

**Réponses du Transporteur  
à la demande de renseignements numéro 1  
d'Option consommateurs  
(« OC »)**



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DEMANDE DE RENSEIGNEMENTS N<sup>o</sup> 1 D'OPTION CONSOMMATEURS (OC) À HQT  
DEMANDE DU TRANSPORTEUR DE MODIFICATION DES TARIFS ET CONDITIONS DES  
SERVICES DE TRANSPORT POUR LES ANNÉES 2021 ET 2022

R-4167-2021

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Éléments du revenu requis sujet à la formule d'indexation

1. Référence :           i)        **B-0012: HQT-5, Document 2 (en liasse)**

**Préambule :**

Brattle has been retained by Hydro Quebec TransEnergie (HQT) to prepare a Partial and Total Factor Productivity Study for the North American Transmission Industry and Total Cost Benchmark Report for HQT.

**Demandes :**

1.1 Please provide a listing, with references of recent similar Brattle studies

**Réponse :**

1           1. On behalf of various intervenors in Alberta, Canada, scope of study was to  
2           propose an X-factor for the 2nd generation TFP plan for Alberta electric and  
3           gas distribution companies. Please see the referenced study and  
4           Commission Order for a discussion of the main aspects of the study and the  
5           conclusions reached by the Commission.

6           Written Evidence of Dr. Toby Brown, Dr. Paul R. Carpenter for ALTAGAS  
7           Utilities Inc, ATCO Electric, ATCO Gas, ENMAX Power Corporation, FORTIS  
8           Alberta Inc. March 23, 2016. Proceeding No. 20414.

9           Errata to Decision 20414-D01-2016. February 6, 2017. Proceeding No. 20414.

10          2. Dr. Ros was co-author of a Total Factor Productivity Study for the North  
11          American Electric Distribution Industry in 2010 in a proceeding before the  
12          Alberta Utilities Commission, see September 12, 2012 decision cited below.  
13          At the time, Dr. Ros was an employee of NERA Economic Consulting. The  
14          client was the Alberta Utilities Commission. The scope of the study was to  
15          develop a TFP for use in a price cap plan for Electric and Gas Distribution

1 companies in Alberta, Canada. Please see the referenced Commission Order  
2 for a discussion of the main aspects of the study and the conclusions  
3 reached by the Commission's findings.

4 Total Factor Productivity Study for Use in AUC Proceeding 566 – Rate  
5 Regulation Initiative. December 30, 2010. Proceeding No. 566.

6 Decision 2012-273: Rate Regulation Initiative Distribution Performance  
7 Based Regulation. September 12, 2012. Application No. 1606029.  
8 Proceeding No. 566.

- 9 3. In the same proceeding, Brattle submitted evidence on TFP on behalf of  
10 ATCO Energy to propose an X-factor for the 1st generation TFP plan for  
11 Alberta electric and gas distribution companies. Please see the referenced  
12 study and Commission Order for a discussion of the main aspects of the  
13 study and the conclusions reached by the Commission.

14 Written Evidence of Paul R. Carpenter for ATCO Gas & ATCO Electric. July  
15 22, 2011. Proceeding No. 566.

- 16 4. On behalf of BC Hydro, Brattle filed a cost benchmarking analysis in a 2019  
17 proceeding before the British Columbia Utilities Commission. The cost  
18 benchmarking analysis used unit cost comparisons between BC Hydro and  
19 U.S. companies based upon FERC Uniform System of Accounts data. No  
20 econometric cost analysis was performed.

21 Expert Report of William P. Zarakas on Behalf of BC Hydro. February 8, 2019.  
22 Case No. EB-2018-0130.

- 23 5. On behalf of Hawaii Electric, Brattle filed reports on a performance based  
24 regulation in Hawaii

25 Improving the PBR Framework in Hawaii, Addressing the risk of “Capex  
26 Bias”. January 4, 2019. Docket No. 2018-0088.

27 Modifying the PBR framework in Hawai'i, Comments on the PUC Staff  
28 Proposal. March, 2019. Docket No. 2018-0088.

1           **6. Report commissioned by DTE Energy on review of PBR plans, goals and**  
2           **incentives.**

3                   **Performance Based Regulation Plans, Goals, Incentives, and Alignment.**  
4                   **December 6, 2017.**

1.2    Please include Client, Regulatory Agency and date for each.

**Réponse :**

5           **See response to 1.1.**

1.3    Specifically note and Reference studies reviewed by Canadian Energy Regulators.

**Réponse :**

6           **See response to 1.1.**

1.4    Please provide the Scope of the Canadian Studies, Conclusions and Recommendations

**Réponse :**

7           **See response to 1.1.**

1.5    Please provide Reference(s) to the Regulator's Decision(s).

**Réponse :**

8           **See response to 1.1.**

**2. Référence :**            **i)    B-0012: HQT-5, Document 2 Table 7 Page V-44 and Table 11 Page 63**

**Préambule :**

Brattle and Pacific Economics Group have prepared Partial and Total Factor Productivity Studies of the North American Transmission Industry. OC wishes to compare the assumptions and methodology of the two studies.

**Demande :**

2.1 Please fill out the OC Template\* (Excel Format) provided for the Brattle TFP Study parameters. Delete/Add any irrelevant/relevant parameters

**Réponse :**

1 **Please see tables below. Some corrections are highlighted in yellow.**

**COMPARISON OF PARAMETERS IN THE BRATTLE AND PEG MULTI\_FACTOR  
CNE AND CAPITAL PRODUCTIVITY STUDIES**

	Parameter	Brattle	Brattle Comments
Sample	Region of Comparison	North America	
	Sample size	74	
	Sample Periods	1994-2019	
Cost definition	Transmission O&M	Includes all FERC Transmission O&M accounts	
	Sales Expenses	Excluded	Not relevant for transmission TFP
	Customer accounts less uncollectibles	Excluded	Not relevant for transmission TFP
	Customer Service & Information	Excluded	Not relevant for transmission TFP
	Pensions and Benefits	Excluded	Relevant only if A&G is included
	Capital benchmark Year	1988	Earliest year of electronic data availability
	Contributions in Aid of Construction	Uses FERC treatment of CIAC	Capital is net of CIAC
Price Indices	Input measures	Labor Materials & Services (M&S)	Labor: deflated wages; MRS: deflated (O&M-labor expenses)
		Capital One Hoss Shay	
		Labour Price Index	Ratio of wage level for a given year to wage level in base year.
		Wage Levels	Use 2019 mean wage levels from BLS OES and use ECI to calculate wage levels for other years.
		Capital Price Index	Handy-Whitman
		M&S Price Index	GDP-PI
		Depreciation Rate	46 year life
		Cost of Debt	Vary by company/year
		ROE	Vary by company/year
		Output Measures	Peak Demand & Miles Lines 60:40 %
	Correction for Autocorrelation	N/A	Relevant for the econometric cost benchmarking analysis
	Correction for Heteroskedasticity	N/A	Relevant for the econometric cost benchmarking analysis

