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February 23, 2015

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Via Electronic Mail and Courier

Newfoundland and Labrador Board
of Commissioners of Public Utilities
120 Torbay Road
P.O. Box 21040
St. John's, NL A1A 5B2

Attention: Ms. G. Cheryl Blundon, Director of Corporate Services and Board Secretary

Dear Ms. Blundon:

Re: Newfoundland and Labrador Hydro - Amended General Rate Application – Island Industrial Customer rates, effective March 1, 2015

These are the submissions of the Island Industrial Customers Group or IIC Group (Corner Brook Pulp and Paper Limited, North Atlantic Refining Limited and Teck Resources Limited) regarding the Hydro's Application for interim rates for Island Industrial Customers effective March 1, 2015.

The IIC Group would refer to its previous submissions on December 11, 2014 and December 18, 2014 (including, on the latter date, a separate filing of the evidence of Mr. Patrick Bowman of InterGroup), in relation to Hydro's previous interim rates proposal, to have been effective January 1, 2015. The IIC Group acknowledge that Hydro's new proposal takes into greater account the concerns expressed in the December 2014 IIC Group submissions with respect to rate shock, forecasted (lower) fuel prices, and the reasonable expectation that existing positive (in favour of the Hydro customer) balances in the RSP be applied to mitigate interim rate increases.

The 2013 Orders-in-Council

The IIC Group also acknowledge that the Board has been given direction, by the 2013 Orders-in-Council, to phase-in island industrial customer rates, based on Hydro's general rate application, over a three-year period, and to apply the Government-directed allocation of the pre-September 2013 load variation surplus for the purposes of that phase-in.

It is further directed by the 2013 Orders-in-Council that, notwithstanding the phase-in direction, the island industrial customers are subject to RSP rate changes in accordance with the Board-approved methodology, starting from January 1, 2014. As the IIC Group have previously submitted, the Orders-in-Council do not direct what the Board-approved RSP methodology should be.

The Board's jurisdiction with respect to the RSP methodology

As held by the Court of Appeal in *Newfoundland and Labrador Hydro* v. *Newfoundland and Labrador (Board of Commissioners of Public Utilities)*, 2012 NLCA 28 (CanLII), the RSP methodology (rules) may be made interim (as a component of interim rates) and in approving such interim rates/RSP rules, the Board is not jurisdictionally constrained by previous Board-approved RSP methodologies.

With reference to the foregoing submissions, the IIC Group submit that it is within the jurisdiction of the Board to order, in the context of interim rates,

(1) that a portion of the 2014 year-end (segregated) load variation balance, which as of December 31, 2014 stood at approximately $36 million, be allocated to the island industrial customers, to reduce the island industrial customer 2014 year-end current balance (deficit) of approximately $6.8 million; and

(2) that a portion of the Industrial Customer RSP Surplus (as allocated by the 2013 Orders-in-Council, and standing at approximately $10.9 million at 2014 year-end) be applied to eliminate any of the island industrial customer 2014 year-end current balance (deficit) still remaining after (1) above.

The IIC Group submit that such orders would be entirely consistent with the Board's jurisdiction to apply an interim Board-approved RSP methodology (for the purpose of mitigating rate shock) and with the Government's direction that island industrial customer rates be phased-in. These two approaches are not contradictory, but rather are complementary.

Hydro has derived a $2.1 million allocation of the RSP load variation balance, based on energy ratios for the previous 12 months as between the island industrial customer class and Newfoundland Power, to be applied to reduce the island industrial customer 2014 year-end current balance (deficit). The IIC Group has previously acknowledged that, in the context of full consideration of the load variation issue and of all other rate issues by a general rate application (GRA), an allocation in accordance with energy ratios of post-GRA load variation may be more appropriate than load variation allocation by customer class (although the IIC Group have submitted and presently anticipate that they will continue to submit in the upcoming GRA that the most appropriate course would be to do away with the load variation component of the RSP entirely). The $2.1 million allocation is the <u>minimum</u> which the island industrial customers can expect will be allocated to their benefit from the 2014 year-end segregated load variation balance. However, the IIC Group do not accept that Hydro's proposed energy ratio approach necessarily dictates the <u>maximum</u> limits of what can or should be applied for the benefit of the island industrial customers from the segregated load variation balance accruing <u>prior to</u> the implementation of a new GRA-approved RSP methodology.

It is neither reasonable nor necessary, in the context of an application for interim rates, that the island industrial customers be faced with the invidious choice of either acquiescing to a de facto final allocation of the current segregated load variation balance, in accordance with Hydro's proposed energy ratio approach, prior to a GRA where they reasonably expected a full and fair opportunity to make submissions on this issue, on the one hand, or should they not so acquiesce, be subjected to higher-than-warranted interim rates effective March 1, 2015.

