented:

Prior to 2009, the Board consistently determined that Hydro did not operate as an investor-owned utility and therefore was not entitled to a return on equity equivalent to that of an investor-owned utility. In Newfoundland Power's view, the essential logic that underpinned prior Board determinations applies to existing Hydro and Nalcor returns on equity.⁵

In its submission the Island Industrial Customer Group stated the following with respect to the equity returns on the Muskrat Falls Project financing:

The IIC Group submit that the imposition of these layers and levels of financial burdens on the ratepayers would be unprecedented in this Province, or in any other jurisdiction where utility costs are to be regulated in accordance with generally accepted sound public utility practice, and would be manifestly inimical to the central power policy objective of least cost reliable service. The IIC Group respectfully submit that government has a responsibility to take prompt and effective steps to remove or ameliorate these financial burdens before their impacts are visited upon the ratepayers.⁶

The Island Industrial Customer Group further submitted that negotiations with the Federal government should begin, stating that "analysis and negotiations at the governmental level need not and ought not to be delayed until the conclusion of Phase 2 of this Reference".⁷

The Consumer Advocate submitted that OC2009-063 should be discontinued and that Hydro's rate of return be set separately by the Board following a hearing. The Consumer Advocate also stated that, given the escalating costs of Muskrat Falls Project, the rate of return on equity as set in the Purchase Power Agreement between Hydro and the Muskrat Falls Corporation should be reviewed with the end result being low cost electricity for ratepayers.

3.2.2 Organizational and Operating Efficiencies

Liberty identified a number of potential cost saving initiatives related to organizational and operational effectiveness. These initiatives will be addressed in two parts: i) Nalcor restructuring, and ii) productivity and efficiency initiatives related to Hydro's operations.

⁵ Newfoundland Power Submission, page 6.

⁶ Island Industrial Customer Group Submission, page 2.

⁷ Island Industrial Customer Group Submission, page 3.

i) Nalcor Restructuring

Liberty explained that once the oil and gas business is divested as planned Nalcor will have one business, split in two parts that are separated based on what has been determined to be regulated and non-regulated and that this structure raises issues related to wide-spread duplication of corporate, support, technical, and operating organizations among sometimes four areas of business operations, Churchill Falls, Power Supply, Hydro and Energy Marketing. This structure also raises issues related to the flow of revenue between the companies supported by Hydro's rates to customers. Liberty explained:

It is unusual to employ two separate and distinct transmission and engineering organizations within the same network topology. This approach reflects management's desire to underscore the distinction between the regulated nature of Hydro's business and the unregulated nature of Power Supply's business. Whether that distinction is one that needs to be maintained, however, merits exploration.⁸

According to Liberty after completion of the Muskrat Falls Project it may not be necessary to continue the separation of the two primary business lines at Nalcor: Nalcor's primary business unit, Power Supply, which is responsible for Muskrat Falls, the LIL, the LTA, Churchill Falls and Nalcor Energy Marketing; and Hydro, which operates the balance of Nalcor generation, transmission and distribution operations. In relation to the integration, in whole or part, of functions now split between Hydro and Power Supply Liberty stated:

Nalcor's organizing to provide largely self-standing Hydro and Power Supply organizations, makes it very likely that total corporate and service functions support requirements have become sub-optimal. Moreover, the size and cost of the MFP relative to current revenues and asset base have led to a legal and operating structure both complex and highly unusual for a company this size. Such a structure has the distinct potential to introduce inefficiencies in staffing, cost-sharing, and service provision (e.g., procurement), particularly with Nalcor so focused on MFP completion.⁹

Based on Liberty's preliminary work there are numerous duplicative functions, though further work is required to assess the extent of duplication. Further the relative size and seeming permanence or stability of temporary staff warrants further examination, as well as changes to permanent staff with the transition to operations of the Muskrat Falls Project. According to Liberty the following are promising lines of inquiry:

- The significant number of executives and senior management positions in related areas.
- Broad duplication of organizations with activities having a high degree of commonality.
- Repetition of service partners to carry out day-to-day functions in multiple organizations.

The opportunities for cost savings and revenue optimization related to Nalcor restructuring which Liberty plans to review further include:

⁸ Liberty Report, page 20.

⁹ Liberty Report, page 21.

- Combine, in whole or part, Nalcor and Hydro leadership and commonly provided corporate and administrative service.
- Combine, in whole or part, Power Supply and Hydro functions including planning, engineering, design, operations, and customer services functions.

In relation to the potential savings associated with Nalcor restructuring Liberty suggested that a five percent cut in resources is not an unreasonable assumption based on preliminary work. Liberty estimated that a five percent cut in resources would reduce the revenue requirement by \$10 million to \$15 million per year.

Liberty identified a number of specific potential constraints that require further evaluation to verify that any impediments or barriers to Nalcor restructuring can be addressed:

- Distinctive factors such as the dc design for the LIL, and the need to account for Hydro Quebec's rights in addressing Churchill Falls organization and resources.
- Extremely-wide geographic dispersal of both customers and key facilities and whether there may be unintended service consequences.
- The complex nature of many of the agreements that govern the various elements of the Muskrat Falls Project and the regulatory, legislative and other restrictions or conditions that may affect corporate reorganization.

ii) Efficiency and Productivity Initiatives

Liberty identified the potential for opportunities to mitigate revenue requirements related to costs incurred within various areas of Hydro, including initiatives related to the transfer of responsibilities related to retail services to Newfoundland Power, and operating and maintenance costs at generation facilities.

One initiative identified by Liberty relates to Hydro's retail operations. Liberty suggested examination of the transfer of operational responsibilities, or ownership of some or all of Hydro's retail operations to Newfoundland Power, recognizing the latter's location and expertise in providing retail service. This may involve some form of divesture or some form of service contracting. Liberty explained that given the nature and location of Newfoundland Power's operations with respect to those of Hydro, transferring some or all of Hydro's distribution assets should be considered. Liberty did not quantify the potential savings which may be associated with this initiative and explained that the net costs to Hydro and Newfoundland Power would have to be considered as well as any potential impacts on service quality.

Liberty also commented that its initial findings indicate there may be opportunities to reduce operating and maintenance costs for certain of Hydro's generation stations. In particular preliminary data suggests that the forecast Muskrat Falls operating and maintenance costs are above those of peer group costs and have risen substantially since the initial plans. According to Liberty a thorough review is required before an assessment can be made as to the reasonableness of these estimates.

