Direct Testimony of Seabron Adamson on behalf of Newfoundland and Labrador Hydro

Demande R-3888-2014

Régie de l'Énergie

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I. INTRODUCTION

My name is Seabron Adamson. I am a Vice President with the Energy practice of Charles River Associates ("CRA"). My business address is 200 Clarendon Street, T-32, Boston, MA 02116.

a. SCOPE AND OBJECTIVE OF TESTIMONY

I have been asked by counsel for Newfoundland and Labrador Hydro ("NLH") to provide an expert opinion of the proposals by Hydro Québec TransÉnergie ("HQT") to change its policies regarding network upgrades in Application R-3888-2014 to the Régie de l'énergie ("Régie").

In preparing this document I have relied upon the descriptions of the proposals provided by HQT in its submissions to the Régie.[1] I have also reviewed and comment here on the testimony of Judy Chang of the Brattle Group which discusses the HQT proposals ("Chang Testimony").[2] Finally, I have reviewed the HQT responses to various information requests ("IRs") posed by NLH, the Régie and other interveners as well as other public documents available from Québec and other jurisdictions. A full list of references is provided in Exhibit SA-1.

b. ISSUES TO BE ADDRESSED

Specifically, in my testimony I discuss:

- The objectives for an efficient network upgrade policy

[1] These include the "Transmission Provider Policy on Network Upgrades", HQT-1, Document 1, April 30, 2014 ("Transmission Provider Policy") and the "Transmission Provider's Additional Evidence in response to Régie de l'énergie Decision D-2014-117", HQT-3, Document 1, September 12, 2014 ("HQT Additional Evidence")

[2] Chang, Judy, "Policy on Network Upgrades: Direct Testimony of Judy W. Chang on Behalf of Hydro-Québec TransÉnergie", HQT-2, Document 1, April 30, 2014.

- The evolving policy landscape at the Federal Energy Regulatory Commission ("FERC") with respect to network upgrades and cost allocation, bolstered by more recent FERC Orders and decisions of the U.S. Courts of Appeal.
- The core economic elements of the mechanism for capacity upgrades under the current HQT Open Access Transmission Tariff ("OATT") and some of the changes proposed by HQT in its recent request.
- A critique of the current HQT proposals, based on the objectives and policy review; and
- Recommendations on development of a more appropriate network upgrade policy approach for Québec.

Each of these topics will be addressed in the following main sections of my testimony.

C. QUALIFICATIONS

I have more than 20 years of consulting experience in the analysis of electric power and natural gas markets, in the United States, Canada, the European Union and other countries. I have been active in market design, transmission, commercial and regulatory issues in many jurisdictions, including in Canada.

I have advised a range of clients on transmission pricing and investment issues, including utilities and merchant transmission developers. This has included work on financial transmission rights, cost allocation, merchant and regulated transmission projects and transmission deliverability rules in the PJM, New York and New England markets. I have also worked on transmission and market design issues associated with the Ontario market. Outside of the Regional Transmission Organization ("RTO") markets, I have worked with clients concerning transmission access and other issues under vertically-integrated utility OATTs in the Southeastern and Western United States.

In addition to my consulting work and other interests, I am an adjunct faculty member of the A.B. Freeman School of Business at Tulane University, and a research associate of the Tulane Energy Institute. In this role, I have taught classes on energy trading, risk and portfolio management. I have published articles on energy economics and policy in academic journals and co-authored a chapter in a recent book on financial transmission rights markets.

I received the B.S. and M.S. degrees in Physics and Applied Physics respectively from Georgia Tech. I received the S.M. degree in Technology and Policy (with an energy focus) from M.I.T. in 1992. I later received the M.A. degree in economics from Boston University. A summary of my background and relevant experience is provided in Exhibit SA-2.

d. SUMMARY OF FINDINGS

I conclude in this testimony that HQT proposes a relatively modest set of changes to its upgrade policy. These modest changes do not address the many profound economic weaknesses which have been identified by FERC in its original *pro forma* OATT with respect to the same issues. HQT clings to the principle that the requester should solely pay for new growth-related transmission upgrades even if other transmission users will see significant benefits. This is clearly inefficient and allows the potential for discriminatory treatment. I recommend that HQT adopt a new benefits-based cost allocation mechanism for transmission upgrades, which is already being implemented in the United States in utility OATTs, including in non-RTO regions. I also recommend that the Régie require strong policies on information availability and transparency from HQT, to ensure all transmission customers are able to make efficient and effective investment and contracting decisions.

II. Objectives for Transmission Upgrade Policies

Before analyzing the HQT Network Upgrade Policy proposals in detail, it is worthwhile to review the basic economic objectives of any such policy. In this section, I will summarize the critical elements of a transmission upgrade policy as a basis for critiquing the HQT proposals.

a. ECONOMIC EFFICIENCY

It is axiomatic that transmission upgrade policy and pricing in general should support the economic operation and expansion of the transmission system. Economists often separate the concept of efficiency into multiple components: productive, allocative and dynamic efficiency. The latter term is related to the efficient expansion and development of the transmission system and is most relevant here.[3]

While HQT, like other transmission providers, conducts detailed transmission planning, its planning process must necessarily be conditioned on the potential decisions of its customers. These include not only Hydro Québec Distribution ("HQD"), the primary distributor in the province, but also point-to-point customers and other potential users such as selected municipalities that can purchase transmission services. These customer decisions will invariably be conditioned on how the costs of new transmission upgrades are charged to the customer by HQT. Thus the network upgrade policy of HQT plays a direct role in the future economic efficiency of the system.

