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Pacific Economics Group Research, LLC

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23 August 2021

Me Jocelyn B. Allard  
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Hi Jocelyn,

Attached please find the budget statement you requested for PEG's participation in the new *demande tarifaire* of Hydro Quebec Transmission.

A handwritten signature in black ink, appearing to read 'Mark Newton Lowry'.

Mark Newton Lowry, PhD

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Pacific Economics Group Research, LLC

# Second Empirical Budget Statement

Mark Newton Lowry, PhD

President, PEG Research LLC

23 August 2021

## Introduction

Pacific Economics Group Research LLC (“PEG”) and the Brattle Group prepared power transmission (“Tx”) productivity and benchmarking studies in phase 2 of Régie de l’énergie proceeding R-4058-2018. Hydro-Quebec Transmission (“HQT”) recently filed a *demande tarifaire* for the last two years of its *mechanisme de reglementation incitatif* (“MRI”) which included Brattle’s study and used it to support their proposals for some MRI provisions. This document remaining steps that PEG should undertake to assist AQCIE and CIFQ in this proceeding. We also provide a budget estimate.

## Background

The Régie decided in D-2018-001 to establish an MRI for HQT. In this mechanism, a *formule d’indexation* escalates the component of HQT’s revenue which compensates the Company for its *charges nettes d’exploitation* (“CNE”). The X factor and S factor terms of the formula were set provisionally by a process of *jugement* but a productivity study was ordered to take place during the term of the MRI. In Phase 2 of R-4058-2018, the Regie in D-2020-028 established guidelines for the Tx productivity studies and directed that parties also file statistical benchmarking studies of the Company’s cost. The requested studies could provide the basis for X and S in the last year of the plan.

On 19 February 2021, PEG and the Brattle Group submitted reports on their studies. HQT then requested that further consideration of the studies be delayed until its *demande tarifaire* for the years 2021-22. Their *dossier* was filed on 30 July. Brattle’s February report was included without apparent amendment or update in this evidence together with working papers. These papers are confidential and PEG has not examined them.

In its application, HQT states that

*le Transporteur s’en remet aux recommandations de son expert en proposant, sur la base des conclusions de l’étude réalisée par celui-ci, les Facteurs X et S utilisés dans la formule d’indexation aux fins de l’établissement des revenus requis de l’année 2022.*



*Ainsi, il retient un Facteur X 13 de -3,38 % ainsi qu'un Facteur S de +0,1 % appliqués à la formule d'indexation.*

HQT also made comments in its *dossier* concerning *comptes d'écarts et reports* ("CERs") for capital cost which are related to the *MRI*.

In D-2021-101, the Régie established a *mode procedural* for the hearing. An *audience* is scheduled for December, but no other stages in the hearing were discussed. Interested parties must request intervention status and propose budgets for the proceeding by August 25.

## Comparing the Brattle and PEG Studies

### An Overview of the Studies

PEG's study calculated the *CNE*, capital, and multifactor productivity trends of a large group of US power distributors and used econometric methods to benchmark the *CNE*, capital cost, and total cost of HQT. The scope of Brattle's research and report format were broadly similar to those of PEG. There were, however, important differences between the commentaries and research methodologies.

### Principles for Revenue Cap Index Design

Brattle provides confused discussions of revenue cap index design and the rationale for the stretch factor. They downplay the need to consider whether the stretch factor should be unusually high due to the ubiquitous use of formula rates (which are essentially comprehensive *CERs*) in U.S. power transmission ("Tx") regulation. They also suggest that a stretch factor is only needed in a utility's first PBR plan.

### Empirical Methods

Brattle used research methods in its study that were similar in many respects to those that PEG used. There were, however, also some noteworthy differences between the Brattle and PEG's methods, and many of these differences favored the interests of HQT. The following methods were particularly controversial. Brattle apparently...

- did not exclude from their studies important Tx cost categories (e.g. miscellaneous Tx expenses and Tx by others expenses) which were affected during the sample period by structural change in the Tx industry, thereby producing a sizable negative impact on their multifactor and (especially) *CNE* productivity trends and bloating the *CNE* of some US utilities in the benchmarking study<sup>1</sup>

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<sup>1</sup> Brattle reports that the quantity of transmission materials and services averaged an extraordinary 5.58% annual growth.



