O'DEA EARLE
INJURY LAWYERS

June 4, 2015

Ms. G. Cheryl Blundon
Board of Commissioners of Public Utilities
120 Torbay Road, P.O. Box 12040
St. John's, NL A1A 5B2

Ladies & Gentlemen:

Re: Newfoundland and Labrador Hydro's 2013 Amended General Rate Application
Re: Pre-Filed Evidence of C. Douglas Bowman

Please find enclosed the original and twelve (12) copies of the Pre-Filed Evidence of C. Douglas Bowman which is being filed on behalf of the Consumer Advocate in relation to the above noted Application.

A copy of the letter, together with enclosure, has been forwarded directly to the parties listed below.

If you have any questions regarding the filing, please contact the undersigned at your convenience.

Yours very truly,

O'DEA, EARLE

THOMAS JOHNSON, Q.C.
TJ/cel

cc: Newfoundland & Labrador Hydro
P.O. Box 12400
500 Columbus Drive
St. John's, NL A1B 4K7
Attention: Geoffrey P. Young, Senior Legal Counsel

Newfoundland Power
P.O. Box 8910
55 Kenmount Road
St. John's, NL A1B 3P6

Attention: Gerard Hayes, Senior Legal Counsel

Vale Newfoundland and Labrador Limited
c/o Cox & Palmer
Suite 1000, Scotia Centre
235 Water Street
St. John's, NL A1C 1B6
Attention: Thomas J. O'Reilly, Q.C.

Towns of Labrador City, Wabush,
Happy Valley-Goose Bay and North West River
c/o Brown Fitzgerald Morgan & Avis
P.O. Box 23135
Terrace on the Square
St. John's, NL 1B 4J9
Attention: Dennis Browne, Q.C.

House of Commons
Confederation Building, Room 682
Ottawa, ON K1A 0A6
Attention: Yvonne Jones, MP Labrador/Christian von Donat

Innu Nation
c/o Olthuis, Kleer, Townshend LLP
250 University Avenue, 8th Floor
Toronto, ON M5H 3E5
Attention: Nancy Kleer

Corner Brook Pulp & Paper Limited,
North Atlantic Refining Limited and
Teck Resources
c/o Stewart McKelvey
Cabot Place, 100 New Gower Street
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St. John's, NL A1C 5V3
Attention: Paul Coxworthy

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9th Floor, Atlantic Place
215 Water Street
St. John's, NL A1C 5N8
Attention: Genevieve M. Dawson

THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

IN THE MATTER OF
the *Public Utilities Act*, RSNL 1990,
Chapter P-47 (the "Act");

AND

IN THE MATTER OF
a General Rate Application (the "Amended Application")
by Newfoundland and Labrador Hydro for
approvals of, under Sections 70 and 75 of the Act, changes
in the rates to be charged for the supply of power
and energy to Newfoundland Power, Rural Customers
and Industrial Customers; and under Section 71 of the
Act, changes in the Rules and Regulations applicable
to the supply of electricity to Rural Customers.

PRE-FILED EVIDENCE OF C. DOUGLAS BOWMAN

June 1, 2015

PRE-FILED EVIDENCE
OF
C. DOUGLAS BOWMAN

Evidence Outline

List of Exhibits

THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

IN THE MATTER OF the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the "Act");

AND

IN THE MATTER OF a General Rate Application (the "Amended Application") by Newfoundland and Labrador Hydro for approvals of, under Sections 70 and 75 of the Act, changes in the rates to be charged for the supply of power and energy to Newfoundland Power, Rural Customers and Industrial Customers; and under Section 71 of the Act, changes in the Rules and Regulations applicable to the supply of electricity to Rural Customers.

PRE-FILED EVIDENCE OF C. DOUGLAS BOWMAN

My name is Doug Bowman. This document was prepared by myself, and is correct to the best of my knowledge and belief. I have been retained by the Government appointed Consumer Advocate to provide expert advice and evidence to the Consumer Advocate in response to Newfoundland and Labrador Hydro's ("Hydro's") Amended 2013 General Rate Application (Amended 2013 GRA).

A summary of my background and qualifications is provided in ***Exhibit CDB-1***. I have both a B.S. and an M.S. in Electrical Engineering from the State University of New York at Buffalo and 38 years of experience in the electricity services and consulting industry. My primary expertise includes electricity services costing and pricing and power sector restructuring, regulation and markets. I am an independent Energy Consultant working out of my office located in Warrenton, Virginia.

Prior to becoming an independent consultant, I was employed by KEMA Consulting, Nexant Inc., Pace Global Energy Services, International Resources Group, CSA Energy Consultants and Ontario Hydro. I have taken part in the regulatory process in the Province of Newfoundland and Labrador on behalf of the Consumer Advocate since 1996, and have submitted testimony before this Board eight times previously as an expert witness on cost of service and rate design at Newfoundland Power's 1996 *Application by Petition for Approval of Certain Revisions to its Rates, Charges and Regulations*, at Newfoundland and Labrador Hydro's 2001 *General Rate Proceeding*, at Newfoundland Power's 2003 *General Rate Application*, at Newfoundland and Labrador Hydro's *2003 General Rate Application*, at Newfoundland and Labrador Hydro's *2006 General Rate Application*, at Newfoundland Power's *2007 General Rate Application*, at Newfoundland and Labrador Hydro's *2009 Application concerning the Rate Stabilization Plan components of the rates to be charged Industrial Customers* and at Newfoundland and Labrador Hydro's *2013 General Rate Application*. I have also appeared twice before the Nova Scotia Utility and Review Board as an expert witness on cost of service and rate design, and while at Ontario Hydro, I was involved with the regulatory process in the areas of generation and transmission planning, demand/supply integration, operations, rate design and customer service.

On July 30, 2013, Hydro filed its 2013 General Rate Application for rates effective January 1, 2014. On April 25, 2014 I filed with the Board Pre-filed Evidence with respect to the 2013 GRA. On June 6, 2014 Hydro filed a letter providing notice to the Board that it would be filing an amended GRA in the fall of 2014. Hydro filed the Amended 2013

GRA with the Board on November 10, 2014. The pre-filed evidence included in this report is filed with respect to Hydro's Amended 2013 GRA filing and supersedes my April 25, 2014 Pre-filed evidence submitted with respect to Hydro's 2013 GRA.

Section 1 of my Pre-filed Evidence summarizes my review of Hydro's evidence with regard to this Application, while **Sections 2 through 17** provide reviews of: customer service strategy, the timing of the next GRA, the RSP, the disposition of RSP balances, the proposed new supply cost variance accounts, Island Industrial Customer rates, the Newfoundland Power wholesale rate, the treatment and design of the NP curtailable rate option and the Island Industrial Customer capacity assistance agreements, the Holyrood capacity factor used in the cost of service study, the loads and test year used in the cost of service study, the rural rate subsidy, the classification of purchases from wind generators in the cost of service study, the Corner Brook Pulp & Paper generation credit, the recovery of the CBPP frequency converter costs, the wheeling rate and the reporting basis for key performance indicators.

1. Summary of Evidence

A summary of my recommendations relating to Hydro's Amended 2013 General Rate Application follows. My recommendations are provided within the context of the Amended 2013 GRA and cost of service study, and are made for the Board's consideration in its Order on the Amended 2013 GRA. When a utility's rate of return is fixed by legislation as it is for Hydro by OC2009-063, its performance whether rising or falling cannot influence its allowed rate of return, so there is a tendency for the utility to pay less attention to regulatory commitments and directives, customer satisfaction, reliability of service and cost control. Under such circumstances it is important that the regulatory board ensure that the utility's performance is not deteriorating. My recommendations are made with this in mind.

a) I recommend that the Board accept Hydro's proposed strategy for improving customer service (CA-NLH-322, Attachment 1). The Board should closely monitor implementation to ensure consistency with the strategy, and strategy results should be posted on the Board's website so that electricity consumers and the parties to this Application are kept informed of progress.

b) I recommend that the Board order Hydro to file its next General Rate Application in 2017. Further, I recommend that the Board order Hydro to conduct studies of marginal costs, cost of service, rate design and the RSP and other supply cost recovery mechanisms in advance of the 2017 GRA filing. The long period since Hydro's last GRA filing in 2006 has resulted in a number of unnecessary complications and rates that are neither just nor reasonable. In addition, the commissioning of Muskrat Falls and associated transmission will result in significant changes in Hydro's cost regime. It is imperative that a full review of Hydro's costs in a 2017 GRA take place to ensure rates appropriately reflect cost of service and rate design principles in the new regime.

c) I recommend that the Board accept Hydro's proposal to continue with the current RSP design with the modification that the load variation component be allocated to customers on the basis of energy ratios. Further, in an effort to acknowledge the violation of cost of service and rate design principles that arose as a result of OC2013-089, I recommend the Board order that the money that has accumulated in the load variation component of the Island Industrial Customer RSP since September 1, 2013 be transferred to the RSP account of Newfoundland Power.

d) I recommend that Hydro and the Parties propose for the Board's consideration a methodology for distributing remaining balances in the RSP in a manner that reduces the volatility of rates over the period through 2017.