[3] Productive efficiency concerns whether production in the short-run is at the lowest total cost – e.g. least cost dispatch in a power system. Allocative efficiency reflects whether consumers see prices that reflect the marginal costs of production – e.g. short-run marginal cost transmission pricing in the case of a power system. While these are important concepts in general these are not the primary focus of the current proceeding.

b. SUPPORTING DYNAMIC EFFICIENCY REQUIRES A BENEFIT-BASED COST ALLOCATION PROCESS

Later in my testimony I will discuss in some detail the cost allocation process inherent in HQT's proposals and existing OATT and why these are insufficient. In this sub-section, I will focus on the general need for a beneficiary-based cost allocation scheme to support efficient transmission expansion, in contrast to a system where the requester of transmission services is assigned costs directly (as is generally the case in Québec today).

In a transmission system, the benefits of a new transmission project are often broad in scope, and may encompass a wide range of *types* of benefits as well as a wide range of transmission system users. For example, consider a new major transmission line that would transport large quantities of power across a significant portion of the transmission region. Clearly, one beneficiary of this new line would be the user of the line that needed to transmit power. There may, however, be many other beneficiaries on the grid; these will also see a wide range of other benefits:

- Building this line may allow other transmission investments to be avoided or deferred, lowering costs for other transmission users that would otherwise need to be recovered in ratebase transmission rates.
- The new transmission capacity may reduce congestion or losses on the grid, again lowering costs and prices for other users.
- The new line may increase competition by bringing in potential new supplies from other regions.
- Additional transmission connections could increase load and supply diversity, with attendant reliability impacts.

For a new transmission facility these benefits could be large, and spread among many transmission users. If the network upgrade policy however assigns all costs to the requester of the transmission service (sometimes referred to as a "direct assignment" approach to allocating these costs), none of these ancillary benefits will be factored into the requester's decision to pay for transmission upgrades, as it will see few of these benefits directly, although it is required to pay all of the costs. This type of externality may bring inefficient outcomes over time, for all users of the transmission system.

To overcome this inefficiency problem requires a cost allocation system in which the costs of transmission projects with wider benefits are shared among eligible beneficiaries, rather than being allocated narrowly to the single requester of the transmission service triggering upgrades. I will return to the need for such a mechanism later in my testimony.

c. NON-DISCRIMINATION BETWEEN TRANSMISSION USERS

Regulators have long recognized the potential for transmission providers linked to generation and distribution function may have strong incentives to preferentially favor themselves or their affiliates in the provisions of transmission service, and that this discrimination could be unduly discriminatory and reduce competition. In Order 888, for example, the Federal Energy Regulatory Commission stated that:

> *A voluntarily offered, new open access transmission tariff that did not provide for services comparable to those that the transmission owner provided itself was unduly discriminatory and anticompetitive.*[4]

FERC's Order 888 and subsequent orders formed the basis for the *pro forma* OATT that is the subject of the current proceeding. The Régie has based its transmission access policy on the same principle.[5]

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[4] FERC, Order 888 Final Rule, Issued April 24, 1996, page 36.

d. TRANSPARENCY

Transmission network upgrade policies and investments require regulated transmission providers to interact with transmission users. Transmission providers (and absent appropriate controls, potentially their affiliates), inevitably, have substantial informational advantages over other transmission users who may also be competitors of their affiliates. Substantial regulatory efforts have therefore been expended to ensure that transmission providers release sufficient information through Open Access Same-Time Information Systems ("OASIS") and similar means to allow other users to access operational data about the transmission grid.[6]

More recently, regulators in the United States have focused attention not just on short-run operational data on OASIS systems but also the detailed information on transmission planning and upgrades which affect future transmission uses. This will be discussed in more detail in Section III.c in my testimony.

e. PREVENTION OF UNDUE COST-SHIFTING

The Chang Testimony emphasizes the need for HQT to protect its existing customers from excess costs associated with other users of the transmission system.[7] Avoidance of cost shifting between customer classes is indeed a laudable goal, and one that every regulator can accept. It should also be noted however that cost shifting can go either way, and that sound regulatory principles of non-discrimination do not unduly favor native load over other users, or *vice versa*. All transmission users serve load in some way, and any differences in treatment should reflect only relevant differences in circumstances.

I further note that the requirements for a benefits-based allocation of applicable transmission network upgrade costs, as discussed in more detail below, completely encapsulates the

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5 Régie de l'énergie, Decision D-2002-95 rendered April 30th, 2002

6 FERC Order 889. Régie de l'énergie's Decision D-2012-10 rendered February 10, 2012

7 See for example Chang Testimony at page 6.

customer cost protections advocated by Ms. Chang. To the extent that native load and other existing customers do not benefit from allocated transmission upgrades (associated with point-to-point service requests, for example), they would not be allocated any of the costs. This mechanism thus provides a powerful shield of customer protection while allowing native load and other existing customers to benefit from transmission upgrade projects that otherwise might not go forward, if all benefitted users are not required to share their fair allocation of costs.

Under a beneficiary pays system, existing customers pay no additional costs if they receive no additional benefits. They may pay some more costs under some circumstances but *if and only if* they receive benefits greater than costs. Existing customers (such as native load) are thus better off than under the “customer protection” principle advocated by Ms. Chang and HQT.

III. The Evolving FERC Landscape with Respect to Network Upgrades and Cost Allocation

Ms. Chang, in her testimony, examines whether HQT's proposed Network Upgrade Policy is consistent with traditional FERC's "higher of" transmission policy. She concludes that it is consistent. FERC policy on transmission upgrades and cost allocation however has not been static, and has moved on considerably from the Order 888 and 890-era policies described by Ms. Chang. Recent major FERC Orders and U.S. Court decisions have greatly shaped the economic and regulatory debate on these issues in the United States, but the HQT Transmission Provider Policy and the Chang Testimony are silent on these more recent developments.

a. FERC Policy Has Moved on While HQT's Policy Appears Tied to a Previous Era

The HQT proposals largely continue the existing structure of the HQT OATT, which was originally based on the FERC *pro forma* OATT. The additional elements proposed by HQT in the Transmission Provider Policy offer relatively minor changes to the underlying economic structure of the OATT. HQT's proposed changes do not eliminate the efficiency and transparency problems already identified by FERC in its *pro forma* OATT.