**COMPARISON OF PARAMETERS IN THE BRATTLE AND PEG BENCHMARK STUDIES**

	Parameter	Brattle	Brattle Comments
Sample	Region of Comparison	North America	
	Sample Size	75 (including HQT)	
	Sample Periods	2001-2019	
Function	Translog Treatment of ScaleVariables	NO	The dependent and scale variables are in logs but there are no second order terms or interactions.
Estimation			
Procedures	Cost Share Regression Equations	YES	Use of fixed-effects regression, with standard errors robust to intragroup heteroskedasticity and autocorrelation
TOTAL COST	Number of Customers	NO	
MODEL	Ratcheted Peak Demand	YES	
VARIABLES	AVG TX Voltage	YES	
	% Transmission Plant	YES	
	Total Length of Lines	YES	
	# Substations per line km	YES	
	% lines underground	YES	
	Customer Growth	NO	
	Percent Forested	NO	
	Elevation Deviation	NO	
	Time Trend	YES	
	Binary Variable	NO	
	Age of Capital	NO	
CAPITAL COST	AS ABOVE	YES	
MODEL			
VARIABLES			
O&M COST	AS ABOVE	YES	
MODEL			
VARIABLES			

2.2 Please provide Explanatory Notes

**Réponse :**

1 **See response to 2.1.**

2.3 Did Brattle use adjustments for Autocorrelation an Heteroskedasasticity? Please provide details.

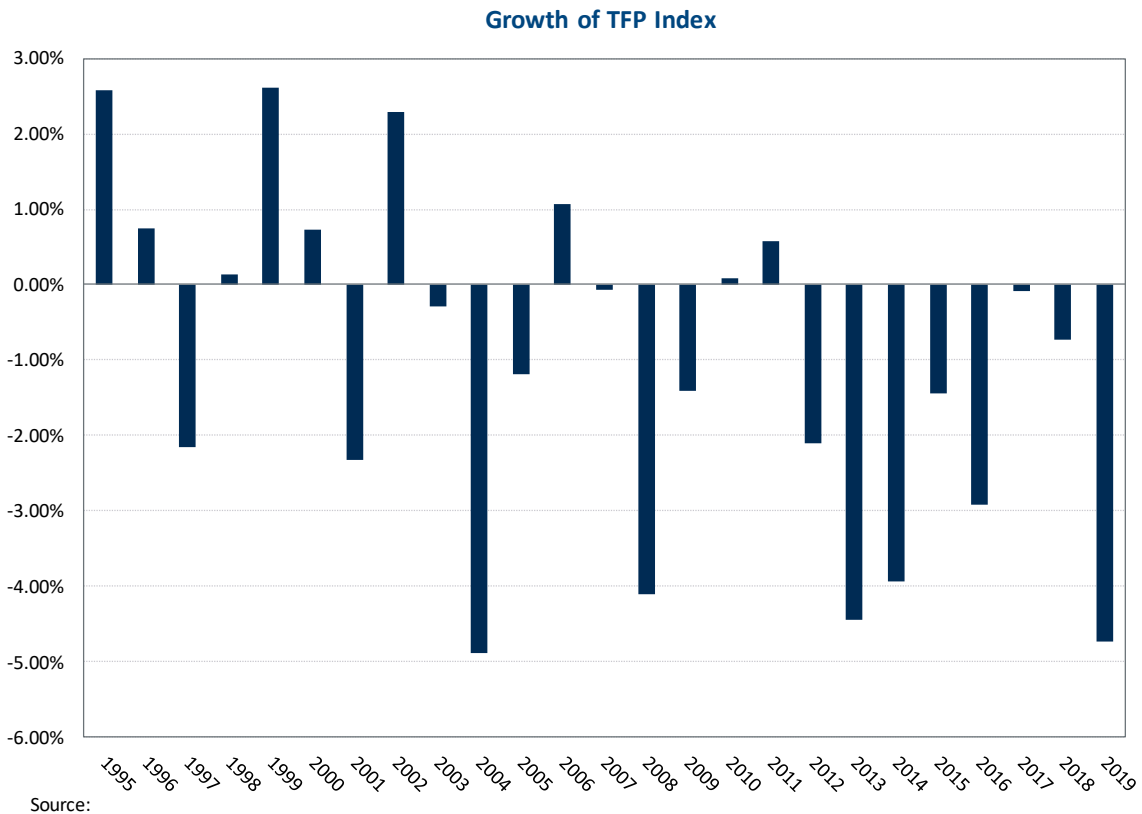
**Réponse :**

2 **Yes. Our standard errors are robust to heteroskedasticity and autocorrelation**  
 3 **and clustered at the utility level.**

2.4 Please Graph the US Transmission Industry TFP growth over the sample Period based on the Brattle Model.

**Réponse :**

4 **Please see graphic below.**





3. Référence :           i)    B-0012:HQT-5, Document 2 Table 12 Page VI 54
- ii)    C-AQCIE-CIFQ-0005

**Préambule :**

In Reference ii) PEG has summarized the results of the Brattle and PEG Partial (CNE and Capital) and Multi/Total Factor productivity Studies for the North American Transmission Industry:

	Multifactor Productivity			CNE		Capital	
	Brattle (OHS)	Brattle (GD)	PEG (GD)	Brattle	PEG	Brattle (OHS)	PEG (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%	

**Demande :**

3.1 Confirm that PEG has extracted the correct/appropriate Data from the Brattle Report.

**Réponse :**

1           **There are several discrepancies in the table above. We note that PEG extracted**  
 2           **our results correctly in its letter, but when it was copied above, the columns**  
 3           **were not kept intact.**

4           **Regarding Brattle’s multifactor productivity results, Brattle’s results using GD**  
 5           **for 2005-2019 was -2.91%, the rest are correct. Regarding Brattle’s partial**  
 6           **productivity CNE results, Brattle’s results for 2005-2019 was -3.09%. Regarding**  
 7           **Brattle’s partial productivity capital results, Brattle’s results for 2005-2019 was -**  
 8           **0.97%. Please see Brattle Table 11 in our report.**

9           **Below is the table above, with the correct values:**

	Multifactor Productivity			CNE		Capital	
	Brattle (OHS)	Brattle (GD)	PEG (GD)	Brattle	PEG	Brattle (OHS)	PEG Tx (GD)
Full Sample	-1.04%	-1.82%	-0.62%	-3.38%	-0.68%	-0.05%	-0.46%
Last 15 years	-1.69%	-2.91%	-2.26%	-3.09%	-1.74%	-0.97%	-2.16%

3.2 Are the Brattle and PEG sample periods the same? If not, indicate each period and why Brattle chose its sample period

**Réponse :**

1           **We use TFP growth rates for the period 1995-2019. We use as long a period as**  
2           **is possible and as is reasonable to do, in order to increase the number of**  
3           **observations in our TFP calculations. PEG uses TFP growth rates for the period**  
4           **1996-2019.**

3.3 Are the Brattle and PEG US Transmission Company Samples similar? Note/list the primary differences between the two Samples.