Allocations of load variation balances other than in accordance with Hydro's proposed energy ratio approach can be reasonably contemplated; the fact that the Board has previously ordered a different allocation methodology, in previous GRAs, makes this evident. As a further example, an allocation of the pre-September 2013 load variation balance other than in accordance with energy ratios was implemented by the 2013 Orders-in-Council, as being necessary "to phase-in island industrial customer rates, based on Hydro's general rate application".

To be clear, the IIC Group do not object to the interim allocation of the 2014 year-end segregated load variation balance, to the extent the Board accepts is necessary to implement the interim rates for other customer classes, as well as for the island industrial customers. However, it is respectfully submitted it is premature and, in the context of interim rates unnecessary, to make a final determination that the island industrial customers opportunity to benefit from the segregated load variation balance is limited to their share as derived from Hydro's proposed energy ratio approach.

Interpretation of the Orders-in-Council

The IIC Group have had the opportunity to consider the February 18, 2015 submissions of the Consumer Advocate, and wish to make the following comments on those submissions:

1. The Consumer Advocate's position that IC rate phase-in steps must occur on September 1 in each year of the 3-year phase-in period is not a direction given by the Orders-in-Council, nor is it a reasonable interpretation of the Orders-in-Council provisions. The Orders-in-Council provide that "*Effective September 1, 2013, Island industrial customer rates will no longer be frozen. Effective on this date rate increases for island industrial customers will be phased in over a three year period...*". While it is reasonable to interpret the foregoing direction as intending that the last phase-in step be effective September 1, 2016, it does not require each intermediary phase-in step to occur on the anniversary of September 1, 2013, nor does it dictate the number of intermediary phase-in steps (except for Teck Resources, and even in that case only to the extent this can be done "to a reasonable degree"). It is noteworthy that the Consumer Advocate, in his December 11, 2014 submissions on the previous Hydro interim rate proposal, did not take the position that the next rate phase-in step was required to occur retroactively on September 1, 2014, and was in agreement with Hydro's proposal to have the next IC rate increase be effective on January 1, 2015.

2. At page 7 of his February 18, 2015 submission, the Consumer Advocate states the following as a reason not to order the interim rates proposed by Hydro: "*The IICs did not have a rate increase from 2008 through August 2013... Conversely, Newfoundland Power customers have been subjected to annual rate adjustments to reflect increased fuel costs since the 2007 test year.*" The foregoing was an issue addressed by the Orders-in-Council, and the allocation thereby of the preponderance of the pre-September 2013 load variation balance to the benefit of the retail customers.

3. Similarly, the Consumer Advocate's reference in paragraph 3) page 7 of his February 18, 2015 submission to a "subsidy" of the island industrial customers by the allocation to them of a portion of the pre-September 2013 load variation balance (a lesser portion, it should be noted, than would have been the case under the Board-approved RSP methodology at the time) was an issue determined by the Orders-in-Council.

Interim rates effective March 1, 2015

Subject to the specific objections expressed below with respect to the impact of the proposed Corner Brook Pulp and Paper (CBPP) specifically assigned charge, the IIC Group do not object to Hydro's proposal ("Alternative 1") in respect of the interim rate increases proposed to be effective March 1, 2015 (which Hydro advises will have a 2.7% rate increase impact for the island industrial customers; however, we note this is an average impact across all industrial customers and will not reflect the actual impact on CBPP, as discussed below).

The IIC Group reserve their right to make submissions, in the upcoming GRA or in any further interim rate proceedings, regarding whether the 4.4% rate increase proposed to be effective on January 1, 2016 and the 10.2% rate increase proposed to be effective on September 1, 2016 are appropriate, and as to how inappropriate rate impacts can be mitigated.

The IIC Group do have significant concerns about a Board order that would result in their facing a rate increase impact of greater than 2.7% on March 1, 2015. It is respectfully submitted that Hydro's application makes evident that it is eminently possible and reasonable to limit the March 1, 2015 interim rate impacts on industrial customers to no more than 2.7%, given the substantial RSP surplus balances available for the purpose of mitigating these rate increases.

Impact of the CBPP specifically assigned charge

Hydro's proposal to implement, in interim rates, Hydro's proposed increase in the specifically assigned charge to CBPP would result in CBPP's effective rate increase impact on March 1, 2015 being 5.1%, as compared to the 2.7% average increase for all island industrial customers. We refer to Exhibit "A" attached, prepared by the IIC Group Consultants InterGroup, which illustrates this impact on CBPP.

