MATTER NO. M09277

IN THE MATTER OF AN APPLICATION BY NSPML FOR AN INTERIM COST ASSESSMENT FOR 2020

DIRECT TESTIMONY OF

PAUL CHERNICK

ON BEHALF OF

THE CONSUMER ADVOCATE

RESOURCE INSIGHT, INC.

AUGUST 29, 2019

TABLE OF CONTENTS

TABLE OF EXHIBITS

I. Identification

Q: Mr. Chernick, please state your name, occupation, and business address.

A: I am Paul L. Chernick. I am the president of Resource Insight, Inc., 5 Water St., Arlington, Massachusetts.

Q: Summarize your professional education and experience.

A: I received an SB degree from the Massachusetts Institute of Technology in June 1974 from the Civil Engineering Department, and an SM degree from the Massachusetts Institute of Technology in February 1978 in technology and policy. I have been elected to membership in the civil engineering honorary society Chi Epsilon, and the engineering honor society Tau Beta Pi, and to associate membership in the research honorary society Sigma Xi.

I was a utility analyst for the Massachusetts Attorney General for more than three years and was involved in numerous aspects of utility rate design, costing, load forecasting, and the evaluation of power supply options. Since 1981, I have been a consultant in utility regulation and planning, first as a research associate at Analysis and Inference, after 1986 as president of PLC, Inc., and in my current position at Resource Insight. In these capacities, I have advised a variety of clients on utility matters.

My work has considered, among other things, the cost-effectiveness of prospective new electric generation plants and transmission lines, retrospective review of generation-planning decisions, ratemaking for plant under construction, ratemaking for excess and/or uneconomical plant entering service, conservation program design, cost recovery for utility efficiency programs, the valuation of environmental externalities from energy production and use, allocation of costs of service between rate classes and jurisdictions, design of

retail and wholesale rates, and performance-based ratemaking and cost recovery in restructured gas and electric industries. My professional qualifications are further summarized in Exhibit PLC-1.

Q: Have you testified previously in utility proceedings?

A: Yes. I have testified more than 300 times on utility issues before various regulatory, legislative, and judicial bodies, including utility regulators in thirty-five states and five Canadian provinces, and two U.S. Federal agencies. This testimony has included the review of many utility-proposed power plants and purchased-power contracts.

Q: Have you testified previously regarding utility investments?

A: Yes. I have testified in numerous proceedings on generation, transmission and other utility projects, as listed in my resume.

Q: Have you previously testified before this Board?

A: Yes. I have testified in over 25 Board proceedings, as listed in my resume. I have also assisted the Consumer Advocate in preparing comments in more than a dozen other Board proceedings.

II. Introduction and Summary

Q: On whose behalf are you testifying?

A: My testimony is sponsored by the Nova Scotia Consumer Advocate.

Q: What is the purpose of your testimony?

A: I review the usefulness of the Maritime Link facilities, for the period prior to full commercial operation of the Muskrat Falls hydro facility, as well as ratemaking treatment for the Maritime Link facilities in that period.

Q: Why are these matters at issue?

A: In Matter M05419, the Board approved the request of NS Power Maritime Link (NSPML), for an assessment to be paid by NS Power ratepayers to recover NSPML's costs of building, financing and operating the Maritime Link.[1] In exchange, the ratepayers were to receive energy at no extra charge from Nalcor's Muskrat Falls hydro-electric plant, consisting of

- the Nova Scotia Base Block (NS Block), which would provide about 153 MW for 16 hours each day (from 7 AM to 11 PM), or about 895 GWh annually, for 35 years, and
- the Supplemental Energy Block, which would provide 240 GWh of off-peak energy (at up to about 200 MW) annually for five years.[2]

In addition, the Maritime Link would provide NS Power access to economy energy from Nalcor's hydro facilities in Labrador (Muskrat Falls and the portion of Churchill Falls not under contract to Hydro Québec) and on the island of Newfoundland, as well as potential future resources in Newfoundland, Labrador and Québec.

The Board's endorsement of the Maritime Link commitments was qualified, such as in the following passage:

> While the Board finds that the ML Project is the lowest long-term cost alternative, it is not on an overwhelming basis. There are various scenarios, within a range of reasonable assumptions that perform almost on an equivalent basis, or even better in a few cases, than the ML Project. Nevertheless, the Board concludes that over the broadest range of assumptions for the ML Project it is slightly more robust than the various other alternatives. On this basis, the ML Project does edge out other alternatives… (Order in M05419 at 135–136)

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[1] Both NSPML and NS Power are subsidiaries of Emera.

