

**Étude de l'opportunité de la mise en place d'un CÉR
Dépenses en capital réalisée par NERA Economic
Consulting**

In the Matter of

**Demande du Transporteur de modification des tarifs et
conditions des services de transport pour les années 2021 et
2022**

R-4167-2021

Written Evidence of

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On behalf of

Hydro-Québec TransÉnergie

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I. Introduction

I am a Managing Director at National Economic Research Associates (“NERA”). I offer the following opinions on behalf of Hydro-Québec TransÉnergie (HQT).

a. Qualifications

NERA is the world’s oldest and largest firm of independent consulting economists, with its principal offices in major cities in North America and around the world. NERA was founded in 1961 by students and associates of Professor Alfred E. Kahn of Cornell University (a future Chair of the New York Public Service Commission, US Civil Aeronautics Board and longtime Special Consultant at NERA). NERA provides clients with practical economic analysis related to complex business and legal issues arising from competition, regulation, public policy, strategy, finance, and litigation. NERA has been at the forefront of issues concerning the modern rate design (including marginal-cost pricing), cost of utility capital and incentive regulation for regulated industries for over 60 years. Among other areas of economics applied to industrial organization, regulation and economic trade questions, NERA was the leading economic consulting firm for the electricity industry throughout the 1980s. We were also the consultant to the UK’s Central Electricity Generating Board in creating the first competitive power market concurrent with the privatization of the electricity industry there, which has provided a model for power sector reform and electricity markets around the world.

I have been associated with, or employed by, NERA since 1984; currently in NERA’s Boston office at 99 High Street, Boston, Massachusetts, 02110. I have M.A. and Ph.D. degrees in economics from the University of Wisconsin, Madison, with a major field of Industrial Organization and a minor field of Econometrics/Public Economics. My specialty within the field of industrial organization is regulated industries. The title of my 1986 Ph.D. thesis is *Sources of Total Factor Productivity in the Electric Utility Industry*.

My work deals with industries that operate networks (such as electricity transmission and gas distribution systems, oil and gas pipelines, telecommunications and water utility systems) and those operating infrastructure business at specific sites, such as airports, electricity generation plants, oil refineries and sewage treatment plants. In such industrial settings, I have researched and provided evidence regarding regulated pricing, the presence or absence of market power, competition, the fair rate of return, regulatory rulemaking, incentive ratemaking, load forecasting, cost measurement, contract

obligations and bankruptcy, among other issues. I have prepared expert testimony and affidavits as an expert witness more than 300 times in US and Canadian, state/provincial, federal and civil court proceedings, as well as in regulatory and civil court proceedings overseas. Such evidence has involved my representation of more than 100 local electricity and gas distribution utilities.

I have given evidence many times before Canadian federal regulators (at the National Energy Board/Canadian Energy Regulator) and provincial regulators. From 2010 to 2012, the Alberta Utilities Commission (the AUC) held North America's largest generic proceeding on how to re-implement *RPI minus X* regulation for its electric and gas utilities. I was the independent expert for the AUC in that proceeding; my recommendations were accepted by the Commission on all major parameters of that PBR initiative—(a) empirical methods, (b) sources of objective data, (c) transparency/lack of confidentiality restrictions, (d) output measures, (e) historical time period for *X-factor* measurement and (f) the avoidance of advanced statistical/econometric methods for an objective regulatory formula arising from a contested regulatory proceeding.¹

I have assisted in the privatization of state-owned utilities and the creation and administration of policies for regulated electricity transmission/distribution service and regulated electricity and gas throughout Canada and the United States, as well as 20 other countries around the world. I have been involved in the development of electricity markets and their associated transmission access links in the United States and Canada. My work involved live testimony before the Federal Energy Regulatory Commission (FERC) in its 1998 Public Conference on Independent System Operators (ISOs) on behalf of the Edison Electric Institute (as part of the panel on ISOs and transmission pricing), that led to FERC Order No. 2000 on Regional Transmission Organizations (RTOs). I subsequently provided evidence before the FERC for various RTOs and electric transmission utilities in their Order No. 2000 compliance filings. I also provided evidence before the Régie for Hydro-Québec TransÉnergie regarding policies of transmission upgrades that would complement Québec's power supply system and on behalf of Gaz Métro (now Énergir) regarding the pricing of gas distribution system expansions.

I publish extensively on subjects relating to international energy markets, including two monographs, nine papers/chapters in peer-reviewed journals or books and more than 40 other published papers on energy industry issues. My latest book, *The Political Economy of Pipelines: A Century of*

¹ See: Alberta Utilities Commission, Decision 2012-237, Rate Regulation Initiative: Distribution Performance-Based Regulation, September 12, 2012.

Comparative Institutional Development, was published in 2012 by The University of Chicago Press (re-issued in Chinese by Beijing’s Petroleum Institute Press in 2016).

My full CV is attached to this statement as Appendix A.

b. Assignment

My assignment is to evaluate the longstanding incentive-based method of project-by-project forecasts by which the Régie has regulated HQT’s incremental rate base capital additions. That method of using forecasts for capital additions was also later employed by the Régie as one of the elements of its framework for the “first generation” performance-based regulation plan (“PBR” plan) that began in 2019. That first-generation PBR plan, designed to set HQT’s revenues and rates for the four years from 2019 through 2022, applies an index-based revenue cap for operating expenses coupled with its pre-existing means of using forecasts for capital additions on a project-by-project basis. As was the case regarding capital additions before the start of the first-generation PBR plan, HQT generates earnings if it spends less on capital additions than it anticipated in its forecast test year.

Observing the differences between forecast and actual capital addition values in recent years, the Régie has posed the question of whether it would be better to use “deferral and variance account” (DVA) accounting for capital additions within the context of a forecast test year. Both the Canadian Federation of Independent Business (Fédération Canadienne des Entreprises Indépendantes “FCEI”) and the Association Québécoise des Consommateurs Industriels d’Électricité/Conseil de l’Industrie Forestière du Québec (“AQCIE-CIFQ”) generally support the concept of a DVA for capital additions.

I provide reasons why the Régie should not move to DVA accounting; but rather should keep its current forecast test year regime for capital additions, as it has done since 1999.² DVA accounting for capital additions would remove a useful incentive. Furthermore, the opinions of the FCEI and AQCIE-CIFQ, on what they consider problems with the Régie’s forward test year regime, are not in my opinion reasonable. They imply, without support, that HQT’s gains under that incentive regime were unfairly achieved (the result of bias or exaggeration, rather than efficient performance against a reasonable projection). They also incorrectly minimize the nature of the incentive that would be lost with a switch to DVA accounting.

² See: D-99-120, p. 12-13. The founding decision that put in place HQT’s regulatory regime was D-2002-95 for the first HQ transmission rate case in 2001.

c. Organization

My evidence proceeds as follows. In **Section II**, I provide my conclusions—both with respect to the DVA issue as the Régie has raised it and with respect to the opinions offered by FCEI and AQCIE-CIFQ (and the latter’s consultant, Pacific Economics Group—PEG). In **Section III**, I review, with examples from HQT’s latest filings, the computational elements associated with the company’s capital cost forecasts. In **Section IV**, I discuss the central nature of “regulatory lag” and the incentive underlying the Régie’s longstanding use of forecast in its future test year computations for revenue requirement. In **Section V**, I examine in detail the discussions of DVA accounting from the Régie, FCEI and AQCIE-CIFQ. In **Section VI**, I review the distinct elements of “regulatory common law” that distinguish regulators in Canada and the United States (including the Régie) versus those in most of the rest of the world (including in the UK and those who looked to the UK’s privatization/regulation experience in the 1980s to form their own regulatory institutions—including New Zealand and Australia). In **Section VII**, I present evidence on the purpose of deferral accounting as it has developed in Canadian and US regulation.

II. Conclusions

HQT is in the last year of its first-generation PBR plan. The PBR plan is based on a familiar Canadian/US cost-of-service (COS) method for year 1 (2019), and a similarly-familiar indexed-based formula (of the $RPI - X$ type) for operating expenses for years 2, 3 and 4 (2020-2022). The plan treats ongoing capital cost requirements not according to the $RPI - X$ index but on a projected test year COS basis for HQT, using cumulative forecasts for individual capital projects planned or in progress. In other words, each year’s “revenue requirement” for years 2-4 comprises the sum of index-based operating costs and COS-based capital costs—the latter in turn constituting the sum of the revenue requirement for HQT’s existing capital and that year’s forecast of ongoing capital additions. Such a treatment for capital additions (using forecasts as an incentive for HQT) pre-dates the start of PBR regulation in Québec—having been part of the Régie’s regulation since it determined forecasts to be the appropriate method in 1999.³

³ D-99-120, p. 12-13. In that opinion, the Régie shared the opinion of Dr. Mark Jaccard as to the incentive for the company to provide “adequate forecasts” (p. 12) and that “an annual review of tariffs encourages regulated companies to produce reliable forecasts, without obvious bias” (p. 9).

The incentive on HQT, with its forecast future test year for capital additions, is highly useful as a spur for HQT to economize on the cost of its capital additions. More than useful, such a regime of rolling forecast test years may well be optimal for capital projects—using the universally acknowledged incentive involving “regulatory lag” to its best advantage on a rolling year-by-year basis. Using its project-by-project forecasts, the existing regulation for capital additions provides a transparent assessment of incremental capital needs. At the same time, it provides a fact-based target against which HQT can measure its performance in installing new capital facilities. As such, it is a substantive incentive program for keeping costs down for the greatest part of HQT’s revenue requirement. The facts are in the forecasts themselves—disaggregated and specific to projects, not subjective and/or generalized.

The Régie, as well as the FCEI and AQCIE-CIFQ, have questioned the accuracy of such a forward test year regime. They point to the fact that in most years, the actual cost totals for completed capital projects have cumulatively been below those projects’ forecast costs. There is nothing improper in questioning forecasts—and indeed HQT has engaged in a program of improving the transparency and accuracy of its forecasts over time in response to such questions.