I note that the most recent FERC order directly referred to by Ms. Chang in her testimony is a May 1995 order of the Commission in Docket RM93-19-001. The initial impression to the reader is that all is quiet south of the border, and that network upgrade policy has not been contentious in the economic or regulatory sphere.

This is an incorrect impression. There has been substantial economic debate and regulatory policy activity in the U.S. regarding the issues directly raised by the Régie in this proceeding regarding transmission upgrades and cost allocation. These include the *Energy Policy Act of 2005*, the issuance of Order 890 in 2007, and finally the issuance of the landmark Order 1000 in

July 2011. The very title of this order – "Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities" – suggests its relevance to the current debate in Québec.[8] On August 15, 2014 the DC Circuit Court of Appeals upheld the primary provisions of FERC's Order 1000.[9]

I understand that of course FERC orders and U.S. Court decisions on FERC's decisions are not binding on the Régie, but they do provide some insight on how policy has been changing elsewhere. It should also be noted that the requirements of Order 1000, as discussed in more detailed below, are requiring significant changes to the OATTs of transmission utilities in the United States (including the OATTS of vertically-integrated utilities outside of the RTO market regions). The FERC launched the OATT reform process and the rulemaking leading to Order 1000 specifically to strengthen the non-discrimination and transmission access provisions and these are clearly viewed by the FERC as having implications for wholesale electric competition. To the extent that HQT wishes to conform its OATT to FERC standards this may be relevant in terms of future cross-border market reciprocity and access decisions.

b. MAJOR ELEMENTS OF ORDER 1000

Order 1000 is over 600 pages long and I will not try to summarize its myriad provisions here. Instead I will highlight some elements which are relevant to the issues raised by the Régie in this proceeding. These include:

- Strengthened requirements for regional planning processes (building on those in Order 890);

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8 FERC, *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, 16 CFR Part 35, July 21, 2011 ("Order 1000").

9 US Court of Appeals for the District of Columbia Circuit, Decision 12-1232, *South Carolina Public Service Authority v. Federal Energy Regulatory Commission,* Decided August 15, 2014.

- Requirements for transmission utilities to coordinate regional and inter-regional planning and jointly identify and evaluate new transmission facilities;
- Development of a *ex ante* cost allocation method for allocating costs associated with regional and inter-regional transmission projects, based on six cost allocation principles:
- Allocation of costs "roughly commensurate" with benefits
- Users that receive no benefits from transmission facilities must not be allocated costs
- Benefit-to-cost thresholds should be set such that projects with significant net benefits should not be excluded
- Costs are not to be allocated outside a region without consent
- Cost allocation methods and the identification of beneficiaries must be transparent
- Different allocation methods can apply to different types of transmission facilities

As a corollary to the principle of allocating costs to benefitting users, FERC specifically excluded transmission utilities from solely requiring "participant funding" for regional transmission facilities – that is, the requirement that the requester of transmission service across a regional facility pay all of the costs. This prohibited requirement appears to be a key aspect of the HQT Transmission Provider Policy.[10]

c. Order 1000 Compliance Filings

In response to Order 1000, U.S. transmission providers have made numerous and substantial compliance filings to FERC. It should be emphasized that Order 1000 applies not only to transmission providers within RTO regions, but applies equally to vertically-integrated standalone utilities in regions such as the Southeast and West. FERC has generally been quite

[10] Order 1000 at paragraph 725. The Order at paragraph 729 does allow participant funding to continue for existing projects and for existing *pro forma* OATT transmission service requests or requests for interconnection, in response to comments made by Entergy. Entergy, it should be noted, has had for some years an independent transmission coordinator approved by FERC and has since been integrated into the MISO.

strict about compliance with Order 1000 requirements and hence many utilities have needed to make multiple filings to comply with the order.[11]

The Order 1000 compliance filings are even more voluminous than the Order itself. I will highlight a few FERC requirements on non-RTO transmission utilities that could be noteworthy for the Régie in the current context:

- Openness of transmission planning meetings to all transmission and interconnection customers, with appropriate confidentiality agreements and similar protections.
- Transparency of transmission planning, including written methodology, processes and criteria used to develop transmission plans, and sufficiently detailed data to be released allowing transmission planning decisions to be replicated by other stakeholders. The specific means of achieving these transparency requirements are required to be filed in a modification of Attachment K of the transmission provider's OATT.
- Prohibition of over-simplified methods for identifying beneficiaries, such as methodologies that consider *only* avoided costs of other transmission projects. Such methods have been not found compliant with Order 1000 requirements, which require a more complete assessment of reliability, economic and public policy-related benefits.
- Detailed information exchange and availability requirements designed to ensure that transmission customers are an integral part of the transmission planning process. For example, for Duke Energy Florida and other vertically-integrated utilities in Florida, the compliance order requirement spells out that detailed power model data shall be available to customers, including power flow model data (buses, loads, transformer data,

[11] Order 1000 compliance filings are available at http://www.ferc.gov/industries/electric/indus-act/trans-plan/filings.asp

etc.), dynamic stability model data (including information on protection schemes, etc.), and short circuit model data.[12]

In summary, Order 1000 and its subsequent FERC compliance orders have changed the very nature of transmission upgrade policy in the United States, and the relationship between the transmission-owning utility and its transmission customers. These changes have important lessons for Québec.

[12] Order 1000 Compliance Filing of Duke Energy Florida *et. al.*, July 10, 2013 at page 42.

