

**Témoignage de  
MM. James M. Coyne et Robert C. Yardley  
de Concentric Energy Advisors sur les  
caractéristiques des MRI du Transporteur et du  
Distributeur d'électricité**



# PERFORMANCE BASED REGULATION RECOMMENDATIONS

PREPARED FOR:  
HYDRO-QUÉBEC DISTRIBUTION AND HYDRO-QUÉBEC TRANSÉNERGIE

**R-3897-2014**

BEFORE THE: RÉGIE DE L'ÉNERGIE

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## SECTION 1: INTRODUCTION

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Concentric Energy Advisors (“Concentric”) has prepared this evidence to address the requirements of the Régie de l’énergie (“Régie”) for Phase 1 of a three-phase proceeding to establish a mécanisme de réglementation incitative (“MRI”) to ensure the realization of efficiency gains for Hydro-Québec Distribution (“HQD”) and Hydro-Québec TransÉnergie (“HQT”).

Phase 1 addresses three issues:

- 1) Interpretation of Article 48.1 of the Act respecting the Régie de l’énergie (the “Act”), as decided by the Régie on October 7;
- 2) Characteristics and operational objectives of the MRI; and
- 3) Treatment of non-integrated or “autonomous” networks within the MRI framework (inclusion or non-inclusion).

This evidence addresses items (2) and (3). With respect to item (2), the Régie further clarified that it seeks evidence on the type of MRI that is applicable to HQD and HQT, the specific characteristics or elements of each MRI, identification of performance indicators, and the sharing of cost reductions between customers and the shareholder.<sup>1</sup>

The objective of Phase 1 is to identify the basic MRI methodology that is appropriate for HQD and HQT, to allow the development of more detailed parameters in Phases 2 and 3, without attempting to define the precise MRI within a single regulatory proceeding. Many jurisdictions pursue Performance-Based Regulation (“PBR”)<sup>2</sup> in stages in order to proceed in a measured way and reflect the experiences gained in successive programs.<sup>3</sup>

A fundamental issue to be addressed in Phase 1 is whether the same or different type of MRI is appropriate for HQD and HQT. There are alternative types of MRIs, and this initial phase is necessary before focusing on the specific parameters and other implementation details in subsequent phases. For example, the Régie will decide at the end of Phase 1 whether it is necessary to perform a productivity study (Phase 2) to inform the determination of an “X-factor” as one of the specific MRI parameters to be determined in Phase 3. Phase 3 will establish the precise MRI for HQD and HQT, including the definition of each of the many elements of an MRI, service quality and performance metrics and financial impacts, and any changes to the Earnings Sharing Mechanism (“ESM” or “MTÉR”) that may be appropriate.

Concentric’s evidence is presented in 8 sections, following this Introduction. Section 2 provides background and context for Phase 1, building upon the work that has been

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<sup>1</sup> D-2015-103, R-3897-2014, paragraph 23.

<sup>2</sup> PBR and MRI are used interchangeably.

<sup>3</sup> For example, Ontario is implementing its “Fourth Generation Incentive Regulation” for its electric distributors.



performed by Elenchus Research Associates, Inc. on behalf of the Régie (the “Elenchus Report”).<sup>4</sup> Section 2 also presents criteria for selecting the type of MRI for HQD and HQT and the regulatory requirements necessary to implement the MRI in an efficient manner. Section 3 applies these criteria to the particular circumstances for HQD to recommend an MRI approach for HQD, and addresses the treatment of HQD’s autonomous networks. Section 4 presents the recommendations for an MRI approach for HQT. Section 5 focuses on the question of whether a productivity study is required to establish parameters for the HQD and HQT MRI. Section 6 addresses cost sharing through an ESM, service quality metrics, and the potential relationship between these two MRI elements. Section 7 discusses filing requirements under the proposed MRI for each division. Finally, Concentric summarizes its conclusions and recommendations in Section 8.