- excluded the administrative and general expenses and general plant of U.S. utilities from their featured productivity and benchmarking calculations
- used peak demand data in their benchmarking work which are not comparable to HQT's and materially favor HQT
- used ratcheted peak demand in their benchmarking study but not in their productivity study
- featured benchmarking results obtained using a controversial fixed effects procedure for estimating econometric model parameters
- proposed a much more negative X factor in the event that the GDPPI is the *formule d'indexation* inflation measure, based on controversial inflation calculations that benefit HQT.

Brattle's work also differed from PEG's in other ways that are probably less important to the outcome but are methodologically substandard. Brattle apparently

- didn't use econometric models with second order terms (e.g. peak demand x peak demand and peak demand x line km), a common practice in econometric benchmarking, on the grounds that they didn't produce "conclusive results"
- had numerous insignificant variables in their econometric models
- had econometric cost models with much lower explanatory power than PEG's
- did not levelize the capital asset price indexes (all utilities are assumed to pay the same rates for construction in a certain year) used in their benchmarking study
- did not levelize the labor price for sampled U.S. utilities either (instead, all U.S. utilities are assumed to have the same labor price in 2019)
- calculated the labor price for HQT as  $\text{Labor Cost}_{\text{HQT}}/\text{Employees}_{\text{HQT}}$  rather than using an external labor price (thereby removing HQT's wage rates as a benchmarking issue)
- used 1988 as the first year for its capital quantity indexes [whereas PEG used 1964, which is more accurate]

Brattle also used one hoss shay as its featured capital quantity specification whereas PEG featured geometric decay. This has been a major issue in several recent MRI proceedings.

Some aspects of Brattle's methods are unclear from the report, but can probably be clarified by examination of their working papers. Here are some questions that we have.

- Did they smooth their capital price index?
- In the benchmarking research, did their calculation of the *CNE* for HQT include only its *reported CNE*? (we included, additionally, its *frais corporatifs*).
- How did they construct the custom asset price index that they calculated for HQT?



- There is no discussion of any price “patches” that might have been used to convert Canadian to US dollars.

## A Comparison of Research Results

### Productivity

Here is a summary of the Brattle and PEG productivity trend calculations.

	Multifactor			CNE		Capital	
	Brattle (OHS)	Brattle (GD)	PEG (GD)	Brattle	PEG	Brattle (OHS)	PEG TX (GD)
Full sample period	-1.04%	-1.82%	-0.62%	-3.38%	-0.68%	-0.05%	-0.46%
Last 15 years	-1.69%		-2.26%	-3.09%	-1.74%	-0.97%	-2.16%

The following recommendations were made by the consultants for an X factor that would apply only to *CNE* revenue.

- Brattle proposed to base X on the **-3.38%** CNE productivity trend for its full sample period.
- PEG stated that the Regie has a choice between **0%**, **-0.68%**, and **-1.74%**.

The Brattle *CNE* productivity results are markedly out of step with those reported by Hydro One’s witness in a study just filed in an Ontario *MRI* proceeding. HQT’s prior MRI consultant, Concentric Energy Advisors, highlighted research by this witness in a prior HQT proceeding.

The following recommendations were made by the consultants in the event that the *formule d’indexation* for a succeeding *MRI* applies to capital cost as well as *CNE*.

- Brattle states that the X factor should depend on the inflation measure. They recommend **-1.04%** if the inflation measure is a power transmission input price index and **-2.82%** if the GDPIPI is instead used.
- PEG states that the Regie should choose between **0%**, **-0.62%**, and **-2.26%** as an X factor depending on how much supplemental capital revenue it intends to provide. We did not comment on how our numbers would change if the GDPIPI were the inflation measure in the *formule d’indexation*.



## Benchmarking

Here are the econometric benchmarking results for the last three years of the sample period (2017-19). It can be seen that Brattle's benchmarking results are much more favorable to HQT than PEG's.

	<b>Total Cost</b>	<b>Capital Cost</b>	<b>CNE</b>
Brattle	-4%	8%	-41%
PEG	67%	55%	121%

On this basis Brattle, citing Ontario precedents, proposes a S factor in the **0.10%** to **0.30%** range.