Hydro's proposed increase to the CBPP specifically assigned charge has been and is vigorously opposed, as supported by the Pre-Filed Evidence of Patrick Bowman filed in the original 2013 GRA (applicable excerpt attached)

In terms of the significance of this contested issue to the interim rates proposed to be paid by CBPP, it is important to note that in 2001, when the specifically assigned charge was first applied, it comprised 0.4% of CBPP's power bill. If the increased CBPP specifically assigned charge is applied as Hydro proposes in interim rates on March 1, 2015, it would comprise almost 25% of CBPP's power bill.

It is also of significance that

- The specifically assigned charge sends no important price signal (it is paid unrelated to power use levels).

- The impact effective March 1, 2015 for Hydro of imposing the increased CBPP specifically assigned charge in interim rates would be approximately $7,000 per month. This amount is not material to Hydro's current application for revenue requirement relief, but is very material as an interim rate impact to CBPP on a contested rate issue.

- If the Hydro 2013 GRA had proceeded as originally filed in July 2013, the issue of what is the appropriate specifically assigned charge for CBPP would in all likelihood have been addressed by this point.

The IIC Group are therefore submitting that, in the proposed interim rates, the rate increase to CBPP attributable to the increased CBPP specifically assigned charge should be disallowed. We refer to Exhibit "B" attached, prepared by InterGroup, which illustrates the impact of this disallowance for CBPP rates (which we note would align the impact on CBPP more closely to the impact of interim rates for the other island industrial customers).

Costs

The IIC Group submit that their participation in these proceedings, with the assistance of legal counsel and of their consultants Intergroup, has been necessary. Moreover, the IIC Group's participation in this Application should be considered in the context of 2 previously unsuccessful applications by Hydro for interim rates and of the delayed and amended General Rate Application; this context has only added to the complexity of the information to be reviewed and the issues to be considered. The IIC Group respectfully submit that these considerations merit an order for costs in favour of the IIC Group, in the present Interim Rate Application, regardless of how the Application may ultimately be disposed of by the Board.

All of which is respectfully submitted.

Yours truly,

Stewart McKelvey

Paul L. Coxworthy

PLC/kmcd

c. Geoffrey P. Young, Senior Legal Counsel, Newfoundland and Labrador Hydro
Thomas J. Johnson, Consumer Advocate
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Edward M. Hearn Q.C., Miller & Hearn
Yvonne Jones, MP, Labrador
Genevieve M. Dawson

Exhibit "A"

Rate Impact Estimate for March 2015

	At Existing Rates	March 1, 2015 Proposed Interim Rates				
		At March 1, 2015 Proposed Rates	Recovered through RSP Surplus Credit Adjustment	March 1, 2015 Rate after RSP Surplus Credit Adjustment	Change	Increase/ Decrease %
	$000	$000	$000	$000	$000	%
		Alternative 1 with 85%				
Monthly bill estimate for CBPP						
Base Rates						
Energy (cents/kW.h)	3.676	4.114	-0.372	3.742	0.066	
Demand ($/kW)	6.68	8.38	-1.45	6.94	0.255	
Load	March					
Power on Order (kW)	9,000					
Sales (kW.h)	3,800,000					
Base Rate revenues						
Energy	139.7	156.3	-14.1	142.2	2.5	1.8%
Demand	60.1	75.4	-13.0	62.4	2.3	3.8%
Subtotal of Base Rate revenues	199.8	231.8	-27.2	204.6	4.8	2.4%
Specifically Assigned Charges	28.9	74.3	-38.5	35.7	6.8	23.5%
Total Monthly Bill	228.7	306.0	-65.7	240.3	11.6	5.1%

2015	Sales (MWh)	Power on Order (kW)
January	3,800	9,000
February	3,400	9,000
March	3,800	9,000
April	3,700	9,000
May	3,800	9,000
June	3,700	9,000
July	3,800	9,000
August	3,800	9,000
September	3,700	9,000
October	3,800	9,000
November	3,700	9,000
December	3,800	9,000
Total	44,800	

Notes:

1. Proposed Rates as per Hydro's January 28, 2015 Interim Rate Application (Alternative 1).
2. The revenue estimates do not include impact of recovery of deferred costs (CDM, 2014 Revenue Deficiency and 2014 Capacity Assistance).

PRE-FILED TESTIMONY OF

P. BOWMAN AND H. NAJMIDINOV

IN REGARD TO NEWFOUNDLAND & LABRADOR HYDRO

2013 GENERAL RATE APPLICATION

Submitted to:

The Board of Commissioners of Public Utilities

on behalf of

Island Industrial Customers Group

Prepared by:

InterGroup Consultants Ltd.

500-280 Smith Street

Winnipeg, MB R3C 1K2

April 28, 2014

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7.0 CORNER BROOK PULP AND PAPER FREQUENCY CONVERTER

In the previous GRA, Hydro directly assigned $0.347 million per year to CBPP in charges related to the Corner Brook Frequency Converter. In the 2013 GRA, this is proposed to increase to $0.945 million per year[111].