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<sup>4</sup> “Performance Based Regulation: A Review of Design Options as Background for the Review of PBR for Hydro-Québec Distribution and Transmission Divisions,” January, 2015.



## SECTION 2: DETERMINING THE APPROPRIATE MRI FOR HQD AND HQT

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The MRI for HQD and HQT must satisfy the requirements of Article 48.1 as discussed in this section. Article 48.1 identifies three objectives: a service quality objective, a cost reduction objective, and a regulatory process (i.e., streamlining) objective. These objectives are interrelated and achieving them requires an understanding of the current regulatory regime. This section provides a brief overview of the current form of regulation for HQD and HQT, as well as an overview of PBR and its various forms and the specific issues pertaining to HQD and HQT.

### A. GOALS OF THE MRI

The goals of the MRI are specified by Article 48.1 of the Act:

48.1 The Régie shall establish a PBR to ensure efficiency gains by the electric power distributor and the electric power carrier.

The regulation must pursue the following objectives:

- 1) continuous improvement of performance and service quality;
- 2) cost reduction that is beneficial to both consumers and the distributor or carrier; and
- 3) streamlining of the process by which the Régie fixes or modifies the rates the electric power carrier and electric power distributor charge consumers or a class of consumers.

The Régie issued a decision on October 7, 2015, indicating that these three objectives are “exhaustive” but that the Régie will interpret these objectives broadly and liberally.<sup>5</sup>

### B. CURRENT FORM OF REGULATION FOR HQD AND HQT

HQD and HQT currently operate under cost-of-service regulation with rates established for a one-year period based on a forward-looking test year. The ratemaking methodology includes a parametric formula that applies to operating expenses (“OPEX”), variance accounts that apply to expenses that are beyond the control of HQD and HQT, and deferral accounts that accommodate differences between the time an expense is incurred and its inclusion in rates. HQD and HQT provide an annual forecast of proposed capital expenditures (“CAPEX”) that is reviewed and authorized by the Régie, and specific filings for larger projects. CAPEX are included in rate base after property, plant and equipment (“PP&E”) are put in service. The Régie approved a MTÉR in D-2014-033 that was suspended until the province of Québec’s budget equilibrium is achieved.

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<sup>5</sup> D-2015-169, R-3897-2014.





HQD has an obligation to serve all customers that request electricity service and all customers of the same category across the province pay the same rate for electricity, including customers served by autonomous networks.

HQD and HQT also present the results of service quality indicators (“SQI”) that were established through a stakeholder process and approved by the Régie<sup>6</sup> in their respective rate cases and annual reports submitted to the Régie. This “scorecard” approach tracks performance through a number of indicators.

In addition, HQD and HQT file the results of their benchmarking activities in their annual rate case.

As the Régie considers a transition to an MRI, it is important to note that the current regime already incorporates elements that promote efficiency gains. In fact, the existing parametric formula explicitly applies a productivity factor to OPEX:

$$\text{OPEX}_t = [(\text{OPEX}_{t-1} - \text{Specifically Tracked Items}_{t-1}) + \text{Inflation} - \text{Efficiency} + \text{Growth}] + (\text{Specifically Tracked Items})_t$$

The productivity or “efficiency” factor represents a targeted gain in efficiencies that is provided to customers at the outset of the plan and reflected in the rates that they will pay whether or not the utility realizes these efficiencies. The inflation factor is intended to capture increases in wages and the costs of other elements of OPEX. The growth factor provides for an increase of required OPEX to cover the incremental costs either of increased customer accounts in the case of HQD or network upgrades to accommodate growth or to maintain quality of service for HQT. Finally, the “specifically tracked items” reflect anticipated increases (or decreases) for specific line item expenses that are not dependably addressed through the formula because they are largely beyond the control of HQD and HQT or elements for which specific budget approval are needed.