But the FCEI and AQCIE-CIFQ have gone further than simply questioning forecasts—the former charging HQT with “clearly biased forecasts”⁴ and the latter describing “a penchant for exaggerating capital cost growth.”⁵ Those charges are not proper, but simply the result of after-the-fact comparisons of the cumulative differences between forecasts and actual capital addition costs in an existing incentive regime. Such comparisons, made for the purpose of implying forecast bias (as FCEI and AQCIE-CIFQ do), do not make regulating HQT more effective, efficient, or streamlined. Such comparisons merely invite unproductive rate controversies by disconnecting capital cost additions from any reasonable, fact-based, *ex ante* expectations of the cost of the project-by-project forecasts that make up the forecast test year.

Such differences, between project forecasts and actuals, reflect how the incentive inherent to such a forecast test year plan is supposed to work. The value of the Régie’s longstanding test year regime lies in pushing HQT to beat its forecasts—providing long-term benefits to its customers as capital projects enter the rate base. Persistently beating forecasts is the *goal* of the regime—not an indication of a problem requiring a change of course or another regulatory remedy. Again, there is nothing wrong with fairly

⁴ R-4167-2021, Brief by the FCEI, p. 5.

⁵ PEG Commentary on Hydro-Québec’s MRI Evidence, 8 November 2021, p. 46.

questioning the reasonableness of those forecasts on a forward-looking factual basis. But it is improper to question their reasonableness merely if HQT beats its forecasts in the construction of new capital projects.

The FCEI and AQCIE-CIFQ (PEG) focus on what they say is the “small incentive” properties associated with the 1-year projected cost-of-service computations. But the 1-year duration of rolling forecasts does not diminish the incentives involved *at the margin*—it simply limits the size of the incentive award (given the yearly cost-of-service updates for capital additions). Those limits are useful for an orderly rate regime that cannot deviate too far from what is reasonable, either for HQT or its customers.

DVA accounting is not a useful substitute for factual examinations of the reasonableness of the project-by-project forecasts that make up the forward test year for capital additions, for three reasons. First, DVA accounting would remove the Régie’s useful regulatory lag incentive mechanism. Second, it would reflect a misuse of such deferred accounting mechanisms (as generally accepted accounting for regulated enterprises throughout North America—which are designed to deal with costs outside utilities’ control). Third, it would not streamline the Régie’s regulatory burden—but rather introduce contentious elements of *ex post* scrutiny, into capital additions—given that “prudence” principle underlying Canadian regulation would still apply to such additions.

III. HQT’s Capital Forecasts

The Régie determined forecast test years to be the appropriate method for HQT ratemaking in its 1999 decision D-99-120, finding that there is an incentive for the company to provide accurate forecasts.⁶ The Régie stated, in part:

With respect to the use of the forecasted test year, Hydro-Québec must, for any rate application aimed at the establishing electricity transmission rates, demonstrate the basis of the assumptions and forecasts submitted to the Régie. To this end, Hydro-Québec must be able to explain each of the forecasts on the basis of actual data. The Régie considers that, at a minimum, the data for the forecasted test year must be supported by the presentation of a historical year, covering a period equivalent to the test year and composed of actual data, and a base year, including both actual and projected data.⁷

⁶ D-99-120, p. 12.

⁷ D-99-120, p. 13.

HQT has followed the process of providing forecasts for capital expenditures first implemented in 1999.

Beginning in 2010, HQT implemented several measures to improve forecast accuracy. Since that time, HQT has continued to refine and strengthen those measures, outlined in Table 1.

Table 1: HQT Forecast Accuracy Improvement Measures

Proceeding	Decision or Proceeding No.	Measure No.	Description
2010 Rate Case	D-2010-032	1	Establishment of a coordination committee with Hydro-Québec Equipment (HQÉ) to anticipate commissioning delays
		2	Annual performance objectives for facility managers
		3	Standardization of certain equipment design to streamline procurement processes including costs and delivery times
2013/2014 Rate Case	D-2014-035	1	Reassessment of investment and commissioning forecasts before filing rate cases
		2	Implementation of computer system to allow more detailed forecasts
		3	Earlier internal authorization of projects
		4	Implementation of a work scheduling system
		5	Introduction of a sliding factor and moderation factors to reduce commissioning forecasts to account for the possibility of commissionings taking place later than expected.
2018 Rate Case	D-2018-021	1	Establishment of the Transmission Activities Management Center (CGAT) to centralize operational planning activities for scheduling and coordination of work through project completion
		2	Consolidated Operational Plan (POC) for execution of projects
2019 Rate Case	R-4058-2018	1	Project manager compensation-linked objectives to meet commissioning target dates
		2	Improving project hour estimates
		3	Standardizing work schedules
		4	Appointment of Project Execution Managers
2020 Rate Case	R-4096-2019	1	Project manager compensation-linked objectives to meet commissioning target dates
		2	Strengthening project coordination structure
2021/2022 Rate Case	R-4167-2021	1	Performance indicators monitored monthly
		2	Appointment of Project Delivery managers
		3	Establishment of an arbitration committee and validation of the prioritization of retirements

Appendix B provides an example of a project on HQT's revenue requirement, using the accounting familiar to HQT and the Régie, to show the impact of a difference between forecast and actual spending. It also reproduces tables provided in HQT's annual reports to the Régie showing annual commissioning, on a project-by-project basis, for 2019. Every year HQT submits the current status of each project over \$5 million and a comparison of forecasted and actual spending. HQT also describes discrepancies between forecasts and actuals for major projects.

IV. Regulatory Lag

The source of the incentive on HQT to be efficient in pursuing needed new capital projects is *regulatory lag*. Such regulatory lag permits regulated companies to earn returns against a pre-determined trajectory of rate control—driving those companies' incentives to keep costs down.

Regulatory lag is a subject integral to Canadian PBR generally. For example, from 2010 to 2012, the Alberta Utilities Commission (the AUC) held North America's largest generic proceeding on how to re-implement *RPI minus X* regulation for its electric and gas utilities. The AUC confirmed that its PBR regime was all about regulatory lag:

As NERA emphasized, this concept [of regulatory lag] corresponds to the underlying theory behind PBR plans in Canada and the United States: to permit regulated prices to change to reflect general price changes and industry productivity movements without the need for a base rate case. The effect is to lengthen regulatory lag and better expose regulated utilities to the type of incentives faced by competitive firms.⁸

The power of regulatory lag to drive efficient utility behavior is a concept that had been well accepted by regulators and economists long before the AUC structured its modern PBR plan. My late colleague Alfred Kahn described regulatory lag over 50 years ago in his famous book *The Economics of Regulation*:

The *regulatory lag*—the inevitable delay that regulation imposes in the downwards adjustment of rate level that produce excessive rates of return and in the upward adjustment ordinarily called for if profits are too low [note omitted]—is thus to be regarded not as a deplorable imperfection of regulation but as a positive advantage. Freezing rates for the period of the lag imposes penalties for inefficiency, excessive conservatism, and wrong guesses, and offers reward for their opposites: companies can for a time keep the higher

⁸ AUC Decision 2012-237, page 58.

profits they reap from a superior performance and have to suffer the losses from a poor one. ...

Of course, if the regulatory lag is on balance helpful, attempts to make regulation “more efficient” in limiting the rate of return to the prescribed levels not just from one major rate case to another but year to year are likely to be on balance harmful.⁹ (emphasis in original)

Kahn became famous for his work on introducing marginal cost pricing to utility regulation in North America. It is therefore no surprise that he also emphasized the incentives *at the margin* associated with incentive regulatory regimes, writing in evidence before the FERC (regarding an index regime for regulating oil pipelines—the “Kahn method” of which the Régie is aware) that “[e]ven an arbitrary index, independent of the actual costs..., would accomplish the economic efficiency goal.” But, as Kahn also wrote, to the extent that an arbitrary index would result in “excessive or insufficient returns” either the service provider or customers would “be likely to demand adjustment to align rates more closely with costs.”¹⁰ Thus, according to Kahn’s uncontroversial—and longstanding—opinions and writings on the matter, the forecast test year for capital additions provides the *incentive based on regulatory lag*; updating those forecasts annually assured that they *remain reasonable* regarding the eventual additions to the rate base.

There is a sharp contrast between these longstanding opinions on the usefulness of regulatory lag (from Kahn in 1971 to the AUC in 2012) and the motivations for supporting a DVA on planned capital additions (on the part of the FCEI and AQCIE-CIFQ). Those motivations are based on what those intervenors see as “excessive returns.” Kahn’s statement that “attempts to make regulation ‘more efficient’ in limiting the rate of return ... are likely to be on balance harmful” bears repeating before I turn to those intervenor positions.

V. Positions by FCEI and AQCIE-CIFQ

The questions of the Régie and the opinions from the FCEI and AQCIE-CIFQ on the issues of possible DVA accounting for capital additions are not lengthy or based on evidentiary material—other than comparisons over time between forecast and actual capital expenditures that raise HQT’s return (shared with customers under the earnings sharing mechanism) as they keep costs down on those listed

⁹ Kahn, A.E., *The Economics of Regulation*, Wiley, New York (1971), Vol. II, pp. 48, 60.

¹⁰ Declaration of Alfred E. Kahn, Federal Energy Regulatory Commission, Docket No. RM00-11-000, August 31, 2000, p. 4.

projects. I will recap each position, in turn, followed by what I consider are the problems of those opinions from the perspective of a useful incentive regime based on facts and evidence.

A. The Régie: Decision D-2020-041

The Régie devotes Section 11.3 of the decision to the question of “Reliability of Projections.” It states that both FCEI (paragraphs 380-84) and AQCIE-CIFQ (paragraphs 385-88) refer to a difference between forecast and actual capital costs. FCEI in that case recommended a reduction of \$54 million in revenue requirement as a result of the difference in capital cost forecasts of \$324 million. The AQCIE-CIFQ recommended a reduction in rate base of \$400 million, expressing the opinion that deviations of actual expenditures from forecasts should “tend toward zero.”

In its Opinion, the Régie also notes the differences between project-by-project forecasts and actual expenditures by HQT. Despite its recognition of HQT’s moves to improve its forecasts, it ordered a \$150 million reduction in rate base for the 2020 test year. Also, noting the persistence of a difference between forecast and actual values, the Régie asked HQT to consider the impact of DVA accounting as part of this current proceeding. The Régie expressed the opinion that DVA accounting

...could have the advantage, on the one hand, of protecting both [HQT] and its customers from these acute problems and, on the other hand, create additional regulatory relief on cost items still using the cost of service.¹¹ (translation)

As a result, the Régie asked HQT to provide evidence on the impact of implementing a DVA for capital cost additions.