[2] Decision in M05419 at 11–12. Delivery of each of these resources will be subject to various contingencies.

In its M05419 filing, NSPML projected that the facilities (Muskrat Falls, the Labrador transmission assets, the Labrador-Island Link HVDC line, and the Maritime Link) would all be in service, and deliveries would start, by October 2017.

Unfortunately, the anticipated matching of the costs of the Maritime Link and the benefits of the Nalcor contracts and other opportunities will not materialize in at least the first two years of operation for the Maritime Link. While the Maritime Link has been able to carry power since January 2018, the Labrador-Island Link (LIL) has not yet entered service (although Nalcor hopes that it will be reliably available by late 2019), the first portions of Muskrat Falls are scheduled to start generating power late in 2019, and the conditions necessary for delivery of power under the NS Block would not occur until some time in 2020.

III. Aligning Maritime Link Charges with the NS Block

Q: How did the Board deal with the delay of the in-service date of the NS Block in the interim assessment for 2018 and 2019?

A: In Decision 2017 NSUARB 149 (Matter No. M07718), the Board found as follows:

> [174]…, the Board accepts that NS ratepayers are not getting what they bargained for. In 2013, the Board found that was an unreasonable allocation of risk.
>
> [175] The Board notes NSPML's submission that the delay in delivery of the NS Block does not result in a burden to Nova Scotia customers based on reasonable assumptions, and its assertion of the usefulness of the Maritime Link for the benefit of ratepayers.
>
> . …

> [180] At the start of the hearing, NSPML recommended an adjustment to defer depreciation expenses totalling $51 million in each of 2018 and 2019, and agreed to a further adjustment to defer a financing amortization expense of $1.5 million in each of 2018 and 2019. Accordingly, NSPML's revised request is a reduced interim assessment of $109.5 million for 2018 and $111.5 million for 2019.

This approach allowed NS Power to start paying NSPML for the costs of operating the Maritime Link, and for return on its investment, including covering the cost of paying interest for funds borrowed under the Federal Load Guarantee (FLG), while aligning the recovery of the capital cost with the period of the NS Block deliveries.

Q: What does NSPML propose regarding depreciation charges to ratepayers in 2020?

A: NSPML proposes the following:

> Setting a commencement date of June 1, 2020 for the recovery of $28.6 million in depreciation and $0.8 million of amortization of deferred financing charges, with the total cost to be recovered from NS Power in time to facilitate the December 1, 2020 debt principal repayment by NSPML under the ML Credit Agreement, required to permit ML Financing Trust to meet its FLG obligations, and maintain the approved DER of 70:30. (Application at 21)

It turns out that the $28.6 million is not all for depreciation and is not all required to meet the December 1, 2020 debt principal repayment.

> NSPML requires $20 million to pay its first semi-annual debt principal payment on December 1, 2020. NSPML also requires $8.6 million by the same time so as to return equity invested by its shareholder in order to maintain the UARB approved 70:30 DER. NSPML seeks recovery of these costs in seven monthly installments commencing on June 1, 2019 ($4.1 million each month between June 1, 2020 and November 1, 2020 and $4.0 million on December 1, 2020 being $28.6 million in total). (Application at 13–14)

Q: Is NSPML's approach reasonable?

A: No. While Muskrat Falls and the transmission assets may all be in place and prepared to deliver the NS Block by June 1, 2020, there is no assurance that the project will be complete by that date. Ratepayers have been paying for return and operating costs for the Maritime Link and receiving very little in return. Ratepayers should not be charged for depreciation until the NS Block is available.

Thus, while the 2020 FAM BCF should reflect the $20 million in depreciation and $0.8 million of financing costs, assuming a June 1, 2020 start date for firm NS Block deliveries, the transfer of those funds to NSPML should only start following a Board order finding that the NS Block is in service. If the NS Block is not in service June 1, the depreciation should be credited to customers in the FAM proceeding, offsetting a portion of the additional fuel cost due to continuing delay in the project.

Q: How would you treat the $8.6 million that NSPML wants to pay back to Emera?

A: There is no urgency in returning those funds to Emera. The only rationale that NSPML offers for making this payment is the UARB approved a Debt to Equity Ratio (DER) of 70:30 (Application at 7, 13, 14, 21; NSPML (NSUARB) IR-3a, 3b, 4, 6c). Once the NS Block is in place providing substantial benefits to ratepayers, NSPML can recover the funds needed to repay Emera for this loan.