HQD and HQT customers have benefitted from significant cost reductions over the years under this regime. The cumulative OPEX efficiency gains integrated in rates by HQT between 2008 and 2014 amount to \$126.7M.<sup>7</sup> In addition, CAPEX efficiency gains that reduce the amortized cost of PP&E put in service have also been remitted to customers through rates. HQD has achieved cumulative efficiency gains of \$398M<sup>8</sup> since 2008 through various efforts, including the smart meters project and a 23% reduction in its workforce from 2008 levels.<sup>9</sup> New MRI programs for HQD and HQT must recognize that future gains will be progressively more challenging as costs are rebased to reflect these prior gains and as opportunities for efficiency gains become less easily achievable.

<sup>6</sup> D-2008-019 (HQT); D-2006-34 (HQD).

<sup>7</sup> R-3903-2014 HQT-03-01; D-2015-017.

<sup>8</sup> R-3933-2014 HQD-01-01.

<sup>9</sup> R-3933-2014 HQD-01-01.



### C. PBR

PBR is an alternative to traditional cost-of-service regulation and is primarily intended to provide the utility with an incentive to operate more efficiently, without diminishing the quality of service.<sup>10</sup> It achieves this objective by weakening the link between costs and rates for the term of the MRI plan and by measuring service quality. PBR provides an opportunity for the utility to improve its ROE until rates are rebased at the end of the plan. Prices during the first year of the MRI are typically based on cost-of-service principles and adjusted in each subsequent year based on the specific MRI methodology. These methodologies typically distinguish between factors that are reasonably within the control of the utility and exogenous factors that are beyond the utility's control. MRIs also include various features that allocate the efficiency gains between shareholders and customers, either upfront in the rates, or at the end of the MRI through rebasing or through an ESM.

The link between service quality and PBR is thought to be necessary in order to preclude a utility from sacrificing service quality in order to achieve and retain a portion of earnings attributable to efficiency gains. This linkage can work in the opposite direction as well under an MRI. For example, efforts to either improve or simply maintain service quality can result in an increase in costs that will eventually be reflected in rates.

As noted in the Elenchus Report, there are several different types of MRIs. These include traditional "I-X" formulas, and "building block" approaches that are based on a forward-looking business plan. Each type is comprised of several defining elements (e.g., the term of the plan, the formula for adjusting prices, treatment of factors beyond the utility's control, an ESM, etc.) and these elements require a determination of parameters that reflect utility-specific facts and circumstances (e.g., the establishment of "I" and "X" if an I-X approach is adopted). The term of an MRI is a key design element as a longer period provides the utility with a greater incentive and opportunity to make investments or modify business processes to produce efficiency gains. Longer terms also create greater risk for the utility and consumers that rates will deviate substantially from costs and potentially impact the financial risk of the company with a resulting impact on ROE. Even though PBR typically breaks the direct link between costs and rates, cost of service remains a periodic reasonableness check for rebasing subsequent programs.

Phase 3 of this proceeding will focus on the specific design elements and parameters. One of the more challenging decisions to be made is an assessment of the opportunity for future efficiency gains, the costs to achieve these gains, any potential impact on service quality, and the ability of the utilities to earn their allowed returns. As discussed in Section 5, there are alternative ways to estimate future efficiency opportunities, each with respective strengths and weaknesses.

The fact that HQD and HQT are Crown Corporations warrants special consideration as these organizations are typically accountable to a broader mandate in addition to their core utility

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<sup>10</sup> The first objective of Article 48.1 calls for "continuous improvement of performance and service quality," suggesting an even higher standard in Québec.



responsibilities than their investor-owned counterparts. Additionally, HQD and HQT are regulated as low-risk utilities, with the lowest equity ratios and allowed ROEs in Canada. Their shareholder, the Government of Québec, relies on the income from HQD and HQT to support the government budget. Any changes to the form of regulation and the choices of the parameters must be determined in light of this reality.