In this proceeding there are four overlapping and related issues with respect to the Corner Brook Frequency Converter:

1) The costs of this Converter (both capital related costs, and allocated operating and maintenance costs) have increased by an extraordinary amount since the previous GRAs. According to the forecast costs recent capital improvements have not provided any operational or maintenance efficiencies.

2) Despite this massive investment, the unit continues to perform well below specifications, to the detriment of CBPP operations. Not only is underperformance compared to nameplate capacity an issue, but Hydro further restricts CBPP in the use of the unit to a level well below its current known capability.

3) The unit's costs remain 100% allocated to CBPP, consistent with an approach adopted when the costs of the unit were trivial by comparison.

4) The underperformance of the unit not only disadvantages CBPP's ability to make use of the device, but also to the detriment of the Island Interconnected System to receive valuable capacity/reliability resources from the CBPP generation, and for CBPP to receive appropriate credit for the capacity resources they can provide to the grid.

This Section consists of the following:

- Background;
- Status Since the Last GRA;
- Role of the Frequency Converter;
- Proposed 2013 Frequency Converter Costs; and
- Conclusions.

7.1 BACKGROUND

Corner Brook Pulp and Paper owns and operates an industrial operation as well as a hydraulic generation plant. Both components (mill and hydro plant) have resources that operate at the typical 60 Hz, as well as at 50 Hz. The 50 Hz resources were established at a time before the completion of the Bay D'Espoir

[111] Please see Table 7-2 of this section.

Generating Station, at a time when vast areas of the Island were not interconnected, and the various isolated zones of the island operated at a mixture of 50 Hz and 60 Hz power.

A detailed background on the function and role of the frequency converters is provided in Appendix C to this evidence.

During the 2001 GRA, information was provided that a primary component of the development of the Bay D'Espoir Generation Station and the core Island transmission grid in the 1960s was the need for large frequency converters. These units were required to integrate 50 Hz generation and loads with 60 Hz generation and loads. Without the converters, the grid would have had to be developed at a higher cost to provide permanent 50 Hz and 60 Hz generation and transmission through the various areas of the new Island Interconnected system. The development of the single frequency system would not have occurred had the frequency converters not been installed. In 2001, it was confirmed the benefits of converters as follows[112]:

i. The frequency converters allowed interconnection of the various loads to make the Bay D'Espoir and island transmission network possible; in particular, this allowed the benefit of "gridding" for the benefit of the entire Island.

ii. The frequency converters would provide additional benefits to the overall grid including frequency and voltage regulation.

Before the 2001 GRA, the cost associated with the frequency converter was assigned as "common" to all Island customers, reflecting that they were a historical asset that provided common, widespread and permanent benefits to the entire Island Interconnected System, as an integral part of the legacy decision to develop an integrated grid. Regardless as to which customers used 50 Hz power and which used 60 Hz power at a given moment in time, all customers benefit from the decision to invest in frequency converters as opposed to a Balkanized system.

In 2001, reflecting the view that less and less customers were using 50 Hz power, Hydro proposed that all costs should be specifically assigned to the remaining industrial customers, Abitibi and CBPP. At that time the cost of the frequency converter to CBPP was $69,031 per year[113], or approximately 0.4% of the total annual CBPP power purchases from Hydro. Note that this compares to the 2013 proposed level of $944,954 per year, or over 16% of what CBPP pays for power purchases from Hydro, a 40-fold increase in impact on CBPP since the time that the cost allocation method was last adjudicated. In that 2001 GRA, the Board approved the specific assignment of the converter to CBPP.

7.2 STATUS SINCE THE LAST GRA

Since the 2006 GRA, the Corner Brook Frequency Converter has been the subject of substantial condition assessment work and capital spending, without achieving expected levels of performance.

[112] Please see Appendix C.

[113] IC-NLH-41 Rev.2 from the 2001 GRA.

Hydro's 2011 Capital Budget [114] notes that CBPP`s Frequency Converter is a 25 MVA rotating motor-generator set which was put in-service in 1967. During Hydro's 2007 Capital Budget review, Hydro provided a copy of the final report prepared by Acres International Limited on Condition Assessment of 50/60 Cycle Frequency Converter (September 1998)[115]. This document states that the unit was operating "at approximately 20 MVA maximum output, about 2/3 of its rating". The report also notes that "the machine should be able to operate up to its rating of 28 MVA if it were cleaned."

With regard to the above reports, two items are noted:

- **Spending:** Since 2006, based on Acres assessment as well as Hydro's own assessment[116], Hydro indicates it has spent approximately $4.2 million[117] on the frequency converter. Hydro's response to IC-NLH-099 provides a list of projects undertaken for Frequency Converter for the 2007-2011 years. Although the current method of allocating these costs is 100% to CBPP, Hydro notes at IC-NLH-100 that it does not make a practice of communicating or consulting with the affected customer in regard to the capital work or its rate impacts, except as part of the overall capital budget reviews.