e) I recommend that the Board deny Hydro's proposal to establish new supply cost variance accounts referred to as the "*Isolated Systems Supply Cost Variance Deferral Account*", the "*Energy Supply Cost Variance Deferral Account*" and the "*Holyrood Conversion Rate Deferral Account*". There is no justification for transferring these risks to consumers when Hydro has been assured a much higher, and uncontested, return on equity fixed by Government Directive OC2009-063. Further, it is inappropriate to establish new supply cost deferral accounts when Hydro is proposing to conduct a full review of such accounts in 2016, less than a year after the Board is expected to rule on the Amended 2013 GRA.

f) I recommend that the Board accept Hydro's proposed rate design for the Island Industrial Customers and Hydro's proposal to raise Island Industrial Customer rates to levels reflecting the full cost of supply consistent with OC2013-089. It is a lost opportunity that Hydro and the Island Industrial Customers have not agreed on a rate design that promotes efficient consumption decisions, but at this point, it is more important that Island Industrial Customer rates be raised to the full cost of supply to finally bring to an end the significant cross-subsidy provided to this class by other customers in the Province.

g) I recommend that the Board accept Hydro's proposed rate design for Newfoundland Power submitted in the Amended 2013 GRA.

h) I recommend that the Board accept Hydro's proposed treatment in the cost of service study of the curtailable rate for NP curtailable service customers and Hydro's proposed design and treatment in the cost of service study of the capacity assistance agreements for the Island Industrial Customers submitted in the Amended 2013 GRA.

i) I recommend that the Board deny the Holyrood capacity factor proposed by Hydro for use in the 2015 test year cost of service study. Owing to the significant change in the operating pattern of Holyrood Thermal Generating Station in the coming years, using the historical Holyrood capacity factor in the cost of service study is unlikely to result in just and reasonable rates. I recommend that the Holyrood capacity factor included in the cost of service study be based on the forecast capacity factor averaged over the period rates are expected to be in effect, specifically, 2015 through 2017.

j) I recommend that the Board deny Hydro's proposed use of the 2015 load forecast in the cost of service study. Owing to a ramping up of operations at Vale and Praxair, Island Industrial Customer load is forecast to increase dramatically in 2016 and 2017 compared to levels included in the 2015 test year cost of service study. Therefore, the 2015 test year cost of service study is not reflective of the period that proposed rates are expected to be in effect, so does not lend confidence that rates will be just and reasonable. I recommend the Board order Hydro to use a test year in the cost of service study that is representative of the load forecast during the period rates are expected to be in effect with costs and allocations to customer classes adjusted accordingly.

k) I recommend that the Board direct a portion of Hydro's return toward payment of the rural subsidy, a subsidy mandated by Government, Hydro's shareholder. If it is determined that a portion of the rural rate subsidy is to continue to be subsidized by Newfoundland Power and Labrador Interconnected customers, I recommend that the Board accept Hydro's proposal in the Amended 2013 GRA to allocate the subsidy to Newfoundland Power and Labrador Interconnected customers on the basis of revenue requirement.

l) I recommend that the Board accept Hydro's proposal in the Amended 2013 GRA to classify wind generation as 100% energy related. This is the appropriate classification as Hydro no longer assumes that wind generation will be available to supply system capacity requirements.

m) I recommend that the Board deny Hydro's proposal to permanently instate the supply agreement with CBPP. I recommend that the Board direct Hydro to file a study of the CBPP supply agreement in its entirety taking into consideration the new capacity assistance agreements, the subsidy being received by the Island Industrial Customers owing to the rate phase-in, the reduced value of energy following commissioning of Muskrat Falls, the requirement to purchase energy from the CBPP co-generator whenever it is available, and the CBPP water rights. I recommend the study consider the pros and cons of separate contracts with Deer

Lake Power generation and the CBPP mill to increase transparency, and optimize the conversion efficiency of water to electrical energy at the Deer Lake Power facility. The filing should be consistent with the studies on marginal costs, cost of service and rate design to be completed prior to submission of the next GRA in 2017.

n) I recommend that the Board accept Hydro's proposal to continue to specifically assign the costs of the CBPP frequency converter to CBPP. Hydro indicates the frequency converter does not provide benefits to other customers on the system. Therefore, its costs should not be borne by the other customers on the system.

o) I recommend that the Board accept Hydro's proposal in the Amended 2013 GRA to keep the wheeling rate active until a need arises to replace it with something different in the future.

p) I recommend that the Board accept Hydro's proposed approach in the Amended 2013 GRA for identifying functionally-oriented financial targets and reporting based on the most recent test year cost of service study.

2. Customer Service Strategy

The 2013 Annual Report on Key Performance Indicators (Amended 2013 GRA, Volume II, Exhibit 2, table on page E5) shows that Hydro did not meet a single key performance indicator (KPI) target in 2013. Hydro's residential customer satisfaction has slipped dramatically from 92% in 2010 to 80% in 2012 (Amended 2013 GRA, Volume II,

Exhibit 2, page E28).[1] This compares to Hydro's target of >90% (Amended 2013 GRA, Volume II, Exhibit 2, table on page E5). In CA-NLH-51, Hydro indicates that it is "*developing a five-year customer service strategy focused on improving the services it provides to customers. The strategy is anticipated to be completed in 2014.*" Hydro filed its five-year customer service strategy with the Board on September 30, 2014 (see CA-NLH-322).[2]

In my April 25, 2014 Pre-filed Evidence I stated that the importance of this initiative cannot be over-emphasized in light of OC2009-063 which directs that Hydro's target return on equity be the same as that set for Newfoundland Power. With the Government directive, Hydro's incentive to provide superior customer service is reduced, so it is important for the Board to closely monitor Hydro's performance. The KPI report provides important insights in this regard.

In my April 25, 2014 Pre-filed Evidence, I recommended that the Board direct Hydro to submit a scope of work and time-bound plan for development of a strategy for improving customer service. I recommended that the strategy include performance targets as a means for gauging progress annually, and once completed, be submitted to relevant stakeholders for review and comment. My review of Hydro's customer service strategy attached to CA-NLH-322 indicates that the strategy can meet these requirements if properly implemented.

[1] A customer satisfaction survey was not completed for 2013 (Amended 2013 GRA, Volume II, Exhibit 2, page E27).
[2] It is in fact a three-year strategic roadmap (CA-NLH-322, Attachment 1, page 4 of 172).

I recommend that the Board accept Hydro's proposed strategy for improving customer service (CA-NLH-322, Attachment 1), that the Board closely monitor implementation to ensure consistency with the strategy, and that the strategy results be posted on the Board's website so that electricity consumers and the parties to this Application are kept informed of progress.

3. Timing of Next General Rate Application

Nine years have passed since Hydro filed its GRA in 2006. This is excessively long. Numerous events have impacted Hydro's costs and rates since the 2006 GRA. The response to CA-NLH-24 indicates there are 18 Government directives to be taken into account by the Board in the 2013 General Rate Application, and OC2013-089 is in direct response to the very low rates the Island Industrial Customers have been paying since the 2006 GRA as a result of a rate freeze brought on by rate volatility caused by the RSP. Had a GRA been submitted, this issue could have been dealt with by the parties and the Board without Government intervention, and the huge $37.6 million cross-subsidy provided by the Province's small customers to the Island Industrial Customers (RSP-CA-NLH-12) could have been mitigated.

Most importantly, the commissioning of Muskrat Falls and associated transmission in 2017 will result in significant changes in Hydro's cost regime (CA-NLH-321). In this regard, I support Hydro's proposal to undertake studies of its marginal costs, cost of service, rate design and the RSP and other supply cost recovery mechanisms prior to filing its next GRA in 2017 (CA-NLH-340). The 2017 GRA should be based on a 2018 test year as proposed by Hydro (CA-NLH-340, Attachment 1).

I recommend that the Board order Hydro to file its next General Rate Application in 2017 to coincide with the commissioning of Muskrat Falls and associated transmission.[3] Further, I recommend the Board order Hydro to conduct studies on marginal costs, cost of service, rate design and the RSP and other supply cost recovery mechanisms in advance of the 2017 GRA similar to the approach and timetable outlined in CA-NLH-340.

4. The Rate Stabilization Plan (RSP)

Hydro proposes to continue with the current RSP design with the exception that "*allocation of the load variation component be modified such that the year-to-date net load variation for both NP and the IC is allocated among the customer groups based on energy ratios. The proposed effective date for the RSP change is September 1, 2013*" (Amended GRA, Volume I, page 4.36, lines 14 to 17). This is the same RSP design proposed by Hydro at the 2006 GRA when the Parties agreed to examine re-design of the RSP to better meet design objectives (see RSP-CA-NLH-6 Attachment 2, page 5 of 27). By agreeing to undertake the study of the RSP the Parties were acknowledging that Hydro's proposed RSP design was inadequate. Unfortunately, Hydro failed to complete the study, and the RSP design remains unresolved.

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[3] Hydro supports this recommendation in its response to CA-NLH-321.

There are a number of concerns with the RSP design as summarized below:[4]

- Inconsistent with regulatory practice elsewhere;
- Provides limited value to customers;
- Creates problems when large balances accumulate;
- Provides limited value to Hydro;
- Reduces incentive to improve rate designs;
- Limited shelf-life.