Different types of MRI have been applied in the utility industry, and many were cited in the Elenchus Report. Two of the more common are: the “I-X” approach that was common when MRIs were first introduced in the 1990s; and the building block approach that has been adopted in the United Kingdom, Australia, and more recently Ontario in the form of a “custom IR” plan.<sup>11</sup> The evolution of these programs reflects learning in each jurisdiction and recognition that broader policy objectives may be pursued through rate regulation.

There are variations of each type of MRI that reflect differences between the treatment of CAPEX and OPEX. Achievement of policy and other objectives may also be imposed, especially with more mature programs. The elements of different methodologies can also be combined to establish a hybrid model. The question of which of the various types of MRIs are appropriate for HQD and HQT requires an assessment of the particular facts and circumstances of each division. This evidence includes an analysis of the major revenue, cost, and service drivers of each division to determine the degree to which they are within the control of the division, and the factors that might cause them to be higher or lower in the future. For example, HQT’s CAPEX are driven to a large degree by (1) a need to respond to requests from its customers either to connect to the network or for new transmission service, and (2) a need to replace aging infrastructure in a manner that optimizes maintenance expenses and infrastructure replacement.

Indeed, as discussed in Sections 3 and 4, HQD and HQT are significantly different from each other. HQT has a limited number of customers; HQD has nearly 4 million customers with varying consumption profiles. HQT’s business is significantly more capital-intensive than HQD’s, and its capital budget is comprised of larger multi-year projects. HQD produces, transmits and distributes electricity to its autonomous networks. It is necessary to identify the type of MRI for HQD and HQT that reflects the particularities of each division. The following sections outline these differences in greater detail and conclude with recommended frameworks reflecting both these differences and the goals of Article 48.1.

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<sup>11</sup> A “Custom IR” is one of three incentive regulation models accepted by the Ontario Energy Board (“OEB”) in an October 18, 2012 decision, “Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach”.