IV. The Proposed HQT Policy Changes

In this section I present a brief economic review of network upgrade policy under the existing HQT OATT and under the changes proposed by HQT. My objective is not to provide a detailed summary of HQT policies but merely to set the economic stage for the critique to follow. The primary focus of this review will be on the treatment of network upgrades for firm point-to-point service from other regional transmission users as this is the primary interest of NLH.

a. Network Upgrades under the Existing HQT OATT

The HQT OATT was based on the traditional FERC *pro forma* OATT. The transmission upgrade process and allocation thus follows generally the same traditional FERC approach. However, the HQT Network Upgrades Policy applies only to upgrades required to meet customer needs (referred to by HQT as the "customer demand growth" category).[13]

It is unclear from HQT's filed Transmission Provider Policy and HQT Additional Evidence exactly how a project that falls into the customer demand growth category and another category has its costs allocated, despite the description provided.[14]

HQT processes transmission network upgrades associated with new service sequentially (using a waiting list approach, as explained in the HQT Additional Evidence). I understand (and discuss further below) that the Régie has questioned the use of this sequential waiting list approach.[15] In simplified terms, the HQT evaluation and charging mechanism works in the following manner:

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13 Transmission Provider Policy at page 9.

14 HQT Additional Evidence at pages15-18.

15 See Régie decisions quoted at page 17 of the HQT Additional Evidence.

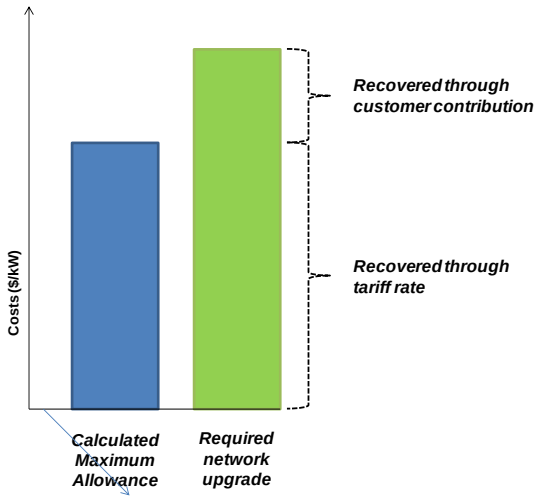
- Requests for additional transmission service are evaluated against the available capacity of the transmission network to accommodate additional transmission flows, reflecting all existing commitments.
- Where sufficient transmission capacity is not available, HQT must respond with a System Impact Study which identifies needed upgrades and costs to accommodate the flows on the transmission network. This may be followed by a more detailed facilities study.
- Assuming that the customer seeks to go ahead, and meets specified application criteria, a service agreement may be entered into under which the transmission customer pays for applicable network upgrades, regardless of whether customer takes service for the full term of its reservation.[16] A customer can be charged for the higher of the incremental cost needed to provide the service or the embedded cost transmission rate (including any changes required by an expansion. If the incremental cost is charged, the amount over the allowed embedded cost amount (referred to by Ms. Chang as the "Maximum Allowance") will be collected in the form of a customer contribution.[17] The Maximum Allowance (in dollars per kW) is calculated as the amount that can be invested - based on a 20-year present value and other assumptions on depreciation, cost of capital, etc. – under the existing per unit transmission revenue requirement.[18] This scheme for cost recovery for network upgrades costing more than the calculated Maximum Allowance is illustrated in Figure 1 below.

[16] See HQT OATT, Section 15.1, Original Sheet No. 43, March 20, 2014

[17] Chang Testimony at page 7.

[18] Chang Testimony at page 11.

Figure 1: Illustration of Maximum Allowance and Customer Contribution



- The customer contribution is applicable to native load growth, generation integration and point-to-point transmission upgrades.[19] Currently, as I understand it, if new transmission service requires upgrades with lower costs than allowed under the Maximum Allowance, then no credit is given the requesting entity.[20]

b. HQT's Proposed Changes to Its Policy

The HQT proposals for changes to its OATT are summarized in Section 1.2 of the Transmission Provider Policy document. Relevant specific HQT-proposed changes that I will discuss in the remainder of my testimony include:

- Annual follow-up on commitments made by point-to-point customers, supposedly to ensure revenue adequacy under all outcomes;[21]
- Using a 20-year life for assets when calculating customer contributions, even if the customer signs a transmission agreement for longer than 20 years;[22] and

19 Chang Testimony at page 7.

20 This is somewhat different and further subject to change for Hydro Québec Distribution ("HQD") in the proposed HQT policy changes, as discussed in more detail below.

21 See Chang Testimony at pages 26-31.

- Allowing HQD to use excess "credits" from load growth (amounts under the Maximum Allowance) to offset network upgrade costs associated with generation resources.[23]

In the next section I will critique these three specific elements of the HQT proposal in some detail, after a broader critique of the current (and retained) HQT general approach to allocation of costs between beneficiaries.

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22 See Chang Testimony at page 19.

23 See Chang Testimony at page 20.

V. Critique of the HQT Network Upgrade Policy

In Section III I identified the many changes in FERC network upgrade policy and cost allocation that have occurred since the 1990s, and especially the wide-ranging reforms of transmission planning, cost allocation and the OATT stimulated by Order 1000. HQT's current policy and proposed changes stick closely to the old forms of the OATT, which suffer from inherent and identified economic weaknesses:

- Reliance on a "requester pays" model that assumes implicitly (and incorrectly) that the party requesting new service is the sole beneficiary of transmission upgrades, and should bear all of the associated costs.
- Use of a sequential "waiting list" method of evaluating transmission upgrade projects for cost allocation.
- Lack of a clearly defined *ex ante* method for allocating upgrade costs between transmission users based on benefits.
- Lack of transparency of information and data such that transmission users and stakeholders cannot understand and replicate transmission project evaluation, selection and cost allocation decisions.