A number of other mitigation opportunities were identified by Liberty relating to efficiency and productivity with respect to Hydro's operations, including work management and productivity, optimizing employee/contractor resources, engineering services, building and fleet maintenance,

circuit breaker replacement, and asset maintenance programs. In relation to work management and productivity, Liberty explained that there may be an opportunity for cost savings with enhanced focus on the structure of and accountability for work planning and management of productivity and on craft work scheduling and overtime. In terms of optimizing employee and contractor resources Liberty explained that there may be cost savings associated with economically optimizing the balance between employee and contractor use, both internally at Hydro and combined with Power Supply and Newfoundland Power. The other efficiency and productivity rate mitigation opportunities identified relate to operations within various departments of Hydro. While Liberty's preliminary work suggests that review of each of these areas may identify opportunities for cost savings, the potential cost savings would appear to be relatively small compared to other identified rate mitigation options.

iii) Submissions and Comments

Nalcor explained that the current organizational structure of Nalcor and Hydro provides a dedicated focus on its regulated electricity operations and a single executive leadership to ensure the provision of reliable service. It also allows for separate focus on completion of the Muskrat Falls Project and the utilization of existing and future non-regulated assets to maximize value for the province. Nalcor committed to providing further clarity on its organizational design in the next phase of this review. Nalcor also welcomed further assessment of its operations to determine where efficiencies may be found, both internally and in conjunction with Newfoundland Power and noted that these efficiencies must be balanced with the need to maintain reliable service.

Newfoundland Power commented that the province is in a transition period as the completion of the Muskrat Falls Project nears and addressing organizational complexity and duplication within Nalcor could yield opportunities to improve efficiencies and reduce costs to customers. According to Newfoundland Power the structural realignment of Nalcor and its subsidiaries is timely and could reduce costs to customers while also improving transparency. Newfoundland Power noted that Nalcor is presently exempt from the provisions of the *EPCA* and regulation by the Board and that any restructuring of Nalcor should also consider the level of regulatory oversight required, if any, to ensure the interests of customers are protected. In relation to Hydro's productivity and efficiency Newfoundland Power submitted that an increased focus by Hydro on this issue could yield further cost savings for customers in the future. In particular Newfoundland Power submitted that avoided costs and service quality improvements may be achievable through the transfer of retail operations from Hydro to Newfoundland Power.

Newfoundland Power also offered an additional suggestion in relation to Hydro's transmission systems. Newfoundland Power observed that the construction, maintenance and operation of transmission systems require substantially similar physical, technical and human resources as required for distribution systems and therefore greater economies of scale could exist beyond retail operations which could provide additional value to customers in terms of reduced costs and improved service quality.

The Consumer Advocate submitted that all options should be considered in relation to the Nalcor structure, including privatization within Nalcor's current business and further that it may be worthwhile to review whether Nalcor Energy Marketing is necessary.

The Island Industrial Customer Group supported the focus in Liberty's next phase of work to clearly identify barriers that must be addressed to pursue mitigation opportunities and any changes needed to make opportunities for revenue requirement reduction executable. The Island Industrial Customer Group noted that the Board's powers to oversee the implementation of the central power policy objective of "least cost reliable service" and other aspects of the power policy set out in the *EPCA* have been constrained by various directions, exemptions and statutory amendments by Government over the years and that it should be a primary objective of this review to identify where such constraints will, if left unmodified, be inimical to the central power policy objective of least cost reliable service.

The International Brotherhood of Electrical Workers Local 1615 (IBEW 1615) made submissions in relation to the identified opportunities related to organizational and operational efficiencies. In relation to the restructuring of Nalcor, IBEW 1615 explained that it does not support the current model and with the divesture of oil and gas and Bull Arm Fabrication the remainder of the organization should be in a new entity named "Hydro Group of Companies" including all regulated and non-regulated assets. In relation to changing responsibility for retail services operations the IBEW 1615 commented that this would provide no potential for rate mitigation, is outside of the Government direction to the Board and should therefore be eliminated from consideration. In addition the IBEW 1615 noted that distribution areas do not overlap, that there are areas where Nalcor/Hydro is overwhelmingly dominant in generation and transmission and that it could be beneficial for Hydro to take over Newfoundland Power's distribution. In relation to temporary employees the IBEW 1615 submitted that the permanent workforce supplemented by temporary employees at certain times of the year is the most effective way of performing work from a cost, quality and performance perspective.

Several of the other written comments received by the Board supported the review of organizational and operational efficiencies.

3.2.3 Electrification

Synapse suggested that electrification is likely to offer the single greatest opportunity to increase revenues to reduce revenue requirement associated with the Muskrat Falls Project. Synapse identified potential for electrification in three end-use sectors: residential heating, commercial heating and transportation. The commercial sector analysis evaluated the potential of oil-heated institutions (e.g. schools, colleges, hospitals) switching to electricity.¹⁰ A high and a low case scenario was analyzed to estimate the potential of substituting electric heating for oil in the residential and commercial sectors. The transportation sector was also reviewed to determine the potential for increased electric vehicle use. Based on its analysis Synapse concluded:

1. In the high electrification scenario:
 - a potential increase in electricity consumption of 916 GWh or 17% of the total Island Interconnected system and Labrador Interconnected system energy requirements by 2030
 - peak demand is forecast to grow by 109 MW

¹⁰ The potential for industrial electrification was not analysed in Phase One but will be reviewed in the next phase.

2. In the low electrification scenario:

- a potential increase in electricity consumption of 245 GWh by 2030
- peak demand is forecast to grow by 29 MW

The primary difference between the low and high scenarios relates to increased vehicle electrification in the high scenario, although it was noted that incremental infrastructure expenditures would be required to support electrification. In addition rate design and appropriate policy support would be critical to increase electrification potential while avoiding or minimizing any increase in the peak load during the winter period.

A preliminary analysis of the revenue potential for the high electrification scenario was undertaken by Synapse based on the existing rate structure which estimated the total gross incremental revenue across all sectors at \$16.5 million in 2020, increasing to \$115.3 million in 2030. Synapse noted that these estimates would be impacted by policy decisions with respect to rate structures and incentives to increase electrification.

Some of the considerations identified by Synapse with respect to electrification include:

- time-of-use rates for all electric vehicle customers and for customers switching from oil heating to electric heat pumps (or boilers for institutional or commercial conversions);
- make-ready infrastructure to support electric vehicle charging stations;
- utility investment in fast-charging stations for low-income, commercial, and government customers; and
- recycling of revenues from federal and provincial greenhouse gas reduction programs where applicable.

In the next phase Synapse will complete a more detailed evaluation of electrification potential, including:

- the potential for electrification for Industrial Customers;
- refinement of commercial sector assumptions;
- the potential benefits and costs of an electrification program;
- the net cost associated with necessary expenditures to support electrification; and
- rate design alternatives and the necessary supportive policies required to enhance electrification potential.