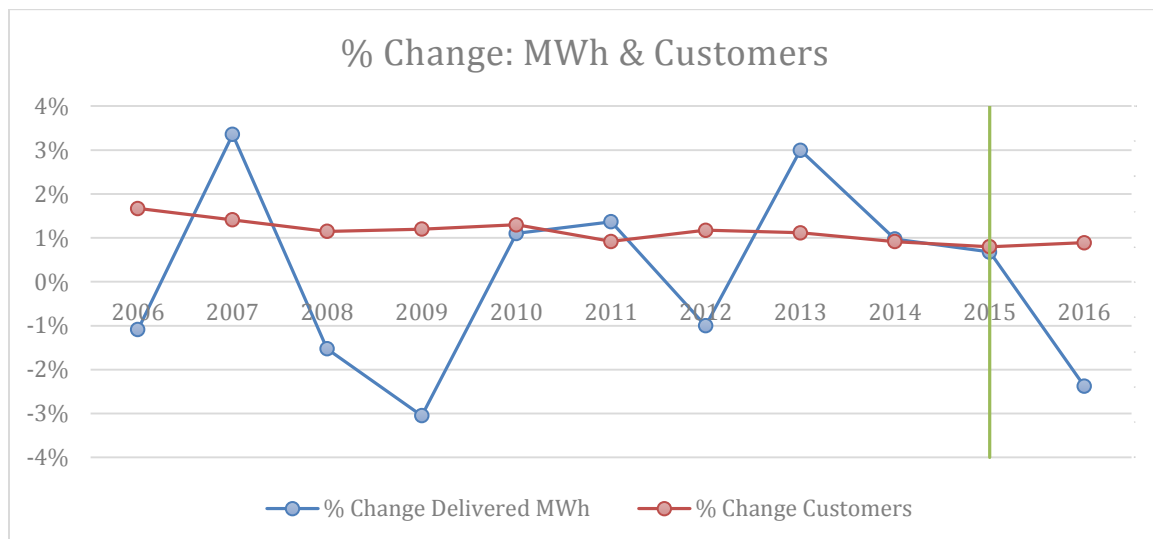
## SECTION 3: MRI FOR HQD

The appropriate MRI methodology for HQD is determined by applying the requirements of Article 48.1 to the particular circumstances of HQD. These circumstances include the drivers of HQD’s revenues and costs, including distinctions between factors that are largely within the control of HQD and those that are not for both CAPEX that will impact rate base, amortization, and return as well as operating and other expenses. These circumstances are reviewed in this section, along with a presentation of Concentric’s recommendation. The recommendation addresses the term of the plan, items that can be addressed through a parametric efficiency formula, the treatment of all other items including the treatment of autonomous networks for purposes of the MRI.

### A. HQD’S SPECIFIC CHARACTERISTICS AND MRI

HQD’s revenues are influenced by two primary factors: MWh sales and customer growth. The number of customers has been growing at a fairly steady rate of approximately 1% per year for the last eight years. Electricity sales are far more volatile than customer growth, in part because they vary with weather conditions. These data are illustrated below for HQD over the 2006-2014 period and projected through 2016. This suggests that any MRI program tied to an output measure (e.g., sales or customer growth) should be tied to customer growth, with annual adjustments to accommodate for weather and any other factors that contribute to sales volatility.

Figure 1: HQD Percent Change: MWh and Customers



Data Source<sup>12</sup>

<sup>12</sup> Delivered MWh:  
2005-2009: Annual Report 2010 HQD-10-02 Table 4



As shown below for 2016, electricity and transmission purchases are the two largest components of HQD's revenue requirements and are not controllable by management. Electricity purchases are recovered through the pass-through mechanism and do not influence earnings.<sup>13</sup> Similarly, HQD maintains a deferral account to track any differences between projected and actual transmission costs.<sup>14</sup> These expenses, together with fuel costs that are also not controllable by management, comprise more than three-quarters of the HQD's revenue requirement at 77.1%. This limits the potential coverage of an MRI to the remaining cost categories. HQD has varying degrees of control over the remaining 22.9% of expenses that are categorized as "Total Distribution and Client Service costs".

Figure 2: HQD 2016 Revenue Requirement

Revenue Requirement, 2016	\$Millions, CAD	%
Electricity Purchases	\$6,356.3	53.1%
Transmission costs	\$2,783.6	23.3%
Operating Expenses	\$1,260.5	10.5%
Return on Rate Base	\$751.7	6.3%
Amortization	\$616.0	5.1%
Fuel costs	\$88.1	0.7%
Taxes	\$84.0	0.7%
Corporate Expenses	\$30.1	0.3%
Total Revenue Requirement	\$11,970.3	

Source: R-3933-2015, HQD-05-01.

HQD's CAPEX are driven primarily by growth in number of customer accounts and asset maintenance (accounting for 90% of projected capital over the 2015-2018 period). Some of these capital investments are smaller, recurring and more predictable, while others are larger individual projects (for instance, new generation meters). CAPEX fluctuate from year to year depending on economic conditions and customer demand. The drop in 2016 spending reflects the completion of the new generation meters project which began in 2011.

2010-2014: Annual Report 2014 HQD-10-02 Table 5

2015-2016: Company provided data.

Customers:

2005-2006 from HQ 2006 Annual Report; 2007-2010 from HQ 2011 Annual Report

2011-2014 from HQ 2014 Annual Report; 2015-2016 Company provided data.