B. FCEI

The FCEI presented its Brief on the issue of forecasts in HQT’s 2021-2022 Rate Application on November 4, 2021 (R-4167-2021). After summarizing the findings of the Régie in D-2020-041 (as I described just above), the FCEI identify the following questions based on arguments presented by HQT:¹²

1. How would the DVA affect the PBR?
2. Impact of a DVA on the ability to manage budget variances?
3. Impact of a DVA on triggering an exit clause?

¹¹ D-2020-041, paragraph 402.

¹² HQT-5, Document 1, Section 12.1, (Revised 4 October 2021), R-4167-2021.

4. Impact of a DVA in efforts to enhance efficiency?
5. Have the requirements for creating a DVA been met?

For the first question, the FCEI concludes that a DVA would better assist in obtaining “median forecasts” (p. 5) for the purposes of the PBR’s earnings sharing mechanism. For the second question, the FCEI, while sharing the view that a DVA could “impede efforts to enhance efficiency,” (p. 6) states its opinion that “using an annual cost-of-service approach alone produces little incentive for improving efficiency, a major reason for introducing the PBR” (p. 6).

On the third question, the FCEI believes that the exit clause would not be triggered—but of course, this is an empirical question. On the fourth question, the FCEI concedes that a DVA would impede efficiency efforts on the part of HQT but believes that the annual cost-of-service approach itself provides “little incentive for improving efficiency” (p. 6). On the fifth question, the FCEI reviews the Régie’s stated criteria for imposing DVA accounts generally for any costs, ultimately concluding that “the forecast variances [between projected and actual capital addition costs] mostly meet these requirements” (p. 7).

C. AQCIE-CIFQ

The AQCIE-CIFQ addresses the DVA issue in the PEG Commentary, dated November 2021. PEG has little to say regarding the issue, devoting nine lines to the subject. PEG first offers the opinion that the forecast cost-of-service treatment of capital projects is a “weak incentive.” PEG then offers three suggestions for dealing with what it considers a “utility penchant for exaggerating capital cost growth” (p. 46): (1) “trimming the revenue requirement in rebasings” (i.e., rate cases); (2) a “more assiduous review of business plans;” and (3) a DVA that applies “only to underspends.” PEG holds that, in suggestion (3), “[a] partial true up of revenue to actuals would strengthen HQT’s performance incentives.”¹³

D. Omissions in the Régie’s Framing of the DVA Issue

The Régie’s opinion about problems in forecasts in D-2020-041 comes solely from its examinations of the differences between HQT’s forecasts and actual capital cost totals. Because the forecast uses regulatory lag as the means of incentivizing HQT, after-the-fact comparisons between those forecasts and actual values are not a valid means by which to assess the reasonableness of those forecasts.

¹³ PEG Commentary on Hydro-Québec’s *MRI* Evidence, 8 November 2021, p. 46.

In other words, the incentive program is *designed* to provide an incentive to beat forecasts—in other words, to produce such a positive dollar total. The only way to evaluate the reasonableness of the project forecasts is to assess them at the times when HQT makes them. Pointing to a positive variation (i.e., actuals below forecasts) over time constitutes an inappropriate use of hindsight—which has the effect of undermining the incentive that justified the use of forecast test years by the Régie from the beginning.

It is not reasonable to presume that the expected value of the practical incentive of beating forecasts is zero based on after-the-fact comparisons. The forecasts are there to improve upon by management action at HQT—otherwise they are an ineffectual incentive mechanism.

The Régie has not rendered a definitive opinion on the subject. But it has not yet framed the DVA issue in a way that properly recognizes that PBR incentives are designed to give firms like HQT the ability to profit. In such a context, it is an error to claim, without evidence, that such rewards are themselves unfair and should somehow be recouped when they appear. Such is an unfortunate, but common-enough problem in the application of incentive regulation generally. Alfred Kahn indeed had a name for that problem: “*profit envy*”—the tendency of customers/intervenors to claim that the legitimate rewards to regulated service providers from PBR plans are somehow unfair and should be recouped.¹⁴

It would have been better, in framing the DVA issue, for the Régie to make a distinction between (a) a more detailed review of business plans and (b) after-the-fact comparisons that by themselves simply cannot answer the question of whether forecasts underlying such a PBR plan are reasonable.

E. Errors in the Opinions of FCEI and AQCIE-CIFQ (i.e., PEG)

There are three errors that appear in FCEI’s statements about the DVA. The first involves the concept of “median forecasts.” The second is the opinion, as expressed by both FCEI and PEG, that forecast test years provide only a small incentive anyway—the removal of which with a DVA is not a significant matter. The third is the application of asymmetric returns to the forecast test year incentive.

1. “Median Forecasts”

The FCEI states its opinion that the Régie’s earnings sharing mechanism (ESM) is based on its expectation of “median forecasts”—saying further, that the “variances [between forecast and actual

¹⁴ See: Jerry A. Hausman and William E. Taylor, “Telecommunication in the US: From Regulation to Competition (Almost),” *Review of Industrial Organization*, Vol. 42, No. 2, Special Issue: Honoring Alfred E. Kahn (March 2013), pp. 203-230.

project totals] observed over the last 10 years are not compatible with this expectation” (p. 5). The FCEI’s use of the term “median forecast,” attached to retrospective measurements of differences, is a manifest example of hindsight-based measurement that would make an HQT incentive based on regulatory lag unworkable. Using such a concept of “median forecasts” to drive future rate reductions would defeat the Régie’s vision of “initiatives in the course of the year that could lead to efficiency gains.”¹⁵ As I said above, there should be a reasonable expectation that an incentive regulatory regime based on forecast test years will produce earnings for HQT (which are shared with consumers in an independent ESM-based sharing). The FCEI discussion of “median forecast,” mixing forward-looking forecasts and hindsight-based actual expenditures, is inconsistent with that reasonable expectation.

Individual HQT capital addition projects have countless idiosyncrasies. Aggregate revenue requirement data, which exists for the purpose of tracking aggregate property totals as the basis for reasonable rates, do not capture such idiosyncrasies. Any useful analysis of contracts would depend on close-focus engineering. Econometrics is not useful, either at the project-by-project level or the aggregate level—econometric models used in contested regulatory proceedings are particularly not useful. The AUC, in the 2010-2012 generic PBR proceeding I mentioned in Section I (page 3) above, dismissed tailor-made econometric analyses offered by interested parties in contested rate proceedings as follows:

...the Commission agrees with NERA’s explanation that the outcome of any regression model is highly dependent on the choice of explanatory variables, which represents the subjective judgement of the person conducting the analysis. ... Therefore, the Commission agrees with NERA’s conclusion that econometric models are prone to the criticism of being less objective and too complex for the purpose of PBR plans.¹⁶

Neither FCEI nor PEG have offered any reasonable evidence, or any recommendation for obtaining evidence, to support their charges of bias, exaggeration, or a basis upon which any future “trimming” could occur. PEG does suggest a closer review of HQT’s “business plans.” If PEG means a further close-focus engineering review of HQT’s capital project forecasts at the time HQT makes them, it could be a useful suggestion. But the rest of PEG’s short discussion of the issue—particularly the comment on “trimming,” continues to suggest that PEG, like FCEI, mixes *forward-looking* forecasts with *hindsight-based* actual expenditures, which is a type of comparison that undercuts any incentive based in regulatory lag.

¹⁵ D-2014-035, paragraph 364, as cited by FCEI, p. 5.

¹⁶ AUC Decision 2012-237, pp. 75-76

2. “Small Incentives”

A consistent error for both FCEI and PEG is their focus on the supposed “small incentive” properties associated with the one-year cost-of-service computations—instead of the factual targets that update each year with a new set of capital addition forecasts. But as all regulatory analysts *should* agree (as prominent economists, like Kahn, have themselves usefully stated), the incentive operates *at the margin*—which persists when the future rate trajectory associated with capital additions is set in advance.

A one-year duration of forecasts does not diminish the marginal incentive. What the one-year durations do is provide a limit on the size of the cumulative award given the yearly cost-of-service updates for capital additions. Such limits are useful for an orderly rate regime that cannot deviate too far from what is reasonable, either for HQT or its customers. PEG considers such an incentive mechanism “weak,” but PEG has no basis for that opinion—the incentive, based in regulatory lag, is both visible and persistent over the years. The one-year rolling duration of forecasts simply limits the cumulative savings for HQT.

3. Asymmetric Returns for the Forecast Test Year Incentive

But PEG’s suggestion of an asymmetric true-up, between forecast and actual values, would violate the nature of the marginal incentive that Kahn describes. It would cut off the proceeds of cost savings at a point that would be impossible for any HQT manager to assess in advance (or as each individual project proceeds in the field). Such an asymmetric cut-off would obscure what otherwise is a useful incentive program.

Finally, PEG suggests that UK regulators have some means of addressing what PEG calls the “utility penchant for exaggerating capital costs,” and states that New York utilities are subject to partial true-ups. As a practical matter, the UK regulatory experience is not pertinent for the Régie, as it falls outside of North American “regulatory common law” as I discuss in Section VI, below. Regarding New York, the incentive programs to which PEG refers do not pertain to regular capital additions. Such New York programs that involve one-sided rewards are called Earnings Adjustment Mechanisms (“EAMs”). Such limited and targeted projects deal with vehicle electrification, increasing system efficiency,

decreasing energy use and system peak demand.¹⁷ They are not analogous to the Régie’s longstanding treatment of HQT capital addition forecasts.

Ultimately, it is useful to recognize that the incentives and perspectives involved in assessing the Régie’s forecast test year regime are longstanding and well known. Alfred Kahn’s observations on incentive regulation and regulatory lag appeared long before *RPI – X* regulation in Canada and the United States. His writings point decisively to incentive regulation being a much older subject than *RPI - X*.

