Newfoundland and Labrador Hydro

2017 General Rate Application

Before the
Newfoundland and Labrador
Board of Commissioners of Public Utilities

Evidence of Drazen Consulting Group, Inc.

on Behalf of Iron Ore Company of Canada

DRAZEN CONSULTING GROUP
Energy & Regulatory Economics

Project No. 171583
December 4, 2017

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Introduction

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESSES.

A Mark Drazen, 225 S. Meramec Avenue, Suite 1033T, St. Louis, Missouri, USA, and 1405 Fairfield Road, Victoria, British Columbia, Canada.

Q WHAT IS YOUR OCCUPATION?

A I am a consultant in the field of public utility economics and regulation and a member of Drazen Consulting Group, Inc.

Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A I have worked in this field since 1972 in rate cases, regulatory analysis, project planning and negotiations throughout Canada (nine provinces and federal jurisdictions) and the United States (41 states and federal jurisdictions). Our firm has been in this field since 1937. I have degrees in mathematics and engineering from the Massachusetts Institute of Technology. Details are given in **Appendix A.**

Q **ON WHOSE BEHALF ARE YOU SUBMITTING THIS EVIDENCE?**

A I am appearing on behalf of Iron Ore Company of Canada (IOC). IOC is a customer of Newfoundland and Labrador Hydro (Hydro or NLH) located in western Labrador. It takes service on the Labrador Industrial Transmission rate (LIT).

Overview

Q **WHAT IS THE SUBJECT OF THIS EVIDENCE?**

A This evidence concerns the level and structure of the LIT rate.

Q **PLEASE SUMMARIZE THE MAIN POINTS IN THIS EVIDENCE.**

A Hydro has proposed both large increases and structural changes for the LIT rate.

The large increases result, in part, from transmission facilities from Muskrat Falls to Happy Valley. Given the delay in the Muskrat Falls completion until 2020, those facilities should not be included in the 2018 and 2019 cost of service. This will lower rates for all Labrador Interconnected System customers.

The structural changes proposed by Hydro are intended to create an incentive for demand management by LIT customers, with a goal of reducing the need for expansion of the Labrador West Transmission System. The proposed structure is unlikely to achieve the goal, because increased demands from other customers far exceed the potential reduction in IOC demand. This evidence suggests an alternative, which can apply more broadly to all customers. However, any change in structure should not be made for 2018, for three reasons. *First*, the expected restart of Wabush

Mines in late 2018 will have an impact on the LIT demand charge. *Second*, it gives Hydro and the customers time to evaluate alternatives. *Third*, the critical winter months of 2018 will have passed by the time any change is implemented.

The Labrador Industrial Transmission Rate

Q WHAT IS THE CURRENT STRUCTURE OF THE LABRADOR INDUSTRIAL TRANSMISSION RATE THAT IOC PAYS?

A The LIT rate is a monthly demand charge applied to the billing demand. The billing demand is defined thus:

> *The billing demand shall be equal to the greater of (i) the customer's Power on Order; (ii) the actual monthly demand in the current month; and (iii) their maximum demand in the calendar year less their interruptible demand.*[1]

Q WHO IS SERVED ON THE LABRADOR INDUSTRIAL TRANSMISSION RATE?

A The only customers on the rate are IOC and Wabush Mines. Currently, Wabush is effectively shut down and uses only a minimal amount of power. However, it was recently purchased and may re-open in late 2018.[2]

Q HOW IS THE LIT RATE DETERMINED?

A The LIT revenue requirement is based on allocated cost of service. The embedded cost of service is divided by the forecast billing demand to get a per-kW charge.

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[1] https://www.nlhydro.com/wp-content/uploads/2014/04/NL-Hydro-July-1-2017-Rates-Complete.pdf.
[2] NLH Application, Volume 1, page 5.34.

