

IN THE MATTER OF the *Electrical Power Control Act, 1994* (the “EPCA”) and the *Public Utilities Act*, R.S.N. 1990, Chapter P-47 (the “Act”) and their subordinate regulations; and

IN THE MATTER OF an Application by Newfoundland and Labrador Hydro (“Hydro”) for approvals of: (1) Under Section 70 of the Act, changes in the rates to be charged for the Supply of power and energy to its Retail Customer, Newfoundland Power, its Rural Customers and its Industrial Customers; (2) Under Section 71 of the Act, its Rules and Regulations applicable to the supply of electricity to its Rural Customers; (3) Under Section 71 of the Act, the contracts setting out the terms and conditions applicable to the supply of electricity to its Industrial Customers; and (4) Under Section 41 of the Act, its 2002 Capital Budget.

RESPONSES TO NLH 1 to 17

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Q. (Re: p.7, lines 8-9)

How would ACI suggest the additional revenue requirement of \$4.8 million be collected if a freeze on industrial rates was implemented?

A. ACI suggests that an additional revenue requirement of \$4.8 million from industrial customers is not required. For example, \$1.5 million of this \$4.8 is due to the Great Northern Peninsula being connected to the island Interconnected Grid. ACI does not agree that Industrial Customers should pay \$1.5 million a year for an interconnection that benefited residents of the Great Northern Peninsula.

Furthermore, in many industries, price increases cannot be passed on to customers. Industry is then forced to look for other efficiencies within their own organization or face a reduced profit level.

Q. (Re: p.3, lines 10-11 and p.4, line 16)

For any mills shutdown by ACI or those having a machine shutdown, provide the comparative power costs for each mill in the last full year of production with ACI Stephenville in that year.

A. The manufacturing costs including power costs for ACI mills outside of Newfoundland are confidential commercial information. Furthermore, they are not relevant for the Board's understanding of the application.

Melvin L. Dean

Q. (Re: p.10, lines 16-20)

Please outline the derivation of the amounts of \$6,080,592 and \$1,763,371.

A. There is an error in the evidence that will be changed. The evidence on page 10, lines 17 – 20 should read “The total quantity of Interruptible “A”, Exceptional and Emergency Power used in 2000 was 6,080,592 kWh for a total dollar value \$524,387 although the amounts vary significantly from year to year. Based on 2000, a 29% increase in Non-firm rates will add \$152,072.23 to the Industrial Customers’ energy costs in 2002.”

Q. For ACI-Stephenville and ACI-Grand Falls, provide a table of actual total manufacturing costs in \$/tonne or dollars per year for the period 1992 to 2000 and forecast for 2001 and 2002 broken down by:

- Depreciation and Interest Costs;
- Labour Costs;
- Shipping Costs;
- Maintenance Costs;
- Power Costs;
- Wood or Fiber Costs;
- Profit; and
- Total.

A. The power cost per tonne of newsprint for ACI-Stephenville and ACI-Grand Falls is outlined in the table below. The other manufacturing costs are confidential commercial information. Furthermore, they are not relevant for the Board's understanding of the application.

Power Costs in total \$ / year)

<u>Year</u>	<u>ACI-Stephenville</u>	<u>ACI-Grand Falls</u>	
1992	\$19,772,406	\$5,879,203	
1993	\$18,754,182	\$5,632,365	
1994	\$18,230,198	\$5,459,622	
1995	\$17,814,848	\$5,856,927	
1996	\$16,880,100	\$7,491,132	
1997	\$18,443,628	\$6,344,536	
1998	\$10,963,177	\$3,875,434	
1999	\$20,209,325	\$5,797,241	
2000	\$17,621,733	\$5,410,493	
2001	\$16,920,000	\$4,854,000	(F)
2002	\$20,634,000	\$8,884,000	(F)

Q. (Re: p.5, lines 12 to 14)

Please show power costs as a percent of manufacturing costs from 1992 – 2000 with and without the Interruptible B arrangement.

Include a description of how the electrical power costs increases compare to all other manufacturing costs over the period from 1992 to 2002.

A. The table below shows the power cost as a percentage of manufacturing cost with and without the Interruptible “B” arrangement.