In CA-NLH-181, Hydro states that the RSP in its present form mainly accounts for variations in Holyrood fuel costs, so once Holyrood is permanently shut down, there will no longer be a need for the RSP in relation to Holyrood. Muskrat Falls is scheduled for service in 2017 (CA-NLH-22), meaning the RSP may no longer be needed two years following an Order of the Board on this Amended 2013 GRA. In fact, Hydro proposes to conduct a study on the future of RSP and the requirements for other supply cost recovery mechanisms in 2016 in advance of its next GRA filing in 2017 (CA-NLH-340).

Given the limited shelf life and the extreme volatility expected in the Island Industrial Customer load (CA-NLH-304) with Vale and Praxair ramping up operations in the coming years, I am inclined to agree with Hydro's proposal that the existing RSP rules remain in place with the exception that the load variation component of the RSP be

[4] For a more complete discussion of these concerns see Pre-filed Evidence of C. Douglas Bowman dated April 25, 2014 relating to Hydro's 2013 General Rate Application.

shared on a proportionate energy basis. Hydro has failed to file any alternative RSP designs for the Board's consideration. As a result, there appears to be little choice but to accept Hydro's RSP design proposed in the Amended 2013 GRA with the exception described below.

The rates for Island Industrial Customers are not collecting the cost of supply, and this has been going on for quite some time. When the original 2013 GRA was filed, the Island Industrial Customers were paying only 65.3% of the cost of power determined in the 2013 cost of service study (see RSP-CA-NLH-12, Attachment 1). As stated by Hydro in RSP-CA-NLH-12, the subsidy to the IC class granted through OC2013-089 is $37.6 million which is more than double the average annual revenue received from the entire Island Industrial Customer class during the period from 2008 to 2012 (see CA-NLH-182). In effect, the Island Industrial Customer class received the equivalent of more than 1 ½ years of free power (based on Island Industrial Customer class average annual consumption during 2008 to 2012 period – see CA-NLH-182). As the Board correctly points out in Order P.U. 40(2013) (page 3, line 48 and page 4, line 1), "*the RSP adjustment has not operated normally for the Industrial Customers since 2008*".

The Board was obliged to crystalize this cross-subsidy in Order No. P.U. 26(2013) which transferred $49 million of RSP funds to the Island Industrial Customer RSP account, of which $37.6 million rightfully belonged to Newfoundland Power customers. The Board was obliged to make this transfer owing to Government Directive OC2013-089. However, there is an opportunity for the Board to acknowledge the unfairness of this decision it was obliged to make. The balance in the Island Industrial Customer load variation component of the RSP that accumulated from September 1, 2013 through year-end 2014 is $1.85 million (CA-NLH-311). While this balance is far less than the cross-subsidy transferred to the Island Industrial Customers through Order No. P.U. 26(2013), an Order transferring this balance from the Island Industrial Customer RSP account to Newfoundland Power's RSP account, although symbolic, would at least allow the Board to recognize the violation of cost of service and rate design principles that arose as a result of OC2013-089.

In summary, I recommend that the Board accept Hydro's proposal to continue with the current RSP design with the modification that the load variation component be allocated to customers on the basis of energy ratios. Further, I recommend that the Board order that the money that has accumulated in the load variation component of the Island Industrial Customer RSP account since September 1, 2013 be transferred to the RSP account of Newfoundland Power.

5. Disposition of RSP Balances

Significant balances have been accumulating in the RSP. As of March 2015, the RSP balance owing to Newfoundland Power customers is $126.3 million, while the RSP balance owing to Island Industrial Customers is $10.9 million (CA-NLH-349). The methodology for disposing of these RSP balances should be reviewed in light of the limited remaining operating time of the Holyrood plant. As Hydro indicates in CA-NLH-

181, there will no longer be a need for the RSP in its present form once Holyrood is permanently shut down.

Hydro has proposed an extraordinarily large number of deferral and recovery mechanisms in this Application. According to PUB-NLH-311 (Revision 2, Mar 25-15), Hydro is proposing 18 deferral and recovery mechanisms. This includes seven existing mechanisms such as the RSP, and 11 newly proposed mechanisms such as hearing costs, extraordinary repairs, 2014 revenue deficiency, etc. In some cases, Hydro has proposed disposition of RSP balances to offset its costs; i.e., to fund interim rates and the 2014 revenue deficiency.

Regardless of the number of deferral and recovery mechanisms, rates will be volatile over the next several years. For example, according to CA-NLH-273, the average Holyrood oil consumption price will increase from $67.6/bbl in 2015 to $82.4/bbl in 2017, an increase of 22% in two years (based on the most recent oil price forecast dated March 2015). Further, the Muskrat Falls and associated transmission project scheduled to be commissioned in 2017 will have an as yet undetermined impact on rates.

Therefore, I recommend that Hydro and the parties propose for the Board's consideration a methodology for distributing the balances in the RSP in a manner that reduces the volatility of rates over the period to 2017; i.e., reduces the volatility of rates relating to the RSP and brought on by new projects such as the 100 MW combustion turbine. The filing should be consistent with the Amended 2013 GRA and cost of service, and should form part of the Board's Order on the Amended 2013 GRA.

6. Proposed New Supply Cost Variance Accounts

In the Amended 2013 GRA (Volume I, page 3.45, lines 15 to 23), Hydro proposes three new supply cost variance accounts, referred to as the "*Isolated Systems Supply Cost Variance Deferral Account*", the "*Energy Supply Cost Variance Deferral Account*" and the "*Holyrood Conversion Rate Deferral Account*". Each of these proposed accounts transfers risk from Hydro to consumers and they take away Hydro's incentive to make good forecasts and to efficiently manage these costs in a least cost manner; i.e., if Hydro fails to negotiate the lowest fuel price possible, it merely passes the additional cost through to consumers. These new accounts raise many of the same issues with respect to the RSP design discussed above.

There is no justification for transferring these risks to consumers when Hydro has been assured a higher, and uncontested, return on equity fixed by Government Directive OC2009-063. In fact, just the opposite is true – with a higher return on equity, Hydro should take on more risk. Further, it is inappropriate for Hydro to propose to establish new supply cost variance accounts prior to its proposal to conduct a review of the need for such accounts less than a year after the Board is expected to make a ruling on this Application. As Hydro states in CA-NLH-312, with the significant changes in system costs on the horizon with Muskrat Falls and associated transmission coming on-line, it does not consider it appropriate to redesign the RSP at this time. I agree, and it is likewise inappropriate to introduce new supply cost variance accounts.

For these reasons, I recommend that the Board deny Hydro's proposal to establish new supply cost variance accounts referred to as the "*Isolated Systems Supply Cost Variance Deferral Account*", the "*Energy Supply Cost Variance Deferral Account*" and the "*Holyrood Conversion Rate Deferral Account*".

7. Island Industrial Customer Rates

A review of the Island Industrial Customer rate design was carried out following the 2006 GRA as a result of the Parties' Agreement (see Amended 2013 GRA, Volume II, Exhibit 12). Hydro and the Industrial Customers reached agreement on a rate design during the 2008 study, yet Hydro has not proposed to implement the rate design in the Amended 2013 GRA. Hydro indicates in CA-NLH-78 that the rate design in Table 1, page 10 of Exhibit 12 "*would encourage economic efficiency while maintaining other rate design principles*". However, in the same RFI response Hydro explains that the existing rate structure should be maintained because Vale's load is forecast to ramp up over the next several years and the phase-in of IC rate levels for September 1, 2013, 2014 and 2015 would mute any price signals, so "*there is no alternative rate design available*".

The fact is, there ***are*** alternative rate designs available that better meet rate design objectives than the rate design proposed by Hydro in the Amended 2013 GRA. Hydro has already acknowledged that the rate design in Table 1, page 10 of Exhibit 12 is one such rate design. The rate design would have to be tailored to reflect the consumption pattern of each Island Industrial Customer, but that would not be too large an undertaking given that there are now only four such customers on the system. However, the first order of efficiency is to increase Island Industrial Customer rates to a level that recovers the full cost of supply. In Order No. P.U. 14(2015), the Board orders an interim base rate increase of 10% for the Island Industrial Customers, and an interim RSP rate adjustment resulting in an effective 2.7% rate increase. This is the long-awaited second step of the Island Industrial Customer rate phase-in required under Government Directive OC2013-089. Table 1 on page 1.6R of the Amended 2013 GRA (Volume I) indicates that the required Island Industrial Customer rate increase based on the 2013 Test Year was 73.1%, and the base rate increase proposed for the Island Industrial Customers in the 2015 Test Year is 39.2%. It is not clear where Island Industrial Customer rates stand with respect to the cost of supply following implementation of Order No. P.U. 14(2015) as evidence has not yet been filed in this regard.[5]

At this point, the other customer classes in the Province would be satisfied if the Island Industrial Customer rates were increased to the full cost of supply to finally bring to an end the cross-subsidy they have been providing the Island Industrial Customer class. The absence of a marginal price signal in the Island Industrial Customer rates represents a lost opportunity that has been missed since the 2008 study referenced earlier was completed.