- **Capability:** The above cited reports note that the nameplate capacity of the Frequency Converter is either 25 MVA or 28 MVA. No reconciliation of the difference between the 25 MVA and 28 MVA ratings have been provided. In other recent documents, Hydro indicates the capacity of the Frequency Converter is 20 MW[118]. Further, during the recent supply disruptions it is our understanding that Hydro recommended the converter be operated to a 22.5 MW level to provide benefit to other customers. In contrast to all of the above ratings, Hydro's contractual conditions imposed on CBPP's use of the Frequency Converter specify that the unit is to be restricted to 18 MW, which is cited as the "normal maximum capability of Hydro's 50/60 Hz frequency converter"[119]. The use of the 18 MW cap also appears inconsistent with all assessments and evidence to date, including the 2013 Capital Budget Application which noted that Hydro "...completed and Engineering Condition Assessment study in 2005 and to this date (2010) most of the recommendations have been completed"[120] which one may reasonably expect to mean that the units were restored to proper working order.

Of particular note, the most recent capital project on the Frequency Converter is a remote vibration monitoring system, which was intended to improve on the effectiveness and reduce the "labour intensive"

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[114] Volume I, page C-151.

[115] 2007 Capital Budget, RFI PUB-NLH-44, http://www.pub.nf.ca/hydro2007cap/files/rfi/PUB-44.pdf.

[116] Engineering Condition Assessment of the Corner Brook Frequency Converter prepared by Paul Nolan, TRO Engineering Department Newfoundland and Labrador Hydro. Hydro's 2006 Capital Budget Application, Section H3.

[117] Based on projects included in Hydro's Capital Budget Applications.

[118] As per NLH Review of Supply Disruptions and Rotating Outages Report, Volume II, Schedule 11, page 12 "Coordination and Communication with Customers". March 24, 2014.
http://publicinfo.nlh.nl.ca/Isl%20Int%20System%20Hearing%202014/March%2024-14%20Reports/2%20Review%20of%20Supply%20Disruptions%20and%20Rotating%20Outages%20Volume%20II.pdf.

[119] CA-NLH-005 Attachment 1 page 3.

[120] NLH 2013 Capital Budget Application, page D-180.

manual vibration checks. The project also noted that previous capital work (since 2007) performed on this unit had been of poor quality. In the discussion in support of this project, Hydro notes:

> "Prior to any major improvements on the rotating assets at the Corner Brook frequency converter, there have been very few known problems identified with vibration. When upgrade work on the rotor and stator was performed in 2008, maintenance staff noticed that the upstairs rail would vibrate when the unit was on line. This was a condition that was not present prior to the refurbishment work. Considering the history of vibration problems, and the fact that the unit operated for over a year with an imbalance and misalignments, eventually resulting in a rotor pole failure, it is critical that an online vibration system be installed on this unit"[121].

7.3 ROLE OF THE FREQUENCY CONVERTER

The CBPP operation includes generation resources that are described in Hydro's filed materials[122]. Specifically, CBPP has 81 MW of 60 Hz hydro generation and 56 MW of 50 Hz hydro generation. In 2013 this generation is allocated on a forecast basis as shown in Table 7-1.

Table 7-1: Simplified CBPP 2013 Load Forecast and Hydraulic Generation Allocation (MW)

	60 Hz	50 Hz
Load Forecast in Mill	119	12
Available from CBPP Hydraulic at full gate/full flow	81	56
Surplus/Shortfall	-38	44
Frequency Converted	18	-18
Net Surplus/Shortfall	-20	26
Power On Order from NLH	*20*	
Unused, or Used for Steam Boiler Elements		*26*

For 2013, the CBPP mill projected the need for 119 MW of 60 Hz power and 12 MW of 50 Hz power. Using the hydraulic output of the CBPP resources at full gate, there is 81 MW of 60 Hz generation available. The shortfall of 38 MW must come from either CBPP 50 Hz power that is converted to 60 Hz, or from Hydro purchases. The 50 Hz generation shows a theoretical surplus of 44 MW after the allocation of 12 MW to the 50 Hz generator for use in the mill. This surplus is not available under all flow conditions. Under Hydro's current frequency converter restrictions, only 18 MW of this generation is able to be converted to 60 Hz power. The remaining 26 MW of 50 Hz generating capacity is therefore not available for dedication to mill loads. These units will either (a) be shut off to maximize water available for 60 Hz

[121] NLH 2013 Capital Budget Application, page D-164 to D-165.