<u>Year</u>	<u>% of Manufacturing Costs Without Interruptible ‘B’</u>	<u>% of Manufacturing Costs With Interruptible ‘B’</u>
1992	23.3	23.3
1993	22.1	21.7
1994	22.8	21.2
1995	20.7	18.7
1996	19.4	18.0
1997	20.8	19.4
1998	21.0	18.8
1999	24.4	22.9
2000	21.3	19.9

(a) The total newsprint manufacturing costs, excluding power, increased 5.4% during the period 1992 to 2002. Total power costs decreased by 4.2% during the same period.

Q. (Re: p.5, lines 1-2)

Provide a table of actual electrical power costs in ¢/kWh for the years 1992 to the present for ACI-Stephenville, ACI-Grand Falls and each of the other ACI mills.

A. The actual costs in ¢/kWh for the years 1992 to the present for ACI-Stephenville and ACI-Grand Falls are in the table below. The ¢/kWh for the ACI mills outside of Newfoundland is confidential commercial information. Furthermore, they are not relevant for the Board's understanding of the application.

Power Cost (¢ / kWh)

<u>Year</u>	<u>ACI-Stephenville</u> (Without Interruptible "B" Rebate)	<u>ACI-Stephenville</u> (With Interruptible "B" Rebate)	<u>ACI-Grand Falls</u>
1992	3.89	3.89	4.76
1993	3.70	3.63	4.32
1994	3.68	3.42	4.09
1995	3.63	3.38	3.98
1996	3.80	3.53	4.21
1997	3.79	3.54	4.80
1998	3.93	3.52	5.61
1999	3.97	3.73	5.56
2000	3.43	3.19	4.75

- Q. Provide an estimate of mill demand at the ACI-Stephenville and ACI-Grand Falls mills that would be altered by the application of a seasonal TOU rate structure assuming that the ratio in rates between the periods November 1 to March 31 and April 1 to October 31 was approximately 1.5 to 1.
- A. ACI-Stephenville and ACI-Grand Falls would not be able to alter mill demand by the use of a seasonal TOU rate structure.

Q. (Re: p.15 – Off Peak Power)

(a) Has ACI-Grand Falls ever used the article with respect to off peak power?

Can industrial customers currently shift their load from Hydro and to what extent? Would this be through generation or through load?

A. (a) An off peak power rate and details have never been finalized in regard to the article in the ACI-Grand Falls contract regarding off peak power. Any time it was discussed with Newfoundland Hydro, there was no interest on their part to supply it since it had no advantage to them. Thus ACI-Grand Falls has never used this article.

(b) Industrial Customers cannot currently shift their loads from Hydro since, as referenced in the Reply to CA 162, it has no price structure in respect of time of day rates by which to judge whether the price incentives would be sufficient to justify a necessary investment in pulp storage facilities and justify changes in production practices. Without a rate structure from which to work, it is not possible to determine whether a customer would shift its load or to what extent such shifting would occur. ACI-Stephenville estimates that it could potentially shift 15 MW of load from day to night provided the economics justify the shift. No estimates are available for any other customers.

Q. (Re: p.11-13 – Transformer Losses)

Who owns the four transformers at the ACI-Stephenville mill? Why should all customers pay for the losses in these transformers?

With respect to specifically assigned transformers at other customer supply points, why should all customers pay for the losses in these transformers?

Please show where losses for specifically assigned or customer owned transformers are absorbed by Hydro (p.12, lines 7-8).

Please provide the New Brunswick, Nova Scotia, Hydro-Quebec and Manitoba Hydro rate schedule for different voltage levels and associated transformer loss adjustments (p.13, lines 3-8). Are there differences for customer owned versus utility owned transformers?

- A. (a) ACI owns the four transformers at the ACI-Stephenville mill. ACI's position on transformer losses is to maintain the status quo. ACI-Stephenville is satisfied with the previous contract and is in agreement with Hydro's statement in a letter dated February 6, 2001 from Mr. Derek W. Osmond to Mr. Jay Backus which states "In past discussions with our industrial customers, we have been informed that, for the most part, there was a good measure of satisfaction with the previous contractual terms." See letter Attachment 1 to this Answer, fourth paragraph, first sentence.
- (b) See response to NLH-9 (a).
- (c) The situation as we know it is that ACI-Stephenville do not pay for losses on their four 230 kv transformers, North Atlantic Refining Ltd. do not pay for losses on their two 230 kv transformers and ACI-Grand Falls do not pay for losses on transformers T1 & T2.