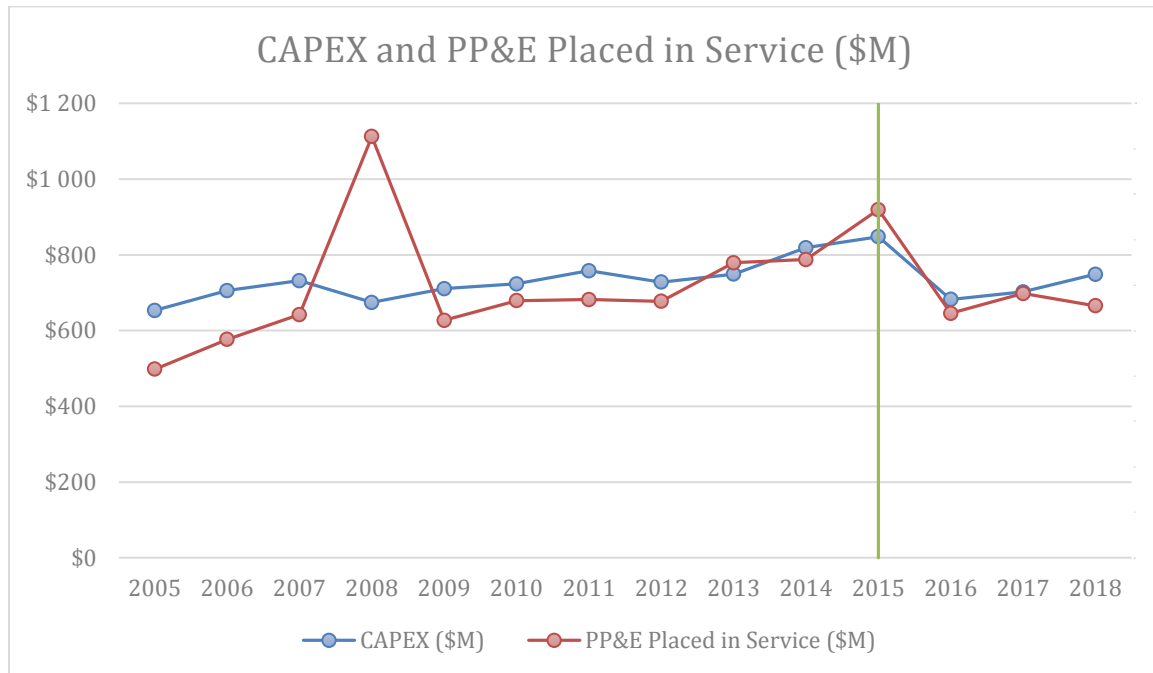
<sup>13</sup> D-2005-34.

<sup>14</sup> D-2008-24.



In the aggregate, HQD's capital spending followed a relatively smooth path over the past decade and projected through 2018, as seen below.

Figure 3: HQD CAPEX and PP&E Placed in Service (2005-2018)



Data Source<sup>15</sup>

Under existing provisions of the *Act* regarding the Régie's regulation of HQD and HQT, the Régie must approve capital additions to rate base.<sup>16</sup> Capital investment is recovered through amortization and the return on rate base. Given the varying timing of initial investment, asset lives and depreciation rates of HQD's assets, the amortization<sup>17</sup> trend is somewhat less smooth, as seen below. Some of the fluctuation is due to special circumstances, e.g., the change in amortization methodology in 2010 caused an increase in the annual amortization expense while the movement to U.S. GAAP in 2015, if authorized by the Régie, would result in a decrease. The following figure shows the amortization expense excluding the amortization related to weather normalization and energy efficiency programs.