Nalcor agreed that, in combination with careful management of peak load and resource availability, increased electrification has potential and should be further examined. Nalcor also advised that it has identified similar electrification opportunities and “is willing to work with Synapse to conduct the required studies to increase confidence in the Synapse assumptions for use in evaluation of the potential benefits and costs of an electrification program.”¹¹

Newfoundland Power supported further examination of opportunities for electrification in residential heating, commercial heating and transportation, noting that these areas have experienced a degree of electrification in the past in the province. Newfoundland Power also noted that electrification of the transportation sector is occurring globally as electric vehicle technology matures and that its preliminary analysis indicates some opportunity to increase

¹¹ Nalcor Submission, page 2.

electric vehicle penetration in the province. Newfoundland Power submitted that it would be appropriate to consider how rate design, including time-of-use pricing, could optimize the benefits of electrification for customers. It was also noted that further refining Synapse's analysis in the next phase of work to apply province-specific data will assist in evaluating the potential for electrification.

The Island Industrial Customer Group supported reasonable measures to promote electrification provided it is demonstrated that it will result in lower rates and the maintenance of reliable service. It was also suggested that careful consideration needs to be given to the impact of electrification of heating in an Island power system where there may continue to be a risk of limited (or no) capacity surplus on the coldest days. Their preliminary view is that the present processes used in their facilities do not present any significant potential for electrification. Identification and investigation of rate design alternatives specific to the industrial sector would be welcomed.

The Consumer Advocate supported review of rate designs, including time-of-use rates, and stated that all potential rate designs should be explored including promotional rates (i.e. to promote heat pump installations), declining/inverted multi-block rates, real-time pricing, surplus power rates (i.e. discounted rates when there are power surpluses), as well as possible implementation of fixed monthly charges.

The Labrador Interconnected Customer Group noted that, since electrification rates are different between the Island and Labrador, the impact of electrification policies will have vastly different impacts on each system and, as a result, it would be more precise to account for the two systems separately in the analysis.

The submission from Drive Electric NL, a non-profit, owner-founded organization created to encourage the use of electric vehicles in the province, suggested that increasing the use of electric vehicles is the best rate mitigation option to develop a domestic use for excess power. It recommended the expansion of the use of light and medium duty electric vehicles and estimated that a 10% increase in electric vehicle use could result in annual revenue of \$16.5 million. It also recommended the development of policies regarding rebates for the purchase of electric vehicles, the availability and service of electric vehicles, the development of the infrastructure required for charging stations and public education on the benefits of electric vehicles.

According to the Canadian Federation of Independent Business (CFIB) electrification should be explored but it must not cost taxpayers and ratepayers.

3.2.4 Conservation and Demand Management (CDM) Potential

CDM can assist in peak load reduction, which could delay or eliminate the need for future supply-side capacity resources, and can reduce winter energy use to allow for increased export sales during higher-valued winter periods. CDM also provides customers with the opportunity to reduce overall consumption, resulting in lower bills. According to Synapse, Hydro and Newfoundland Power have historically implemented limited CDM programs relative to other provinces and states, therefore there may be opportunities to significantly increase their potential.

Synapse noted that the interconnection of the Island Interconnected system to the Muskrat Falls Project brings a shift in the avoided cost profile of the Island Interconnected system toward higher capacity costs and lower energy costs. This shift increases the significance of CDM programs and has implications for program design and cost effectiveness. Opportunities that primarily reduce peak demand will have higher value than those that primarily reduce energy consumption and will contribute to delaying the need for new generation resources.

Synapse analysed the potential costs and energy savings of energy efficiency through utility programs offering some combination of financial incentives, technical assistance, education and contractor testing. A separate analysis was conducted for heat pumps in light of the significant recent uptake in the province and the expectation that this trend will continue. Based on its assessment Synapse estimated the following annual CDM costs and energy savings achievable by 2030 for both the Island Interconnected system and the Labrador Interconnected system:

- Total potential energy savings range for low and high CDM scenarios:
 - 436 GWh to 1,111 GWh (5% to 14% of load) for the Island Interconnected system
 - 71 GWh to 224 GWh (3% to 9% of load) for the Labrador Interconnected system
- Potential savings associated with heat pumps range from 25% to 30% of total CDM savings on the Island, and 10% to 21% in Labrador.
- Total CDM costs range for low and high CDM scenarios:
 - \$11 million to \$31 million for the Island Interconnected system
 - \$2 million to \$9 million for the Labrador Interconnected system

Synapse also highlighted the importance of CDM measures to forestall any potential need for new supply-side capacity resources, noting:

CDM measures, including demand response technologies that have not been historically utilized in the Province, are a particularly critical and potentially cost-effective means to ensure sufficient resource adequacy. Even peak period energy consumption from electrification can be managed to minimize consumption during the subset of winter peak hours that represent critical resource availability/capability periods.¹²

A number of potential initiatives related to CDM were identified by Synapse including increased energy efficiency budgets, creation of an Energy Efficiency Stakeholder Advisory Group, avoided cost studies and aggressive demand response programs. Synapse also recommended investigation of heat pump programs that will minimize combined heat pump and the contribution of electric resistance heating during the highest winter peak periods, independent of whether the heat pumps represent electrification of oil end uses, or substitution for electric resistance heat provision.

Synapse noted that more detailed analysis on the potential for CDM programs in the province will be completed in the next phase of work, including:

- impacts of increased electricity rates on CDM programs;
- more detailed study on the costs of saved energy by sector;
- heat pump efficiency potential methodology and assumptions;
- breaking out peak reduction factors by sector and region;

¹² Synapse Report, page 2.

- impacts of embedded CDM on the base load forecast; and
- rate design alternatives required to support appropriate CDM programs.

Nalcor supported CDM efforts to optimize required capacity and noted that Hydro and Newfoundland Power cooperated previously on CDM programs in the province. Nalcor stated that it “looks forward to further analysis of CDM programming opportunities the two companies can undertake to ensure reliable service at least cost, while creating opportunities for increased export sales.”¹³

Newfoundland Power noted that customer demand for conservation programs is high and that it has, in coordination with Hydro, implemented such programs since 2008. Newfoundland Power noted that it is initiating studies in 2019 on conservation potential which will include an increased focus on demand response technologies, a rate design study, which will include time-of-use rates and a load research study which will provide a better understanding of the impacts of heat pump technology. One of the studies it is undertaking in 2019 will ensure programs are economically justified based on conditions in the province.

The Consumer Advocate suggested that conservation may not be especially desirable when Muskrat Falls energy becomes available and that it would be appropriate to consider actions that reduce peak loads rather than conservation per se, since peaking demand on the Island could cause high value export opportunities to be missed or require additional investment in peaking capacity.

The Island Industrial Customer Group commented that any enhanced CDM programs should clearly result in rate mitigation and cautioned that the experience of other jurisdictions with CDM programs may not be applicable to the post-Muskrat Falls situation.

The CFIB stated that CDM deserves careful consideration but noted that business owners are often unaware of funding programs or lack the necessary information and find it difficult to adopt.