**Réponse :**

5           **We use 74 US transmission companies. PEG uses 51 US transmission**  
6           **companies. The following table shows the companies in our sample that are not**  
7           **included in PEG's sample, as well as the companies in PEG's sample that are**  
8           **not in our sample.**

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<b>In Brattle's Model, But Not PEG's</b>	<b>In PEG Model, But Not Brattle's</b>
Black Hills Power, Inc.	Duke Energy Indiana, LLC
Central Maine Power Company	Duke Energy Ohio, Inc.
Cleveland Electric Illuminating Company	Jersey Central Power & Light Company
Dayton Power and Light Company	Kansas City Power & Light
Dominion Energy South Carolina, Inc.	Kansas Gas & Electric
Entergy Arkansas, LLC	South Carolina Electric & Gas
Entergy Mississippi, LLC	Southern Indiana Gas and Electric Company
Entergy New Orleans, LLC	
Evergy Kansas South, Inc.	
Evergy Metro, Inc.	
Georgia Power Company	
Green Mountain Power Corporation	
MDU Resources Group Inc.	
Nevada Power Company	
Northern Indiana Public Service Company	
Northern States Power Company - WI	
NSTAR Electric Company	
Ohio Valley Electric Corporation	
Otter Tail Corporation	
Pacific Gas and Electric Company	
Portland General Electric Company	
Potomac Edison Company	
PPL Electric Utilities Corporation	
Public Service Company of New Hampshire	
Public Service Company of New Mexico	
Public Service Company of Oklahoma	
Puget Sound Energy, Inc.	
Sierra Pacific Power Company	
Southwestern Electric Power Company	
United Illuminating Company	

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- 3.4 For the Multi-Factor and Capital Factor Productivity Analysis, has Brattle used One Hoss Shay (OHS) or Geometric Decay (GD) for Capital in the prior studies to be provided in the response to Question 1 above? Using the list of prior studies, please indicate which used OHS and GD.

Réponse :

1 **Dr. Ros used OHS in the Alberta study referenced to question 1.1 above. Capital**  
2 **factor productivity was not a consideration in the Alberta proceeding, it was**  
3 **focused entirely on multi-factor productivity. The two other Brattle studies in**  
4 **Alberta referenced in question 1.1 above, relied on Dr. Ros' TFP study for its**  
5 **analysis and so implicitly also used OHS. The Brattle BC Hydro study did not**  
6 **calculate TFP.**

- 3.5 Does Brattle prefer OHS or GD methodology, or does it provide both because of the split among experts on preferred methodology?

Réponse :

7 **Please see our discussion of the two approaches in our Report (Brattle Report**  
8 **Section IV.D) and the reasons why we recommend the use of OHS in this study.**  
9 **The issue of OHS vs. GD has been a topic of particular interest and difference in**  
10 **opinion among experts in recent TFP studies and we provide both results**  
11 **to inform the record on the impact of selecting one approach over the other in**  
12 **our study.**

- 3.6 Please discuss the significant reasons for the materially different results for the Multifactor Productivity of the North American Transmission Industry between Brattle and PEG.

Réponse :

13 **As of this writing, we are still reviewing PEG's workpapers and models that**  
14 **could provide more insight into this question. From the PEG report, and based**  
15 **upon our model and analysis, there are a number of differences in our study and**  
16 **PEG's study that help explain the differences in results. Many of those are being**  
17 **captured in response to question 2.1 above. These include factors such as: the**  
18 **difference in sample companies, the use of OHS vs. GD, the start year for the**  
19 **benchmark capital stock, the inclusion or exclusion of certain transmission**  
20 **O&M expenses in the FERC accounts, and the inclusion or exclusion of A&G**  
21 **and general plant.**

- 3.7 Does Brattle agree that the differences between Brattle and PEG are too great to allow the Intervenors and the Régie to determine the appropriate X-factor for HQT? Please discuss.

**Réponse :**

- 1 **No, we do not agree. It is not uncommon in regulatory proceedings for experts**  
2 **to provide results that are materially different, based upon different**  
3 **methodologies, data, and assumptions. The differences between our study and**  
4 **PEGs are not unlike differences in other regulatory matters that come before the**  
5 **Régie and other regulators, e.g., cost of capital determinations.**

4. Référence : i) C-AQCIE-CIFQ-0005, page 2-5

**Préambule :**

In Reference i) PEG has criticized the results of the Brattle Partial (CNE and Capital) and Multi/Total Factor Productivity Studies for the North American Transmission Industry:

**Demande :**

- 4.1 Please indicate if the criticisms of Dr. Lowry listed at page 2-5 of his correspondence are valid and respond to each of these.

**Réponse :**

- 6 **The criticisms are not valid, and we will be responding to each of them in a**  
7 **proper manner once we have received the final PEG report.**

- 4.2 Provide any similar comments Brattle wishes to make regarding the February 2021 PEG Multi-Factor, CNE and Capital Productivity Studies

**Réponse :**

- 8 **We will include our comments on the February 2021 PEG report in a proper**  
9 **manner once we have received the final PEG report.**

4.3 ACQCIE has received approval from the Regie for PEG (Dr. Lowry) to prepare updated TFP and Total Cost Benchmarking Studies. Has Brattle been retained by HQT to update its February Study *HQT-5, Document 2*? If so when will this be filed?