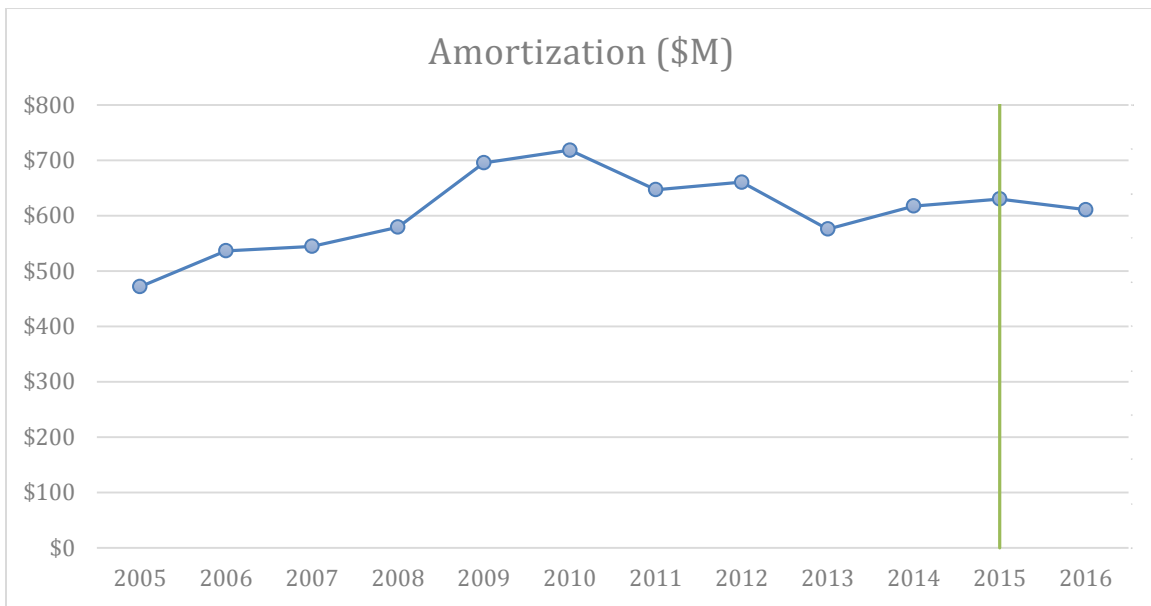
<sup>15</sup> CAPEX: 2005-2009 Company provided data; 2010-2018 HQD-09-05 R-3933-2015;  
PP&E: Company provided data.

<sup>16</sup> RLRQ, c. R-6.01, Articles 49 and 73.

<sup>17</sup> Excluding the amortization related to weather normalization and energy efficiency programs.