3.2.5 Maximizing Export Sales Revenue

Based on its analysis Synapse concluded there was significant potential to increase export revenues from the sales of surplus energy, depending on the level of energy efficiency and electrification achieved. Synapse noted that revenue could be maximized during higher value periods through the use of CDM programs that save winter energy. Synapse estimated the range of approximate net revenues from export energy sales for a number of different scenarios from 2021 to 2030 as follows:

- high electrification/low energy efficiency: \$93 million to \$135 million
- Synapse base case: \$92 million to \$142 million
- low electrification/high energy efficiency: \$96 million to \$168 million

Synapse also noted that sales of surplus capacity to external markets over the Maritime Link could increase revenue from export sales. Potential markets include the Maritimes, Quebec, New

¹³ Nalcor Submission, page 2.

York and New England. According to Synapse this opportunity is much smaller due to the requirement for aggressive peak load reduction and/or containment of peak load growth in the case of electrification, that may be needed to ensure resource adequacy. The value of such sales range from the buyer's going-forward costs to the cost of new capacity and would depend on the supply terms.

More detailed analysis will be completed by Synapse in the next phase of work to:

- determine if more energy can be made available during peak periods when prices are higher;
- determine the amount and value of capacity sales in all potential markets; and
- identify measures to support increased opportunity imports and export sales through market optimization and ponding.

Nalcor also agreed that maximizing the potential of export sales during higher value periods is a worthwhile objective, and noted the pilot project to assess optimization of hydraulic resources through "ponding" opportunities that was recently put in place.¹⁴ According to Nalcor "supporting increased opportunity imports and export sales through market optimization and ponding should be further analysed as part of Phase 2."¹⁵

The Consumer Advocate submitted that, in the determination of the amount of power available for export, consideration must be given to demand on the Labrador Interconnected system and the resulting quantity of recall power available for the Island.

The Island Industrial Customer Group supported maximizing export sales as a rate mitigation measure and submitted that all options to maximize sales should be considered, including water and reservoir management and overall system configuration changes such as overall dispatch and additional capital for capacity.

3.2.6 Allocation of Export Sales Revenue

Liberty noted that Hydro's customers must pay all of the Muskrat Falls Project costs of \$12.7 billion while receiving the benefits of only a portion of the energy produced with revenue from export sales excluded. Under the current arrangements export revenue will go to Nalcor. Liberty stated that the election to treat some of the revenue streams and returns generated by traditional electric utility activities as "unregulated" makes a vast difference in the assignment of costs and revenues. A typical ratemaking structure applied to a traditional utility includes costs and revenues from the utility's activities in calculating customer rates. The end result is that the customer pays their utility service provider's capital and operating costs net of off-systems revenues. Under the current financing agreements, this will not happen and export sales will not form part of the calculation of customer rates. Therefore, according to Liberty the exclusion of export sales profits is not in accordance with sound utility practice.

¹⁴ Ponding refers to the purchase and import of low cost energy from off-island sources and the export and sale of an offsetting amount of energy at another time when market prices are higher relative to the timing of the imported energy.

¹⁵ Nalcor Submission, page 2.

Newfoundland Power submitted that, given the costs of the Muskrat Falls Project are required to be recovered from customers, it is consistent with sound utility practice to ensure these customers receive the full benefit of export sales.

3.3 Question 2 - Available Energy and Capacity

Synapse reviewed both the short and long-term forecasts of the utilities for both the Island Interconnected system and the Labrador Interconnected system, including an evaluation of the reasonableness of the economic assumptions, inputs, methodology and resulting trend patterns. Synapse produced an alternative reference load forecast for the Island Interconnected system that matches Hydro's to 2023 for the Island Interconnected system after which it diverges and gradually declines. According to Synapse part of this adjustment reflects Newfoundland Power's historical sales and most recent near-term forecast, recent conversions to heat pumps and other conservation measures undertaken by customers in anticipation of electricity price increases and forecast price increases to 2030. Synapse adopted Hydro's forecast for the Labrador Interconnected system and the isolated systems for its preliminary work. Synapse's forecast for the province, including the Island Interconnected system, the Labrador Interconnected system and isolated diesel systems, is 9,977 GWh in 2019 declining to 9,598 GWh in 2030.¹⁶

With respect to the elasticity effects of electricity price increases Synapse noted that, while econometric forecast models based on historical data are sufficient for modeling modest price changes, these models may not adequately capture the effects of the large price increases expected with the Muskrat Falls Project. Consumer responses to these price increases may include moving to alternate heating sources such as oil or wood, conservation approaches, energy efficiency improvements and introducing new technologies such as heat pumps, which will impact the load forecast. Synapse also noted that large rate increases may lead to large Industrial customers converting to self-supply or relocating. Depending on the level of rate increases experienced Synapse suggested that retail sales in 2030 could be as much as 4 to 11 percent lower than they would be without the Muskrat Falls Project. Further examination of elasticity effects will be undertaken by Synapse in the next phase of work.

The amount of surplus energy available from 2021 to 2030 will depend on the load growth on both the Island Interconnected system and the Labrador Interconnected system as well as the extent of electrification and energy efficiency pursued. Electrification will increase the load forecast, meaning less surplus energy will be available for export. On the other hand enhanced CDM programs will reduce the load forecast, providing the opportunity for higher amounts of surplus energy, especially during the winter months when market energy prices are higher. Load growth may also be impacted by how customers respond to increases in electricity prices, referred to as elasticity effects.

Synapse estimated the surplus energy available for export using the total energy available to the province, including from the Muskrat Falls Project, and subtracting the energy required to meet the Island Interconnected and Labrador Interconnected load requirements, including transmission and distribution losses. The net energy available for export to each market during peak and off-peak periods was then estimated based on the export volume and estimated market prices and

¹⁶ Synapse Report, page 24. This represents Synapse's forecast of the total load forecast, including losses, net of self-supply by Newfoundland Power and the Industrial Customers.

considering transmission constraints and losses. Under the current base case assumptions Synapse estimated the annual export energy sales volume to be approximately 4,000 GWh, which could increase to as much as 4,800 GWh by 2030 in the combined low electrification, high energy efficiency scenario.

The amount of surplus capacity that may be available for export is a function of the amount of capacity over and above planning reserve requirements. Synapse conducted a preliminary review of the amount of and potential for capacity exports, considering only capacity sales to Nova Scotia at this stage, and found that approximately 80 MW could be injected for delivery over the Maritime Link assuming sufficient reserves are available in the province. Further detailed evaluation of the amount and value of capacity sales in all potential markets will be completed in the next phase of work.

Nalcor noted that Synapse found its load forecast process to be reasonable and supported further efforts to analyze price elasticity as a component of load forecasting efforts.