(d) Hydro Quebec

The Hydro Quebec website contains the document entitled “Electricity Rates Bylaw Effective May 1, 1998”. The equivalent of Hydro’s industrial firm rate is Hydro Quebec’s Rate L – General Rates for large Power. Sections 105, 303 and 304 are attached and show the demand discount for owning your own equipment plus a further discount to account for transformer losses. Section 303 states that the discount for a voltage level of 230 kV is \$2.934/kW per month and section 304 grants a further discount of 13.20¢/kW per month when metering is on the high voltage side of the transformer. An extract from this document is attached is Attachment 2.

New Brunswick

As stated in Melvin L. Dean’s evidence page 13, lines 3 to 5 “New Brunswick Power seems to limit transformation charges to those circumstances where power is supplied at primary voltages between 4 kv and 25 kv. In that case, the demand and energy rates are increased by 1.5%”. An electronic copy of an NP generic Industrial Contract was obtained and the following was the wording in the contract pertaining to this subject:

“Losses Charge: At the discretion of NB Power, electricity may be supplied at a primary service voltage between 4 kV and 25 kV. In such cases, the monthly demand and energy consumption will be increased by 1 1/2% to compensate for transformation losses.

Transformation Charge:

When a Customer is provided service at voltages less than 69 kV, the Customer will also be charged an "equivalent kVA rental" charge equal to 1 2/3% per month of the costs of the equivalent substation kVA utilized by the Customer's electrical load. The equivalent kVA charge is the Customer's kVA demand multiplied by 30¢ per kVA per month (94¢ per kVA per month effective October 1, 2001)."

Manitoba

Manitoba Hydro web site shows that the higher the voltage, the lower the demand rate. The text is Attachment 3 to this Answer.

Nova Scotia

Industrial contacts and Nova Scotia Power confirm that there is a reduction for customer owned transformers and there is a 1.75% reduction in meter readings when the metering is done on the high voltage side of the bulk power transformer. The pertinent parts of an e-mail from Nova Scotia Power are annexed as Attachment 4.

Q. (Re: p.12, lines 4-5)

Please explain the statement “This is a convenient way of avoiding the details around meter location and if customers currently pay for losses or not.”

- A. With regard to metering and transformer losses, there are several primary transformer voltages and several secondary voltages. In addition to different voltage levels, there appears to be four metering situations that occur in the industry, namely;
- i) Metering is on the low voltage side of the transformer and the customer does not pay for the losses.
 - ii) Metering is on the low voltage side of the transformer and customer is charged an adjustment equivalent to the losses.
 - iii) Metering is on the high voltage side of the transformer and no discount to compensate for transformer losses is given.
 - iv) Metering is on the high voltage side of the transformer and the customer is given a discount to compensate paying for the transformer losses.

To simplify the discussion in his evidence, Melvin Dean refers to the “effective” voltage at which the power is purchased. Using this method simplifies and reduces the variables. For example, instead of saying that “the metering is on the low voltage side of the 230 / 13.8 kV transformer but an adjustment is made to compensate for the transformer losses”, one can say that “the power is ‘effectively’ purchased at 230 kV”.

Q. (Re: p.13, lines 5-6)

Provide details of Hydro-Quebec's major discount per kilowatt for Industrial Customers taking power at high voltage.

A. Please see NLH-9(d).

Q. (Re: pp 13-14)

Explain why Hydro or other customers should bear the fixed cost of facilities normally borne by industrial customers when a strike occurs at the customer's facilities?

A. The Industrial Customers are only asking for a continuation of the existing arrangement or an arrangement similar to that which exists in other jurisdictions. As explained in NLH-9(a), the Industrial Customers agree with Hydro's statement that there was a good measure of satisfaction with the previous contractual arrangement.

Q. (Re: p.5, lines 1-4)

- (a) Please give the ranking of the Stephenville mill in terms of overall cost per tonne of newsprint produced from 1992 to 2000 and projected to 2004.
- (b) Also, for the same period, provide its ranking in terms of electrical energy costs per tonne with and without the Interruptible B arrangement.
- (c) Please state your assumptions with respect to power costs for the other mills in the ACI ranking.

A. The manufacturing costs including power costs for ACI mills outside of Newfoundland are confidential commercial information. Furthermore, they are not relevant for the Board's understanding of the application.