Hydro says that it "… is proposing to continue to use the same methodology to determine the costs to be recovered from the Labrador Industrial Transmission Customers".[3] **Table 1** shows the costs and rate as calculated for 2015, which produce the current rate, and as forecast by Hydro for 2018 and 2019:

Table 1

Derivation of Labrador Industrial Transmission Rate[4]

	2015	**2018**	**2019**
LIS total cost (000)			
Oper. & maint.	$4,358	$3,877	$4,028
Depreciation	685	1,031	1,955
Credits	(18)	(13)	(14)
Subtotal	5,026	4,894	5,969
Debt cost	777	1,758	2,434
Equity return	293	668	989
Total LIS	$6,096	$7,321	$9,391
Industrial %	63.37%	58.02%	58.10%
LIT cost	$3,863	$4,247	$5,456
Billing demand	270,000	245,000	245,000
Monthly rate per kW	**$1.19**	**$1.44**	**$1.86**

Note that the depreciation, debt and equity costs all triple from 2015 to 2019.

Q WHAT CAUSES THESE LARGE INCREASES IN CAPITAL-RELATED COSTS?

A They result from very large increases in the forecast plant in service. **Table 2** shows the gross plant (the basis for depreciation expense) and net plant (the basis for return):

[3] NLH Application, Volume 1, page 5.35.

[4] 2015 data from NLH Compliance Application June 8, 2017; 2018 and 2019 from current Application (Revision 4).

Table 2			
Forecast Plant in Service (000)			
	2015	**2018**	**2019**
Gross plant			
Transmission lines	$17,101	$29,514	$42,551
Terminals	6,420	20,113	25,396
Total	$23,521	$49,627	$67,947
Net plant			
Transmission lines	$7,907	$20,154	$32,591
Terminals	3.363	16,714	21,513
Total	$11,271	$36,868	$54,104

Q WHAT IS THE PURPOSE OF THESE PLANT ADDITIONS?

A Much is for the interconnection between Muskrat Falls (MF) and Happy Valley (HVY). Hydro's response to information request IOC-NLH-028 provides details of the plant investments. Hydro's Capital Budget for 2018 states:

> *The increase in expenditures related to Transmission in 2018, over the five year average expenditure, is largely attributable to the Muskrat Falls to Happy Valley Interconnection.*

The largest single amount is $23.5 million for "Project Proposal–Interconnect MFA to HVY". Hydro has already proposed a lower-cost alternative[5] for this and stated that some other plant additions will not be in service, so the rate base and revenue requirements will be lower.

[5] NLH 2018 Capital Budget Application (Revision 3—October 3, 2017), pdf 5-6.

Q **WHAT IS THE COST OF SERVICE FOR THESE FACILITIES?**

A Hydro's response to information request CA-NLH-166 provides the investment and associated revenue requirement of these capital projects. These are shown in **Table 3**.

Table 3

Costs of MF-HVY Capital Projects (000)

	2018	**2019**
Net book value	$11,926	$23,587
Depreciation	$44	$528
Return	$683	$1,340
Total revenue requirement	$727	$1,868

In its response to information request IOC-NLH-038, Hydro has also identified other reductions in the amount originally forecast to be invested in the Labrador system.

Q **DOES HYDRO PLAN TO REFLECT THESE REDUCTIONS IN ITS 2018-2019 RATES?**

A Yes, but not until it makes its Compliance Filing:

> *Due to the materiality of the reduction in the capital expenditure requirements on the Labrador Interconnected System (LIS) as a result of the reduced expenditures in 2017 on the circuit breakers provided in response to a) and the filing of the revised Muskrat Falls to Happy Valley project in the 2018 CBA noted in part b), Hydro will revise its 2018 and 2019 revenue requirements for the LIS in its compliance filing to reflect the reduced capital expenditure adjustments.*[6]

[6] Hydro response to information request IOC-NLH-038.

Q WHAT IS YOUR RECOMMENDATION?

A Hydro has already submitted four revisions to its Application. The revisions to cost of service will have a material effect on the LIT rate. It would be helpful to IOC to have the estimated effects provided earlier than the Compliance Filing.