Réponse :

1           **We have been retained to update our study, if necessary, and to address**  
 2           **PEG’s criticism of our model, in a proper manner once we have received the**  
 3           **final PEG report.**

5. Référence :           i)    **EB-2021-0110 Hydro One Networks Inc.**

**Exhibit A Tab 4 Schedule 1 Attachment 1 Filed with OEB  
 ClearSpring EA TFP and Total Cost Benchmarking Study  
 (<https://www.rds.oeb.ca/CMWebDrawer/Record?q=CaseNumber=EB-2021-0110&sortBy=recRegisteredOn-&pageSize=400> )**

Préambule :

In Reference i) Hydro One Transmission has filed a TFP and Total Cost Benchmarking Study. OC would like to understand the differences in Clearspring’s conclusions of the TFP trend for the North American Transmission Industry and those of Brattle:

	Multifactor Productivity -North American Transmission Industry		
	Brattle (OHS) (GD)	PEG (GD)	Clearspring EA (GD)
Full sample period	-1.04% -1.82%	-0.62%	-1.66% (2000-2019)
Last 15 years	-1.69% -2.26%	-3.09%	-2.74% (2010-2019)

Demande :

5.1 Please comment on the Clearspring EA TFP results taking into account any material differences on Sample and period.

Réponse :

4           **First, there is a typo in the table above, we found a MFP growth of -2.91% for the**  
 5           **last 15 years when using GD, not -2.26%. PEG found a MFP growth**  
 6           **of -2.26% for the last 15 years.**

7           **For the period 2000-2019, our Multifactor Productivity was -1.50%, compared to**  
 8           **Clearspring’s -1.66%. For the period 2010-2019, our Multifactor Productivity was**

1           **-1.97%, compared to Clearspring's -2.74%. Our MFP results are higher (less**  
2           **negative) than ClearSpring's with the difference being more pronounced in the**  
3           **more recent period.**

4           **Clearspring used a sample of 50 US transmission utilities while we used a sample**  
5           **of 74 US transmission utilities. There were seven utilities in Clearspring's sample**  
6           **that were not in Brattle's sample.**

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**List of Companies in Clearspring Sample but not in Brattle's**

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Appalachian Power Company  
Duke Energy Indiana, LLC  
Jersey Central Power & Light Company  
Kansas City Power & Light  
Kansas Gas and Electric Company  
South Carolina Electric and Gas Co.  
Southern Indiana Gas and Electric Company

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7           **We do not have access to Clearspring's model and workpapers and cannot**  
8           **perform sensitivity analyzes on their model that could help explain differences**  
9           **in results between our model Clearspring's model. From the Clearspring report**  
10          **and our analysis, however, there are several factors that appear to be important**  
11          **differences in the studies. They are: Clearspring's use of GD instead of OHS,**  
12          **Clearspring's inclusion of common costs, and Clearspring's exclusion of FERC**  
13          **transmission O&M account 565. On the latter, we include all FERC transmission**  
14          **O&M accounts while Clearspring includes all the FERC transmission O&M**  
15          **accounts except for account 565.**

5.2      Discuss the implications for setting the appropriate X factor for HQT.

**Réponse :**

16          **We recommend the results of our TFP study for recommendation of the X-**  
17          **factor for HQT.**

6. Référence :            i)    **B-0012: HQT-5, Document 2 Pages**

**Préambule :**

**Brattle and Pacific Economics Group have prepared Econometric Benchmarking Models to compare/score HQT to the North American Transmission Industry. OC wishes to compare the assumptions and methodology of the two studies**

**Demande :**

6.1 Please fill out/correct the OC Template\* (Excel Format) provided for the Brattle Total Cost Capital and O&M Benchmark Model parameters. Add/delete any irrelevant/relevant parameters

**Réponse :**

1 **See response to question 2.1.**

6.2 Please provide a Summary of the material differences in the input assumptions and parameters of the Brattle and PEG models.

**Réponse :**

2 **As of this writing, we are still reviewing PEG's workpapers and models that**  
3 **could provide more insight into this question. Based upon our review of the PEG**  
4 **report, the following is a list of likely material differences in the econometric**  
5 **models:**

6 **Different period: Brattle 2001-2019, PEG 2004-2019.**

7 **Different treatment of capital: Brattle OHS, PEG GD.**

8 **Brattle excludes A&G and General plant, while PEG included it.**

9 **Brattle includes all FERC O&M transmission accounts, PEG excludes three**  
10 **accounts.**

11 **Brattle utilizes a panel-data estimator for the parameters, the fixed-effects**  
12 **estimator, PEG utilizes an OLS estimator.**



7. Référence :            i)    **B-0012: HQT-5, Document 2 Table 15 Pages VI-65/66 Figure 1**

**Préambule :**

Brattle and Pacific Economics Group have prepared Econometric Benchmarking Models to compare/score HQT to the North American Transmission Industry. OC wishes to compare/understand the assumptions and methodology of the two studies  
The results of the two models are very different:

	Brattle		PEG	
	HQT Total Costs	US Sample	HQT Total Costs	US Sample
2001-2019	-1.7%,	-2.3% avg		
2005-2019	-2.8%	-1-9% avg		
2010-2019	-6.0%	-1.0% avg	2017-19	+67%
<b>Stretch Factor</b>	0.10- 0.30%		0.60%.	

**Demande :**

7.1 Did Brattle consider any other explanatory model variables such as forestation, terrain, construction cost, age of Capital? Explain if these were considered/tested as in other similar Models

**Réponse :**

1            **We did not have variables on the factors listed in the question. We note,**  
 2            **however, that many of these factors are controlled for in our fixed-effects model**  
 3            **and reduce omitted variable bias. In a fixed-effects model, the unobserved**  
 4            **utility-specific factors provide information on how different the companies are**  
 5            **among each other and those factors are estimated and used for prediction. This**  
 6            **permits us to account for those factors, like forestation, terrain and construction**  
 7            **cost characteristics.**

7.2 Has Brattle estimated the projected relative Total Cost Scores for the period 2020-2025?

**Réponse :**

8            **No.**

7.3 Brattle results indicate HQT is a good performer in Total Cost relative to the US Industry but PEG concludes HQT is a relatively poor performer relative to the US industry. Please discuss how the Intervenors and the Regie can decide on an appropriate stretch factor for HQT given the very different results and recommendations?

**Réponse :**

1 **Tables 15 of our report shows that over the period 2001-2019, according to our**  
2 **econometric model and in terms of TFP, 59% of the sample performed better**  
3 **than HQT. Table 17 of our report shows that over the period 2001-2019,**  
4 **according to our econometric model and in terms of PFP capital, 57% of the**  
5 **sample performed better than HQT. Table 19 of our report shows that over the**  
6 **period 2001-2019, according to our econometric model and in terms of PFP**  
7 **O&M, 61% of the sample performed better than HQT.**

8 **Regarding the question how Intervenors and the Regis can decide on**  
9 **appropriate stretch factor based upon these two studies, please see our**  
10 **response to question 3.7 above.**

**8. Référence :** i) **B-0012: HQT-5, Document 2 Table 17 Pages VI-68/69 Figure 2**

**Préambule :**

Brattle has prepared an Econometric Benchmarking Model for Capital Costs to compare/score HQT to the North American Transmission Industry. OC wishes to compare/understand the assumptions, methodology and results.

**Demande :**

8.1 Please indicate how Brattle defined Capital Costs—for example Property Plant and Equipment or PPE, plus Capitalized Overheads.