Q. (Re: p. 4, line 18 to 20)

Please show how the \$3.2 million per year increase and the 18.8% increase are calculated. Separate the increase to show the RSP impact and base rates impact

A. In reviewing the calculation, a small error was noted. The increase should be 19% and the amount should be \$3.3 million. Note that the impact without the RSP is 11.1% and \$1.7 million. The calculations are shown on the Table attached.

Q. (Re: p.10 – Non-firm Rates)

- (a) Please show how the 56% increase on line 10, p. 10, is calculated.
- (b) Does the increase reflect the RSP adjustment for 2001 and 2002? If not, recalculate the increase with the RSP adjustments.
- (c) What percentage increase in cost per tonne of newsprint is the change in non-firm rates to each of the ACI paper mills in Newfoundland? Please include the RSP impact for 2002 on the existing Interruptible rates if they were to continue.
- (d) With the implementation of the power purchase agreement in 2003 for incremental generation on the Exploits River, please estimate how often Generation Outage Demand will be required by ACI and how it will change from the current circumstances in terms of energy, power demands and costs.
- (e) What will the cost be to ACI assuming a one day outage is planned to number 4 generator at Grand Falls in 2002 with No. 6 fuel costing \$28.00 per barrel, assuming current rate structure and the proposed rate structure? What will the cost to ACI be under each rate structure if the change was a forced outage? Please show the percent change for each scenario.
- (f) In 2000, ACI-Stephenville took Interruptible “A” at an average monthly load factor of approximately 25%. Assuming an industrial customer is taking 1,000 kW of Interruptible “A” at load factors of 10, 25, 40, 65 and 80% and the cost of fuel is \$28/bbl, show the cost and the percent difference in cost to the customer at each load factor using the current rate structure for Interruptible “A” including the current RSP adjustment, the current rate structure for Interruptible “A” with the proposed firm rates and forecast 2002 RSP adjustment, and the proposed Interruptible rate structure and rates. Please show your calculations.
- (g) Explain why the proposed rate as referred to on line 13 of p. 10 of the evidence of Melvin Dean is prohibitive.

- A. (a) see Table attached on page 4 of this Answer.
- (b) the increase referred to in NLH15(a) does not reflect the RSP adjustment for 2001 and 2002. The recalculated increase is shown on the Table on page 5 of this Answer.
- (c) the Interruptible “A” rate will not increase the cost per tonne of newsprint for the Stephenville Mill in 2002. A high increase in the rate would result in ACI-Stephenville using more firm power and less Interruptible “A” power. An increase in the Interruptible “A” rate has the effect of reducing the Mill’s flexibility when going through periods of operational change. This would in turn lead to additional costs.

Hydro’s proposed non-firm power incorporates the existing Interruptible “A” Power, Emergency Power and Exceptional Power used at ACI-Grand Falls. The main use of non-firm power at ACI-Grand Falls is for generation outage. It is not possible to predict the number of generator failures or the duration of these failures with any accuracy.

Grand Falls uses very little Interruptible “A” Power, so the impact on this power block is minimal.

The Emergency Power will have the biggest possible cost to ACI-Grand Falls due to the method of calculating the demand, i.e., the number of days in which non-firm power was taken multiplied by the maximum non-firm demand for the month. Given the large range in the Grand Falls generation output, this could be a costly rate. Exact costs or impact on costs per tonne cannot be accurately estimated as it depends on the number of generator outages and duration.

- (d) With the implementation of the power purchase agreement in 2003 for incremental generation on the Exploits River, the need for Generation Outage Demand required by ACI Grand Falls will be greatly reduced. Barring a double contingency for forced outages, the only circumstance would be if #4 generator at Grand Falls was forced down. This would leave us 2.5 MW short. Generation Outage Demand could also be used for a plugged river (ice) or low water in storage at Red Indian Lake. While the frequency of use for Generation Outage Demand will be reduced due to the peaking capacity at Grand Falls and Bishop’s Falls, the costs incurred when it will be used is higher due to the Demand charge. The energy rate will be the same as is currently charged for Emergency (Bunker C or gas turbine).

The amount of Generation Outage Demand requested for low reservoir levels in Red Indian Lake will not change due to having more generating capacity. The impact that the proposed rate will have will depend largely on the load factor for the demand taken.