Hydro's Proposal Regarding LIT

Q WHAT CHANGES HAS HYDRO PROPOSED FOR THE LIT STRUCTURE?

A Hydro has proposed two changes in the rate structure: (1) a change in the minimum billing demand; and (2) an inclining block demand charge.

The new definition of billing demand is:

> *The Metered Demand equals the actual monthly demand in the current month. The Power on Order will be set annually by the customer. Any requested increase in Power on Order from the previous calendar year will be subject to approval by Hydro. The rate that applies to Metered Demand in Excess of Power on Order will also apply to Interruptible Demand.*[7]

The "inclining block" structure has a low rate for demand up to 90% of the Power on Order (P/O) and a higher charge above that. **Table 4** shows the proposed rate structure.

Table 4

Proposed LIT Rate Structure

	2018	**2019**
First block: up to 90% of P/O	\$1.34	\$1.86
Second block: >90% of P/O	\$2.83	\$3.95

[7] NLH Application, Volume 3, Exhibit 17, Sheet LAB-IND-1 (pdf 326/326).

Q WHAT IS THE EFFECT OF THESE CHANGES?

A The combined effect—or at least the apparent intent[8]--is that the minimum billing demand would be reduced from 100% of the P/O amount to 90%. IOC's requested Power on Demand (P/D) for 2018 is 250,000 kW. [9] Under the current rate design, IOC would pay for at least 250,000 kW every month, even though its peak demand in some months are lower. If its peak demand is higher than 250,000 kW, it pays for the higher actual peak. Under the proposed structure, IOC would pay for a minimum of 225,000 kW (90% of 250,000 kW). Further, the per-kW charge for demands above 225,000 kW would be higher than for the lower block, as shown above in **Table 4**.

Q WHY IS HYDRO PROPOSING THESE CHANGES?

A Hydro says it wants the rate to "provide an improved price signal to promote effective demand management by the Labrador Industrial Customer class".[10] The Labrador transmission system[11] is facing the possible need for additional transmission capacity if there is further load growth in western Labrador.

Hydro contrasts the cost of a new transmission line, which it says is in the range of \$5-\$6 per kW,[12] with the embedded cost of \$1.86 per kW (in 2019). A rate based on embedded cost, it says, does not provide a sufficient price signal to the customer to reduce demand. Also, with a minimum demand of 100% of the P/O, there is no benefit

[8] Actually, the wording is not clear that the minimum billing demand is 90% of the P/O.
[9] Hydro's Application assumes 245,000 kW.
[10] Application, page 5.36.
[11] More precisely, the Labrador West portion.
[12] NLH Application, page 5.36.

to the customer of reducing demand, because it must still pay for the full P/O. Reducing the minimum to 90% of the P/O creates some potential flexibility and the higher second block rates creates some incentive.

Analysis of Hydro's Proposal

Q IS THIS A VALID BASIS FOR RATE DESIGN?

A Not really. Improving price signals is desirable, but trying to reflect the cost of possible future facilities in current rates is not. The overall revenue requirement is constrained by the embedded cost. So, trying to set some rates closer to new capacity cost means that other rates will be below embedded cost. In other words, creating an "improved" price signal for the top 10% of the LIT customers' load means a weaker price signal for any further load reduction.

The difference between embedded cost and new facilities costs is not unique to Hydro. For most utilities at most times, new capacity–electric, gas transmission, water, and so on–costs more than the embedded cost of existing capacity. This results from inflation in the cost of new facilities and depreciation of existing plant (and the declining rate base approach to cost accounting).

Q ARE THERE OTHER CONCERNS WITH HYDRO'S PROPOSAL?