I will discuss each of these weaknesses in HQT's current and proposed network upgrades policy in the following sub-sections.

a. HQT Relies Solely on an Inefficient "Requester Pays" Model of Transmission Cost Allocation

As I discussed in Section II.b of my testimony above, a "requester pays" approach, as used and advocated by HQT, can lead to inefficient levels and patterns of transmission expansion, and the potential for discriminatory treatment. Transmission users will not pay

for the full costs of new transmission upgrades when they receive only a subset of the benefits. These "external benefits" are not captured in a "requester pays" approach.

As stated in Order 1000, FERC noted:

> *The Commission is concerned that reliance on participant funding as a regional or interregional cost allocation method increases the incentive of any individual beneficiary to defer investment in the hopes that other beneficiaries will value a transmission project enough to fund its development. Because of this, it is likely that some transmission facilities identified as needed in the region transmission planning process would not be constructed in a timely manner, adversely affecting ratepayers.*[24]

The HQT proposals do not appear to apportion the costs with these other beneficiaries, and hence suffer from this same weakness. For example, HQT in its responses to interrogatories from NLH stated that:

> *The Transmission Provider considers that the request of an entity that led to a network upgrade remains the beneficiary thereof. Moreover, the Transmission Provider specifies that the entire transmission system is used to provide all transmission services.* [25]

This economic "free rider" problem has been clearly identified by the FERC in Order 1000 and the DC Circuit Court of Appeals as requiring a cost allocation method that the U.S. courts have repeatedly embraced: "costs are to be allocated to those who cause the costs to be incurred and reap the resulting benefits".[26] An efficient approach, which sound economics and regulatory practice requires, is an approach under which cost allocation is roughly commensurate with benefits.

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24 FERC, Order 1000, paragraph 723.

25 HQT, "Transmission Provider's Responses to the request for information number 1 of Newfoundland and Labrador Hydro", HQT-4, Document 6, November 3, 2014 (Response to Partie 2, Question 19).

26 *National Association of Regulatory Utility Commissions v. FERC*, (2007) as quoted by the DC Circuit Court of Appeals in its August 2014 ruling upholding Order 1000.

b. HQT Relies on a Sequential Waiting List Evaluation Process Which is Also Inefficient

HQT states that it believes that the waiting list for evaluating network upgrades and cost causation principles it has implemented "remain the customary equitable practices for managing customer requests that involve transmission upgrades" in response to the Régie's questions.[27] While I agree that these may have been "customary" at one time, a waiting list approach to evaluation of network upgrades when combined with the free rider problem identified in the previous section is ineffective. As regulators have identified, a waiting list approach simply encourages any individual beneficiary to defer investment in the hopes that other beneficiaries will value a project enough to fund its development. [28] This evaluation approach also leaves room for potential discriminatory treatment.

HQT's responses to the Régie's information request illustrate the inherent problems associated with a waiting list methodology.[29] In the Régie's Example 1, two customers require a transmission upgrade to meet customer demand growth objectives, and the joint technical solution costs $300 million, while the cost of individual solutions to the customers is $200 million for Customer 1 and $150 million for Customer 2. In its response, HQT explains that under its policy if Customer 1 made its request first, it would pay $200 million while Customer 2 would pay $100 million. On the other hand, if Customer 2 made its request first, each would pay $150 million. It is plain that such a system provides a strong incentive for Customer 1 to wait and see if Customer 2 will act, as it saves $50 million for a delay (which could be very short – Customer 1 could make its request only shortly after). Customer 2, on the other hand, has no incentive to go first under this scenario. The result is a waiting game, in which no one has the incentive to act.

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27 HQT Additional Evidence at page 17.

28 Order 1000 at paragraph 486.

29 HQT, Transmission Provider's Responses to the request for information number 1 of the Régie de l'energie, HQT -4, Document 1. Response to Question 14.6, pages 38-39.

The Régie's Example 2 provides an even starker example of the incentive to play a "waiting game". In this example, HQT states that if Customer 1 makes its request first it pays $300 million while Customer 2 pays zero, and if Customer 2 makes its request first then it pays $50 million while Customer 1 pays $250 million. Again, each of the transmission customers has the strong incentive to do nothing, even if in aggregate everyone would be better off if transmission upgrades were made (including retail customers, who might see lower rates).

The Régie's examples provide a powerful illustration for the need for a transmission upgrade policy which eliminates the strict chronological evaluation method advocated by HQT. A more efficient process for Québec would require the development and analysis of a portfolio of potentially related transmission projects which could then be evaluated together, in a consistent cost-benefit evaluation process.

c. HQT Lacks a Clearly Defined Method for Allocating Upgrade Costs Based on Benefits

HQT appears to resist the Régie's consideration of a "user-pays" principle – which it identifies as amounting to cost-sharing by beneficiaries of a transmission upgrade – for two reasons. First, it states that it is unaware that cost sharing among the beneficiaries of a transmission project is common practice in other jurisdictions. Second, it states that there is no single approach to making such a cost allocation, and that such an approach could be difficult.[30] It therefore allocates all costs to the requester as it is clearly identifiable.

With respect to the HQT's first issue – that it is unaware of cost sharing being common practice in other jurisdictions – it need look only south of the border. In the U.S. such cost allocation based on benefits is now the law, and the thousands of pages of transmission provider compliance filings to Order 1000 (and the large volumes of modified OATTs filed with the FERC) provide documentation of the evolving changes.

[30] HQT Additional Evidence at page 18.