In this respect, *all regulation of investor-owned utilities is incentive regulation*. Conflating incentive regulation with *RPI - X* simply reflects an excessively narrow perspective. The North American regulatory model uses facts and reliable sources of evidence to encourage investment in public service infrastructure. Such fact-based regulation, based on a high respect for known and measurable evidence, is the basis of such successful Canadian and US regulation. Such regulation, called “North American regulatory common law” as discussed in Section VI, below, promotes a continuity of generally supportive interactions between investors and those overseeing public interest—two groups that could otherwise be in conflict.

VI. North American “Regulatory Common Law”

I describe briefly in this section some elements of the foundation of regulation in Canada and the United States that bear on the question of maintaining a useful, fact-based, forward test year incentive for HQT.

The institutions of regulation in Canada and the United States are much older, and quite different, than the regulatory institutions that accompanied the late 1980s privatization of the Margaret Thatcher government in the UK (and also those countries who looked to UK institutions for their own later privatizations, like New Zealand and Australia). Particular elements of Canadian and US regulation lead to practical utility ratemaking, based on evidence and objectivity rather than on expert opinion. Sufficient to illustrate my point regarding “regulatory common law” in North America are three foundational elements of ratemaking that the rest of the world does not share: (1) the use of “prudence” in evaluating

¹⁷ For example, see: State of New York Public Service Commissions, Joint Proposal of Consolidated Edison Company of New York, Inc., 9 September 2016, pp. 75 – 76, available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b178701AD-5B92-4D0C-833B-22C37DE32065%7d>.

capital additions; (2) the use of original cost to determine the rate base, and (3) the use of nominal accounting (avoiding the “real” accounting evident in UK regulation and those looking to the UK for guidance regarding their own regulations).

My point in referencing this history of Canadian and US regulation is twofold. First, it supports use of factual evidence and the avoidance of impermissible hindsight-based prudence evaluations. Second, it removes from practical consideration for the Régie practices of regulators (such as in the UK or Australia) that rest on quite different regulatory and accounting foundations.

A. Prudence

“Prudence” is a North American invention and a big deal in North American regulation—appearing, in one form or another, in the interpretation of every regulatory statute or regulation in Canada and the United States. For example, Section 49 of the Régie Act includes the following:

When fixing or modifying rates, ... the Régie shall ... determine the rate base of the electric power carrier ... in particular, to the fair value of the assets the Régie considers *prudently* acquired and useful for the operation of the electric power transmission system...¹⁸ (my emphasis)

The early attention of commissions and the courts (who reviewed commission decisions on appeal) in Canadian and US regulation was the “value” of the rate base. That focus on value followed a general distrust of the books and records of utilities in an era before reliable accounting. But that focus on the value of the rate base, rather than cost, came close to dooming the private regulatory model in the eyes of those economists like James C. Bonbright, who lived through the era. They could see that in the context of regulated ratemaking, value was circular (and thus unworkable). US Supreme Court Associate Justice Louis Brandeis agreed. Against the majority of the Supreme Court, he worked to substitute *cost* for *value* in regulated ratemaking. But in doing so, he knew that the next question coming was *which costs?* Thus, Brandeis had to define some boundaries on what would enter the rate base and the cost-of-service formula.

Brandeis proposed a purposeful regulatory filter through which all costs would have to pass to be part of the ratemaking formula. That filter would prohibit judging the efficiency of costs based on *hindsight*. It would also embrace a presumption that utility management has acted “*prudently*” in their

¹⁸ Act Respecting the Régie de L’Energie, Updated to October 31, 2021.

investment decisions.¹⁹ His objective was the reasonable continuation of a utility enterprise that could maintain uninterrupted access to low-cost investor capital on reasonable terms. A “prudent investment” was one made with reasonable judgement and one that “under ordinary circumstances, would be deemed reasonable” absent “dishonest or obviously wasteful or imprudent expenditures.”²⁰ As he wrote:

The adoption of the amount prudently invested as the rate base and the amount of the capital charge as the measure of the rate of return would give definiteness to these two factors involved in rate controversies which are now shifting and treacherous, and which render the proceedings peculiarly burdensome and largely futile. Such measures offer a basis for decision which is certain and stable. The rate base would be ascertained as a fact, not determined as matter of opinion.²¹

Brandeis’ purpose was promoting *orderly action* where the profit interest of utilities intersected with the public interest. He wished to harmonize the relations between those parties who are otherwise in actual or potential conflict. According to his friend economist John R. Commons, who wrote about Brandeis’ reasoning, “[w]hat is wanted is not truth, but orderly action. The concern must be kept agoing.”²²

The force of such reasoning—the search for practical regulation without endless conflict—led to the prudence standard becoming “regulatory common law” in Canada and the United States.²³ Regulators apply innumerable minor instances of “imprudence” as regulatory commission staffs assess normal rate cases. But major imprudence disallowances that threaten the credit of utilities are uncommon—and almost all related to power plant construction.²⁴

B. Original Cost Valuation for Ratemaking: *Northwest Utilities* and *Hope Natural Gas*

¹⁹ “Every investment may be assumed to have been made in the exercise of reasonable judgment, unless the contrary is shown.” *Missouri ex rel. Southwestern Bell Tel. Co. v. PSC*, 262 U.S. 276 (1923).

²⁰ *Missouri ex rel, Southwestern Bell Tel. Co. v. Public Svc. Comm'n*, 262 U.S. 276, 289 (1923) (“*Missouri*”), note 1.

²¹ *Missouri*, 276.

²² Commons, J.R., *Institutional Economics*, Macmillan, New York (1934), p. 712.

²³ See: National Association of Regulatory Utility Commissioners, *Utility Regulatory Policy in the United States and Canada: Compilation 1993-94*, p. 52. Also see: Goodman, L.S., *The Process of Ratemaking*, Public Utility Reports Inc, Vienna VA (1998), pp. 857-58.

²⁴ A list of the 37 largest electric utility cost disallowances—all related to power plants—from 1980 through 1991 appears in: Lyon, T.P., and Mayo, J.W., “Regulatory opportunism and investment behavior: evidence from the U.S. electric utility industry,” *RAND Journal of Economics*, Vol. 36, No. 3., Autumn 2005. For the TAPS case, see: FERC Docket Nos. IS09-348-004, *et al.* and IS09-348-006, *et al.*

Canada and the United States are virtually alone among modern democracies in their reliance on investors to supply the greatest proportion of their energy infrastructures. The history of such developments in North America has long been a part of scholarly economic research.²⁵ The central role of private capital in building-out North American energy infrastructure is today taken for granted. But this was not always the case. Both Canada and the United States had difficulties in relying on the traditional principles of English common law when confronting the industrial demand of fast-growing regulated enterprises in the early 20th century. Definitively, Canada solved that problem first with its *Northwest Utilities* decision in 1929.²⁶ The United States later reached the same end result in 1944 in its *Hope Natural Gas* decision.²⁷

A major legal problem facing early 20th century regulators involved traditional common law measures of property values. Traditional independent measures of value had no objective meaning for regulation and caused endless controversy. As economist James C. Bonbright put it in 1937:

...the value of a public utility system depends on earnings anticipated by present or prospective owners.... To attempt, therefore, to fix rates by [an independent] valuation of the property, in the strictest sense of the word “valuation” is to put the cart before the horse.²⁸

The remedy was to remove any independent valuation and define the rate base consistent with the recorded cost of the property involved, or as the US Supreme Court wrote in *Hope*:

The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.²⁹

In setting permissible revenues, a utility’s profit would be measured by potential earnings for investors on an original cost rate base (resting on invested capital as reflected in accurate bookkeeping) in

²⁵ Davis, L.E., and North, D.C., *Institutional Change and American Economic Growth*, Cambridge University Press, Cambridge (1971). I described some of the history of private capital development in US regulatory institutions in: Makhholm, J.D., “The REvolution Yields to a More Familiar Path: New York’s Reforming the Energy Vision (REV),” *The Electricity Journal* (November 2016), pp. 48-55. I include a broader discussion of the issues of private infrastructure capital in my book, *The Political Economy of Pipelines: A Century of Comparative Institutional Development* (University of Chicago Press, Chicago and London, 2012), pp. 8, 22, 164.

²⁶ *Northwest Utilities v. City of Edmonton*, S.C.R. 186 (NUL 1929).

²⁷ *Federal Power Commission v. Hope Natural Gas*, 320 US 591 (1944).

²⁸ Bonbright, J.C., *Valuation of Utility Property*, 2 vols., McGraw-Hill, New York (1937), p. 1083 (vol. 2).

²⁹ *Federal Power Commission et al v. Hope Natural Gas Co*, 320 U.S. 591 (1944), p. 603.

reference to other enterprises of similar risk. Both in the use of invested capital (as reflected in the books) and in requiring measures of profitability in similarly risky ventures (as reflected by the capital markets), the *Northwest Utilities* and *Hope* decisions sharply limited regulatory discretion and also removed endless contention about utility valuations. As the US followed the example already sent in Canada by *Northwest Utilities*, Bonbright called it “one of the most important economic pronouncements in the history of American law.”³⁰

C. Avoidance of Inflation Accounting

The cost of capital awarded by Canadian and US regulators is a *nominal* figure (with inflation included). In the UK, Australia, the EU, and many other regions, the cost of capital awarded by regulators is a *real* figure (with inflation excluded), called current-cost accounting (CCA). Those non-North American jurisdictions add a measure of inflation to the capital base. The reason for the difference comes mainly down to political expediency regarding the privatization of British Gas.³¹

Canadian and US regulators, with an older history of regulating utilities, never realistically considered inflation accounting. The closest the United States came to doing so was following a period of unexpected inflation in the 1970s, when the Federal Accounting Standards Board (FASB) began a five-year experiment that required large companies to disclose supplemental price-adjusted information (in addition to historical cost data) about inventories and property, plant, and equipment.³² In 1983, after the experiment in CCA bookkeeping, FASB requested comments on whether the approach the utility of FAS 33.³³ Among the 400 responders were institutional investors, market analysts, rating agencies, retailers, suppliers, manufacturers, and others. Those responders by and large hated the CCA experiment, regarding inflation accounting as: (1) too simplistic to represent actual ongoing cost or entry cost; (2) not reflective of price changes of specific assets; (3) not reflective of changes in technology and preferences; (4) not a useful indicator of future spending or cash requirements; and (5) not useful to managers, market

³⁰ Bonbright, J.C., “Utility Rate Control Reconsidered in the Light of the *Hope Natural Gas Case*,” *The American Economic Review*, Vol. 38, No. 2. (1948), p. 465.