Newfoundland Power acknowledged the significant uncertainty that exists regarding future load forecasting and supported further analysis to better understand future elasticity impacts and the effect it would have on customer rates. The Consumer Advocate submitted that, in the determination of the amount of power available for export, consideration must be given to demand on the Labrador system and the resulting quantity of power available for the Island.

The Consumer Advocate also submitted that consideration must be given to the requirement that Island demand be supplied in a reliable and secure manner. It was noted that concerns have been expressed that, in the event of the loss of the LIL, Hydro may not be able to rely on 300 MW of emergency power over the Maritime Link, and that this may have repercussions relating to the amount of power available for export. According to the Consumer Advocate this area requires further study.

The Island Industrial Customer Group noted the 2012 amendments to the *EPCA* may have been intended as a barrier to self-supply by the Industrial customers but suggested that the potential for self-supply merits consideration in terms of potential system benefits as it “could avoid the need of other expenditures by the utility to ensure reliable service and might even serve as a source of additional capacity to the system in emergency circumstances”.¹⁷

The Labrador Interconnected customers noted that the Island Interconnected system and the Labrador Interconnected system have different rates, cost structures and elasticities of demand and, based on OC2013-343, Labrador Interconnected ratepayers are not paying any of the costs of the Muskrat Falls Project. According to the Labrador Interconnected customers any price elasticity of demand will be more precise if applied only to the Island Interconnected system.

3.4 Other Suggestions and Comments

Newfoundland Power proposed that the Board also consider examining whether changes to depreciation methodologies and asset service lives could reduce annual costs to customers. It was noted that depreciation expense is a significant component of Nalcor’s annual revenue

¹⁷ Island Industrial Customer Group Submission, page 4.

requirement for the Muskrat Falls Project. While the actual expense has not been verified Newfoundland Power estimated, based on information provided by Nalcor, that depreciation expense comprises approximately \$246 million, or 30% of Nalcor's annual revenue requirement for the Muskrat Falls Project in 2021.

The Consumer Advocate also made a number of suggestions regarding ways to mitigate rates:

- Performance based regulation or some other form of price regulation should be considered.
- A plan should be implemented to spread the burden of Muskrat Falls over a number of years.
- Whether Hydro's exclusive right to sell power in the province should continue.
- Whether Newfoundland Power should be given the opportunity to purchase and sell electricity as a means to lower costs.
- Examination of any mitigation revenue that could be available from privatization within Nalcor's current business.

The Consumer Advocate also suggested the establishment of a Regional Transmission Organization for the Atlantic provinces, and possibly Quebec, similar to that in use in the United States to coordinate transmission sales of power between Atlantic provinces and the United States. According to the Consumer Advocate the establishment of a Regional Transmission Organization could offer potential benefits of reducing tariff transmission charges and the benefits of sales of Muskrat Falls Power to the New England Power Pool would be significantly impaired if there is a requirement to pay the transmission charges of each jurisdiction along the sales path.

The CFIB raised a number of issues concerning the use of demand charges for small business and the potential cross-subsidization by small-medium size enterprises to other electricity rate classes.

4.0 BOARD COMMENTS

This interim report sets out the preliminary findings of the Board in relation to mitigating the impact of the Muskrat Falls Project on electricity rates in the province up to the year 2030. Once Muskrat Falls begins operation in 2021, rates on the island are expected to increase substantially to recover the costs of the project. Based on the most current estimate of the Muskrat Falls Project costs it is expected that the average retail rate paid by customers of Newfoundland Power after commissioning of the project will increase to 22.89 cents per kWh. This would be a 10.63 cents per kWh increase from the current average unit cost rate of 12.26 cents per kWh.¹⁸ It is also expected that there would be similar rate increases for other customers.

The Reference sets out that:

Government's position is that the projected rate increases associated with Muskrat Falls Project costs are not acceptable. Without intervention, these projected rate increases would likely cause financial hardship for customers in all rate classes on the island portion of Newfoundland and Labrador ("Ratepayers"). With the assistance of the Board, the Government of Newfoundland and Labrador wishes to examine options to reduce the impact of the Muskrat Falls Project on rates.

The Board has been directed to review and report on options to reduce the impact of the Muskrat Falls Project on rates. While there has been no expressed policy on the extent to which rates may be mitigated, Hydro has stated that one potential target may be the expected Atlantic Canadian average retail customer rate of 16-18 cents per kWh.¹⁹ Hydro has estimated that each 1 cent per kWh in rate mitigation would require approximately \$70 million per year in funding.²⁰ Using this estimate the annual shortfall to be covered to maintain retail rates at the current level of 12.26 cents per kWh would be approximately \$744 million, and to maintain rates at between 16-18 cents per kWh the annual shortfall would be between \$342 million and \$483 million.

In answering the Reference Questions the Board was directed to consider the power policy of the province as set out in the *EPCA* which, among other things, requires that all sources and facilities for the production, transmission and distribution of power should be managed and operated in a manner that would result in the most efficient production, transmission and distribution of power and that would result in power being delivered to consumers in the province at the lowest possible cost consistent with reliable service. In addition the *EPCA* requires that, in implementing the power policy, the Board shall apply tests which are consistent with generally accepted sound public utility practice.

The Island Industrial Customer Group submitted that the overall analysis and ultimate results derived from the Reference should be guided by the power policy of the province set out in section 3 of the *EPCA*, and commented:

The IIC group acknowledge that the Board's powers to oversee the implementation of this central power policy objective (which is abbreviated in these comments to "least cost

¹⁸ Hydro 2017 General Rate Application. Hydro Supplemental Evidence – Customer Impacts Reflecting 2017 General Rate Application Settlement Agreements (Revision 1 – August 3, 2018), July 20, 2018, page 14.

¹⁹ Ibid. Hydro referred to the various news coverage in the spring of 2018 where this target rate was discussed.

²⁰ Ibid, page 20.

reliable service") and of other aspects of the power policy mandated by section 3 of the EPCA, have been constrained by various directions, exemptions and statutory amendments by government over the years. Now is not the time to question the past advisability of or past necessity for such constraints. However, going forward, the IIC Group respectfully submit that it should be a primary objective of this Reference to identify where such constraints will, if left unmodified, be inimical to the central power policy objective of least cost reliable service.²¹

According to the Island Industrial Customer Group ratepayers should be the primary beneficiaries of rate mitigation measures and they should not be required to subsidize other Government or utility objectives. The Consumer Advocate also cited the legislative provisions and general rate-making principles related to the provision of reliable power at the lowest possible cost, the recovery of prudent costs incurred for the provision of service and the requirement for rates to be reasonable.