With respect to the second issue, HQT's observation that benefits cannot be completely and objectively identified is true, but is also not a fundamental hindrance to a benefit-based cost allocation approach. The U.S. Courts have allowed the FERC to approve rate mechanisms that track the cost-causation principle less than perfectly, and have stated elsewhere that the sole requirement is that cost allocation be roughly commensurate with benefits.[31]

Other economists with significant experience in the economics of transmission regulation, pricing and cost allocation have recognized that benefits-based cost allocation of transmission upgrades is practical, and relies fundamentally on the tools and analysis already needed for efficient transmission planning. As stated by Professor William Hogan of Harvard University:

> *A workable system of cost allocation commensurate with benefits for new transmission investment is within reach using available analytical tools. Cost allocation commensurate with the distribution follows directly from the information that must be produced as part of the evaluation of the investment….*[32]

It will not be possible for HQT to precisely model and identify all benefits completely, but this should also not be required by the Régie. All that is required is a method under which stakeholders can generally and approximately identify the core benefits of a project, and which can be used to allocate costs. While such an approach can never be precisely right, that is no excuse to rely on a "requester pays" methodology which is almost assuredly wrong.

HQT will require a framework for analyzing the benefits of new transmission projects – both for project evaluation and for cost allocation. Ms. Chang has written elsewhere on the need for a

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31 See for example the discussion of the United States Court of Appeals for the District of Columbia Circuit in Decision 12-1232, *South Carolina Public Service Authority v. Federal Energy Regulatory Commission,* page 81.

32 William W. Hogan, "Transmission Benefits and Cost Allocation", Working Paper, Harvard Electricity Policy Group, May 31, 2011. Available from www.whogan.com

comprehensive analysis of transmission benefits including not only traditional production cost savings (such as avoided costs) but also reliability, environmental and other types of benefits.[33] I agree with Ms. Chang in general that all of these types of benefits should be included in a project evaluation and cost allocation methodology.

Once the most promising transmission upgrades have been identified and their (comprehensive) benefits have been analyzed and quantified, cost allocation rules can be developed based on the principles outlined previously. Transmission users (including native load) should not be allocated costs if they are not net beneficiaries of a set of transmission upgrades, and the costs should be allocated to those who are beneficiaries. In general, a transmission provider should only pick projects whose benefits exceed their costs (a fundamental premise of cost-benefit analysis). So if the beneficiaries pay all costs roughly proportionally to their estimated benefits (excluding, for example, users that do not see a benefit), then each beneficiary should still be economically better off.

d. HQT's Approach May Provide Insufficient Transparency to Understand Transmission Planning and Cost Allocation Decisions

As discussed in Section III.c above, under Order 1000 transmission providers are required to provide substantial data and information to stakeholders to ensure sufficient transparency in transmission planning and cost allocation decisions. These requirements go further than the Order 890 requirements.

I have not reviewed all of HQT's publicly available transmission data and have not participated in previous stakeholder meetings, and so I cannot comment on the sufficiency of these against Order 1000-type requirements. Given however that this proceeding is still in a policy stage, and

[33] Judy Chang, "Transmission Planning: The Challenges Ahead", The Brattle Group, Presentation to the Harvard Electricity Policy Group, February 27, 2014.

is not yet at the stage of reviewing specific OATT language, I believe that this would be an appropriate time for the Régie to require a strong commitment by HQT for detailed transmission information exchange and transparency. This should include requirements on the release of data and models, transmission planning assumptions, and other information needed for transmission customers and users to have a full view of the current state and future likely evolution of the transmission grid, for both planning and cost allocation purposes.

e. Specific Elements of HQT's New Upgrade Policy Proposals May Not Be Appropriate

Section IV.b introduced three specific and new elements of the HQT proposed network upgrades policy that merit further attention: follow-up on revenue commitments from point-to-point customers, depreciation assumptions for calculating Maximum Allowance and use of credits by HQD to offset other cost contributions. These will be critiqued in this section.

1. Annual Revenue Follow-ups for Point-to-Point Customers

As described in the Chang Testimony and the Transmission Provider Policy, HQT proposes to introduce annual follow-ups of payment commitments in connection with network upgrades for point-to-point service.[34]

First, from the description provided and responses to IRs by HQT, it is unclear that this annual follow-up is actually required. In response to an IR from NLH, HQT indicates that over the last five years that it has collected sufficient revenues to cover all transmission upgrade commitments; follow-up payments have apparently not been needed.[35] In light of this record of full cost recovery, the need for the policy change proposed by HQT may be questioned.

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[34] HQT Additional Evidence at page 19.

[35] HQT, "Transmission Provider's Responses to the request of information number 1 of Newfoundland and Labrador Hydro", HQT-4, Document 6, November 3, 2014. See HQT response to Question 12 by Seabron Adamson for NLH.

Second, while the text of HQT's proposal with respect to these follow-ups is not completely clear, it appears that the follow-ups could result in additional payments from point-to-point customers to meet future HQT revenue shortfalls. If this is true, this would have the effect of varying the final rate in the transmission service agreement and violates the commonsense principle that a contract customer should, to the maximum extent possible, pay a fixed and agreed rate once the network upgrade goes in service. If HQT is allowed to collect additional revenues *ex post*, the original economics of the transmission request could be undermined and with no recourse by the transmission customer. The allocation of all revenue risks from HQT to the customer provides weak incentives for HQT to estimate costs initially with appropriate care, and hence could prove additionally inefficient.

2. Depreciation Assumptions for Calculating Maximum Allowance

The HQT upgrade policy limits the depreciation assumption to 20 years in calculating the Maximum Allowance for new transmission assets required for new service, even if these assets are expected to have a far-longer life.[36] This is especially important for transmission customers requesting new service over longer periods of time. Even if they are willing to contract for firm service for a longer period, the HQT policy effectively limits their Allowance and raises their required contribution, as noted by Ms. Chang.[37]

If these assets, as Ms. Chang notes, are likely to last longer than 20 years, this policy shifts costs unjustifiably onto these transmission service customers. These customers are willing to contractually commit to pay for transmission service, which will allow HQT to recover its costs over the entire period. However under the HQT upgrade policy the long-term benefits (the value of those assets after the 20 period is up, in which all costs have already been recovered) of these assets paid for by the customer contribution are spread across all users. The ability of

[36] Chang Testimony at page 19.