**Réponse :**

11 **For the capital stock (quantity), we begin with constant dollar gross**  
12 **transmission investment in 1988. We calculate the capital stock in subsequent**  
13 **years by using One Hoss Shay—adding constant dollar plant additions and**  
14 **subtracting constant dollar plant retirements. For the capital price we apply**  
15 **formula (20) p. 36 of the Brattle Report. The capital stock in a given year**  
16 **multiplied by the capital price in a given year results in the capital annual**  
17 **expenses, i.e., the capital costs.**

8.2 Did Brattle adjust Capital Cost for the Exchange rates for the US sample over the sample period?

**Réponse :**

1           **Our TFP model was in U.S. dollars. For the cost benchmarking study we**  
2           **converted HQT's cost data, which was in Canadian dollars, to US currency using**  
3           **Purchasing Power Parity exchange rates.**

8.3 Did Brattle consider any other explanatory model variables such as Forestation, Terrain, construction cost, age of capital? Explain if these were tested as in other similar Models.

**Réponse :**

4           **Please see response to question 7.1 above.**

8.4 Please discuss why R<sup>2</sup> Values are Low.

**Réponse :**

5           **Please see response to Régie 13.4.2.**

**9. Référence :**           i)    **B-0012: HQT-5, Document 2 Table 19 Pages VII-71/72 Figure 3**

**Préambule :**

Brattle has prepared an Econometric Benchmarking Model for OM&A Costs to compare/score HQT to the North American Transmission Industry. OC wishes to compare/understand the assumptions, methodology and results.

**Demande :**

9.1 Please indicate how Brattle defined OM&A. For example before/after capitalization.

**Réponse :**

6           **FERC accounts include capitalized labor as part of the capital plant categories**  
7           **and not as part of labor. For HQT we exclude capitalized labor from the**  
8           **definition of labor because these expenses are included in the company's**  
9           **capital expenses.**

9.2 Please provide a list of major categories

Réponse :

1 **We used all the transmission expense accounts in the FERC Uniform System of**  
2 **Accounts. The list below is the name of each operation and maintenance**  
3 **account that fall under transmission expense.**

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**FERC Form 1 Accounts Included**

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(560) Operation Supervision and Engineering  
(561.1) Load Dispatch-Reliability  
(561.2) Load Dispatch-Monitor and Operate Transmission System  
(561.3) Load Dispatch-Transmission Service and Scheduling  
(561.4) Scheduling, System Control and Dispatch Services  
(561.5) Reliability, Planning and Standards Development  
(561.6) Transmission Service Studies  
(561.7) Generation Interconnection Studies  
(561.8) Reliability, Planning and Standards Development Services  
(562) Station Expenses  
(563) Overhead Lines Expenses  
(564) Underground Lines Expenses  
(565) Transmission of Electricity by Others  
(566) Miscellaneous Transmission Expenses  
(567) Rents  
(568) Maintenance Supervision and Engineering  
(569) Maintenance of Structures  
(569.1) Maintenance of Computer Hardware  
(569.2) Maintenance of Computer Software  
(569.3) Maintenance of Communication Equipment  
(569.4) Maintenance of Miscellaneous Regional Transmission Plant  
(570) Maintenance of Station Equipment  
(571) Maintenance of Overhead Lines  
(572) Maintenance of Underground Lines  
(573) Maintenance of Miscellaneous Transmission Plant

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9.3 Were Pensions and Benefits included or excluded?

Réponse :

4 **Pension and benefits are a part of Administrative and General expenses,**  
5 **which we did not include in our base case results.**

9.4 Did Brattle adjust OM&A Cost for the Exchange rates for the US sample over the sample period?

**Réponse :**

1 **For the cost benchmarking study we converted HQT's cost data to US currency**  
2 **using Purchasing Power Parity exchange rates.**

9.5 Is Brattle also aware that in Ontario under “Custom IR”, electricity and gas distribution utilities are eligible to propose an Incremental Capital Module (ICM) to allow for extraordinary CAPEX? Has Brattle an opinion on such approach for Quebec?

**Réponse :**

3 **We are generally aware of the Ontario approach under Custom IR. This issue is**  
4 **relevant if the Régie decides to regulate capital under the MRI plan. Including**  
5 **an ICM in a MRI plan that applies to capital as well as O&M lowers the incentive**  
6 **properties of the plan, but provides a level of protection against under-funding**  
7 **large capital projects that are unanticipated and can have material impact on**  
8 **service quality. Any ICM proposed in a future MRI plan that applies to capital**  
9 **should be carefully considered and examined by the Régie.**

**10. Référence :** i) **B-0012: HQT-5, Document 2 Table 20 Pages VIII-74**

**Préambule :**

The inflation factor in the current MRI represents the growth in the wages and labor expenses that HQT likely faces in its geographic territory—as measured by the average growth rate of the weekly earnings of Quebec employees—as well as the growth in input prices HQT pays for non-labor purchases—as measured by CPI-Québec. While the current MRI plan does not include capital expenses—and the updated MRI plan may eventually include capital—there is regulatory precedence for using the CPI index as a proxy for changes in non-labor input prices, including capital.

**Demande :**

10.1 Please List MRI's that Brattle reviewed, where the I-factor is based on CPI and the Canadian GDP-PI.

**Réponse :**

1           **In the 2012 Alberta Utilities Commission TFP proceeding, the Commission used**  
2           **the CPI as the non-labor input in the inflation factor I, along with the Alberta AWE**  
3           **index from Statistics Canada as the labor cost component of the inflation factor**  
4           **I, see Section 5 of the AUC 2012 decision cited in question 1.1 above.**

10.2 Confirm that in Ontario, the OEB sets the I-factor based on the proposed Inflation Factor (I) based on the weighted average of the annual percent change of two labour and non-labour indices, namely:

- Canada's GDP-IPI (FDD) as reported by Statistics Canada; and
- Average Weekly Earnings (AWE) for workers in Ontario, as reported by Statistics Canada.

What is Brattle's view of this approach (using Quebec AWE)

**Réponse :**

5           **Confirmed, by examining the 2018 PSE report referenced in the OEB's decision**  
6           **on the inflation factor. At a high level, the approach seems reasonable but**  
7           **we have not performed analysis of what inflation factor is most suitable in**  
8           **this proceeding.**

11. Référence :
- i) B-0012: HQT-5, Document 2 Table 23 Page VIII-76
  - ii) OEB EB-2021-0110 Hydro One Networks Integrated Rate Application [Exhibit A Tab 4 Schedule 1 Pages 1-2] (<https://www.rds.oeb.ca/CMWebDrawer/Record?q=CaseNumber=E B-2021-0110&sortBy=recRegisteredOn-&pageSize=400>)

**Préambule :**

Brattle has prepared a TPP and Econometric Benchmarking Model for OM&A and Capital Costs. OC would like to understand Brattle's opinion regarding inclusion of a Capital factor in the IRM Formula and the form this should take.