³¹ Because of the political press of time for the privatization of British Gas in 1986, Margaret Thatcher’s government used recently formed accounting rules—in the well-known “Byatt Report”—designed for valuing investments in publicly-owned enterprises, which had included the re-valuation for inflation in public enterprises to reflect better their opportunity costs of those longstanding public projects. See: *Accounting for Economic Costs and Changing Prices, A Report to HM Treasury by an Advisory Group*, Her Majesty’s Stationery Office, London (1986) (the “Byatt Report”), Vol. 1, p. 5. “... **accounting for changing prices is especially important in nationalised industries.**” (emphasis in original)

³² *Statement of Financial Accounting Standards (FAS) No. 33, Financial Reporting and Changing Price*, 1979.

³³ Invitation to Comment: Supplementary Disclosures about the Effects of Changing Prices, December 1983

analysts, industry experts, and shareholders.³⁴ Overall, industry complained that CCA books were expensive to maintain, were inaccurate, and failed to deal with the more nuanced ways that managers dealt with inflation in their own businesses. The FASB subsequently dropped the experiment and stopped pursuing inflation-adjusted accounting for American industry—utilities included.

My presentation of the source of these three important subjects of Canadian and US regulation (prudence, original cost ratemaking and avoidance of inflation accounting) bear on the importance of recognizing the purposeful creation of the foundational institutions of effective regulation in North America. The proper use of DVA accounting is consistent with such longstanding regulatory institutions.

VII. Proper Uses for Deferral Accounting

The Régie, in D-2007-008 with regard to short-term point-to-point service, described two criteria for establishing a deferral and variance account:

The Régie recognizes that short-term point-to-point service bookings are subject to many hazards, such as market conditions and hydraulicity. The Distributor's surplus electricity disposal activities are also subject to significant hazards. *These various hazards are beyond the control of the Carrier and its customers and can have a significant impact on short-term point-to-point revenues.*³⁵ (my emphasis)

The Régie has authorized several deferral and variance accounts for HQT in the past. The purposes of these accounts fit with the above criteria from the Régie (that the cost is beyond the provider's control and can have a significant impact on revenues). These criteria established by the Régie and used by HQT are no exception to the rule that is widely employed by North American regulators, which limits expense deferral accounting to cases where: (1) the cost is material and extraordinary in nature, and (2) the cost was incremental to what was allowed in rates. Table 2 shows typical examples of deferral accounting that conform to the reasonably standard definition.

³⁴ NERA has obtained the complete responses to the FASB questions, and has compiled an associated database that NERA will share upon request.

³⁵ D-2007-008, p. 63.

Table 2: Typical Deferral and Variance Account Definitions and Examples

No.	Utility	State	Year of Approval	Purpose
1	Portland General Electric Company	Oregon	2000	Existing tax benefits owed by customers to Utility
2	Idaho Power Company	Oregon	2004	Financial Impact of implementation of Statement of Financial Accounting Standards (SFAS) 143
3	Louisville Gas and Electric Company	Kentucky	2008	Storm-related costs
4	Baltimore Gas and Electric	Maryland	2010	Implementation, depreciation and amortization costs of Advanced Metering Infrastructure
5	Union Electric Company	Missouri	2013	Ice Storm related loss of revenue (account to allow for recovery of fixed costs)
6	Union Electric Company	Missouri	2019	Costs related to Electric Vehicle Charging Infrastructure
7	Hawaiian Electric Company, Inc; Hawaii Electric Light Company, Inc.; Maui Electric Company, Limited	Hawaii	2020	Covid-19 related costs
8	All Maryland Public Service Companies	Maryland	2020	Covid-19 related costs

Sources: Hawaii Public Utilities Commission, Hawaiian Electric Company application *For Approval for Defer Costs Associated with the COVID-19 Pandemic Emergency Related Costs and Expenses*, Docket No. 2020-069, Order No. 37192; Kentucky Public Service Commission, *Application of Louisville Gas and Electric Company for an Order Approving the Establishment of a Regulatory Asset*, Case No. 2008-00456; Maryland Public Service Commission, *Application of Baltimore Gas and Electric Company for Authorization to Deploy a Smart Grid Initiative and to Establish a Surcharge for the Recovery of Cost*, Case No. 9028; Maryland Public Service Commission, *Order Authorizing Establishment of a Regulatory Asset for COVID-19 Related Incremental Costs*, Case No. 9639; Missouri Public Service Commission, *Application of Union Electric Company d/b/a Ameren Missouri for Approval of Efficient Electrification Program*, File No. ET-2018-0132; Missouri Public Service Commission, *Application of Union Electric Company d/b/a Ameren Missouri for Issuance of an Accounting Authority Order Relating to its Electrical Operations*, File No. EU-2012-0027; Oregon Public Utilities Commission, *Idaho Power Company Application for an Accounting Order Regarding Treatment of Certain Asset Requirement Obligations*, Order No. 04-585; Oregon Public Utilities Commission, *Application of Portland General Electric Company for an Accounting Order and Order Approving Tariff Sheets Implementing a Rate Reduction*, Order No. 00-601.

Deferral and variance accounts are not intended to be used for costs that are routine, nor those that are expected and easy to forecast. Rather, these accounts are used for those costs that cannot reasonably be expected or may be out of the utilities control as the above examples show.

Appendix A.

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Dr. Makhholm concentrates on the issues surrounding the market and regulation for energy (electricity and gas), transportation (road and rail), and mining—those that operate networks (pipelines, electricity transmission networks, rail and road networks, telecommunications and water utility systems) and those operating infrastructure business at specific sites, such as mines, hydrocarbon rigs, oil refineries, electricity generation plants, oil and gas storage facilities, gas treatment plants, sewage treatment plants and airports. These issues include the broad categories of project valuation, efficient pricing, market definition and the components of reasonable regulatory practices. Specific valuation issues in the extractive industries include the value of permits for include the right to explore and develop natural resources. Specific pricing issues include tariff design, incentive ratemaking, and the unbundling of prices and services, and analysis of energy commodities markets (including derivative markets comprising forwards, futures and swaps for commodities and liquefied natural gas—LNG). Issues of market definition include assessments of mergers, including the identification and measurement of market power. Issues of reasonable regulatory practices include the creation of credible and sustainable accounting rules for ratemaking as well as the establishment of administrative procedures for regulatory rulemaking and adjudication. On such issues among others, Dr. Makhholm has prepared expert testimony, reports and statements, and has appeared as an expert witness in many states, federal and U.S. district court proceedings as well as before courts, international arbitrations and regulatory bodies and Parliamentary panels abroad.

Dr. Makhholm's clients in the United States include privately held oil, gas and utility corporations, rail companies, public corporations and government agencies. He has represented dozens of gas and electric distribution utilities, as well as both intrastate and interstate oil and gas pipeline companies and oil, gas and electricity producers. Dr. Makhholm has also worked with many leading law firms engaged in issues pertaining to the local and interstate regulation of energy utilities.

Internationally, Dr. Makhholm has directed an extensive number of projects in the mining, utility and energy transportation businesses in 20 countries on six continents. These projects have involved work for investor-owned and regulated business as well as for governments and the World Bank. These projects have included advance pricing and regulatory work prior to major gas, railroad and toll highway privatizations (Poland, Argentina, Bolivia, Mexico, Chile and Australia), gas industry restructuring and/or pricing studies (Canada, China, Spain, Morocco, Mexico and the United Kingdom), utility mergers and market power analyses (New Zealand), gas development and and/or contract and financing studies (Tanzania, Egypt, Israel and Peru), regulatory studies (Chile, Argentina), and oil pipeline transport financing and regulation (Russia). As part of this work, Dr. Makhholm has prepared reports, drafted regulations and conducted training sessions for many government, industry and regulatory personnel.

Dr. Makhholm has published many papers in various peer-reviewed and editor-reviewed publications (*Review of Environmental Economics and Policy*, *Economics of Energy & Environmental Policy*, *Public Utilities Fortnightly*, *Natural Gas and Electricity*, *The Electricity Journal*, *The Energy Law Journal*, and *Competition and Regulation in Network Industries*)—involving a wide range of subjects pertaining to his research work. He is a frequent speaker in the U.S., Europe and elsewhere at conferences and seminars addressing market, pricing and regulatory issues for the energy, commodity and transportation sectors. His latest book, *The Political Economy of Pipelines: A Century of Comparative Institutional Development*, was published by the University of Chicago Press in 2012 and re-issued in Chinese in 2016 by Beijing's Petroleum Institute Press.

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TESTIMONY SINCE 1981

Before the Ontario Superior Court of Justice, Rebuttal Expert Report of Jeff D. Makhholm and Faten Sabry in Support of TransAlta in The Mangrove Partners Master Fund, Ltd. (“Plaintiff”) v. TransAlta Corporation, Brookfield BRP Holdings (Canada) Inc., et al. (CV-19-00618554-000), March 22, 2021, Subject: Minority shareholder dispute.

Before the United States Bankruptcy Court Southern District of Texas Houston Division, Declaration in support of Gulfport Energy Corporation’s Reply in Support of Motion for Entry of an Order (I) Authorizing Rejection of Certain Negotiated Rate Firm Transportation Agreements and Related Contracts Effective as of the Petition Date and (II) Granting Related Relief with TC Energy Effective as of the Petition Date, Case No. 20-35562-11, February 3, 2021. Subject: Response to objection to reject a gas pipeline firm transportation agreement in bankruptcy.

Before the United States Bankruptcy Court Southern District of Texas Houston Division, Declaration in support of Gulfport Energy Corporation’s Reply in Support of Motion for Entry of an Order (I) Authorizing Rejection of the Firm Transportation Negotiated Rate Agreement with Rover Pipeline Company and Related Contracts Effective as of the Petition Date and (II) Granting Related Relief, Case No. 20-35562-11, February 3, 2021. Subject: Response to objection to reject a gas pipeline firm transportation agreement in bankruptcy.