[122] Hydro's Review of Supply Disruptions and Rotating Outages Report, Volume II, Schedule 11, page 12 "Coordination and Communication with Customers". March 24, 2014.

generation, (b) be dispatched to produce 50 Hz power for a boiler (generally a lower value use of power), or (c) lead to hydro spillage, depending on the flow condition.

The frequency converters also play a role in overall grid support. The best recent example was during the January power outages, when we understand from discussions with staff at CBPP and Hydro that Hydro adjusted the maximum operating parameters to 22.5 MW in order to maximize the generation made available to all customers to aid in continuity of service. These situations help underline that it is not just CBPP who is benefitting from the capacity delivered through the converter.

It is apparent that the 18 MW limitation imposed by Hydro is economically costly to CBPP, and at times costly to the remainder of the system either in terms of added Holyrood generation, or reduced reliability. At times of high water (as has been the case for much of the past five years) this has the effect of trapping a considerable amount of valuable hydraulic generation into either waste, or lower value uses.

7.4 PROPOSED 2013 FREQUENCY CONVERTER COSTS

Hydro proposes to recognize the annual cost of the Frequency Converter as an increase from $0.347 million/year at existing rates to $0.945 million/year at proposed 2013 rates.

Table 7-2 below provides a breakdown of the specifically assigned charges as proposed in 2013 COS compared to 2007 COS.

Table 7-2: Comparison of CBPP Specifically Assigned Charges: 2013 COS vs 2007 COS ($)[123]

CBPP Specifically Assigned Charges Breakdown	2007 COS (Existing until Aug. 31, 2013)	2013 GRA COS	Increase
Operating and Maintenance Expense	140,472	351,968	211,496
Depreciation	59,112	170,812	111,700
Return on Debt	134,076	301,001	166,925
Return on Equity	12,130	118,454	106,324
Gains/Losses on Disposal of Fixed Assets	(included in Other)	3,878	3,878
Other (includes credits and revenue related costs)	1,377	-1,161	-2,538
Total	**$347,167**	**$944,954**	**$597,787**

As the above table, illustrates the rate increase is proposed on the basis of costs in a number of areas, but the largest part of the increase is in O&M expenses. The O&M portion accounts for approximately 35% of the total increase in charges. As per the COS methodology, Hydro has assigned a share of the Island Interconnected O&M expenses to the frequency converter based on share of "average original cost" of the related capital asset. However, the increase in capital cost of the frequency converter is related to the replacement of parts and other overhead costs which, it does not appear, is expected to

[123] Prepared based on Schedule 3.3A of 2007 COS (provided by Hydro in response to IC-NLH-002, 2013 GRA) and 2013 COS.

add any O&M expenses (and in some cases, such as the remote vibration monitoring project, were to have resulted in lower O&M expenses). This is confirmed by Hydro responses to IC-NLH-144 and IC-NLH-145 which show no change in number of FTEs related to the department with responsibility for the facility (the increase in salaries and wages reflects only a general wage increase), and by a comparison of 2007 actual and 2013 forecast maintenance material and supplies for this business unit which shows a decrease from 2007 actuals to 2013 forecast. In short, other than coarse allocation methods, the evidence provides no rationale as to why the Frequency Converter O&M costs are calculated to rise 150% as suggested in the filing.

Cost of Service style allocation methods are intended to reflect a simplified, but still representative, allocation of underlying expenses. In the case of the Corner Brook Frequency Converter, this form of allocation method does not appear to be functioning as intended, as a reasonable proxy estimate. The result is causing a material impact on cost allocation. As such the simplified method should be replaced by a more detailed approach, which has not been undertaken. Pending such evidence, there is no reason to consider the 2013 O&M costs for the Frequency Converter to be higher than 2007 levels, particularly in light of the fact that a number of the capital projects were specifically noted as being intended to reduce operating costs[124].

7.5 CONCLUSIONS

As a result of the above noted factors regarding the Frequency Converter, a series of adjustments are appropriate to Hydro's GRA:

1. **Not Specifically Assign:** The approach of specifically assigning the Frequency Converter to CBPP was only adopted in 2001 (had been assigned as "common" for all periods up to this time) at a time when there was limited financial impact from this decision (0.4% rate impact on CBPP). The financial impact today is materially different (16% rate impact on CBPP). It is clear that the asset is used by CBPP for managing its power resources, but it is also used by all other Island Interconnected customers both during normal situations, when the CBPP generation provides stability and grid support, as well as during emergencies when the CBPP generation can be heavily used to maintain service to all ratepayers. Moreover, regardless as to "use", the asset reflects a necessary legacy component of the existing system, which would not have been able to deliver power cost benefits to all of today's ratepayers without the Frequency Converter having been an integral part of the investment (and further, as set out in Appendix C, without being part of Hydro's "permanent" commitment to the CBPP operator).