[37] Chang Testimony at page 20.

HQT to be "conservative" must surely be limited when its upgrade policy explicitly requires such unjustifiable cost shifting.

It should be noted that HQT upgrade policy also incorporates cost shifting with its treatment of Maximum Allowance when the requested transmission service contract is for shorter than 20 years. In this case, the Maximum Allowance is calculated for the shorter period, which again forces the transmission customer to pay the entirety of the upgrade costs while any benefits from further uses of the assets accrues to other users. This too is a form of cost shifting.

3. HQD Credits to Transmission Costs

The HQT upgrade policy allows HQD to bundle its load-growth network upgrades that are commissioned in a given year, and any "credit" associated with these load-growth related upgrades (amounts under the Maximum Allowance) can be used as an offset against other HQD network upgrade costs (for new resource-related projects, for example).[38] In short, HQD gets the benefit of offsetting load-growth related "credits" (amounts under Maximum Allowance) against contributions required for other network upgrades. Under the proposed modifications, HQT would allow HQD to continue to offset load-growth related "credits" against network resource-related contributions, but capped at the current level.

First, from the perspective of non-discrimination and comparability of service, it is unclear why HQT should solely allow HQD the "pooling" mechanism, which does not appear to be available to other transmission system users.[39] If other transmission users have multiple upgrades in the same planning period, then these should be treated equally with HQD and "pooling" should be allowed to minimize these customers' contributions as well.

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38 Chang Testimony at page 20.

39 HQT, "Transmission Provider's Responses to the request for information number 1 of Newfoundland and Labrador Hydro", HQT-4, Document 6, November 3, 2014. See HQT response to Question 3 by Seabron Adamson for NLH.

Second, I note that it is unclear from the examples provided how in practice Maximum Allowance is calculated and used for these HQD upgrades. For example, in Table 5 of her prepared Testimony, Ms. Chang provides an example where two upgrade projects (with a total network upgrade cost of $137.1) million are associated with a aggregate load growth of 100 MW.[40] This then provides HQD with a total allowance of $59.8 million, based on a Maximum Allowance of $598/kW.

The situation appears different in the example in Table A1 of Ms. Chang's testimony.[41] Here there are three projects of various sizes (totaling $140 million in costs), but now *each* project seems to be allowed the 100 MW quantity amount for calculating Maximum Allowance. This greatly changes the economic consequences to HQD and lowers the effective contribution from HQD even in the "Current Approach" case. The upgrade policy needs to be clearer in terms of how the Maximum Allowance is applied, particularly in the context of multiple pooled projects related to load growth. In reviewing the HQD upgrade policy, the Régie should be careful to ensure that the "Allocation Units" (e.g. megawatts) calculations applied by HQT are logical and consistent; otherwise HQD can potentially shift costs onto other customers.

[40] Chang Testimony at page 22.

[41] Chang Testimony at page A-2.

VI. Conclusions and Recommendations

HQT's proposed changes to its network upgrades policy may be characterized in some ways as marginal, and designed above all to further insulate HQT from any further financial risk. My primary criticism of the HQT policies – even with the modifications – is that they continue to rely upon the old FERC structure with respect to transmission upgrades and cost allocation, even where these have been shown to be economically inefficient and prone to discrimination. Ms. Chang places great emphasis on the consistency of the HQT policies with FERC policies, but she compares them only to a previous generation of FERC policy. U.S. policy has moved on.

Despite that criticism, I believe that HQT can relatively easily modify its current and proposed policies in order to be more efficient, transparent and consistent with FERC-based approaches. At this stage, I understand that the emphasis is on the Régie setting policy which will later be translated into modified tariff language for the HQT OATT in phase 2 of this current file. I would recommend that a new HQT network upgrade policy reflect the following basic elements:

1. Creation of a more open transmission planning process that will use clear and specific criteria to identify needed new transmission projects (within Québec and for projects connecting to neighboring systems) and for allocating the costs of these projects.
2. Elimination of the inefficient "requester pays" policy and substitution of a policy that allocates transmission upgrade costs based on benefits, regardless of customer class.
3. Development of a workable benefits-based cost allocation methodology, to be published after approval by the Régie, which will allow all transmission customers to understand cost allocation clearly and before potentially incurring costs. This methodology should be consistent with the cost allocation principles in FERC Order 1000.
4. Elimination of the chronological "waiting list" evaluation of transmission upgrades and replacement with a system of more holistic evaluation of major potentially-related

transmission projects together. This will ensure that a proper cost-benefit analysis can be conducted using reasonable criteria and that cost allocation can be consistent.

5. Issuance of detailed information release and exchange policies that will allow transmission customers and stakeholders adequate detailed and technical information for proposing and evaluating transmission service requests and projects on a comparable basis. This should include release of detailed technical models and data with appropriate provisions to protect security and confidentiality.

6. Allow all transmission users – and not just HQD – to utilize upgrade "credits" to offset other potential contributions required under the same planning period.

7. Allow transmission service customers entering into transmission service agreements for longer than 20 years a Maximum Allowance based on the full term of their contractual agreement, rather than artificially limiting the Maximum Allowance calculation to a 20 horizon as proposed by HQT.

8. Eliminate any aspect of "follow-ups" to transmission service agreements that have the effect of creating uncertainty for transmission contract customers regarding the total and final prices to be paid for transmission service over the contract period.

This concludes my testimony.