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[5] On May 27, 2015, Hydro filed an application for interim rates in compliance with the Board's 2015 Interim Rates Order. The evidence provides: (i) proposed customer rates and customer rate impacts; (ii) revised RSP Rules to permit the next stage of the phase-in of rates to IIC in accordance with Government directives; and (iii) the forecast 2015 financial impact on Hydro resulting from the Board's Order.

Hydro proposes to study Island Industrial Customer rates in 2016. Hopefully this study will result in a rate design that promotes efficient consumption decisions.

In summary, I recommend that the Board accept Hydro's proposed Island Industrial Customer rate design, and more importantly, accept Hydro's proposal consistent with OC2013-089 to increase Island Industrial Customer rates to levels reflecting the full cost of supply.

8. Newfoundland Power (NP) Rate

In the Amended 2013 GRA, Hydro has modified the proposal made in the 2013 GRA with respect to the Newfoundland Power wholesale rate. Hydro had proposed a 128% increase in the capacity charge from $4.00/kW/month to $9.12/kW/month (2013 GRA, Volume 1, page 4.4, Table 4.1). It now proposes to increase the NP capacity charge to $5.50/kW/month, and set the second block energy charge at 11.6 cents/kWh (Amended 2013 GRA, Volume I, page 4.25, Table 4.6).

The most recent forecast of marginal costs for the 2015 through 2017 period when the proposed rates are expected to be in force is shown in the table below (CA-NLH-341):

Year	*Capacity ($/kW/year)*	*Energy (cents/kWh)*
2015	42	10.6
2016	58	13.3
2017	61	13.8
Average	**53.67,** **or 4.47/kW/month**	**12.6**

The NP rate proposed in the Amended 2013 GRA does a much better job of reflecting marginal costs than the rate design proposed in the original 2013 GRA. It is also more sensitive to the potential impact on NP's cash flow (see NP-NLH-119).

I recommend that the Board accept the Newfoundland Power wholesale rate design proposed by Hydro in the Amended 2013 GRA.

9. Curtailable Load and Capacity Assistance Rate Options

Hydro has proposed to modify the treatment of NP's curtailable load in the cost of service study to provide incentive for NP to retain, and pursue, curtailable service customers. The objective of this modification is to promote interruptions only when there is a system need for the capacity. Hydro now proposes in the Amended 2013 GRA to reflect the curtailable load credit in the calculation of billing demand for NP. Hydro proposes that this modification "*be approved by the Board until a review of the longer-term benefits of interruptible/curtailable load is completed giving consideration to the results of a marginal cost study reflecting the Labrador-Island Interconnection*"

(Amended 2013 GRA, Volume I, page 4.26, lines 21 – 24). I agree with this proposal as it is consistent with the intent of the agreement reached among the Parties during the Review of Demand Billing to Newfoundland Power 2008 Report (Amended 2013 GRA, Volume II, Exhibit 11, Section 4.4, pages 25 and 26).

Hydro has also entered into capacity assistance agreements with Corner Brook Pulp & Paper and Vale, for 60 MW and 15.8 MW, respectively. These agreements are backed up by generation owned by the customers. The total cost of these agreements in 2015 is $2.1 million (Amended 2013 GRA, Volume I, page 2.13, lines 11 to 18). Hydro proposes to treat these costs as a production demand cost in the cost of service study with allocation to customer classes on the basis of a single coincident peak allocator (Amended 2013 GRA, Volume I, page 4.17 lines 11 to 14). I support these agreements and the proposed treatment in the cost of service study provided Hydro undertakes its proposed rate design review which would include a review of the continuing need for such capacity assistance agreements post commissioning of the Muskrat Falls and associated transmission project (CA-NLH-315).

In summary, I recommend that the Board accept Hydro's proposals in the Amended 2013 GRA relating to NP curtailable load and the Island Industrial Customer capacity assistance agreements.

10. Holyrood Capacity Factor Used in the Cost of Service Study

Table 4.4 of the Amended 2013 GRA (Volume I, page 4.16) shows Holyrood capacity factors from 2001 to 2013 and forecast for the years 2014 to 2017. Hydro states (page 4.16, lines 2 to 3) "*The approved Cost of Service methodology requires the use of a historical five year period*". However, Holyrood is expected to operate at a much higher capacity factor in the future when the proposed rates are expected to be in effect. For example, Holyrood's capacity factor in 2010 was only 20%. This compares to the Holyrood capacity factor of 45% forecast for 2016 and 2017.

Hydro recognizes the significant change in the Holyrood operating regime by proposing to include the forecast capacity factor for 2015 in the historical 5-year average. Hydro points out that the average for the historical period from 2010 to 2014 is only 24% which is "*materially lower than the forecast Holyrood capacity factors for the period that rates will be in effect*" (Amended 2013 GRA, Volume I, page 4.16, lines 6 to 10). Including the forecast 2015 capacity factor brings the 5-year average up to 28%, still much lower than the forecast 43% capacity factor averaged over the 2015 to 2017 period when proposed rates are expected to be in effect. It is important to reflect the period that rates will be in effect as it impacts the cost allocations in the cost of service study (CA-NLH-291).[6] Ignoring the significant change in the Holyrood operating regime does not lend confidence that proposed rates are just and reasonable.

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[6] According to CA-NLH-291 (page 2 of 2), using a Holyrood capacity factor reflecting the average capacity factor forecast for the 2015 to 2017 period rates are expected to be in effect would reduce the cost allocated

In summary, I recommend that the Board deny Hydro's proposed treatment of the Holyrood capacity factor in the cost of service study. Instead of basing the Holyrood capacity factor on its historical capacity factor averaged over the past five years (including the forecast capacity factor for 2015 as proposed), I recommend that it be based on the forecast capacity factor averaged over the 2015 to 2017 period when proposed rates are expected to be in effect.

11. Use of 2015 Load Forecast in Cost of Service Study

As can be seen in Hydro's response to CA-NLH-304, the load forecast for the Island Industrial Customer class increases dramatically in 2016 and 2017 over levels included in the 2015 Test Year cost of service study. This dramatic increase in demand is driven by the ramping up of operations at Vale and Praxair. In 2016, the Island Industrial Customer class energy sales are forecast to increase by 25.2% over levels assumed in the 2015 test year. In contrast, NP energy sales are forecast to increase by only 2.06%, and Island Rural Customer Class energy sales are forecast to decrease by 0.6%. In 2017, Island Industrial Customer Class energy sales are forecast to increase by 40.6% over levels assumed in the 2015 test year, while NP energy sales are forecast to increase only 2.2%, and Island Rural Customer class energy sales are forecast to decrease by 5.3%. Use of 2015 loads in the cost of service study is not representative of loads during the period

to Newfoundland Power by $314,250, while increasing the cost allocated to the Island Industrial Customers by $286,409 and to Hydro Rural by $27,841.

rates are expected to be in effect, so proposed rates are unlikely to be just and reasonable. For example, a customer class with a higher peak demand would attract a greater share of the costs that are allocated on the basis of coincident peak in the cost of service study.

Hydro points out in CA-NLH-304 that an increase in sales necessitates an increase in production at Holyrood, which in turn would increase the revenue requirement. As Hydro states "*To change just one factor, sales, would not result in appropriate customer rates*" (CA-NLH-304, page 1 of 2, lines 16 to 17). This is precisely the point. The load forecast assumed in the cost of service study is not representative of the loads during the 2015 to 2017 time frame when the rates are expected to be in effect, so the cost of service study is not representative of the costs that the different customer classes impose on the system. As a result, the proposed rates cannot be considered just and reasonable. An adjustment to the cost of service study is needed to reflect loads during the 2015 to 2017 period. This adjustment will require an adjustment in Hydro's costs, which will in turn result in different cost allocations to customer classes in the cost of service study.

I recommend the Board deny Hydro's proposed use of 2015 loads in the cost of service study. Instead, I recommend the Board order Hydro to use a test year in the cost of service study that is representative of the load forecast during the period rates are expected to be in effect with costs and customer class cost allocations adjusted accordingly.

12. Rural Rate Subsidy

As I stated in my April 25, 2014 Pre-filed Evidence, the Rural Rate Subsidy has reached alarmingly high levels. Hydro states in the Amended GRA (Volume I, page 2.82, lines 28 to 29): "*The Rural Deficit has grown from $40.8 million in the 2007 Test Year to a forecast of $64.1 million in the 2015 Test Year*". The rural deficit adds about 13% to the bills of NP and Labrador Interconnected Rural customers based on the proposed allocation methodology (see Amended 2013 GRA, Volume II, Exhibit 13, Schedule 1.2, pages 2 of 6 and 6 of 6). This results in a serious distortion of the price signal.