As noted previously the Muskrat Falls Project and Nalcor are exempt from the jurisdiction of the Board and as such are not subject to regulatory oversight in the same manner as Hydro and Newfoundland Power. Newfoundland Power also raised Nalcor's exemption from the provisions of the *EPCA* and regulation by the Board and submitted that any restructuring of Nalcor should also consider the level of regulatory oversight which is required to ensure the interests of customers are protected. While the current legislative framework and directions from Government exempt Nalcor and the Muskrat Falls Project from regulatory oversight, the express direction to the Board in the Reference to consider the power policy of the province as set out in the *EPCA* provides the lens through which the Board will consider the identified options and respond to the Reference Questions.

Preliminary Findings

This interim report addresses the Board's preliminary findings with respect to Questions 1 and 2 of the Reference. These findings are based on the preliminary work of the Board's consultants and the submissions and comments filed in relation to this work. The Board notes that these submissions and comments generally accepted that the work completed by Liberty and Synapse to date is reasonable in the circumstances.

It is important to recognize that both Liberty and Synapse were very clear that further work is required before any conclusions can be reached with respect to rate mitigation options. Liberty stated that all of the identified measures warrant further investigation but are contingent on the further analysis which is required to validate the size of the revenue requirement reduction. Liberty also noted that some of the measures depend on parties outside of Nalcor and Hydro and that many measures require detailed evaluation to verify whether barriers and constraints can be addressed. Synapse similarly emphasized that its findings are preliminary and are based upon the information gathered and analysis conducted in a very short timeframe and therefore conclusions and recommendations on rate mitigation options should be based on the results of the work at the end of this Reference.

²¹ Island Industrial Customer Group Submission, pages 1-2.

The Board notes that the range of issues to be addressed in this Reference are extensive and the potential variables and constraints require a great deal more work before a conclusion can be reached as to the best approach in the circumstances. The financial, legislative and contractual issues which are raised by many of the options that have been identified are complex and require further analysis and the consideration of various interests and perspectives.

Question 1 - Cost Savings and Revenue Opportunities

The primary focus of the preliminary work of Liberty and Synapse was to identify opportunities for cost savings and revenue enhancement across all activities and operations of Nalcor and its subsidiaries. Potential rate mitigation measures were identified with respect to Muskrat Falls Project financing, the application of export sales revenue, returns and dividends, organizational and operational effectiveness at Nalcor and Hydro, electrification and CDM.

Based on the information gathered to date there are significant opportunities for rate mitigation associated with financing, and the application of export sales revenue and returns and dividends in relation to the Muskrat Falls Project, including:

- changes to the capital structure associated with the Muskrat Falls Project;
- treatment of Nalcor returns and dividends;
- reduction of Hydro's return, and potentially Nalcor's return related to the Muskrat Falls Project;
- modification of the sinking fund arrangements;
- reduction or deferral of interest payments;
- issuance of new debt; and
- application of export sales revenue to Muskrat Falls Project costs.

According to Liberty the initiatives related to financing offer significant potential since financing costs and returns and dividends make up more than 50% of future revenue requirements. There are, however, significant potential constraints for some of these initiatives that will need to be addressed, some of which may require the cooperation and agreement of other parties. At the same time some of these initiatives are related to policy issues which are subject to few outside constraints. For example Hydro's rate of return could be reduced by rescinding the applicable Order in Council.²² In addition a decision could be taken to apply the returns and dividends and the proceeds of export sales to reduce costs or otherwise mitigate rates. In relation to the proceeds of export sales concerns were raised with regards to the fact that the customers required to pay the full costs of the project will receive the benefits of only a portion of the energy produced. It is noted that all of these initiatives are to a large extent interrelated so that decisions taken with respect to one may impact the others. For example if the allowed returns are reduced it would affect decisions on the capital structures and the issuance of new debt. All of these initiatives offer measureable opportunities for rate mitigation and will be a focus for the Board as this Reference proceeds.

Rate mitigation opportunities have also been identified related to restructuring Nalcor, particularly in relation to combining, in whole or in part, Nalcor and Hydro leadership and

²² In Hydro's 2013 General Rate Application the impact of moving to a return on equity of 8.8% for rate setting was an increase of \$23 million in revenue requirement, including the impact of including rural assets, which was previously excluded.

common services, and combining, in whole or in part, Power Supply and Hydro planning, engineering, design, construction, operations and customer services functions. Based on Liberty's preliminary work there are number of issues and constraints associated with restructuring Nalcor, including issues related to the legislative and regulatory framework and the complex legal arrangements that are in place in relation to the Muskrat Falls Project. Nevertheless the Board believes that there is potential for measurable annual cost savings associated with Nalcor restructuring and this will be an area of focus for the Board as this Reference proceeds. As a part of this work it may be necessary to consider the issues which have been raised with respect to the exemption of Nalcor and the Muskrat Falls Project from regulatory oversight.

As to the efficiency and productivity initiatives in Hydro's operations identified by Liberty, most of these initiatives would require a comprehensive review of a broad range of Hydro's operations and appear to offer the potential for relatively modest cost savings compared to other options. This sort of operational review would best be completed after consideration of the broader structural issues. For example it is possible that determinations in relation to Nalcor restructuring or Newfoundland Power's role in what are current Hydro responsibilities may influence the nature, scope and results of the work that would be undertaken to address some aspects of these initiatives. Further there is a great deal of work to be completed in this Reference to allow the Board to provide its final report by January 31, 2020. The Board's view is that the options with the most potential should receive priority for the next phase of work. In the circumstances the Board will focus on two of the identified efficiency and productivity initiatives; firstly whether there are rate mitigation opportunities associated with expanding Newfoundland Power's role into what are currently Hydro responsibilities, and secondly the operating and maintenance costs to be paid by Hydro for the Muskrat Falls Project.

The Reference specifically requires that the Board review the Muskrat Falls Project operating and maintenance costs. These are significant new costs in relation to this new generating facility which must be paid by Hydro and may offer an opportunity to mitigate rates. The Board notes that the operating and maintenance costs for the Muskrat Falls Project increased from a 2012 forecast of \$34 million to the current forecast of more than \$100 million per year.²³

While this Reference will not involve a full operational review in relation to all of the identified efficiency and productivity initiatives at Hydro they may be raised in relation to other issues being reviewed to the extent that they are determined to be informative to the Board. The Board notes that the efficiency and productivity of the utilities, including Hydro, is a matter which arises routinely before the Board and as such some of the identified issues may be raised in other proceedings.

Electrification offers another significant opportunity for rate mitigation which will be a focus in this Reference. According to Synapse electrification may offer significant opportunity to increase revenues to support the additional revenue requirement associated with the Muskrat Falls Project. A review of electrification potential in the end-use sectors of residential heating, commercial heating and transportation showed potential for increased electricity consumption related to the substitution of electric heat for oil and for increased electric vehicle use. Preliminary analyses suggests potential gross incremental revenue across all sectors of up to

²³ Hydro 2017 General Rate Application, IC-NLH-122, Attachment 1, page 15.