2. **Not Include Any Capital Spending Since 2007 in Rate Base:** Given the current contractual limits that Hydro has imposed on CBPP (18 MW) compared to the proper nameplate capacity of the unit (25-28 MVA), there is a clear basis for concern over unit underperformance and whether this degree of investment was prudently incurred. It is clear that each project was approved by the PUB; however, there does not appear to be any references in the respective Capital Budget

[124] For example, upgrades to the starting system and voltage regulator in 2008 were indicated to help address maintenance difficulties. NLH Capital Budget Application, 2008 Page B-87.

Applications that would apprise the Board that the investments were being made in order to achieve inferior unit performance. Until such time as the unit can consistently perform on a planning basis to the 25-28 MVA level (or at minimum the 22.5 MW level recently used in the emergency condition) the capital spending on the unit since 2007 should not be included in Rate Base as it fails the normal 'used, useful and prudently acquired' test.

3. **Revise Allocation of O&M:** The application of a standard cost of service methodology to determine the O&M cost allocation to this facility is driving an increasing allocation of O&M as a result of the new capital spending since 2007. However, there is no evidence that the capital spending drives any associated increase in true O&M activity; on the contrary, it appears at least some portion of the capital spending should have resulted in reduced O&M. For this reason, the cost of service methodology is not resulting in a fair and reasonable allocation of costs, and no added allocation of O&M costs (as compared to 2007) should be included for this facility until such time as Hydro can produce a detailed cost analysis for this facility that justifies the Cost of Service levels. For this reason, the 2013 allocation should be revised to limit the O&M cost responsibility allocation to the same $0.140 million per year level used in 2007.

4. **Revise IC Peak Load for COS:** For Cost of Service load data inputs, as discussed above in regard to peak loads, the inferior performance of the Frequency Converter is driving a need for CBPP to contract for a Power on Order level that is higher than otherwise could be required. Further, the excessively limited contract constraint (18 MW) as compared to the known operating level during a true capacity constrained period (22.5 MW) means that the industrial class is being allocated 4.5 MW of peak costs that should not be assumed to be imposed on the system at peak times. Just as other dispatchable peak capacity resources have been netted out of the Cost of Service load allocations (e.g., NP generation or interruptible loads, whether they actually run or are interrupted at peak times), the industrial load should similarly be revised downwards by at minimum 4.5 MW for this known capacity that can be made available at key times. Further consideration should be given to revising the industrial peak load downwards by 7-10 MW to insulate the industrial class from the negative effects due to the underperformance of the Frequency Converter compared to nameplate ratings of 25-28 MVA.

5. **Consider Revising Contractual Limit:** Consideration should be given to revisiting the 18 MW contractual limit on Frequency Converter use, and in the event this can be safely and reliability increased from the 18 MW level, CBPP should be given opportunity to revise its annual Power on Order at that time without any form of restriction or penalty.

APPENDIX C:
FREQUENCY CONVERTERS BACKGROUND FROM THE 2011 GRA

The following appeared in the argument of the Industrial Customers in the 2001 GRA:

[Hydro's 2001 GRA, Final Submission of Industrial Customers, pages 37-41. The document can be found at http://www.pub.nf.ca/hyd01gra/filings/Jan21/FinArgue/IndFinArgue.pdf]

> What Hydro may wish to regard as simply a plant assignment issue - the treatment of frequency Converters - in fact illuminates the entire history of the development of electric power and the vital role which Industrial Customers have played in that development.
>
> The historical record is reflected in a number of documents, several of which have been produced in response to IC-NLH-56 and IC-NLH-219. Looking initially at the Preliminary Report on Integration of the Bay D'Espoir Power Development and Existing Power Systems into a Newfoundland Network prepared by The Shawinigan Engineering Company Limited for the Newfoundland Power Commission at IC-NLH-219, one notes that in 1963, 72% of the energy generated on the island of Newfoundland was 50 cycle. (p. 3). The consultants also make the significant assumption at p. 2 that areas of 50 cycles, specifically including Corner Brook and Grand Falls, may exist indefinitely. The report goes on to consider a number of schemes to create the grid, which is essentially the grid we have today as described by Mr. Reeves in his evidence. Consideration was given to having 50 cycle generation installed at Bay D'Espoir with conversion at various later dates. However, it was ultimately concluded that a single system with frequency converters as required had the lowest present worth cost, provided a source of emergency power from existing industrial generation facilities and assisted in voltage control. That scheme was recommended both in the initial report and the supplementary report, which notes further advantages at p. 5 including maximum utilization and economy of equipment, best facilitation of the network, improved frequency regulation, simplified and less expensive facilities at Bay D'Espoir, voltage control, no penalty for delayed conversion and no restriction on growth of the 50 cycle system.
>
> In the Power Commission's presentation to the Royal Commission on Electrical Power and Energy in July, 1965, reproduced as part of IC-NLH-56, (which incidentally has an excellent history of the development of the electrical power system in Newfoundland), the vital nature of the 50 cycle issue is highlighted at p. 13 in the final paragraph, and the major efforts of the predecessors of CBPP and Abitibi to assist in the process are acknowledged on p. 14. The presentation to the Atlantic Development Board of Jan. 1965 (also part of IC-NLH-56) confirms at p. 3 that conversion of the paper mills to 60 cycle was impractical and acknowledges the contribution of those customers in absorbing substantial conversion costs. Note also, under Item 6 on p. 14 that the Power Commission (Hydro's predecessor) indicates that two "permanent" frequency converters would be required.
>
> Even in 1982 when Hydro signed a power contract with Bowater Power[133], the parties acknowledged in Article 9.01 that Hydro would continue to provide the converter at