Q: Is the equity ratio an issue for the Federal Loan Guarantee?

A: No. As NSPML explains that the FLG requires "debt financing not to exceed 70 percent," but additional equity financing is fine (NSPML (NSUARB) IR-7a).

Q: Would you expect that Emera would have any difficulty carrying the $8.6 million advance to NSPML or any additional funds needed to make the principal repayment on December 1, 2019?

A: No. At the end of 2018, Emera had cash of $316 million, which had grown to $333 million at June 30, 2019. Emera is scheduled to sell Emera Maine in late 2019, providing "cash proceeds of $959 million USD."[3] It is difficult to see how Emera would not have any problem carrying the Maritime Link costs, and NSPML has not provided any evidence that delayed cost recovery would be a problem.

Q: Is there any reason that the Board should not simply assume that the NS Block will be available by June 1, 2020?

A: Yes. The history of this project, especially Muskrat Falls and the Labrador-Island Link (LIL), is cause for concern. While the contractors may finally have their act together and be able to meet deadlines, this outcome is not assured.

The Nalcor portion of the Muskrat Falls project has been delayed over two years, from a forecast of first power for 2017 in 2012 to late 2019 today. The projected costs for Muskrat Fall, the LIL and Labrador transmission have risen from $6.2 billion in 2012 to over $10.1 billion today, plus interest during construction. The schedule has remained stable for about two years, but unpleasant surprises remain possible.[4]

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[3] Emera Incorporated Unaudited Condensed Consolidated Interim Financial Statements, June 30, 2019 and 2018 at 13.

[4] The reservoir flooding has started without full mitigation of mercury-pollution concerns, raising the possibility of future legal action that would delay operation to permit further mitigation.

The LIL appears to be physically complete, but it has operated only sporadically and is on a long-term outage through the summer and into the fall. (NSPML (CA) IR-2e) The problem appears to be related primarily to the GE software that would control the HVDC converter systems for the line, especially with both poles of the line in service. As discussed in CA IR-3 Attachment 1, GE has experienced software problems with multiple HVDC transmission projects, sometimes resulting in multi-year delays. So far, the LIL has only been able to carry a maximum of 140 MW (NSPML (CA) IR-2d). If the LIL is not able to operate in bipole mode, it is not clear how much NS Block power can be delivered.

IV. Recognizing Benefits of Maritime Link without the NS Block

Q: Does the operation of the Maritime Link provide benefits to Nova Scotia ratepayers, even without the NS Block?

A: Yes. Those benefits can be divided up in various ways, but it may be useful to think of five buckets of benefits:

- At times (mostly in the winter), NS Power can sell energy to Newfoundland, backing down the expensive heavy-oil-fired Holyrood plant with less expensive NS Power coal.
- At some times, Newfoundland may have energy available for sale to NS Power at prices below the costs of running NS Power's available plants. That would be expected to occur at times in the summer, if the Newfoundland Island system has more hydro energy than it can use, or (if the LIL is in operation) energy is available in Labrador from Churchill Falls or the start-up energy from Muskrat Falls. Since LIL has not

performed well and Muskrat Falls has not produced any power, this category has been modest.

- Newfoundland may have energy available for sale that is not economic for NS Power, but is competitive in New Brunswick, PEI, or even New England. Or conversely, Newfoundland may want to purchase energy from beyond Nova Scotia. Under those conditions, NS Power receives transmission charges for wheeling power for other parties.
- At times, Newfoundland may be able to provide non-energy ancillary services to NS Power, such as having some hydro generation available to absorb changes in Nova Scotia load and supply.
- The Maritime Link HVDC converter itself has electrical characteristics that may be useful to NS Power in operating the transmission system, even without any energy or other services from Newfoundland.

Q: Did NSPML forecast benefits prior to the availability of the NS Block?

A: Yes, in Matter No. M07718, NSPML estimated the annual benefits shown in **Error! Reference source not found.**. Note that the high end of the energy flow in "Total Estimated Energy Benefit" is less than the sum of the component parts.