\$115 million by 2030 for a high electrification scenario. Incremental infrastructure expenditures will be required to support electrification and policy decisions with respect to rate structures and incentives will impact the revenue potential estimates.

Preliminary work by Synapse also points to a significant potential to increase export revenue from the sales of surplus energy depending on the level of energy efficiency and electrification achieved. CDM programs that save high-value winter energy would maximize the amount of available surplus energy and resulting export revenues. Synapse estimated the approximate net revenues from export surplus energy sales in 2030 at between \$92 million and \$168 million, depending on the level of electrification and energy efficiency achieved. CDM can also defer future capacity investment which would have a positive impact on future rates. Sales of surplus capacity to external markets also present a potential revenue opportunity.

A number of other potential initiatives for cost savings were suggested in the submissions and comments, such as modifying depreciation related to the Muskrat Falls Project. Some of the additional suggestions may offer opportunities which the Board may determine should be explored further as this Reference progresses.

Question 2 - Available Energy and Capacity

A primary focus for Synapse was to determine the amount of capacity and energy required to meet current and future load on the Island Interconnected system and the amount available from the Muskrat Falls Project to serve this load. Included in this analysis was consideration of the impact on the load of the rate increases associated with recovery of the Muskrat Falls Project costs, enhanced CDM program potential and electrification potential. Synapse reviewed Hydro's and Newfoundland Power's short and long-term load forecasts and found them to be generally reasonable. A slight adjustment was made to Hydro's forecast for the period post 2023. Synapse's base forecast for the province is 9,977 GWh in 2019 declining to 9,598 GWH in 2030 after deducting losses and self-supply by Newfoundland Power and Industrial customers. Synapse noted that this base forecast would be impacted by the elasticity effects of electricity price increases which will be studied further in the next phase.

To determine the amount of surplus energy available for export Synapse subtracted the energy required to meet the province's requirements, including transmission and distribution losses, from the total energy available, including the Muskrat Falls Project. The net energy available for export to each market was then estimated based on the export volume and estimated export market prices after considering market transmission constraints and losses. Synapse determined that, under the current base case assumptions, the available annual export sales volume is approximately 4,000 GWh, which could increase to as much as 4,800 GWH by 2030 if there is significant CDM potential achieved and low electrification.

Synapse also completed a preliminary review of the amount of and potential for capacity exports and determined that 80 MW could be available for delivery over the Maritime Link. Further detailed analysis will be completed in the next phase of work to evaluate the amount and value of potential capacity sales in all markets.

Further analysis on the load requirements for the province proposed by Synapse, which was supported by Nalcor, Newfoundland Power, the Consumer Advocate and the Island Industrial

Customer Group, is necessary before any conclusions can be reached in relation to the amount of energy and capacity for load and export.

Conclusion

At this stage of the Reference it is clear that there are a number of initiatives which offer opportunities to mitigate the significant rate increases expected with the commissioning of the Muskrat Falls Project. While a great deal of work has already been completed it is not yet possible to conclude as to the magnitude of the potential rate mitigation offered by these initiatives or whether the constraints and barriers associated with each can be addressed. It is clear that there is a significant annual shortfall to be covered in the range of \$744 million to \$342 million to maintain rates at the current levels or at average Atlantic Canadian rate levels. Such a large revenue shortfall and resulting increase in estimated rates is extraordinary and there is no one rate mitigation initiative that will generate enough cost savings or revenue to meet this shortfall. To put this in context it is expected that when the Muskrat Falls Project is commissioned the rates for retail customers of Newfoundland Power will be almost double the current rates. As stated in the Reference it is the Government's view that the projected rate increases are not acceptable and that, without intervention, would likely cause financial hardship.

The work to be completed in this Reference will focus on those issues which appear to offer the best opportunity to mitigate the impact of the Muskrat Falls Project on rates. Potential initiatives relate to financing, returns and dividends, Nalcor restructuring, the transfer of certain responsibilities to Newfoundland Power, operating and maintenance costs for the Muskrat Falls Project, electrification and export sales revenue. Many of these initiatives are associated with a number of issues and constraints that will have to be addressed. It is clear at this stage that there is significant work left to do before any conclusions can be drawn.

While work for the Reference is ongoing Government may, in the meantime, consider a number of the broader structural and policy issues. As submitted by the Island Industrial Customer Group:

The IIC Group support such a focus for Phase 2, but would go further to request that the Board, by its interim Phase 1 report, emphasize to the Provincial Government the urgent need to initiate its own analysis and to begin negotiations with the Federal Government, and with other stakeholders as necessary. The IIC Group respectfully submit such analysis and negotiations at the government level need not and ought not be delayed until the conclusion of Phase 2 of the Reference.²⁴

In the Board's view early consideration of these issues would ensure that those matters with long lead times can be addressed to get ready for the commissioning of the Muskrat Falls Project. In addition clarity with respect to some of these policy issues would reduce uncertainty and allow a focus on the remaining issues. The policy issues which may be considered include:

- discussions with the Federal government and other stakeholders in relation to the Muskrat Falls Project financing;
- changes with respect to the treatment of revenues from export sales;
- whether returns and dividends can and should be used as an offset to rate increases;

²⁴ Island Industrial Customer Group Submission, page 3.

- Government direction with respect to Hydro's return; and
- whether there should be changes with respect to the regulatory oversight of Nalcor and the Muskrat Falls Project.

The expected rate impacts of the Muskrat Falls Project are extraordinary by any measure. While it is not possible to reach any conclusions as to the best approach in the circumstances, it is clear that some action is required to address these impacts. Further it is likely that no one measure will address the significant gap that is forecast to exist between current rates and the expected rates once the Muskrat Falls Project is commissioned.

Next Steps

The Board is required to file its final report by January 31, 2020. A number of the options to be evaluated require consultation with and information collection from Nalcor and others, including the Consumer Advocate, Newfoundland Power, the Island Industrial Customers and the public. This work will only be possible in this time period with the cooperation of all parties. The Board believes that consultation and cooperation throughout the information gathering and evaluation process is essential in this Reference to ensure all potential options are appropriately evaluated. The Board will therefore establish a consultative process to engage parties during the next phase of work. The Board notes that there are a number of matters currently before it apart from this Reference, including the Reliability and Resource Adequacy Study, which may inform or provide information that could be relevant in this Reference. Any such information arising from these matters will also be considered in this Reference.

The next steps for this Reference will be established by the Board in the coming weeks. The Board will issue a public notice inviting interested parties who wish to be involved in the process to submit a request for standing outlining their interest in the matter, the extent of their participation and the expertise they will offer to the Reference Questions to be addressed. Interested persons who do not request standing or who are not granted standing may file written submissions and letters of comment for the consideration of the Board. The process will be ongoing through the spring and summer. It is anticipated that the consultants will complete their reports by late summer 2019. A public hearing will be held in the fall.