Before the Canadian Energy Regulator, Reply Testimony in support of the Canadian Shippers Group in Enbridge Pipelines Inc. Canadian Mainline Contracting Application, Hearing Order RH-001-2020, December 7, 2020. Subject: Economic effects of a switch from common carriage to contract carriage on the largest pipeline originating in the Western Canada Sedimentary Basin (WCSB).

Before the Federal Energy Regulatory Commission, Reply Declaration in support of Gulfport Energy Corporation’s Rebuttal Submission in response to Rover Pipeline LLC, Docket No. RP20-1233, October 26, 2020. Subject: Public interest matters related to abrogation or modification of gas pipeline contracts.

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Before the Federal Energy Regulatory Commission, Declaration in support of Gulfport Energy Corporation’s Motion to Intervene and Initial Submission responding to the Order on Petition for Declaratory Order filed by Midship Pipeline Company, LLC, Docket No. RP20-1237, October 16, 2020. Subject: Public interest matters related to abrogation or modification of gas pipeline contracts.

Before the Federal Energy Regulatory Commission, Reply Declaration in support of Gulfport Energy Corporation’s Rebuttal Submission in response to Rockies Express Pipeline, LLC Direct Case, Docket No. RP20-1220, October 16, 2020. Subject: Public interest matters related to abrogation or modification of gas pipeline contracts.

Before the Federal Energy Regulatory Commission, Declaration in support of Gulfport Energy

TESTIMONY SINCE 1981 CONTINUED

Corporation's Motion to Intervene and Initial Submission responding to the Order on Petition for Declaratory Order filed by Rockies Express Pipeline, LLC, Docket No. RP20-1220, October 9, 2020. Subject: Public interest matters related to abrogation or modification of gas pipeline contracts.

Before the United States Bankruptcy Court for the District of Delaware, Declaration in support of Extraction Oil & Gas, Inc's Omnibus Motion for Entry of An Order (1) Authorizing Rejection of Unexpired Leases of Nonresidential Real Property and Executory Contracts, Case No. 20-11548, September 21, 2020. Subject: Response to objection to reject oil pipeline transportation services agreements with Grand Mesa Pipeline, LLC in bankruptcy.

Before the United States Bankruptcy Court for the District of Delaware, Declaration in support of Extraction Oil & Gas, Inc's Omnibus Motion for Entry of An Order (1) Authorizing Rejection of Unexpired Leases of Nonresidential Real Property and Executory Contracts, Case No. 20-11548, September 18, 2020. Subject: Response to objection to reject oil pipeline transportation services agreements with Platte River Midstream, LLC and DJ South Gathering, LLC in bankruptcy.

Before the United States Bankruptcy Court Southern District of Texas Houston Division, Declaration in support of Ultra Petroleum Inc.'s Reply in Support of Motion for Entry of an Order Authorizing Rejection of the Firm Transportation Negotiated Rate Agreement with Rockies Express Pipeline LLC Effective as of the Petition Date, Case No. 20-32631, July 2, 2020. Subject: Response to objection to reject a gas pipeline firm transportation agreement in bankruptcy.

Before the United States District Court for the District of Columbia, Second Declaration in Support of Dakota Access, LLC Brief of the Question of Remedy in Standing Rock Sioux Tribe v. United States Army Corps of Engineers, Case No. 1:16-cv-1534-JEB (and Consolidated Case Nos. 16-cv-1796 and 17-cv-267), May 27, 2020. Subject: Response to motion to vacate an easement while the Army Corps of Engineers conducts an environmental impact statement.

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TESTIMONY SINCE 1981 CONTINUED

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Before the Public Service Commission of the State of North Dakota, Direct Testimony on behalf of Dakota Access, LLC, November 13, 2019. Subject: Siting Application for new pumping facilities to expand capacity.

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Dakota Access, LLC and Energy Transfer Crude Oil Company, LLC., Docket No. 19-0673, October 22, 2019. Subject: Authority to expanding pumping capacity on Certificated Pipelines in the State of Illinois.

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TESTIMONY SINCE 1981 CONTINUED

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TESTIMONY SINCE 1981 CONTINUED

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TESTIMONY SINCE 1981 CONTINUED

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TESTIMONY SINCE 1981 CONTINUED

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Before the Public Utilities Commission of Ohio, Direct Testimony on behalf of The Dayton Power and Light Company. Case No. 08-1094-EL-SSO. October 10, 2008. Subject: Cost of capital.

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Northern Illinois Gas Company, Case No. 08-0363. September 25, 2008. Subject: Cost of capital.

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Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No. 07-09016. January 14, 2008. Subject: Stand-alone costs and cost allocation issues.

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TESTIMONY SINCE 1981 CONTINUED

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TESTIMONY SINCE 1981 CONTINUED

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TESTIMONY SINCE 1981 CONTINUED

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TESTIMONY SINCE 1981 CONTINUED

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Before the Public Utility Commission of Texas, Rebuttal Testimony on behalf of American Electric Power Company, Inc., Mutual energy CPL, LP, Mutual Energy WTU, LP and Centrica PLC, Centrica N.S. Holding, Inc., Centrica Holdco, Inc.. Case No. 25957. October 28, 2002. Subject: Impact of the merger on competition in the retail electric market.

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Before the Public Service Commission of the State of Missouri, Rebuttal Testimony on behalf of Gateway Pipeline Company. Case GM-2001-595. August 20, 2001. Subject: Acquisition of Capital Stock of Utilicorp Pipeline Systems, and connection.

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“Central America Pipeline: Regulatory Analysis and Proposal” (July 28, 1998). This report presents the regulatory analysis and development of a fiscal, legal and commercial framework proposal for gas import, transportation, distribution and marketing in El Salvador, Honduras and Guatemala regarding the proposed Central American Pipeline.

“Energy Regulation in El Salvador” (July 28, 1998). This report presents a deep analysis of the electricity and natural gas regulatory, legal and tax frameworks in El Salvador.

“Energy Regulation in Guatemala” (July 28, 1998). This report presents a deep analysis of the electricity and natural gas regulatory, legal and tax frameworks in Guatemala.

“The Cost of Capital for Gas Transmission and Distribution Companies in Victoria” (June 22, 1998). Report prepared for BHP Petroleum Pty Ltd.

“Principios Económicos Básicos de Tarificación de Transmisión Eléctrica. Revisión Tarifaria de Transener” (May 26, 1998). The main purpose for this report was to provide an economic and regulatory analysis of laws, decrees, license and documents of the tender to provide advise in the tariff review of Transener (the electricity transmission company in Argentina), to present an economic analysis of transmission tariffs and to provide an opinion on specific topics to be discussed in the public hearing. This report was written for a consortium of generators in Argentina (reports in English and Spanish)

“Asesoría en la Fijación de Tarifas de Transener y Normativa del Transporte, Benchmarking Study” (May 26, 1998). This report compares the costs of Transener (the electricity transmission company in Argentina) with those of other companies elsewhere for a consortium of generators (the electricity transmission company in Argentina).

“International Regulation Tool Kit: Argentina” (March 20, 1998). This document describes the natural gas regulatory framework in Argentina for BG.

“Tarificación de los Servicios Que Prestan las Terminales de Gas LP” (January 9, 1998). The final report given to PEMEX Gas y Petroquímica Básica (México) for the determination of rates for LPG terminals.

“NERA-Pérez Compañía Distribution Tariff Model” (January 5, 1998). This report explains the methodology behind NERA’s calculations of distribution tariffs for Pérez Compañía in Monterrey.

“Monterrey Natural Gas Market Assessment,” (January 5, 1998). A series of reports were written to present the results of the market study of the demand for natural gas in the geographic zone of Monterrey to a company interested in bidding for the natural gas distributorship.

“Resolving the Question of Escalation of Phases (bb) and (cc) Under the Maui Gas Sale and Purchase Contract”, prepared for the New Zealand Treasury, December 16, 1997.

“Timetable and Regulatory Review for the Monterrey International Public Tender,” (December 5, 1997). A description of the necessary steps to bid for a distribution company as well as an explanation and analysis of natural regulations in Mexico for Pérez Compañía.

“Economic Issues in the PFR for 18.3.1(I)(bb) & (cc)”, prepared for the New Zealand Treasury, November 17, 1997.

“NERA’s Distribution Tariff Model” (October 29, 1997). This report explains the methodology behind NERA’s calculations of distribution tariffs for MetroGas.

“Evaluation Design Standards for MetroGas,” (October 24, 1997). This report dealt with the analytical support resulting from work with MetroGas to create a meticulously-documented security criterion analysis that supported its efforts to obtain due recognition—and appropriate tariff treatment—for its costs.

“Ghana Natural Gas Market Assessment,” prepared for the Ministry of Mines and Energy, Ghana (March-July, 1997). A series of four reports assessing prospective gas demand usage and netback prices for a number of proposed pipeline project alternatives.

“Final Report for Russian Oil Transportation & Export Study: Commercial, Contractual & Regulatory Component,” prepared for The World Bank, June 25, 1997.

Response to FIEL’s criticisms regarding NERA’s report “Cálculo del Factor de Eficiencia (X)” (June 2, 1997).

“Impacts on Pemex of Natural Gas Regulations” prepared for Pemex Gas y Petroquímica Básica México, May 21, 1997.

“Market Models for Victoria’s Gas Industry: A Review of Options,” April 1997, prepared for Broken Hill Proprietary (BHP) Petroleum, to propose an alternative model for gas industry restructuring in Victoria, Australia.

“New Market Arrangements for the Victorian Gas Industry,” prepared for Broken Hill Proprietary Petroleum; March 13, 1997.

“CEG Privatization: Comments to the Regulatory Framework,” prepared for Capitaltec Consultoria Economica SA describing our comments with respect to the regulatory framework and the license proposed in the privatization of Riogas and CEG in Rio de Janeiro, Brazil; March 7, 1997.

“Determination of the Efficiency Factor (X),” prepared for ENARGAS, Argentina, January 24, 1997.

“Determination of Costs and Prices for Natural Gas Transmission,” prepared for Pemex Gas y Petroquímica Básica, México, December 19, 1996.

“Regulating Argentina’s Gas Industry,” a report prepared for The Ministry of Economy and The World Bank, November 26, 1996.