OC2003-347 (Attachment 1 to CA-NLH-38) states that the rural deficit is to be collected from NP and Labrador Interconnected customers. The currently approved methodology for allocation of the rural deficit between NP and the Labrador Interconnected customers is based on the Board's February 1993 report relating to the Cost of Service Methodology hearing (see Amended 2013 GRA, Volume I, page 4.7, footnote 5). Under the current allocation methodology, the proposed rate increase for Labrador Interconnected Rural Customers would be 27.8% versus 2.1% for NP's customers (Amended 2013 GRA, Volume I, page 4.7, lines 18 to 21), and the revenue to cost ratios would be 142% for Labrador Interconnected Rural Customers and 112% for Newfoundland Power (Amended 2013 GRA, Volume 1, page 4.9, Table 4.2). In the Amended 2013 GRA, Hydro proposes an alternative allocation methodology on the basis of revenue requirement (Amended 2013 GRA, Volume I, page 4.7, lines 12 to 16). Under Hydro's proposed allocation methodology, the proposed rate increase would be 2.1% for Labrador Interconnected Rural Customers and 2.8% for Newfoundland Power's customers

(Amended 2013 GRA, Volume I, page 4.7, lines 18 to 21), and the revenue to cost ratios would be 13% for both customer classes (Amended 2013 GRA, Volume II, Exhibit 13, Schedule 1.2, pages 2 of 6 and 6 of 6).

Hydro justifies its review of the allocation methodology as follows (Amended 2013 GRA, Volume I, page 4.8, lines 5 to 9):

> *"This is the first GRA since the Existing Methodology was approved in 1993 in which the full impact of the Rural Deficit allocation will be reflected in the rates of customers on the Labrador Interconnected System. Therefore, Hydro believes it is appropriate at this time to review the fairness of the Rural Deficit allocation methodology."*

Although rates for Labrador Interconnected customers start at a low level, almost 30%[7] of the proposed rate under the current allocation methodology would be attributable to the rural rate subsidy, a cost over which Labrador Interconnected customers have no control. The average annual contribution per Labrador Interconnected customer under the current allocation methodology is $653.15, about three times the average annual contribution per NP customer of $216.64 (Amended 2013 GRA, Volume I, page 4.8, Table 4.1). As Hydro states on page 5 of 8 in CA-NLH-166 (Revision 3, Mar 24-15), "*The current methodology results in materially higher customer billing impacts for Labrador*

[7] Based on the portion of the revenue to cost ratio attributable to the rural deficit (0.42) divided by the overall revenue to cost ratio (1.42) (Amended 2013 GRA, Volume 1, page 4.9, Table 4.2).

Interconnected Customers primarily because they have higher electricity usage as a result of living in an area of the Province where the climate is materially colder".

Hydro states on page 6 of 8 in CA-NLH-166 (Revision 3, Mar 24-15) "*Hydro believes that the current methodology does not provide a reasonable sharing of the rural deficit between Labrador Interconnected Customers and Newfoundland Power Customers*". I agree, and have a number of points to make relating to the Board's 22 year old report on Hydro's Cost of Service Methodology and the allocation of the rural deficit (see February 1993 report on Hydro's Cost of Service Methodology, PUB-NLH-113, Attachment 1), as follows:

a) ***Allocation of Large Subsidies***: As stated on page 51 of the Board's February 1993 report, "*The deficit instead falls out of the operation of a system that is physically, for the most part, and financially isolated from the three main classes in the Cost of Service, NP, the Industrials and Labrador Interconnected.*" On page 53, the Board points out that "*as a component of a Cost of Service and basis for pricing under a cost recovery system, the allocation for rural deficit represents the allocation of another group of customers' cost of service*". Finally, on page 55 the Board states "*There does not appear to be any competency constraint in the methodology chosen to allocate the rural deficit either by revenue to cost ratio of one, energy allocation or some combination of revenue, energy or demand*". To summarize the Board's points, the rural deficit represents a cost to be recovered by Hydro that is not related to the cost of supply of the customers required to pay the subsidy, and there is no "accepted" methodology in the industry for allocating the rural deficit.

b) ***Proposed Deficit Recovery Methodologies***: Three methods of cost recovery for the rural deficit were proposed by the interveners at the 1993 review. Hydro proposed allocation on the basis of revenue requirement (see page 55) which would result in the same revenue to cost ratio for all subsidizing customer classes regardless of the system from which they are supplied. NP pointed out that there is no basis on which non-rural customers can have the deficit allocated in accordance with causality, so fairness of the ultimate result can assist in the selection of a methodology. NP proposed that the deficit be allocated on the basis of 50% energy and 50% revenue requirement (see page 56). The Industrial Customers proposed allocation of the rural deficit on the basis of plant cost. The Town of Labrador and the Town of Wabush supported Hydro's proposed methodology of allocation on the basis of revenue requirement. The Towns put forth the argument that allocation according to revenue requirement is in accordance with sound regulatory principles.

c) ***Board Consultant's Proposed Recovery Methodology***: As the Towns pointed out, allocation of a cost according to revenue requirement is a commonly used allocator in cost of service. On the other hand, plant cost as proposed by the ICs is also a commonly used allocator in cost of service, and so is energy as proposed by NP (50/50 split in combination with revenue requirement). The Board's consultant, Mr. Baker, proposed a method that "*involves a preliminary split of costs between Newfoundland and Labrador on the basis of demand, energy and* *customer number*". His proposed methodology first classifies the deficit by proration on the classified costs of subsidizing classes. Next, the classified totals are divided by the use characteristics of the subsidizing classes as a whole to obtain unit classified costs. These unit costs are then used to allocate between Island and Labrador Systems." (IN-PUB-2, page 29, lines 13 to 21 of Mr. Baker's testimony attached to the response). While revenue requirement, plant and energy are commonly used allocators in cost of service, I am not aware of any jurisdiction that uses the allocation methodology proposed by Mr. Baker, and accepted by the Board, and note that no reference was made to regulatory precedents in either the Board's report or Mr. Baker's testimony. Mr. Baker himself states "*I am not aware of any generally accepted cost of service methodology for dealing with this particular situation. In finding the best solution, judgment must play a part*" (IN-PUB-2, page 28, lines 2 to 4 of Mr. Baker's testimony attached to response).

d) ***Board's Position on Proposed Recovery Methodologies***: The Board states (PUB-NLH-113, Attachment 1, page 64 of 83) that the Hydro, NP and IC proposed methods of deficit allocation are not in accordance with generally accepted cost of service principles, and that the NP and IC proposals use arbitrary methods. However, in my opinion these methodologies are just as much in accordance with generally accepted cost of service principles and not any more arbitrary than the methodology proposed by the Board's consultant and accepted by the Board.

e) ***Criterion for Deficit Allocation***: A criterion for allocating the rural rate deficit that does not appear to have been considered in the 1993 study is allocation in a manner that minimizes the impact on the price signal of the subsidizing customers. Rates based on the cost of service represent the correct price signal in that rates reflect the costs that customers impose on the system. In 1993 the Board's consultant states in his testimony that he favours cost-based rates (IN-PUB-1, page 23, line 8). Most rate design experts do, but once it is accepted that the rural deficit must be collected from the subsiding customers (i.e., NP and Labrador Interconnected customers), then a guiding principle is that the deficit be applied in a manner that least distorts the price signal. Recovery of the rural rate deficit forces distortion of the rates of the subsidizing classes because their rates are based on full cost recovery, plus the rural deficit. This means the principle of cost based rates cannot be met; however, the rural deficit can be applied to the subsidizing classes in a manner that minimizes the impact on the price signal.

f) ***Assessment of Alternatives on Basis of Price Signal Impacts:*** As can be seen in CA-NLH-228 Attachment 1, of the allocation methodologies proposed at the 1993 review,[8] allocation based on revenue requirement would result in the same revenue to cost ratio of 1.15 for both NP and the Labrador Interconnected customers. The current allocation methodology results in revenue to cost ratios ranging from 1.37 to 1.63 (depending on the customer class) for the Labrador Interconnected customers and 1.14 for NP. The allocation methodology based on the NP proposal of 50% revenue requirement and 50% energy sales results in a revenue to cost ratio of 1.14 for NP, and revenue to cost ratios ranging from 1.1 (street and area lighting) to 1.33 (General Service over 1000 kVA) on the

[8] Similar results would be expected for the 2015 test year.

Labrador Interconnected system. The least amount of distortion to the price signal is obtained by allocation on the basis of revenue requirement. The current rural deficit allocation methodology results in the greatest distortion of the price signal when compared to the other methodologies proposed at the 1993 review.

g) ***The Size of the Rural Rate Subsidy has Reached Extreme Levels***: The above discussion is based on the assumption that the subsidizing parties must pay the full amount of the rural deficit. While it is important that the subsidy be transparent and based on accepted cost of service principles, the size of the rural rate deficit and the requirement that NP and Labrador Interconnected customers pay the full amount of the deficit goes well beyond what has been accepted as normal practice in the industry. As discussed in PUB-NLH-339, Hydro filed as part of the 2003 GRA a discussion paper for the Minister of Mines and Energy on the rural deficit which included practices in other jurisdictions. In PUB-NLH-339 Attachment 1, Hydro includes a copy of the Discussion Paper which shows (page 2 of 14) that the deficit increased from $28.9 million in 1992 to $38.8 million in 2002. Hydro correctly predicted that the deficit would continue to increase – it is now forecast to be $64.07 million in 2015 (PUB-NLH-392). As Hydro states (PUB-NLH-339, Attachment 1, pages 8 of 14 and 9 of 14), the rural deficit per customer falls within the range experienced by other utilities in Canada. However, with the small population base in the Province, Hydro's operating deficit for its rural areas at the time of the study was 8.8 % of revenues from electricity sales, far larger than in Quebec and British Columbia at 1%, and Manitoba and Ontario at about 0.1% of revenue from electricity sales. The operating deficit in the

Province based on rates proposed in the Amended 2013 GRA is 9.7% of revenue from electricity sales.[9]

h) ***Board's Position on Payment of Rural Deficit:*** PUB-NLH-339 Attachment 1 (pages 10 of 14 and 11 of 14) references a number of statements attributable to the Board relevant to the rural rate deficit, as follows:

- In its 2002 Order the Board stated "*The question of who should share in this continuing liability, either rural customers, other customers, NLH and/or Government, may become a central issue for the Board in the future*".
- "*Depending on the level of subsidy paid by one customer to support equitable rates for another customer, rates may be judged unreasonable and discriminatory to the subsidizing customer*".
- "*Under these circumstances, the only effective means of implementing the provincial power policy is to transfer some or all of the rural deficit to NLH or its shareholder, Government*".
- "*The Board is not inclined to adjust NLH's regulated 3% ROE in this Application*".