Exhibit SA-1

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Exhibit SA-2

Qualifications and Experience of Seabron Adamson

SEABRON C. ADAMSON

Seabron Adamson is a Vice President at Charles River Associates, where he focuses on the energy sector. He was previously an analyst with Tudor Investment Corporation, as part of their energy and commodities trading group. In the last few years he has served as Senior Consultant to CRA before rejoining the firm in May 2014.

Seabron was previously a Vice President of CRA and co-Head of the firm's Energy and Environment practice from 2006 to 2008. In this role he led a team of 15-20 professionals in the Enterprise and Asset Investment group, focusing on the quantitative analysis of energy markets to support investment decisions in generation and transmission projects. His clients included major investment banks, international energy companies, private equity firms, hedge and sovereign wealth funds and national and multilateral governmental and lending agencies.

Seabron also has significance experience in energy regulation and litigation matters, in North America, the European Union and other countries. Seabron has testified in international arbitration proceedings regarding energy sector disputes in Latin America, Canada and other countries. He has provided expert testimony before the Federal Energy Regulatory Commission, the Ontario Energy Board, and a state public utility commission.

Prior to joining CRA, he was a Director of Tabors Caramanis & Associates. Seabron was a co-founder of the Frontier Economics Group, an international economics consulting group. He previously founded the U.S. practice of London Economics and managed the American office until the company's sale in 1999. He was a consultant with London Economics, based in the U.K. from 1992 to 1996.

Seabron also serves as an adjunct lecturer at the A.B Freeman School of Business at Tulane University, where he has taught classes on energy trading, risk and portfolio management, and is a research associate of the Tulane Energy Institute. He has published a number of articles in peer-reviewed academic journals and conference proceedings on electricity and gas markets. He is the co-author of a recent book chapter on financial transmission rights markets.

Education

Boston University	M.A., Economics
M.I.T.	S.M., Technology and Policy
Georgia Tech	M.S., Applied Physics
Georgia Tech	B.S., Physics

Experience Highlights

Present	Vice President, Charles River Associates.

2008 - 2010 Gas and Power Analyst, Tudor Investment Corporation, Boston, MA/London UK. Senior power and gas analyst for a major US alternative investment firm. Analyzed gas and power markets as part of the energy and commodities trading group, as well as developed trading models for gas markets.

2004 - 2008 Vice President (and Co-Head, Energy and Environment Practice), Charles River Associates, Boston, MA. Led a wide range of major consulting projects in the energy sector, especially focusing on investment valuation, due diligence and market analysis, as well as regulatory matters. Co-Head of the E&E practice from 2006-2008, and managed Enterprise and Asset Investment team of ~20 professionals within the practice.

2003 - 2004 Director, Tabors Caramanis & Associates. Managed projects on economic analysis of energy markets, transmission regulation and other FERC issues..

1999 - 2003 Founder and President, Frontier Economics Inc. Co-founder of Frontier Economics Group, an international economics consulting firm with offices in Cambridge, MA, London, UK and Melbourne, Australia. Managed major client assignments regarding litigation and energy market analysis. Provided extensive expert testimony on market competition issues, transmission pricing and market design, and regulatory economics.

1996 -1999 President, London Economics Inc. Started US subsidiary of major European economics consulting firm. Advised major energy sector clients on market development, restructuring, retail competition, and mergers and acquisitions. Advised clients on significant M&A transactions.

1992 – 1996 Consultant, Senior Consultant and Managing Consultant, London Economics Ltd. (UK). Provided economic and strategic advice to major UK and international energy clients operating in the natural gas and electricity markets.

1990 – 1992 Research Assistant, Massachusetts Institute of Technology. Research on carbon reduction strategies for the US power industry sponsored by U.S. EPA and EPRI.

1988 –1990 Research engineer, Itek Optical Systems. Developed and implemented interferometry techniques for fabrication of the primary of the Keck 10-meter telescope, the world's largest optical telescope.

Fields of Expertise

- Energy Economics
- Energy Markets Design and Analysis
- Financial Analysis of Energy Sector Mergers and Acquisitions

Professional Affiliations

- International Association for Energy Economics
- Academic reviewer for *The Energy Journal*, *Energy Policy*, *Ecological Economics* and other journals.

Publications and Teaching

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Academic Workshops/Short Courses

S. Raikar and S. Adamson, “Financing Capital Intensive Energy Projects”, MIT Sloan School of Management, January 2014.

Classes Taught

Energy Portfolio Management II
Advanced Energy Trading and Finance

Both courses taught at the A.B. Freeman School of Business, Tulane University (Master’s level)

Trade Press Publication

Seabron Adamson, “Industry Structures and Market Mechanisms”, *Public Utilities Fortnightly*, April 1995.

Selected Expert Testimony and Reports (Last 10 Years)

Testimony in an American Arbitration Association proceeding regarding the terms of an energy sales contract in the Northeast United States.

Testimony before an Ontario arbitration tribunal with respect to a major contract dispute for a gas-fired cogeneration plant;

Written testimony before FERC on market power and market-based rate authorization of PHI Holdings and affiliate companies (2002 and 2005);

Testimony in UNCITRAL arbitration in Geneva regarding an energy sales agreement in Latin America.

Testimony in ICC arbitration regarding coal generation technology licensing in China (settled before final hearing).

Testimony of Seabron C. Adamson on behalf of Calpine Corporation before the Federal Energy Regulatory Commission in Southern Power, Docket ER03-713, November 2003.

Prepared Testimony of Richard D. Tabors and Seabron C. Adamson on behalf of the New England Power Pool before the Federal Energy Regulatory Commission, Docket ER13-895-000, February 2013.

Affidavit of Seabron C. Adamson in support of the NRG Companies with respect to gas-electric issues in the CAISO in Dockets ER14-1142, ER14-1140 and ER14-1128.

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