“Open Access and Regulation,” prepared for Gascor, in the State of Victoria, Australia; (October 2, 1996).

“A Review and Critique of Russian Oil Transportation Tariffs (Russian Oil Transportation & Export Study; Commercial, Contractual & Regulatory Component),” prepared for The World Bank, June 13, 1996.

“Tariff Options for Transneft (Russian Oil Transportation & Export Study; Commercial, Contractual & Regulatory Component),” prepared for The World Bank, June 6, 1996.

“Comments on the Proposed Amendments to the Regulation of Airports in New Zealand,” prepared for the New Zealand Parliament Select Committee hearings on the regulation of monopolies, March 13, 1996.

“Evaluating the Shell Camisea Project,” prepared for Perupetro S.A., Government of Peru, December 8, 1995.

“Towards a Permanent Pricing and Services Regime,” prepared for British Gas, London, England, November, 1995.

“Final Report: Gas Competition in Victoria,” prepared for Gas Industry Reform Unit, Office of State Owned Enterprises, June 1995.

“Natural Gas Tariff Study,” prepared for the World Bank, May 1995, consisting of:

Principles and Tariffs of Open-Access Gas Transportation and Distribution Tariffs

Handbook for Calculating Open-Access Gas Transportation and Distribution Tariffs

“Economic Implications of the Proposed Enerco/Capital Merger,” prepared for Natural Gas Corporation of New Zealand, December 1994.

“Contract Terms and Prices for Transportation and Distribution of Gas in the United States,” prepared for British Gas TransCo, November 1994.

“Economic Issues in Transport Facing British Gas,” prepared for British Gas plc, December 1993.

“Overview of Natural Gas Corporation's Open-Access Gas Tariffs and Contract Proposals,” prepared for Natural Gas Corporation of New Zealand, October 1993.

PARTIAL LIST OF ENERGY CLIENTS SERVED WORLDWIDE**ELECTRIC UTILITY**

AEP Energy Services, Inc
 Alberta Power Limited
 American Electric Power Company
 Atlantic Electric Company
 Boston Edison Company
 Central Hudson Gas and Electric
 Central Maine Power Company
 Central Power & Light Company
 Commonwealth Edison Company (Unicom/Exelon)
 Commonwealth Energy System
 Consolidated Edison Company of New York, Inc
 Conowingo Power Company
 Duquesne Light Company
 Edison Electric Institute
 Entergy Gulf States, Inc
 Florida Power and Light Company
 Green Mountain Power Company
 Long Island Lighting Company
 Massachusetts Municipal Wholesale Electric Company
 Massachusetts Electric Company
 Nantahala Power Company
 New York State Electric & Gas Corporation
 Niagara Mohawk Power
 Ohio Power Company
 Orange & Rockland Utilities
 Pennsylvania Power and Light Company
 Pennsylvania Power Company
 Philadelphia Electric Company
 PJM electricity transmission owners
 Public Service Company of New Hampshire
 Public Service Company of New Mexico
 Public Service Electric and Gas Company
 Portland General Electric Company
 Reliant Energy HL&P
 Rochester Gas and Electric Corp.
 Sierra Pacific Power Corporation
 Southwest Electric Power Company
 Southwestern Public Service Company
 Tampa Electric Company
 Texas-New Mexico Power Company
 TXU Electric Company
 United Illuminating Company
 UtiliCorp Networks Canada
 Virginia Electric and Power Company
 West Penn Power Company
 West Texas Utilities Company
 Western Massachusetts Electric Co.

GAS UTILITY

Alberta Northeast Gas Company
 ANR Pipeline Company
 ARKLA, Inc.
 Atlanta Gas Light Company
 Bay State Gas Company
 Berkshire Gas Company
 Blackstone Gas Company
 Boston Gas Company
 Bristol & Warren Gas Company
 British Gas plc
 Brooklyn Union Gas Company
 Canadian Western Natural Gas
 Chattanooga Gas Company
 Citizens Gas Supply Corporation
 Colonial Gas Company
 Commonwealth Gas Company
 Connecticut Natural Gas Corp.
 Consolidated Gas Supply Corp.
 Elizabethtown Gas Company
 Empire State Pipeline Company
 ENAGAS (Spain)
 EnergyNorth, Inc.
 Equitable Gas Company
 Essex County Gas Company
 Fall River Gas Company
 Fitchburg Gas & Electric Light Company
 Gas and Fuel Corporation of Victoria
 Gateway Pipeline Company
 Granite State Gas Transmission, Inc.
 Great Falls Gas Company
 Holyoke, Mass. Gas & Electric Dept.
 ICG Utilities (Ontario) Ltd.
 KN Energy, Inc.
 Michigan Consolidated Gas Company
 Middleborough Municipal Gas & Electric
 National Fuel Gas Distribution Corp.
 Natural Gas Corporation of New Zealand
 Natural Gas Pipeline of America
 Northern Indiana Public Service
 Norwich Department of Public Utilities
 Pacific Gas Transmission
 Pemex Gas y Petroquímica Básica
 Pennsylvania Gas and Water Company
 Peoples Gas Light and Coke Company
 Polish Oil and Gas Company
 Providence Gas Company
 Southern Connecticut Gas Company
 Southwest Gas Corporation
 Transwestern Pipeline Company
 Valley Gas Company
 Washington Gas Light Company
 Westfield Gas & Electric Light Dept.
 Wisconsin Gas Company
 Yankee Gas Services Company

Appendix B. Impact of Forecast and Actual Spending on the Revenue Requirement

HQT regularly provides project-by-project forecast and actual spending data which allows the Régie and other stakeholders to follow the impact of achieved savings on the revenue requirement. In this Appendix, I provide a hypothetical example, using the accounting familiar to HQT and the Régie, to show the impact of a difference between forecast and actual spending on HQT's revenue requirement. My example follows the project-by-project tables provided by HQT to the Régie.

In this example, I illustrate a *forecast* for a \$100 million asset put into service in September of Year 1, with a useful life of 40 years. Table 1 shows the forecast rate base in Year 1 and Year 2, with the rate base declining month-by-month according to monthly depreciation for a 40-year asset.

Table 1: Year 1 and Year 2 Forecast Rate Base (\$ Millions)

Year 1 - M\$														
Rate Base	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Avg 13-months
Balance, beginning of year	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	99.8	99.6	23.0
Commissioning										100.0				
Depreciation											(0.2)	(0.2)	(0.2)	
Balance, end of year	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	99.8	99.6	99.4	30.7

Year 2 - M\$														
Rate Base	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Avg 13-months
Balance, beginning of year		99.4	99.2	99.0	98.8	98.5	98.3	98.1	97.9	97.7	97.5	97.3	97.1	90.7
Commissioning														
Depreciation		(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	
Balance, end of year	99.4	99.2	99.0	98.8	98.5	98.3	98.1	97.9	97.7	97.5	97.3	97.1	96.9	98.1

Table 2 shows the expected impact on the revenue requirement in Years 1 and 2 as forecast. There is a small revenue requirement effect for Year 1 (\$2.7 million) reflecting 4 months, and a full year revenue requirement effect for Year 2 (\$9.0 million).

Table 2: Year 1 and Year 2 Forecast Effect on Revenue Requirement (\$ Millions)

	Year 1	Year 2
Return on Rate Base	2.0	6.5
Cost of Debt	1.3	4.1
Cost of Equity	0.8	2.4
Rate Base (Average 13-Months)	30.7	98.1
Weighted Average Cost of Capital	6.660%	6.660%
Debt cost rate	6.000%	6.000%
Return of Equity	8.200%	8.200%
Depreciation	0.6	2.5
Revenue Requirement	2.7	9.0

I show in Table 3 a case where *actual* expenditure for the September Year 1 asset (\$105 million) was higher than the forecast (\$100 million).

Table 3: Year 1 and Year 2 Actual Rate Base (\$ Millions)

Year 1 - M\$														
Rate Base	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Avg 13-months
Balance, beginning of year	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.0	104.8	104.6	24.2
Commissioning										105.0				
Depreciation											(0.2)	(0.2)	(0.2)	
Balance, end of year	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.0	104.8	104.6	104.3	32.2
Year 2 - M\$														
Rate Base	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Avg 13-months
Balance, beginning of year		104.3	104.1	103.9	103.7	103.5	103.3	103.0	102.8	102.6	102.4	102.2	101.9	95.2
Commissioning														
Depreciation		(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	
Balance, end of year	104.3	104.1	103.9	103.7	103.5	103.3	103.0	102.8	102.6	102.4	102.2	101.9	101.7	103.0

Table 4 shows the impact on the revenue requirement in Years 1 and 2 using the actual cost of the asset.

Table 4: Year 1 and Year 2 *Actual* Effect on Revenue Requirement (\$ Millions)

	Year 1	Year 2
Return on Rate Base	2.1	6.9
Cost of Debt	1.4	4.3
Cost of Equity	0.8	2.5
Rate Base (Average 13-Months)	32.2	103.0
Weighted Average Cost of Capital	6.660%	6.660%
Debt cost rate	6.000%	6.000%
Return of Equity	8.200%	8.200%
Depreciation	0.7	2.6
Revenue Requirement	2.8	9.5

Table 5 shows the difference between actual and forecast effects on the revenue requirement. An *actual* expenditure of \$5 million over *forecast* results in negative earnings to the company of \$100,000 in Year 1 and \$500,000 in Year 2.

Table 5: Difference between Forecast and Actual Impact on Revenue Requirement (\$ Millions)

	<u>Year 1</u>	<u>Year 2</u>
Actual	\$2.8	\$9.5
Forecast	\$2.7	\$9.0
Difference	(\$0.1)	(\$0.5)

In its annual reports to the Régie, HQT provides the current status of projects over \$5 million, including the amount approved by the HQT Board and the Régie (when applicable), as well as annual and cumulative spending. Tables 6 shows, reproduced from HQT annual reports, the status of projects in

2019. HQT also provides explanations for discrepancies between forecasts and actuals for major projects (reproduced in Table 7).