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[9] Based on a rural deficit of $64.07 million (Amended GRA, Volume II, Exhibit 13, Schedule 1.2.1, page 2 of 2) and revenue from sales of $660.0 million (GRA Application Volume I, Finance Schedule 1, page 1 of 11).

- "*The Board feels strongly, however, that discussions involving NLH and Government around future funding options for the rural deficit should constitute part of the evidentiary record*".

The Board's statements remain relevant today with the exception that Hydro's regulated 3% ROE is no longer the case because OC2009-063 directs that Hydro's target return on equity be the same as that set for NP, currently 8.8%, and that its rate of return apply to the entire rate base "*including amounts used solely for the provision of service to its rural customers*".

In summary, the rural rate deficit has become a significant burden. It results in unreasonable and discriminatory rates for the subsidizing customers. Now that Hydro has a mandated ROE commensurate with that of Newfoundland Power, I recommend that the Board consider directing a portion of Hydro's return toward payment of the rural subsidy, a subsidy mandated by Government, Hydro's shareholder.

Further, if rural rates continue to be subsidized by NP and Labrador Interconnected customers, I recommend that the Board accept the allocation methodology proposed by Hydro in the Amended 2013 GRA. Based on the principles of fairness and minimization of the impact on the price signal, allocation of the deficit on the basis of revenue requirement is preferred over the current allocation methodology.

13. Classification of Wind Generation Purchases in the Cost of Service Study

Since the 2006 GRA, two new sources of wind generated energy have been installed on the Island Interconnected System at St. Lawrence and Fermeuse (see Amended 2013 GRA, Volume I, page 1.13, lines 16-17). The characteristics of wind generation can be quite different from other forms of generation owing to the intermittency of the primary fuel source – the wind. In the original cost of service study based on the 2013 test year Hydro proposed that purchases from non-utility generation including wind generators be classified on the basis of system load factor consistent with hydraulic resources , roughly 48% as capacity-related and 52% as energy-related (Amended 2013 GRA, Volume I, page 4.15, footnote 22). In the Amended 2013 GRA based on the 2015 test year, Hydro is proposing a change in the classification of wind generation to 100% energy related (Amended 2013 GRA, Volume I, page 4.15, lines 13 to 17). Hydro notes "*from a system planning perspective, Hydro no longer assumes that wind generation will be available to supply system capacity requirements*" (Amended 2013 GRA, Volume I, page 4.15, lines 13 to 14).

In its response to IC-NLH-198, Hydro states "*For all current and future Loss of Load Probability calculations, as well as Peak Load Carrying Capabilities, the default assumption is/will be that wind resources are ignored or provided a value of 0 MW*". In IN-NLH-264 Hydro notes that it is important to consider each wind resource's location. As there are only two wind resources on the system, there is little diversity. Clearly, Hydro's proposed classification of wind generation in the cost of service study as 100% energy related is appropriate.

I recommend that the Board accept Hydro's proposal in the Amended 2013 GRA to classify wind generation as 100% energy related.

14. Corner Brook Pulp & Paper (CBPP) Generation Credit

In the Amended 2013 GRA (Volume II, Exhibit 4) Hydro documents its study on the Corner Brook Pulp and Paper (CBPP) generation credit. A pilot supply agreement was approved by the Board in April 2009 where under normal circumstances CBPP will be free to operate its generating units to most efficiently convert water to energy. The intent is to allow operation of Deer Lake Power generation at its most efficient load settings. In the Amended 2013 GRA, Hydro proposes that this pilot supply agreement with CBPP be permanently instated (pages 1 to 3 of Exhibit 4).

Hydro summarizes the overall benefits of the proposed supply agreement with CBPP on pages 2 and 3 of Exhibit 4. The energy savings are estimated to have a value of $573,000[10]. These savings when applied to the 2015 Test Year cost of service allocation are shared as follows: $484,000 for NP, $51,000 for the Island Industrial Customers and $38,000 for Hydro Rural customers (Amended 2013 GRA, Volume II, Exhibit 4, page 3, Revision 1, March 25, 2015).[11]

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[10] According to CA-NLH-288, based on the most recent fuel price forecast (March 2014) savings for the years 2015-2017 are estimated at $520,000 annually.

[11] In the original Exhibit 4 filed with the Amended 2013 GRA, it is stated on page 3 that the benefits would be shared as follows: $327,000 for NP, $220,000 for the Island Industrial Customers and $26,000 for Hydro Rural Customers. These figures were revised on March 25, 2015 as shown above.

There are a number of issues associated with Hydro's analysis of the CBPP supply agreement, as follows:

a) ***Benefits are Overstated***: In NP-NLH-380, Hydro estimates the savings post 2017 (i.e., following Muskrat Falls commissioning) at a much reduced level of only about $185,000 annually. Hydro notes that this figure could change as marginal costs will be updated later in 2015. Regardless, the expectation following Muskrat Falls commissioning in 2017 is that the marginal cost of energy will be much reduced from today's very high levels driven by Holyrood TGS. The savings from the proposed supply agreement with CBPP will also be much reduced.

b) ***Costs Exceed Benefits***: The benefits to CBPP of the proposed supply agreement are identified in CA-NLH-59 (Revision 1, November 28, 2014). In 2016 and 2017, CBPP will save an average of about $594,000 annually on its electricity bills while customers are forecast to see cost savings of about $555,000 annually over the same period (CA-NLH-56, Revision 1, November 26, 2014). Based on the most recent oil price forecast, the savings are reduced to about $520,000 annually over the period 2015 to 2017 (CA-NLH-288), and as already discussed, following Muskrat Falls commissioning savings are expected to be reduced to only $185,000 annually (NP-NLH-380).

c) ***Fairness Issues***: CBPP and other Island Industrial Customers are receiving subsidized rates owing to OC2013-089. NP customers are being forced to fund the IC rate subsidy. This raises issues of fairness and the appropriateness of locking in additional savings to CBPP on top of the subsidized rate when the value of the proposed supply agreement to other customers on the system does not appear to exceed the costs, particularly following the commissioning of Muskrat Falls.

d) ***Impact of Recent Events on Benefits Analysis***: Hydro has recently entered into two capacity assistance agreements with CBPP. The initial agreement "*allows Hydro to call on CBPP for its ability to provide up to 60 MW capacity assistance to Hydro during winter peak demand periods by both reducing its firm demand supplied by Hydro (9 MW), and by providing 51 MW of capacity to Hydro's system from the CBPP hydraulic generating facilities*" (CA-NLH-296, page 3 of 4, lines 7 to 11). Hydro also has a Supplemental Capacity Assistance Agreement "*which provides for an additional net capacity assistance of approximately 22 MW through a further interruption by CBPP of its operating load that is normally provided by the CBPP hydro generating facilities* (CA-NLH-296, page 4 of 4, lines 4 to 7)". When asked about the impact of the capacity assistance agreement on its analysis of the benefits of the CBPP Demand Credit Agreement (CA-NLH-288, part (d)), Hydro states "*Hydro is unable to determine the full impact on this analysis of the capacity assistance agreement entered into with CBPP*".

e) ***Other Components of the CBPP Supply Agreement***: The supply agreement with CBPP is overly complicated to the point that it is difficult to determine if it is fair to customers including CBPP. The supply agreement covers purchases of capacity and energy by CBPP from Hydro. These purchases are net of Deer Lake hydro generation. Further, Hydro purchases cogeneration and capacity assistance from CBPP. Hydro indicates that the capacity assistance is a combination of purchases from CBPP hydro generation and interruptions to Mill load (see point (d) above). The cogeneration purchases are energy purchases that Hydro is required to make whenever energy from CBPP's cogeneration unit is available (CA-NLH-344). The cogeneration and capacity assistance purchases are substantial, dwarfing Hydro sales to CBPP. As can be seen in the table below, Hydro purchases of cogeneration and capacity assistance from CBPP in 2014 were $15.9 million, and are forecast to be $11.7 million in 2015 (CA-NLH-285). This compares to Hydro revenues from electricity sales to CBPP (CA-NLH-284) of $3.52 million in 2014 (actual) and 4.10 million in 2015 (forecast). CBPP's net income in the NL electricity market during the 2015 to 2017 period is forecast to exceed $7.6 million annually. It is not clear if these figures incorporate CBPP's $594,000 annual savings in its electricity billings or its share of the $51,000 annual energy savings allocated to the Island Industrial Customer class deriving from the CBPP pilot supply agreement.