Again, this cost will be higher since in the past Hydro would extend the Interruptible "A" beyond the 5 MW cap to the required level to make up the shortfall in ACI's generation. While the demand charge for Generation Outage is lower, the energy charge will be higher. It will depend largely on the load factor for the demand taken.

e) Forced Outage

See the attached Tables at pp. 6 and 7 of this Answer for the costs of a one day planned outage and forced outage on No. 4 Generator.

It is important to note that if there had been Generation Outage Demand taken in this month prior to or after this particular outage for one of the smaller generators then the total cost for the month would be much larger.

(f) the requested information and calculations are shown on pp. 8 through 12 of this Answer.

(g) with a load factor of 89%, the increase in the rate would be 56%. An increase of this amount would result in ACI-Stephenville using firm power instead of non-firm power.

Q. (Re: p.11 - Converters)

- (a) What is Grand Falls' plan with respect to 50 Hz operation and conversion to 60 Hz of the ACI mill in the next 5 years? Why?
- (b) What is Corner Brook Pulp and Paper's plan with respect to 50 Hz operation and conversion to 60 Hz of their mill in Corner Brook? Why?
- (c) Which customers require and control the need for the frequency converters at this time?
- (d) If the frequency converter at Corner Brook failed and was out of service for one month, what would the impact be to Corner Brook Pulp and paper? What would the impact be to other Hydro customers?

A.

- (a) ACI Grand Falls plans to decommission the Grand Falls Frequency Converter in the spring of 2002 as part of the conversion to 60 HZ of the Bishop's Falls generation. All mill 50 HZ loads will be converted to 60 HZ by that time. Engineering is currently ongoing. This will bring the mill and its generating facilities to a common standard of 60 HZ. We will also decommission some aging 50 HZ unit substations.
- (b) CBPP's 50 Hz load is about 18,000 kilowatts. This load is directly associated with production equipment, namely, numbers 1 and 4 paper machines. The total cost for CBPP to implement conversion to 60 Hz includes:

- The cost of converting paper mill/machine equipment
 - The cost of converting generation/transmission assets
 - The cost (lost revenue) of lost production

Equipment conversion to 60 Hz is technically feasible. However, the total cost to implement conversion would be in excess of \$20 million and such conversion would not be cost effective nor contribute to improved product quality. Hence, CBPP plans to continue utilizing energy at 50 Hz.

- (c) CBPP (division Deer Lake Power) has approximately 100,000 kilowatts of 60 Hz generation capability which includes 20,000 kilowatts of 50 Hz generation converted to 60 Hz through the frequency converter. The frequency converter is required to convert the 20,000 kilowatts of 50 Hz generation to 60 Hz. This energy is usually used by CBPP but has been used by Hydro to facilitate scheduled maintenance at the Massey Drive and Deer Lake terminal stations, thus avoiding total interruptions to domestic loads (Newfoundland Power) in the Corner Brook/Deer Lake areas. Under system transmission emergencies affecting Western Newfoundland, Hydro would use CBPP's 100,000 kilowatts of 60 Hz generation capability made possible, in part, by the frequency converter.

ACI-Grand Falls requires the frequency converter to keep the integrity of the 50 Hz supply intact until the converter has been decommissioned as referred to in (a) above so that there is not a risk to mill operations. As with CBPP, the power can be made available to the grid in system transmission emergencies.

- (d) Under existing arrangements, during frequency converter outages, replacement 60 Hz power and energy is provided to the paper mill by Hydro without a demand charge – energy provided is paid at the industrial rate. Extended outages of the frequency converter would potentially affect all customers on the grid, especially Newfoundland Power, in that:
- (i) during system emergency in the Corner Brook/Deer Lake areas, approximately 20,000 kilowatts of generation capability would not be available;
 - (ii) loss of load probability would be affected;
 - (iii) the availability of interruptible power to other customers could be affected.

Q. (Re: p.15 – Interruptible “B” Power)

What is the cost to Stephenville for providing this service?

- A. The cost to Stephenville for providing Interruptible “B” service depends on a number of variables. The main ones are frequency of interruption, duration of interruption, grade of newsprint being manufactured, pulp inventory at the time of interruption, source of cost of alternative fiber and shipping schedules. In a year when there are no interruptions, the cost to Stephenville is minimal. The higher the hours of interruption in a year, the higher the risk of production downtime and thus the higher the cost.