**Demande :**

11.1 What are Brattle’s recommendation(s) regarding including Capital in the MRI?

**Réponse :**

1           **We provided a discussion of the pros and cons of including capital in the MRI**  
2           **plan in our Report, Section VIII B. Including capital involves tradeoffs that we**  
3           **discussed in that section of our report.**

11.2 What does Brattle suggest regarding an approach to include capital in the IRM formula, for example a Capital Factor (e.g. Toronto Hydro). Please propose a modified IRM formula with Capital included. Does this include a stretch factor on Capital?

**Réponse :**

4           **See response to question 9.5.**

11.3 Is Brattle aware that in the Custom IRM for Hydro One Transmission for 2023-2027:

The Custom RCI is expressed as follows:

$$RCI = I - X + C$$

Where:

- “I” is the Inflation Factor, based on a custom weighted two-factor input price index;
- “X” is the Productivity Factor, equal to the sum of Hydro One’s Custom Industry Total Factor Productivity measure and Hydro One’s Custom Productivity Stretch Factor; and
- “C” is Hydro One’s Custom Capital Factor, designed to recover incremental revenue each year necessary to support Hydro One’s proposed system plans, beyond the amount of revenue recovered through the I – X adjustment, **but reduced by a supplemental stretch factor on capital of 0.15%.**

**Please comment on the viability of a similar approach for HQT.**

**Réponse :**

5           **See response to question 9.5.**

12. Référence :
- i) B-0012: HQT-5, Document 2 Table 23 Page VIII-76
  - ii) OEB EB-2021-0110 Hydro One Networks Integrated Rate Application [Exhibit A Tab 4 Schedule 1 Pages 1-2] (<https://www.rds.oeb.ca/CMWebDrawer/Record?q=CaseNumber=E B-2021-0110&sortBy=recRegisteredOn-&pageSize=400>)

**Préambule :**

Additional Features of an IRM may include a Stretch Factor or Factors, an Earnings Sharing Mechanism (ESM), Off Ramps, Capital In-Service Variance Account (CISVA) (to capture over under capital spending) and provision for a Z- factor (with threshold).

**Demande :**

12.1 Does Brattle have an opinion on the inclusion of Stretch Factor? Confirm the recommended Range and if this should apply to OM&A, Capital or both?

**Réponse :**

1           **Yes, we recommend a stretch factor in the range of 0.1 to 0.3 applicable to OM&A**  
2           **and Capital, see Brattle report Section VIII. D.**

12.2 Should some or all of the additional features listed above, be included in the IRM for HQT? Please provide a detailed response.

**Réponse :**

3           **Earnings sharing: This is already a feature of the current MRI. Earnings sharing**  
4           **mechanisms can blunt the incentive effects of an MRI plan. But at the same time,**  
5           **it provides benefits to customers who can share in the efficiency gains resulting**  
6           **from the plan beyond the stretch factor. If the earnings sharing is symmetric,**  
7           **and applies when the company earns below a certain amount, it provides**  
8           **financial protection to the company in the event of unanticipated demand**  
9           **shocks and/or sudden and unforeseen expenditures.**

10           **Off Ramps: This is already a feature of the current MRI Allows the company and**  
11           **the regulator to agree beforehand on the circumstances in which the plan will**  
12           **terminate and the company will return to rate of return regulation. This creates**  
13           **the same tradeoffs as already discussed, it blunts the incentive effects of an MRI**  
14           **plan, but can provide protection to the company in the event of unanticipated**  
15           **demand shocks and/or sudden and unforeseen expenditures.**



- 1           **Capital In-Service Variance Accounts: This is similar to the Custom Capital**  
2           **Factors discussed in response to previous questions.**
- 3           **Z-factors: This is already a feature of the current MRI and is a standard feature**  
4           **of price/revenue caps.**

### Planification du réseau de transport

13. Référence :           i)           Pièce B-0021, p. 8 et 9, lignes 28 à 5

#### Préambule :

- i)           *« Par ailleurs, le Transporteur précise qu'il évalue, en plus de la condition de pointe de charge normale, d'autres conditions dont celle de la pointe exceptionnelle, à la demande du Distributeur. Cette condition correspond à une pointe de 4 000 MW supérieure à la pointe de charge normale et permet d'évaluer la performance du réseau de transport résultant de conditions météorologiques extrêmes. Comme il s'agit d'une situation à faible probabilité d'occurrence, l'utilisation de ressources qui ne sont pas sollicitées en condition de pointe normale est permise, notamment les centrales thermiques, les importations ainsi que les ressources interruptibles. Le Transporteur précise que depuis le dernier dossier tarifaire, aucun projet visant spécifiquement à satisfaire la condition de pointe de charge exceptionnelle n'a été identifié<sup>5</sup> et qu'aucune modification entraînant un impact sur les investissements requis n'a été apportée à ses critères de conception. (nos soulignés) »*

#### Demande :

13.1 Veuillez définir le terme « importation » dans le cadre de la citation à la référence i).

#### Réponse :

- 5           **Dans le cadre de la référence i), le terme « importation » correspond à**  
6           **l'importation du Distributeur. Le Transporteur transporte l'électricité pour le**  
7           **Distributeur, d'une source de production située dans un réseau voisin reçue à**  
8           **un point de réception et livrée au point de livraison HQT déduction faite des**  
9           **pertes de transport, et destinée à l'alimentation de la charge locale du**  
10          **Distributeur.**

13.2 Veuillez confirmer que l'énergie importée du Labrador en provenance de la centrale Churchill Falls fait partie des ressources planifiées en condition de pointe normale.

**Réponse :**

1           **Le contrat d'approvisionnement de la centrale de Churchill Falls fait partie des**  
2           **ressources désignées par le Distributeur pour l'alimentation de la charge locale.**  
3           **Le Transporteur planifie son réseau dans plusieurs conditions, dont celle de**  
4           **pointe normale pour assurer une alimentation fiable de la charge locale en**  
5           **tenant compte des ressources que le Distributeur désigne à cette fin, dont le**  
6           **contrat d'approvisionnement de la centrale de Churchill Falls.**

13.3 Veuillez expliquer dans quelles circonstances et sous quelles conditions le Transporteur pourrait éventuellement prendre en considération des importations comme étant des ressources planifiées en condition de pointe normale.