CBPP Sales and Revenues ($ Millions)

	2014 Actual	*2015 Forecast*	*2016 Forecast*	*2017 Forecast*
Hydro Revenue from Sales to CBPP	3.52	4.10	4.10	4.10
CBPP Income from Sales to Hydro				
Cogeneration	9.66	10.28	10.30	10.31
Capacity Assistance[12]	6.22	1.43	1.43	1.43
Total	15.88	11.71	11.73	11.74
CBPP Net Revenue	12.36	7.61	7.63	7.64

The requirement to purchase cogeneration "*whenever it is available*" means Hydro may be purchasing CBPP cogeneration when there is no system need, and might potentially be spilling water at its own hydro sites to accommodate the purchases. Further complicating the sales agreement between Hydro and CBPP is the fact that the Supplemental Capacity Assistance Agreement with CBPP has a maximum estimated capacity of 30 MW, but is reduced by 8 MW because "*at this level of load curtailment at the Mill, process steam requirements would decrease significantly and the generation from the co-generation unit (8 MW) would*

[12] PR-PUB-NLH-138 indicates that 2015 estimated costs included in the current rate case associated with agreements with CBPP to provide capacity are $1.68 million.

effectively become unavailable" (PUB-NLH-462). In addition, energy efficiency projects completed by CBPP resulted in 22,258 MWh energy savings in 2014. With so many things going on, it is difficult to determine if the sales agreement is fair to the electricity consumers in the Province, including CBPP. Neither is it clear if the CBPP Power Purchase Agreement is consistent with CBPP's water rights agreement (CA-NLH-339). What is clear is that CBPP is not a typical Island Industrial Customer.

In light of the above, I recommend that the Board deny Hydro's proposal to permanently instate the supply agreement with CBPP. I recommend that the Board direct Hydro to file a study of the CBPP supply agreement in its entirety taking into consideration the new capacity assistance agreements, the subsidy being received by the Island Industrial Customers owing to the rate phase-in, the reduced value of energy following commissioning of Muskrat Falls, the requirement to purchase energy form the CBPP co-generator whenever it is available, and the CBPP water rights. I recommend the study consider the pros and cons of separate contracts with Deer Lake Power generation and the CBPP mill. The contract with Deer Lake Power generation would be similar to other power purchase agreements with generators on the Island Interconnected System, while the agreement with the CBPP mill would be similar to other supply agreements with Industrial Customers on the Island Interconnected System. This would increase transparency and optimize the conversion efficiency of water to electrical energy at the Deer Lake Power facility. It would also give Hydro a measure of control over the Deer Lake facility during system emergencies when it is most needed, such as the outage events during the past two winters. The filing should be consistent with the studies on marginal costs, cost of service and rate design to be completed prior to submission of the next GRA in 2017.

15. CBPP Frequency Converter

In the Amended 2013 GRA (Volume I, page 4.29, lines 3 to 5), it is stated "*The material increase in the specifically assigned costs to CBPP is a result of approximately $3.5 million of capital expenditures by Hydro over the period 2007 to 2015 forecast on the frequency converter in place to provide service to CBPP*". In CA-NLH-295, Hydro states that the specific assignment of all costs associated with the frequency converter to CBPP is appropriate because "*This unit is of primary benefit to CBPP as it allows CBPP to convert some of its 50 Hz generation to 60 Hz for use within its mill operations, thereby reducing the amount of power it would otherwise have to purchase from the grid. In addition, the unit provides an ancillary benefit of increasing the overall stability of CBPP's 50 Hz power system*" (page 1 of 2, lines 21 to 26).

In spite of the benefits that the frequency converter provides CBPP, it would appear that CBPP does not believe it should pay costs associated with maintaining it in a safe and reliable operating condition. In its February 23, 2015 letter to the Board entitled *Newfoundland and Labrador Hydro – Amended General Rate Application – Island Industrial Customer rates, effective March 1, 2015*, the IIC Group state "*Hydro's proposed increase to the CBPP specifically assigned charge has been and is vigorously opposed*" (page 4).

Hydro was asked in CA-NLH-295 why it does not simply retire the frequency converter from service, or alternatively, transfer ownership to CBPP. Hydro responded that retirement would create undue hardship on CBPP, requiring a significant increase in its purchased power requirements from Hydro or a partial shutdown of mill operations. Further, Hydro indicates it "*has not entered into discussions with CBPP on the transfer of this unit in recent years so it is unable to comment on whether this would be advantageous or disadvantageous to CBPP*" (CA-NLH-295, page 2 of 2, lines 15 to 18).

The response to IC-NLH-187 indicates that if these costs were not assigned to CBPP as proposed by Hydro, and were instead assigned as common in the cost of service study, costs of $891,045 would be transferred to the other customers on the system of which approximately 90%, or $801,941, would be recovered from Newfoundland Power.

In summary, the CBPP frequency converter does not benefit other customers on the system. Therefore, its costs should not be borne by the other customers on the system. I recommend that the Board accept Hydro's proposal to continue to specifically assign the costs of the CBPP frequency converter to CBPP.

16. Wheeling Rate

In the GRA Application (Volume I, page 4.6, lines 17 to 18) Hydro stated "*As there are no remaining ICs to whom the availability clause of Hydro's former Wheeling Rate* *applies, Hydro is proposing to no longer offer this rate*". In CA-NLH-29, Hydro indicated there is a possibility that a wheeling rate may be required in the future for another customer, but no such requirements are known at this time. Hydro went on to say that if a wheeling rate is required in the future, an application will be put forward at that time.

In my April 25, 2014 Pre-filed Evidence I argued that this explanation does not justify abandonment of a rate that is tried and tested, and if the need for the rate arises in the future, it would be much simpler to use a rate that is already available than to submit an application for a new rate. In the Amended 2013 GRA (Volume I, page 4.30, lines 13 to 16) Hydro states that although there are no customers currently on the rate, it is proposing "*to maintain the rate in the event that it may be required*".

I recommend that the Board accept Hydro's proposal in the Amended 2013 GRA to maintain the wheeling rate.

17. Key Performance Indicators (KPIs)

In its original filing (GRA Application, Volume I, page 4.28, lines 12 to 14), Hydro requested the Board's approval for altering or amending Order No. P.U. 14(2004) so that it would not be required to provide functionally oriented financial Key Performance Indicators on a forecast basis. Hydro's justification (page 4.28, lines 1 to 3) was that its functionally oriented financial KPIs require a COS study to allocate costs among systems and functional areas.

I pointed out in my April 25, 2014 Pre-filed Evidence that it is useful for the Parties and the Board to see how Hydro is performing relative to targets, particularly when Hydro's target return on equity is fixed by way of Government directive (OC2009-063). In the Amended 2013 GRA (Volume I, page 4.52, lines 20 to 27), Hydro acknowledges this point, and now proposes "*to continue to provide this information in its annual KPI reports based on the most recent Test Year Cost of Service Study*".

I recommend that the Board accept Hydro's proposal in the Amended 2013 GRA to continue to provide functionally oriented financial Key Performance Indicators based on the most recent test year cost of service study.

This concludes my Pre-filed Evidence.

Exhibit CDB-1

C. Douglas Bowman

Background and Qualifications

Profession	*ENERGY CONSULTANT*
Nationality	Canadian Citizen U.S. Resident
Years of Experience	38
Education	M.S./1977/Electrical Engineering/State University of New York, Buffalo, NY B.S./1975/Electrical Engineering/State University of New York, Buffalo, NY
Key Qualifications	Mr. Bowman has 38 years of experience in the power industry both domestically and internationally. His primary areas of expertise include electricity services costing and pricing and power sector restructuring, regulation and markets. Mr. Bowman has played a leading role in consulting projects in Canada, Armenia, Australia, Central America, China, Colombia, Dutch Antilles, Egypt, Georgia, Ghana, India, Indonesia, Macao SAR, Macedonia, Mexico, the Middle East, Mongolia, Pakistan, the Philippines, Russia, Saudi Arabia, Serbia, South Korea, Taiwan, Thailand, United States and Vietnam.

Expert Testimony at Newfoundland and Labrador Hydro's Rates Submission
Provided expert written testimony on issues related to cost of service, rate design and regulation at Hydro's 2013 General Rate Proceeding.

Expert Testimony at Newfoundland and Labrador Hydro's Application Concerning the Rate Stabilization Plan
Provided expert written testimony on issues related to Hydro's 2009 Application on the rate stabilization plan components of the rates to be charged Industrial Customers.

Expert Testimony at Newfoundland Power Inc.'s Rates Submission
Provided expert written and oral testimony on issues related to cost of service, rate design and distribution quality and reliability of service standards at Newfoundland Power's 2008 General Rate Application.