**Reference Questions to the
Board of Commissioners of Public Utilities
Rate Mitigation Options and Impacts**

The June 23, 2017 update on the Muskrat Falls Project by Nalcor Energy indicates the capital cost and during-construction financing costs of the Muskrat Falls Project have risen to \$12.7 billion, which is more than double the estimated costs submitted to the Board of Commissioners of Public Utilities (the “**Board**”) in the 2011 reference question, when the Board was asked to compare the Muskrat Falls Project and an isolated-island alternative. The obligations under the Federal Loan Guarantee, dated November 30, 2012, place the financial burden of the Muskrat Falls Project on Newfoundland and Labrador ratepayers. As a result, the June 23, 2017 update forecasts that, without taking mitigating actions, rates for domestic customers on the Island of Newfoundland will increase to 22.89 cents per kilowatt hour in 2021, and related increases are expected for other Island rate classes. This rate increase is primarily attributable to the impact of cost recovery required for the Muskrat Falls Generating Station, Labrador Transmission Assets, and the Labrador Island Link projects, collectively known as the Muskrat Falls Project (the “**MFP**”), which was exempted from oversight by the Board on November 29, 2013.

Government’s position is that the projected rate increases associated with Muskrat Falls Project costs are not acceptable. Without intervention, these projected rate increases would likely cause financial hardships for customers in all rate classes on the island portion of Newfoundland and Labrador (“**Ratepayers**”). With the assistance of the Board, the Government of Newfoundland and Labrador wishes to examine options to reduce the impact of the Muskrat Falls Project on rates.

To assist with Government’s approach to this issue, pursuant to section 5 of the *Electrical Power Control Act, 1994*, the Government of Newfoundland and Labrador hereby refers the following matter to the Board:

The Reference Questions

The Board shall review and report to the Minister of Natural Resources on:

- 1) Options to reduce the impact of MFP costs on electricity rates up to the year 2030, or such shorter period as the Board sees fit, including cost savings and revenue opportunities with respect to electricity, including generation, transmission, distribution, sales, and marketing assets and activities of Nalcor Energy and its Subsidiaries, including NLH, Labrador Island Link Holding Corporation, LIL General Partner Corporation, LIL Operating Corporation, Lower Churchill Management Corporation, Muskrat Falls Corporation, Labrador Transmission Corporation, Nalcor Energy Marketing Corporation, and the Gull Island Power Company (together the “**Subsidiaries**”, and collectively with Nalcor Energy, (“**Nalcor**”));
- 2) The amount of energy and capacity from the MFP required to meet Island interconnected load and the remaining surplus energy and capacity available for other uses such as export and load growth; and

3) The potential electricity rate impacts of the options identified in Question 1, based on the most recent MFP cost estimates.

These questions are the “**Reference Questions**”. In answering the Reference Questions, the Board shall consider the power policy of the province, as set out in the *Electrical Power Control Act, 1994*, and the following:

- new and existing sources of Nalcor income that could be put towards reducing rate increases, including income from:
 - Nalcor power exports, including those from generation assets it owns or controls, the MFP, and Churchill Falls recapture power, taking into account any export-related costs such as those relating to Nalcor Energy Marketing; and
 - any other effective opportunities to find synergies, efficiencies and reduce duplication and costs within Nalcor and its subsidiaries.
- whether it is more advantageous to Ratepayers to maximize domestic load or maximize exports. Depending on the Board’s recommendation, provide options for:
 - increasing domestic load, such as:
 - The electrification of industrial facilities and oil-fueled boilers in heating plants; and
 - Incentives for increased electrification and usage by NL ratepayers, including increasing number of ratepayers, electric vehicles and electric heating; or
 - increasing exports, such as:
 - Incentives for energy conservation, including for lowering system peak demand to maximize system capacity reserves, in order to increase availability of energy and capacity for export.
- forward-looking cost savings and opportunities for increased efficiency related to operating and maintenance of MFP.
- what are industry best practices related to external market purchases and sales of electricity.

On November 20, 2017, the Government of Newfoundland and Labrador issued the *Commission of Inquiry Respecting the Muskrat Falls Project Order* under the *Public Inquiries Act, 2006*. As part of its mandate, the Commission of Inquiry is required to examine the sanction and execution of the MFP. Therefore, to avoid duplicating the work of the Commission of Inquiry, the Board shall not review MFP construction costs in answering the Reference Questions.

Where the Board determines that information required by the Board for this review is commercially sensitive information, as defined in the *Energy Corporation Act*, and the Board also determines that the release of such information would significantly harm the competitive position of, interfere significantly with the negotiating position of, or result in financial harm to Nalcor or a third party, the Board and its experts and consultants may use such information for this review but shall not release such information to any party.

For the purposes of this review, a consumer advocate shall be appointed pursuant to section 117 of the *Public Utilities Act*.

Any costs of the Board in respect of this review, shall be paid by Nalcor Energy, and shall not be considered MFP costs.

The Board shall provide an interim report to the Minister of Natural Resources by February 15, 2019. The interim report shall include the Board's preliminary findings from Questions 1 and 2 with respect to reasonably-anticipated cost savings, and reasonable-anticipated revenue from surplus energy and capacity.

The Board's final report shall be provided to the Minister of Natural Resources by January 31, 2020.

The Minister shall make the reports public.

**Newfoundland and Labrador
Board of Commissioners of Public Utilities
Rate Mitigation Options and Impacts**

Public Comments/Submissions Received

	Name	Address	Date Received
1	PG	St. John's, NL	January 3, 2019
2	BP	Unknown	January 3, 2019
3	AS	Corner Brook	January 3, 2019
4	CR	Unknown	January 3, 2019
5	SB	Unknown	January 8, 2019
6	JM	Unknown	January 8, 2019
7	Wilfred Bartlett	Green Bay South	January 9, 2019
8	RHE	St. John's, NL	January 17, 2019
9	Dennis Browne, Q.C. Consumer Advocate	St. John's, NL	January 18, 2019
10	Senwung Luk Partner – Olthuis, Kleer, Townshend LLP Labrador Interconnected Customers	Toronto, ON	January 18, 2019
11	Jon Seary Drive Electric NL	St. John's, NL	January 18, 2019
12	Jabez Lane International Brotherhood of Electric Workers (IBEW) Local 1615	Mount Pearl, NL	January 18, 2019
13	Byron Chubb Newfoundland Power Inc.	St. John's, NL	January 18, 2019
14	Vaughn Hammond Canadian Federation of Independent Business (CFIB)	St. John's, NL	January 18, 2019
15	Paul L. Coxworthy Stewart McKelvey Island Industrial Customers	St. John's, NL	January 18, 2019
16	RBB	Unknown	January 22, 2019

**NOTE: Initials and general address used to protect confidentiality of personal information.*

Newfoundland & Labrador

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