**Réponse :**

7           **Voir la réponse à la question 9.3 de la demande de renseignements (« DDR »)**  
8           **numéro 1 de l'AHQ-ARQ à la pièce HQT-10, Document 2.1.**

**14. Référence :**           i)           **Pièce B-0021, p. 9, lignes 26 à 32**

**Préambule :**

1. « Les prévisions des besoins d'investissement sont établies en coûts paramétriques, notamment parce qu'un certain degré d'incertitude est relié, par exemple, à la réalisation de certains projets de croissance et aussi parce que les solutions évoluent jusqu'au terme des analyses. Des projets particuliers peuvent aussi être devancés ou reportés en fonction de l'ensemble des projets que le Transporteur doit réaliser afin d'optimiser la résolution d'une problématique dans une zone donnée ou à l'égard d'un équipement en particulier ou pour profiter d'occasions d'affaires. *(nos soulignés)* »

**Demande :**

14.1 Veuillez donner des exemples de projets particuliers comme mentionner à la référence i).

Réponse :

1 Par exemple, de façon particulière, un projet de remplacement de disjoncteur,  
 2 sectionneur ou de services auxiliaires pourrait être devancé de quelques années  
 3 afin d'être réalisé simultanément avec un autre projet pour profiter de la  
 4 mobilisation d'un chantier dans un même poste électrique. Le regroupement de  
 5 projets particuliers peut représenter une occasion d'affaire en optimisant les  
 6 coûts de mobilisation et de réalisation des travaux.

7 De plus, un projet pourrait également être reporté ou devancé selon les impacts  
 8 réseaux associés aux retraits d'équipement. Par exemple, un projet de  
 9 remplacement d'isolateurs sur une ligne stratégique pourrait être reporté ou  
 10 devancé en raison d'occasions d'affaires générées par des opportunités de  
 11 ventes sur les marchés externes dues à des conditions favorables.

14.2 Veuillez donner des exemples d'occasions d'affaires comme mentionner à la référence i).

Réponse :

12 Voir la réponse à la question 14.1.

15. Référence : i) Pièce B-0021, p. 12

Préambule :

*Taux d'utilisation du réseau*

Tableau 2  
 Taux d'utilisation du réseau de transport pour 2019 et 2020 (%)

	2019		2020	
	Charge locale	Réseau global	Charge locale	Réseau global
Janvier	88,1	95,6	81,3	91,6
Février	84,3	95,5	81,1	90,3
Mars	78,9	90,6	68,5	82,4
Avril	66,0	77,6	58,7	68,4
Mai	54,8	66,8	47,8	63,1
Juin	46,2	61,7	50,2	62,8
Juillet	48,4	63,8	51,8	65,3
Août	47,6	63,1	49,4	51,1
Septembre	46,4	61,8	45,3	57,9
Octobre	51,5	63,0	60,6	72,4
Novembre	72,8	84,8	67,2	77,9
Décembre	84,5	94,1	81,6	89,2

Notes :

- Le taux d'utilisation représente le rapport entre l'utilisation du réseau de transport et la capacité de transport prévue à la pointe pour 2019 et 2020.
- L'heure de pointe correspond à l'heure à laquelle le transport pour la charge locale et pour les services de transport de point à point est à son maximum.
- La capacité de transport prévue à la pointe, déterminée par la simulation d'un scénario de forte demande survenant dans les conditions d'exploitation anticipées à la pointe, a été établie à 44 233 MW pour 2019 et à 45 334 MW pour 2020.

OC constate à la première note de bas de page du Tableau 2 (référence i)) qu’il est mentionné que le taux d’utilisation (du Tableau 2) représente le rapport entre l’utilisation du réseau de transport et la capacité de transport prévue à la pointe pour 2019 et 2020. Conséquemment, mis à part pour les mois d’hiver, ces données ne représentent pas le taux d’utilisation du réseau en fonction des capacités réellement disponibles, soit les capacités du réseau qui tiennent compte, entre autres, de la mise hors service de certains équipements pour des entretiens.

**Demande :**

15.1 Veuillez reproduire le tableau 2 en établissant le taux d’utilisation sur le rapport entre l’utilisation du réseau de transport et la capacité de transport disponible pour chacun des mois de l’année.

**Réponse :**

1 **Le Transporteur ne calcule pas de capacité de transport disponible pour chacun**  
 2 **des mois de l’année et ne peut donc donner suite à cette demande. De plus, voir**  
 3 **la réponse à la question 16.1.1 de la DDR numéro 1 de la Régie à la pièce HQT-10,**  
 4 **Document 1.1.**

**16. Référence :** i) **Pièce B-0021, p. 16**

ii) **Études d’impact**  
 ([http://www.oasis.oati.com/woa/docs/HQT/HQTdocs/Liste\\_Etudes\\_impact.pdf](http://www.oasis.oati.com/woa/docs/HQT/HQTdocs/Liste_Etudes_impact.pdf))

**Préambule :**

**Tableau 7**  
**Prévision des besoins des services de transport à long terme**  
**(MW)**

Services de transport	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Charge locale	39 401	39 719	40 085	40 427	40 501	40 838	41 157	41 479	41 770	42 041
Point à point	4 697	5 534	5 971	5 971	5 971	5 971	5 971	5 971	5 971	5 971
Total	44 098	45 253	46 056	46 398	46 472	46 809	47 128	47 450	47 741	48 012

« »

**Demande :**

16.1 Veuillez confirmer et expliquer pourquoi les prévisions de services de transport point à point mentionné à la référence i) ne considère pas le service de transport associé à la demande de service de transport de point à point 203T liée à l'interconnexion Appalaches-Maine (référence ii)).

**Réponse :**

1 **Tel qu'il est possible de constater au tableau 7 de la référence i) ci-dessus,**  
2 **le service de transport associé à la demande 203T liée à l'interconnexion**  
3 **Appalaches-Maine est considéré dans la prévision des besoins de service de**  
4 **transport à long terme à compter de 2023.**

16.2 Veuillez indiquer quelle est la date estimée pour la mise en service de l'interconnexion Appalaches-Maine (référence ii))

**Réponse :**

5 **Selon la progression des travaux lors de la préparation de la présente demande**  
6 **tarifaire, la date estimée de la mise en service de l'interconnexion Appalaches-**  
7 **Maine était en mai 2023.**

8 **Le Transporteur précise, à titre d'information, que la mise en service finale de**  
9 **l'interconnexion Appalaches-Maine n'a pas d'effet sur les tarifs des années 2021**  
10 **et 2022 qui seront approuvés par la Régie dans le présent dossier.**

**Autre**

iii) Référence : i) Pièce B-0039, p. 79 à 82

**Préambule :**

i) « ...