Table 6: 2019 Follow-up of Commissioning and Authorizations of Investment Projects

**Tableau 16
Suivi des mises en service et des autorisations de projets d'investissement (M\$)**

	Valeur autorisée			Total MES			
	HQ	Régie	Déclinaison Régie	Mois MES (Note 2)		2019	Cumulé
	(1)	(2)	(3)	Projets (D-2019-058)	Réel	(4) (Note 3)	
Mises en service projets - autorisation spécifique Régie						1 487,7	
Poste Manicougan - Réfection CB24 et systèmes connexes	87,5	89,6	D-2012-151	Déc	Résiduelle	8,6	63,3
Poste Nicolet	68,6	68,6	D-2013-156	Août	Déc	23,4	60,3
Intégration parcs éoliens - Appel d'offres 2009-02 (3e)	282,1	281,7	D-2014-045	Août-Nov	Août-Oct-Nov	102,3	201,7
Poste Chénée - Remplacement équipements et automatismes	39,6	39,6	D-2014-110	Oct	Déc	10,9	36,4
Mise en place du réseau IP MPLS/VPN	97,6	97,6	D-2014-191	Nov	Nov	17,4	95,2
Modernisation des liaisons optiques (NG-SONET)	66,7	66,7	D-2014-191	Juil	Nov	6,5	42,8
Poste Judith-Jasmin	260,4	260,4	D-2015-022	Oct	Juil	116,9	225,9
Ligne à 735 kV Chamouchouane - Bout-de-Tête (Note 4)	1 090,3	1 083,4	D-2015-023	Mai	Mai	818,0	1 033,0
Poste Saint-Patrice	129,3	129,3	D-2015-051	Mars	Mars	94,6	97,2
Poste Notre-Dame	29,9	29,9	D-2015-075	Nov	Nov	8,2	26,9
Ligne Langlois - Vaudreuil-Soulanges	46,3	46,3	D-2015-105	Résiduelle	Résiduelle	5,8	46,3
Ligne Grand-Broû - Déclinaison Saint-Sauveur	119,1	98,0	D-2016-130	Résiduelle	Mai	99,9	124,4
Poste Graciefield et ligne Paugan - Maniwaki	115,0	115,0	D-2016-176	Nov	Oct	52,8	118,8
Poste A Québec	35,3	35,3	D-2017-001	Déc	Déc	7,9	18,8
Intégration parcs éoliens - Appel d'offres 2013-01 (4e)	300,4	300,4	D-2017-025	Note 1	Juin	(12,4)	145,1
Poste Sherbrooke - Renforcement du réseau	76,1	76,1	D-2017-088	Juil	Mai	10,7	75,0
Reconstruction lignes à 120 kV à Gatineau	51,6	51,6	D-2018-028	Sept	Oct-Déc	31,1	31,1
Poste Montagnais - Remplacement inductances shunt à 735 kV	43,6	43,6	D-2018-092	Déc	Oct	13,2	13,2
Poste Châteauguay - Remplacement équipements et automatismes	36,8	36,8	D-2018-133	Déc	Déc	5,3	5,3
Ligne Beaumont - Dorchester	25,6	25,6	D-2019-039	Déc	Déc	28,4	28,4
Autres mises en service						38,2	
Mises en service projets - autres						788,4	
Sécurisation des postes (Note 5)	57,8			Note 1	Déc	42,4	42,4
Poste Duvernay - Remplacement équipements appareillage (Note 6)	26,3			Juin	Nov	5,9	17,1
Poste Carignan - Remplacement transformateurs	22,4			Juil	Sept	5,1	21,3
Poste Varennes - Ajout transformateur	22,1			Sept	Oct	8,8	8,8
Aéroport de Némicou - Poste atterrissage	20,8			Note 1	Août	5,7	18,5
Ligne Saint-Maxime - Marie-Victorin	20,4			Déc	Déc	16,1	16,1
Poste Notre-Dame - Remplacement transformateurs	19,5			Déc	Nov	10,8	18,7
Poste Oudouard-3 - Remplacement câbles	18,8			Nov	Août - Déc	11,1	18,8
Poste Sainte-Croix - Remplacement transformateurs	17,2			Août	Jul - Déc	18,0	18,0
Remplacement transformateurs de courant - MBE (Note 7)	16,9			Note 1	Nov	14,0	14,0
Mise en place des fondations technologiques OptICT (Note 8)	16,4			Déc	Oct	13,1	13,1
Accumulateurs 2017-2019	16,0			Déc	Déc	6,0	14,9
Poste Tremblant	15,9			Août	Jul	6,7	12,9
Poste Carillon - Remplacement disjoncteurs	14,2			Résiduelle	Nov	8,0	12,9
Poste Montréal-Est - Ajout transformateur	12,0			Sept	Août	9,2	9,2
Poste Saraguay - Ajout transformateur	11,9			Nov	Déc	7,9	7,9
Poste Matagami	11,8			Sept	Nov	10,2	10,2
Poste Charlesbourg - Ajout transformateur	10,8			Oct	Nov	9,5	9,5
Raccordement Ville de Montréal - Station d'épuration	10,7			Mai	Déc	5,1	7,6
Accumulateurs 2018	9,8			Fév	Juin	6,1	6,1
Poste La Vérendrye - Remplacement inductance	9,4			Sept	Oct	10,5	10,5
Poste Vaudreuil-Soulanges - Ajout transformateur	9,3			Oct	Déc	9,1	9,1
Poste Chamouchouane - Remplacement équipements	9,2			Note 1	Nov	5,2	5,2
Remplacement automatismes de manœuvre de parafoudres	8,4			Déc	Déc	5,8	7,1
Poste Duvernay - Ajout d'un entré	8,3			Résiduelle	Mars	5,1	7,9
Poste Châteauguay - Ajout transformateur	8,1			Note 1	Déc	6,1	6,1
Poste Berr	7,5			Sept	Déc	7,4	7,4
Poste Eastman	7,4			Mai	Déc	8,2	8,2
Ligne Montagnais - Amapud - Remplacement isolateurs (pylônes 2-107)	6,3			Nov	Jul	6,0	6,0
Poste Lorrainville - Remplacement équipements	6,2			Déc	Déc	6,3	6,3
Poste Caspé	5,1			Sept	Nov	5,0	5,0
Poste Nicolet - Remplacement inductance	6,0			Oct	Nov	5,3	5,3
Poste Abitibi - Remplacement inductances XL3-A et XL3-B	6,0			Jul	Nov	5,5	5,5
Poste Albanel - Remplacement inductances	6,0			Note 1	Nov	6,3	6,3
Poste Québec - Remplacement disjoncteurs	5,9			Sept	Déc	5,8	5,8
Ligne Montagnais - Amapud - Remplacement isolateurs (pylônes 2-101)	5,8			Nov	Sept	5,6	5,6
Ligne Montagnais - Amapud - Remplacement isolateurs (pylônes 2-100)	5,8			Nov	Jul	5,3	5,3
Poste Madawaska	5,1			Note 1	Déc	5,2	5,2
Poste Maisonneuve - Remplacement équipements	4,4			Note 1	Déc	5,4	5,3
Postes Némicou et Albanel - Remplacement transformateurs	4,3			Note 1	Déc	5,6	5,6
Autres mises en service						446,2	
Total						2 277,1	

Note 1 : Aucune mise en service planifiée dans l'année témoin 2019.
 Note 2 : La désignation "Résiduelle" indique la mise en service de divers coûts résiduels et crédits encourus après la mise en service finale.
 Note 3 : Les MES 2019 comprennent 31,5 M\$ d'actifs incorporels, (1,8) M\$ de contributions internes et 6,1 M\$ d'actifs réglementaires.
 Note 4 : Le projet inclut un montant de MES 2019 de 12,4 M\$ en actifs incorporels.
 Note 5 : Les coûts du projet de sécurisation des postes ont été révisés à la hausse de 33,6 M\$, principalement pour la hausse des coûts de travaux et une prolongation des délais (D-2019-088).
 Note 6 : Les coûts du projet Duvernay ont été révisés à la hausse de 9,3 M\$, principalement pour la hausse des coûts de travaux et une prolongation des délais suite aux reports de l'obtention des retails d'exploitation.
 Note 7 : Les coûts du projet de remplacement des transformateurs de courant - MBE ont été révisés à la hausse de 3,7 M\$ suite à une révision de l'étendue des travaux à exécuter dans le cadre de ce projet.
 Note 8 : Le projet inclut un montant de MES 2019 de 5,7 M\$ en actifs incorporels.

Source: HQT 2019 Annual Report, p. 19

Table 7: Discrepancies between 2019 Authorized and Actual Commissionings

Tableau 17
Comparaison des mises en service réelles de l'année 2019 à celles autorisées selon la décision D-2019-058 (M\$)

Projets du Transporteur	Décision (1)	D-2019-058 (2)	Réel (3)	Écarts (4)	Explications (5)
1 Mises en service projets - autorisation spécifique Régie		1 378,9	1 487,7	108,8	
2 Poste Manicouagan - Réfection CS24 et syst. conn.	D-2012-151	41,3	8,6	(32,7)	Écart sur les mises en service découlant de l'abandon des travaux de réfection du compensateur synchrone CS23.
3 Ligne à 735 kV Chamouchouane - Bout-de-Île	D-2015-023	764,6	818,0	53,4	Hausse des coûts de construction ainsi que des coûts de traitement de la végétation liés à des complexités diverses rencontrées sur le chantier.
4 Ligne Grand-Brûlé - Dérivation Saint-Sauveur	D-2016-130	4,3	99,9	95,6	Report de la mise en service de 2018 à 2019 causé par un début tardif des travaux engendrés par un retard dans l'obtention des autorisations gouvernementales.
5 Poste Duvernay	D-2018-043	21,1	-	(21,1)	Report de la mise en service de 2019 à 2020 suite à l'impossibilité de mettre hors tension une section de ligne à 315 kV.
6 Autres - Mises en service projets - autorisation spécifique Régie		547,6	561,2	13,6	
7 Mises en service projets - autres		706,0	789,4	83,4	Principalement causé par une prolongation des délais et une hausse des coûts des travaux du projet de sécurisation des postes (+42,4 M\$) ainsi que par une surestimation du facteur de glissement.
8 Total		2 084,9	2 277,1	192,2	

Source: HQT 2019 Annual Report, p.21