PEG, in contrast, argued for an S factor of at least **0.60%** plus an adder for the fact that most US utilities in the study operated under formula rates.

## Summary

Brattle and PEG clearly did not reach consensus regarding Tx productivity trends, HQT's cost performance, or the appropriate S factor. The consultants used different methods, and the Regie may wish to understand better the pros and cons of different statistical cost research methods.

## Work Plan

PEG proposes the following tasks in R-4167-2021.

- Review HQT's prefiled evidence
- Prepare *demandes de renforcements* ("DDR's") for HQT
- Review their DDR responses and if necessary follow up
- Prepare new research as needed to respond to HQT's evidence
- Critique other controversial elements of the Company's proposal that pertain to its MRI (e.g. CERs)
- Prepare commentary on HQT's evidence (including, as needed, working papers on responsive new empirical evidence)

After submission of this commentary the following steps are anticipated to complete the proceeding.

- Respond to DDRs on PEG's evidence
- Dr. Lowry prepares for and then participates in the *audience*



- Help AQCIE/CIFQ prepare *audience* questions for HQT
- Respond to any record requests from the *audience*
- Assist AQCIE/CIFQ with briefs

The project will also require

- Correspondence and discussions with AQCIE/CIFQ
- A few hours for project administration

Using permissible hourly rates drawn from the Régie guidelines, we estimate the cost of this work to be CAD 194,340. Details of this cost estimate, including the assumptions on which it is based, are found on the attached spreadsheet.



**PEG Research Budget Estimate for R-4167-2021**

	Personnel						Total Hours	Expenses	Cost		Comments
	President Mark Lowry	Vice President Dave Hovde	Consultant II Matt Makos	Economist II Rebecca Kavan	Office Manager/Consultant II Gretchen Waschbusch	Interns			by Task	Subtotals	
	\$ 300	\$ 240	\$ 195	\$ 135	\$ 160						
<b>Regie Guide Rates (CAD)</b>											
<b>Hours</b>											
<b>Work Elements</b>											
<b>Tasks Up To Filing</b>									\$	115 840	
1 Review HQT's prefiled evidence	16	32	24	32				\$	21 480		
2a Prepare interrogatories for HQT	16	16	8		6			\$	11 160		
2b Review Interrogatory Responses of HQT and Followup if Needed	16	8	8					\$	8 280	Assumes no Ontario-style technical conference	
3 New research that responds to HQT evidence	24	48	40	80				\$	37 320		
4 Critique other controversial elements of the MRI proposal (e.g. CERs)	16		16					\$	7 920		
5a Prepare commentary on HQT evidence	40	8	8	8	16			\$	19 120	Assumes no response to any HQT critique of PEG evidence	
5c Prepare working papers for any responsive empirical work		24	8	24				\$	10 560		
<b>Tasks After Filing</b>									\$	76 260	
6 Respond to IRs on PEG evidence	40	60		60	16			\$	37 060	Assumes no Ontario-style technical conference	
<b>Audience</b>											
7a PEG witness preparation and hearings attendance	30	16	16	16	8			\$	19 400	Assumes video hearing, 5 hours PEG oral testimony, and 5 hours Brattle testimony	
7b Help AQICIE/CIFQ prepare questions for Brattle	10							\$	3 000		
7c Respond to any in-hearing record requests	16	16	8	16	6			\$	13 320		
8 Assist AQICIE with briefs	10				3			\$	3 480		
<b>Other Costs</b>									\$	2 240	
9 Correspondence and discussions with AQICIE-CIFQ	3	3						\$	1 620		
10 Project administration	1				2			\$	620		
<b>Total Hours by Team Members</b>	238	231	136	236	57	0	898	\$ -		\$ 194 340	
% of total hours	27%	26%	15%	26%	6%		100%				
<b>Cost by Team Member</b>											
<b>Total Cost by Team Member (CAD)</b>	\$ 71 400	\$ 55 440	\$ 26 520	\$ 31 860	\$ 9 120	\$ -	\$ -	\$ -	\$ 194 340	\$ 194 340	