[133] IC-5 - 2nd attachment. From 2001 GRA.

Hydro's expense in order to "continue integration of the generating facilities of Hydro and the Customer and thereby derive benefits for both parties". The converter at Grand Falls is being decommissioned but the one at Corner Brook is still required, primarily to convert 50 cycle generation to 60 cycle for use in the mill, as discussed by Mr. Budgell[134]. Mr. Budgell acknowledges that the converter could serve a purpose in converting 50 to 60 cycle power to provide emergency power to the grid should Hydro require it. He questioned whether CBPP would actually provide same but he did not refer to the contract between CBPP's predecessor and Hydro dated May 15, 1977 (produced in response to IC-NLH-43) on which Hydro still relies in respect of secondary purchases from CBPP. That contract provides in Article 5 that Bowater Power will provide emergency service to Hydro within the limitations of its obligations and requirements. Accordingly, the frequency converter makes a substantial contribution to security on the entire grid, a benefit to all of Hydro's customers. Note also the answer to IC-NLH-58 which speaks of the generation of Industrial Customers contributing to the reliability of the interconnected system. Granting that their contribution is not as great as Bay D'Espoir as the answer suggests, that suggestion itself confirms that there is a contribution from the generation, and that contribution must rely, in part, on the frequency converters.

...

The broader issue, of course, is the historic pact between Hydro's predecessor and CBPP's predecessors which gave birth the grid we all enjoy today. The benefits of a single frequency of generation at Bay D'Espoir are still being felt today. It borders on scandalous to think that Hydro, having accepted the benefits of the costs absorbed by the paper mills in the 1960's in return for converters (which it referred to itself as "permanent"), should now be asking to shed itself of its concurrent obligation to maintain the converters. There were many understandings in place among these parties. Hydro wheels power over CBPP's lines to Newfoundland Power's customers at Pasadena and Marble Mountain (See IC-NLH-57) and receives no recompense; CBPP will need to revisit the issue of wheeling charges if other historic agreements are being abandoned. Hydro relies on its history to justify preferential rates for certain customers in Bay D'Espoir itself; its historic obligations to provide these converters are certainly much more concrete.

[134] Transcript, November 8, 2001 from p. 1 line 81 to p. 7 line 81.

Exhibit "B"

Rate Impact Estimate for CBPP

	At Existing Rates	March 1, 2015 Proposed Interim Rates			Change	Increase/ Decrease %
		At March 1, 2015 Proposed Rates	Recovered through RSP Surplus Credit Adjustment	March 1, 2015 Rate after RSP Surplus Credit Adjustment		
	$000	$000	$000	$000	$000	%
		Alternative 1 with 85%				
Annual rate impact to CBPP - no increase in Specifically Assigned Charges						
Base Rates						
Energy (cents/kW.h)	3.676	4.114	-0.372	3.742	0.066	
Demand ($/kW)	6.68	8.38	-1.45	6.94	0.255	
Load						
Power on Order (kW)	9,000					
Sales (kW.h)	44,800,000					
Base Rate revenues						
Energy	1,646.8	1,843.1	-166.8	1,676.3	29.4	1.8%
Demand	721.4	905.0	-156.1	749.0	27.5	3.8%
Subtotal of Base Rate revenues	2,368.3	2,748.1	-322.9	2,425.3	57.0	2.4%
Specifically Assigned Charges	347.2	347.2	.0	347.2	.0	0.0%
Total Monthly Bill	2,715.5	3,095.3	-322.9	2,772.4	57.0	2.1%

Notes:

1. Proposed Rates as per Hydro's January 28, 2015 Interim Rate Application (Alternative 1). But, assumes no increase in Specifically Assigned Charges.
2. The revenue estimates do not include impact of recovery of deferred costs (CDM, 2014 Revenue Deficiency and 2014 Capacity Assistance).