Table 1: NSPML-Claimed Maritime Link Benefits, 2018 and 2019

	Forecast Energy flow (GWh/year)	Gross Energy Value ($M)	Potential Range of Net Benefit ($M)
Energy			
Nov-Mar sales to displace Holyrood	[redacted]	[redacted]	[redacted]
Apr-Oct purchases and storage			[redacted]
Recall energy purchase	[redacted]	[redacted]	
Pre-FCP surplus energy purchases	[redacted]	[redacted]	
Hydro storage	[redacted]	[redacted]	
Total Estimated Energy Benefit	[redacted]	[redacted]	[redacted]
Ancillary Services			
Diversity of Supply			[redacted]
Seasonal Shutdown			[redacted]
Unit Commitment Sharing			[redacted]
AGC/Regulation			[redacted]
Reserve Sharing			[redacted]
Enhanced Reliability			
Total Potential Ancillary Services			[redacted]
Total Estimated Benefit	[redacted]	[redacted]	[redacted]

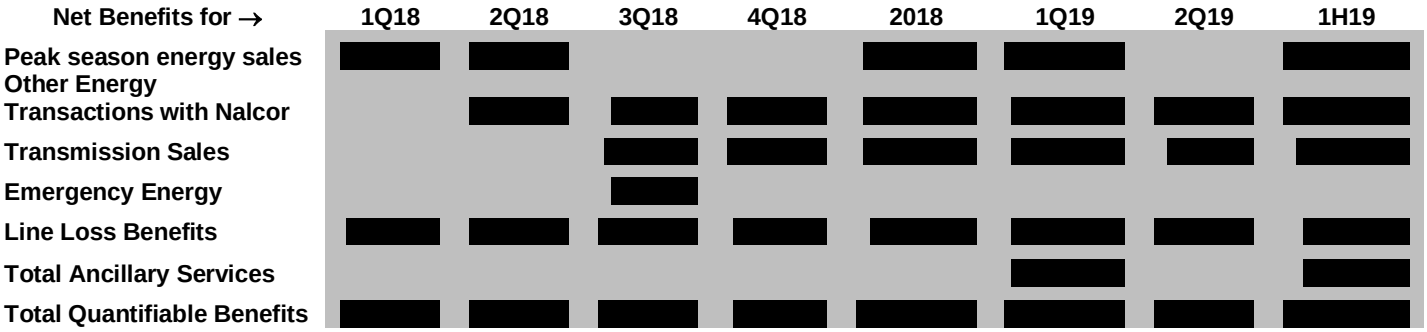
NS Power did not provide any documentation of these values. My evidence in Matter No. M07718 questioned some of these estimates, based on the uncertainty in the in-service date of the LIL, the lack of a Newfoundland market for winter energy once the LIL is carrying Churchill energy to Newfoundland island, and other uncertainties.

Q: What benefits does NSPML claim ratepayers have received from the Maritime Link since it entered service in 2018?

A: Table 2 summarizes the net benefits from the Maritime Link Benefits Quarterly Tracking reports.[5]

[5] The summary tables in the appendices of the reports sometimes listed benefits in the wrong row, inconsistent with the text and/or the annual summary. I have corrected those errors. In addition, the value for emergency energy reported in 3Q18 does not appear in the annual summary, suggesting that NSPML has withdrawn this claim.

Table 2: Net Benefits Claimed in the Maritime Link Benefit Reports

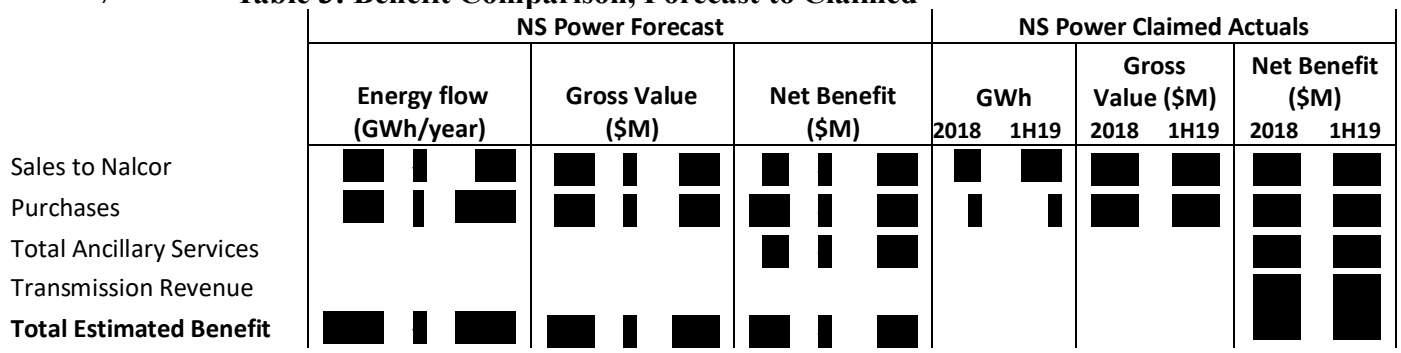


NS Power did not provide any documentation of these values, either.