A A basic principle of regulated ratemaking is that rates are set on the basis of actual cost of plant in service. Plant additions must be "used and useful" in order to be included in rate base. For example, the Board has said:[13]

> *Section 4 of the EPCA directs the Board to apply tests that are consistent with generally accepted sound public utility practice. The Board sets out the following principles for purposes of its regulatory framework:*
>
> * * *
>
> *2. Cost of Service*
> *Under this principle a utility is permitted to set rates that allow the recovery of costs for regulated operations, including a fair return on its investment devoted to regulated operations - no more, no less. Costs should be:*
>
> - *prudent;*
> - ***used and useful in providing the service****;*
> - *assigned based on cause (causality);*
> - *incurred and recovered (matching costs and benefits) during the same period; and*
> - *reflective of private/social costs and benefits occasioned by the service.* (emphasis added)

Next, it is hard to see how changing IOC's rate can have any significant impact on the need for a third transmission line. If IOC curtails its demand by 10%, that reduces peak demand by 25,000 kW. This is small compared to expected (or potential) load additions: Wabush Mines[14] (45,000 kW), Kami Mine[15] (58,000 to 120,000 kW) and data centres[16] (50,000 kW).

Another consideration is that curtailments impose a cost on the customer, in the form of lost output and, in IOC's case, the financial and environmental impacts of

[13] Order No: P.U. 8 (2007), Appendix A, page 7.
[14] Hydro response to information request IOC-NLH-020.
[15] NL Department of Natural Resources: *Labrador mining and power: how much and where from?* (2012).
[16] Response to information request IOC-NLH-033.

burning oil. Many electric utilities have interruptible rates, and some customers—but not all—find the cost/benefit tradeoff worthwhile.

Alternate Structure

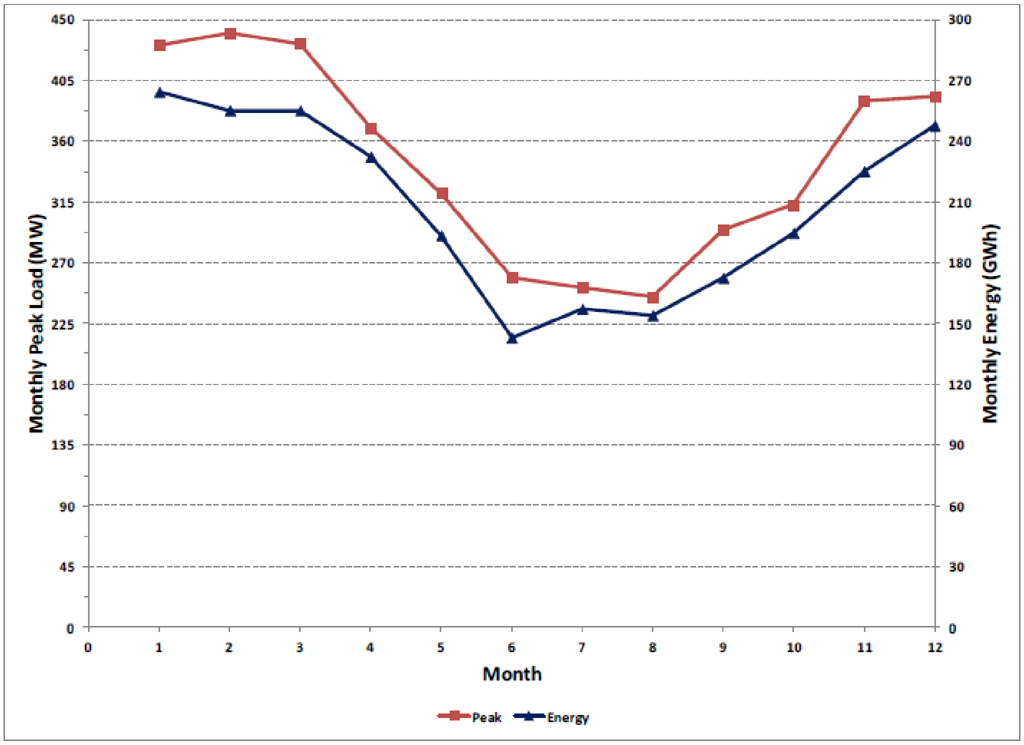
Q WHAT DO YOU RECOMMEND REGARDING RATE STRUCTURE CHANGES?