**Explication des écarts**

*Les principaux écarts, totalisant 208,1 M\$, proviennent des éléments suivants :*

- *L'inflation et les conditions de marché défavorables.*
- *Les conditions terrain plus sévères et la mise sur place des mesures nécessaires pour accroître la sécurité des travailleurs et le respect de l'environnement.*

- L'augmentation des frais financiers due notamment à la hausse des coûts du Projet et au retard dans les autorisations gouvernementales.
- L'arrêt des travaux au printemps 2020 et la mise en place des mesures sanitaires en raison de la COVID-19.
- La diminution des coûts relatifs aux mesures d'atténuation des impacts environnementaux et d'acceptabilité sociale.

Le tableau 1 présente le coût des travaux selon l'autorisation initiale, le coût révisé ainsi que les écarts<sup>3</sup>.

**Tableau 1**  
**Coûts des travaux avant-projet et projet**  
 Construction d'une ligne à 735 kV  
 entre les postes Micoua et du Saguenay  
 (en milliers de dollars)

	Autorisation initiale D-2019-087	Coût révisé	Écarts
<b>Coûts de l'avant-projet</b>	9 897,9	10 016,8	118,9
<b>Sous-total</b>	<b>9 897,9</b>	<b>10 016,8</b>	<b>118,9</b>
<b>Coûts du projet</b>			
Ingénierie, approvisionnement et construction	607 425,9	833 798,9	226 373,0
Client	107 558,9	59 889,4	- 47 669,5
Frais financiers	67 835,7	97 070,7	29 235,5
<b>Sous-total</b>	<b>782 820,5</b>	<b>990 759,0</b>	<b>207 938,5</b>
<b>TOTAL</b>	<b>792 718,4</b>	<b>1 000 775,8</b>	<b>208 057,4</b>

OC constate que les coûts d'ingénierie, approvisionnement et construction prévue initialement (D-2019-087) à 607,43 M\$ ont augmentés de 226,37 M\$, soit une hausse de 37,3%.

**Demande :**

16.3 Veuillez ventiler la hausse de coûts de 208 M\$ parmi les cinq explications des écarts mentionnés à la référence i) listés ci-dessous :

- L'inflation et les conditions de marché défavorables.
- Les conditions terrain plus sévères et la mise sur place des mesures nécessaires pour accroître la sécurité des travailleurs et le respect de l'environnement.
- L'augmentation des frais financiers due notamment à la hausse des coûts du Projet et au retard dans les autorisations gouvernementales.
- L'arrêt des travaux au printemps 2020 et la mise en place des mesures sanitaires en raison de la COVID-19.
- La diminution des coûts relatifs aux mesures d'atténuation des impacts environnementale et d'acceptabilité sociale.

**Réponse :**

1            **Le Transporteur a présenté le suivi des coûts du projet de construction de la**  
2            **ligne à 735 kV entre les postes Micoua et du Saguenay, selon la forme et le**  
3            **niveau de détail demandés par la Régie, conformément à la décision**  
4            **D-2019-087<sup>1</sup>. De plus, il a présenté le suivi de l'échéancier du projet et**  
5            **l'explication des écarts majeurs entre les coûts autorisés et révisés.**

6            **Le Transporteur réfère l'intervenant au suivi des coûts détaillés du projet,**  
7            **déposé à la Régie dans le cadre de l'état d'avancement des projets majeurs du**  
8            **rapport annuel du Transporteur au 31 décembre 2020<sup>2</sup>.**

16.4 Veuillez indiquer par poste de coûts ce qui compose la hausse de coût de 226,37 M\$ associé aux coûts d'ingénierie, approvisionnement et construction mentionné à la référence i).

**Réponse :**

9            **Voir la réponse à la question 16.3.**

16.5 Veuillez indiquer si le suivie des coûts mentionnés à la référence i) date du 31 mai 2021 ou d'une date antérieure. Le cas échéant, veuillez indiquer cette date.

**Réponse :**

10           **Les coûts révisés de la référence i) ont été autorisés par le Conseil**  
11           **d'administration d'Hydro-Québec en février 2021.**

16.6 Veuillez indiquer l'estimation des coûts des travaux avant-projet et projet pour la construction d'une ligne à 735 kV entre les postes Micoua et du Saguenay en date d'aujourd'hui. Veuillez fournir cette mise à jour en utilisant le même format que le Tableau 1 de la référence i).

**Réponse :**

12           **Le Transporteur ne dispose pas de nouvelle estimation des coûts du projet,**  
13           **autre que celle déposée dans son rapport annuel au 31 décembre 2020.**

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<sup>1</sup> [Par. 204 à 207.](#)

<sup>2</sup> [B-0016](#), HQT-6, Document 1, p. 75 et [B-0017](#), HQT-6, Document 1.1, p. 32.

16.7 Veuillez indiquer ce que représente l'élément de coût intitulé « *Client* » dans le Tableau 1 (voir référence i)) et expliquer la baisse de 47,7 M\$ associé à ce coût.

**Réponse :**

1 **Voir le dossier R-4052-2018<sup>3</sup>.**

16.8 Veuillez indiquer, le cas échéant, l'ampleur des dépassements de coût (en M\$) lié au projet Chamouchouane-bout-de-l'île.

**Réponse :**

2 **Le Transporteur réfère l'intervenant à l'état d'avancement du projet**  
3 **Chamouchouane–Bout-de-l'Île<sup>4</sup> déposé dans son rapport annuel au**  
4 **31 décembre 2020.**

16.9 Veuillez indiquer si les conditions de terrains de certain tronçon du projet Chamouchouane-bout-de-l'île étaient similaires aux conditions de terrain mentionnées à la référence i).

**Réponse :**

5 **Les conditions de terrains du projet Chamouchouane–Bout-de-l'Île sont**  
6 **particulièrement variées, du fait que ce projet s'étend sur plus de 400 km et**  
7 **traverse plusieurs régions et unités géologiques. Dans le cas du projet**  
8 **Micoua-Saguenay, les conditions terrain plus sévères mentionnées dans la**  
9 **référence i) font référence à une portion du tracé en terrain montagneux et reculé**  
10 **qui, lors des relevés terrain réalisés en phase projet, s'est avérée plus**  
11 **accidentée que prévu.**

16.10 Veuillez expliquer en quoi « La diminution des coûts relatifs aux mesures d'atténuation des impacts environnementaux et d'acceptabilité sociale » explique l'écart entre le budget initial et le coût révisé.

**Réponse :**

12 **Le Transporteur réfère l'intervenant au dossier R-4052-2018<sup>5</sup> quant à la nature**  
13 **des coûts visant à favoriser l'acceptabilité sociale et atténuer les impacts**  
14 **environnementaux. Ces coûts ont été plus faibles que prévu.**

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<sup>3</sup> [B-0010](#), HQT-1, Document 2.1, p. 8.

<sup>4</sup> [B-0016](#), HQT-6, Document 1, pp. 29-32.

<sup>5</sup> [B-0010](#), HQT-1, Document 2.1, p. 8.