Q: How do the projections compare to NSPML's claimed benefits to date?

A: The claimed benefits are much lower than NSPML's projections, as shown in Table 3. The actual energy and gross transaction values are from CA IR-8 Attachment 1 and the net benefit from Table 2, above.

Table 3: Benefit Comparison, Forecast to Claimed



The 2018 energy flow, gross benefits and net benefits were small fractions of even the low end of NSPML's forecasts. The same is true for the first half of 2019.

Some of the discrepancy is due to

- the failure of Labrador-Island Link to be in place to start delivering energy from Churchill Falls to NS Power on April 1, 2018, as NS Power assumed,
- the delay until February 19, 2018, in the start of sales to Newfoundland,

- other regulatory restrictions on sales to Newfoundland until December 19, 2018,
- good water supply to Newfoundland hydro in most of 2018, which reduced NS Power sales, and
- cold weather in Nova Scotia in late 2018, which reduced surplus coal energy available for sale to Newfoundland.

Q: Are the net benefits claimed in the Maritime Link Benefits Quarterly Tracking reports plausible?

A: The net benefits from the sales to Newfoundland are reasonable. The revenues from CA IR-8 Attachment 1 average $[redacted]/MWh and $[redacted]/MWh for 2018 and 2019, respectively, and the claimed net profits average $[redacted]MWh and $[redacted]/MWh, implying that NS Power's cost of energy to serve these sales was $[redacted]/MWh and $[redacted]MWh, respectively.

The net benefits from the purchases from Newfoundland are harder to understand. The prices paid to Newfoundland (from CA IR-8 Attachment 1) average $[redacted]/MWh and $[redacted]/MWh for 2018 and 2019, respectively, and the claimed benefits to NS Power average $[redacted]/MWh in both years, implying that NS Power's avoided cost of energy during these purchases was $[redacted]MWh and $[redacted]/MWh, respectively. The only NS Power units with [redacted] those values require additional explanation.

Q: How did the Board deal with uncertainty of these benefits in Matter No. M07718?

A: In the Decision 2017 NSUARB 149, the Board found:

> [176] The Board believes it appropriate, and just and reasonable, to take steps to ensure NSPML and NSPI achieve the promised benefit.
>
> [177] A conservative estimate of the benefit of the Maritime Link based on all of the evidence, without any accounting for the deferrals, is a minimum annual benefit of $10 million for the ratepayers of NSPI. In order to incent the achievement of those conservatively estimated benefits and to, in a modest way, take account of the risks outlined in paragraph 336 of the 2013 Board ML Decision, NSPI is directed to hold back $10 million from the assessment in each of 2018 and 2019. At the end of each year, NSPML and NSPI are directed to provide proof satisfactory to the Board that a minimum of $10 million per year in benefits has been achieved. If the $10 million in benefits is achieved, the Board will direct NSPI to pay the $10 million to NSPML. If the $10 million in benefits is not achieved, then NSPI is to pay, on the direction of the Board, only that portion of the $10 million that is achieved and the balance will be refunded to ratepayers through the FAM. NSPI and NSPML have suggested the benefits could be significantly more than $10 million. NSPML and NSPI are obliged to realize any and all benefits over $10 million per year that are prudently achieved in the interests of ratepayers.

In other words, for 2018 and 2019, NSPML and NS Power were required to provide $10 million in annual ratepayer benefits, either through operation of the Maritime Link or by absorbing the shortfall.

Q: Should this treatment continue into 2020?

A: Yes. While the $10 million is far too low to make ratepayers whole for the annual cost of the Maritime Link, it is at least a token contribution to mitigate the burden.[6] The pre-NS-Block benefit floor for 2020 should be set at $850,000 times the number of months in 2020 prior to the Board declaring the NS Block in service.

[6] Even before any depreciation charges, repayment of Emera, or amortization of deferred financing costs, customers would be paying $115 million in interest, equity return and O&M.

Q: Does this conclude your testimony?

A: Yes.