A First off, I suggest that no rate redesign be undertaken for 2018. The reasons are:

- Hydro and its LIT customer (or customers, if Wabush Mines is proceeding) should have a chance to evaluate alternatives;
- By the time a decision in this case is implemented, the critical winter months will mostly have passed; and
- If Wabush Mines restarts, the billing determinants will be different.

Q WHAT ALTERNATE RATE DESIGN SHOULD BE CONSIDERED?

A Seasonally differentiating the rate can produce a similar incentive, but is more consistent with cost incurrence and can be applied more broadly. The Labrador Interconnected System peak monthly loads are very seasonal.



The critical months, when demand is highest, are January through March. A rate that reflects this seasonality would be higher in the winter and lower in non-winter months. This rate design would provide a similar signal as Hydro's proposal in the winter months, when the effect is most important.

Further, a seasonally-differentiated rate can (and should) be used for all customers, not just IOC.

Q WHAT WOULD A SEASONALLY-DIFFERENTIATED LIT RATE LOOK LIKE?

A The minimum billing demand would be lower than the P/O (as proposed by Hydro) and the per-kW charge would be higher in the winter than in other months. To illustrate the structure, I calculated a rate with these assumptions:

- LIT revenue requirement identical to Hydro's forecast;

- P/O of 290,000 kW (including Wabush Mines);[17]
- Monthly peak in 2019 using Hydro's data;[18]
- Winter months are January-March;
- Non-Winter months are April-December; and
- Winter transmission rate is four times the Non-Winter rate.

This produces the following rates:

Table 5	
Seasonal LIT Rate Structure (2019)	
	Per kW
Winter rate	$3.93
Non-winter rate	$0.98

For comparison, the per-kW rate under the current design would be $1.68/kW.

Q YOU HAVE MENTIONED THE POSSIBILITY OF WABUSH MINES RESTARTING. DOES THIS HAVE ANY OTHER IMPLICATIONS?

A Yes. The level of the LIT rate (that is, $/kW of demand) depends on the amount of load. If Wabush Mines does restart, the portion of the revenue requirement allocated to LIT will be higher and the total LIT billing demand will be higher. The net effect is that the per-kW rate will be lower, as shown in Hydro's response to IOC-NLH-020. Given that the Wabush load would have a material effect on the rate, if and when it comes on line the LIT demand rate should be recalculated.

[17] For comparability with Hydro's calculation, this assumes Power on Demand of 245,000 kW for IOC and 45,000 kW for Wabush.
[18] From Hydro's response to information request IOC-NLH-020, page 3.

Q DOES THAT CONCLUDE YOUR EVIDENCE?

A Yes.

Experience of Mark Drazen

Mr. Drazen has worked since 1972 on economic analysis of energy and utility service, pricing in regulated and deregulated utility markets, contract negotiations, and strategic planning throughout the United States and Canada. His experience covers electric, natural gas, oil pipeline, telecommunications, transportation, waste and water utilities in nine Canadian Provinces (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Québec and Saskatchewan) and in 41 states in the U.S. (Alabama, Alaska, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming).

He has appeared as an expert witness before courts, federal, provincial and state regulatory agencies (including the National Energy Board, the Canadian Radio-Television and Telecommunications Commission, the Federal Energy Regulatory Commission and the Federal Communications Commission).

Drazen Consulting Group offers economic, project planning, regulatory consulting and litigation support services to clients that include industrial utility users, municipalities, schools, hospitals, utilities and government agencies. The founding firm (Michael Drazen and Associates) was established in 1937.

The firm's work covers all aspects of utility regulation (and deregulation), including revenue requirements, cost of capital, cost analysis, pricing, valuation, performance-based regulation and industry restructuring.

Mr. Drazen is a graduate of the Massachusetts Institute of Technology, with the degrees of Bachelor of Science in Mathematics, Master of Science in Electrical Engineering, and Electrical Engineer.