Expert Testimony at Newfoundland and Labrador Hydro's Rates Submission
Provided expert oral and written testimony and participated in negotiation sessions on issues related to cost of service, rate design and regulation at Hydro's 2006 General Rate Proceeding.

Expert Testimony at Newfoundland and Labrador Hydro's Rates Submission
Provided expert oral and written testimony and participated in mediation sessions on issues related to cost of service, rate design and regulation at Hydro's 2003 General Rate Proceeding.

Expert Testimony at Newfoundland Light & Power's Rates Submission
Provided expert written testimony and participated in mediation/technical sessions on issues related to cost of service and rate design at Newfoundland Light & Power's 2003 General Rate Application.

Expert Testimony at Newfoundland and Labrador Hydro's Rates Submission
Provided expert oral and written testimony related to cost of service and rate design issues at Hydro's 2001 General Rate Proceeding.

Expert Testimony at Newfoundland Light & Power's Rates Submission
Provided expert oral and written testimony related to cost of service and rate design issues at Newfoundland Light & Power's 1996 General Rate Proceeding.

Expert Testimony at Nova Scotia Power's Rates Submission
Provided expert oral and written testimony related to cost of service and rate design issues. Recommended and designed time-of-day rates for all customer classes and designed an alternative interruptible rate design for large industrial customers.

Expert Testimony at Nova Scotia Power's Rates Submission
Provided expert oral and written testimony regarding an Industrial Expansion rate design. Recommended approval of rate with modifications and submitted two alternative rate designs for approval including a real-time surplus power rate and a time-of-day expansion rate.

Cost of Service and Cost Reducing Rate Design Study
On behalf of the Nova Scotia Utility and Review Board, reviewed Nova Scotia's cost of service study and developed rate designs consistent with Nova Scotia Power's integrated resource plan for all customer classes. Report was filed with Board, and reviewed as part of hearing on utility's subsequent rate submission.

Economic Policy Reform and Competitiveness Project – Mongolia
Assisted with the setup and training of the new regulatory commission in Mongolia. Developed tariff reform plan that was accepted by the regulatory commission for implementation. Developed incentive based power purchase agreement for sales of generating company capacity and energy to the transmission company. Developed market rules for governing competitive electricity market.

Electricity Market Reform in Macedonia
Participated in development of competitive electricity market design for Macedonia consistent with European Union market design. Assisted with development of Market Rules to govern operation of the competitive electricity market.

Competitive Electricity Market Design – Taiwan
Developed competitive market design for electricity sector in Taiwan. Drafted market governance documents including Market Rules and Grid Code. Managed market modeling component of project which simulated market operation under wide range of scenarios.

Alberta RTO Evaluation Project
Developed strategy related to preferred business relationship between the Alberta Regional Transmission Organization and RTO West to ensure Alberta's electricity needs are met by a competitive market. The project participants included the Alberta Department of Energy, ESBI Alberta Limited, and the Power Pool of Alberta.

Detailed Market Design and Market Rules Development, Western Australia
Served as project manager providing advice to the Government of Western Australia with regard to detailed market design, market rules development, and market power mitigation. Assisted with the stakeholder process, drafted position papers on various design topics, drafted market rules consistent with a bilateral contracts market, and designed a market power mitigation program.

Market Assessment of Generating Company in Korea
Provided advisory services to a client interested in submitting a bid for the purchase of a large generating company in Korea. Served as Project Manager for the market valuation component of the project.

Expert Testimony in Kansas Civil Case Concerning IPP Development
Provided expert testimony concerning the independent power producer (IPP) programs in India and Colombia. The testimony related to the difficulties and hurdles that must be overcome in order to successfully develop an independent power project in a developing country.

Market Power Mitigation Strategy for Generating Company in Korea
Provided advisory services to a large generating company in Korea relating to a market power mitigation strategy. Served as project manager. The project included market simulation to determine if the generating company would have market power in the new competitive market, and if so, if its market power were any greater than other generating companies participating in the market.

Advisory Services to World Bank on Regional Market Design among Arab Countries: Conducted a review of the status of market reform in the Arab countries and designed a competitive regional electricity market and road map for implementation of the market and ultimately gain access to markets in the surrounding region. Developed governance documentation for the regional electricity market including a General Agreement, Market/Commercial Rules and a Grid Code.

Advisory Services on Transmission Tariff Development in Georgia: Provided advice to Government of Georgia on behalf of USAID on transmission tariff development. The project included a comparison of current practice in Georgia to best practice in the European Union and provided recommendations for bringing current practice up to EU standards.

Advisory Services to World Bank on Regional Energy Integration in Middle East and Surrounding Area: Provided advice to Government of Saudi Arabia on behalf of World Bank on regional energy integration of GCC countries (Saudi Arabia, Kuwait, Bahrain, Qatar, UAE and Oman), as well as a select number of other countries offering trade opportunities for Saudi Arabia including Egypt, Iraq, Jordan, Syria, Lebanon, Iran, Turkey and the EU. Advice included assessments of legal, regulatory and policy relating to international energy trade, energy demand and supply balance, electric transmission interconnection including HVAC and HVDC, and pipeline capacity to support trade.

Advisory Services to World Bank on Potential Egypt – Saudi Electrical Interconnection: On behalf of Government of Saudi Arabia, conducted evaluation of potential HVDC electrical interconnection between Saudi Arabia and Egypt.

Advisory Services on Electricity Market Design in Serbia
Developed a high-level, phased design for the internal Serbian electricity market consistent with the EU Directive. The project intent was to provide institutional support to the Ministry of Mining and Energy to facilitate the phased development of the internal electricity market with competitive bilateral contracts taking into account Serbian Energy Policy, the draft Energy Law, European Union requirements and the Athens Memorandum 2002.

Expert Testimony in California Civil Case Concerning Breach of Contract
Provided expert testimony concerning the value of a company based on revenues generated less costs to manage and operate the business. Revenues were derived from a contract for energy services covering steam and electricity sales to an industrial client and its power purchase agreement covering electricity sales to a utility.

Workshop on Transmission Planning in a Competitive Power Market
Conducted workshop on transmission planning for proposed RTO West in Portland, Oregon. Workshop covered transmission planning

responsibilities of Regional Transmission Organizations under FERC Order No. 2000 and experience with domestic independent system operators and international transmission organizations. Reliance on market mechanisms for transmission expansion was emphasized at workshop.

Workshop on Transmission Pricing in a Competitive Power Market
Conducted workshop on transmission pricing for proposed RTO West in Portland, Oregon. Workshop covered transmission pricing in Regional Transmission Organizations under FERC Order 2000 and experience with domestic Independent System Operators and international transmission organizations. Workshop addressed transmission services such as network, connection, import, export, and point-to-point service, and cost recovery such as postage stamp, zonal and nodal pricing.

Development of Terms and Conditions for Transmission Tariff
Assisted Ontario Hydro Services Company with development of terms and conditions for its new transmission tariff. The terms and conditions were filed with the regulatory authority as part of the utility's application for approval of the new tariff. Also assisted with preparation of responses to various discovery questions related to the tariff.

International Survey of Transmission Rates and Services
Conducted a survey of transmission rates and services provided in various domestic and international jurisdictions. Survey conducted in support of submission by Ontario Hydro Services Company to Ontario Energy Board on its new transmission tariff. Survey topics included: services offered such as network, point-to-point, connection, import and export service; cost recovery such as postage stamp, zonal and nodal pricing; treatment of generation; and transmission planning.

Feasibility Study of Merchant Co-generation Project
Participated with a team of consultants on a feasibility study for development of a merchant co-generation facility to sell power into the wholesale market and steam to the industrial plant. Directed market studies including analyses of forecasts for electricity demand, new generating plant construction, generation costs, market bid strategies, fuel costs, utility avoided costs, etc.

Advice to Mid-west Cooperative Concerning Role in Deregulated Power Market
Provided advice to a mid-west cooperative on positioning itself for a deregulated power market. Advice included the cooperative's future power purchasing strategy, transmission and distribution construction and operations and maintenance strategy and how it should position itself to compete in the future deregulated power market.

Experience

Independent Consultant, Warrenton, VA 2005 to Present

Nexant, Inc., Washington, DC 2004
Executive Consultant

KEMA Consulting, Fairfax, VA 1999 to 2004
Executive Consultant

Pace Global Energy Services, Fairfax, VA 1998 to 1999
Director, Power Services

International Resources Group, Ltd. (IRG), Washington, DC 1995 to 1998
Senior Manager, Energy Group

CSA Energy Consultants, Arlington, VA 1994 to 1995
Vice President (1995); Senior Manager, Power Supply Analysis (1994)

Ontario Hydro, Toronto, Ontario, Canada 1977 to 1993
Industrial Service Advisor, Field Support Services Department, 1992-1993

Senior Rate Economist, Rate Structures Department, 1990-1992

Planning Engineer, Demand/Supply Integration, System Planning Division, 1988-1990

Senior Engineer, Resource Utilization, Power System Operations Division, 1987-1988

Planning Engineer, BES-Resources Planning, System Planning Division, 1981-1987

Assistant Planning Engineer, Transmission System Planning Department, 1979-1981

Engineer-in-Training, 1977-1979