Figure 4: HQD Amortization 2005-2016



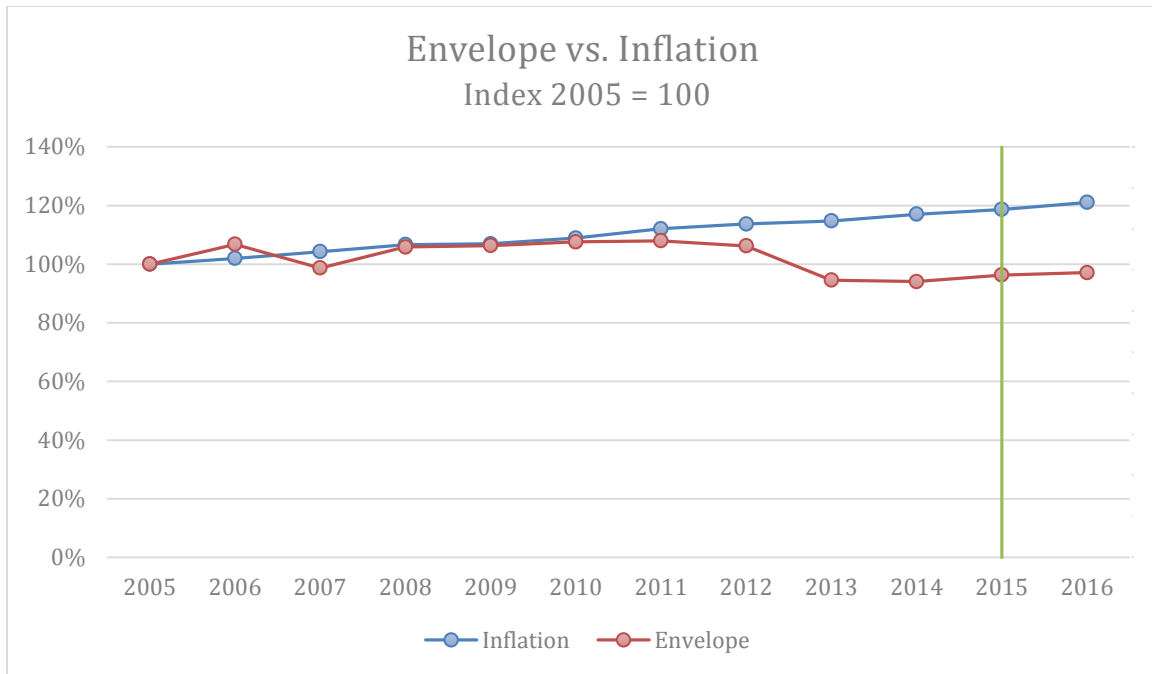
Data Source<sup>18</sup>

HQD's OPEX represent 10.5% of revenue requirement for 2016. The majority of OPEX or "Envelope Expenses" has been subject to the parametric formula and considered to be meaningfully within management's general control. Operating Expenses excluded from the Envelope are called "Specifically Tracked Items", and represent around 22% of Operating Expenses. As shown below, HQD has managed these expenses (those covered by the parametric formula) to increase at less than the rate of inflation, especially over the past five years.

<sup>18</sup> Company provided data.

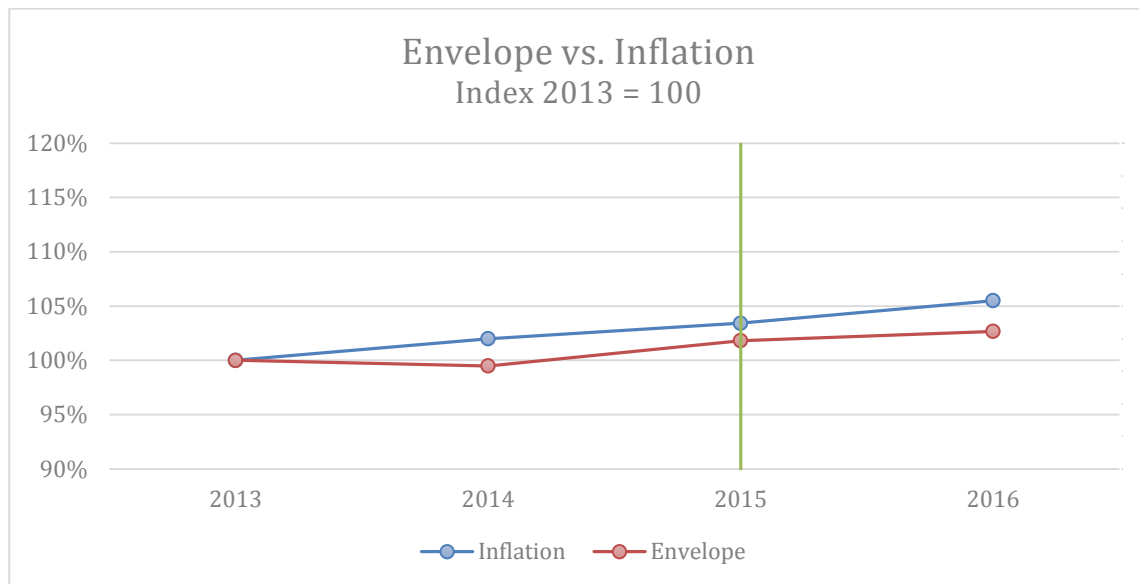


Figure 5: HQD Envelope Expenses vs. Inflation (Index 2005 = 100)



Data Source<sup>19</sup>

Figure 6: HQD Envelope Expenses vs. Inflation (Index 2013 = 100)



Data Source<sup>20</sup>

<sup>19</sup> Envelope Expenses: Company provided data;  
Inflation: StatCan Canada CPI (R-3934-2015-HQT-09-01).

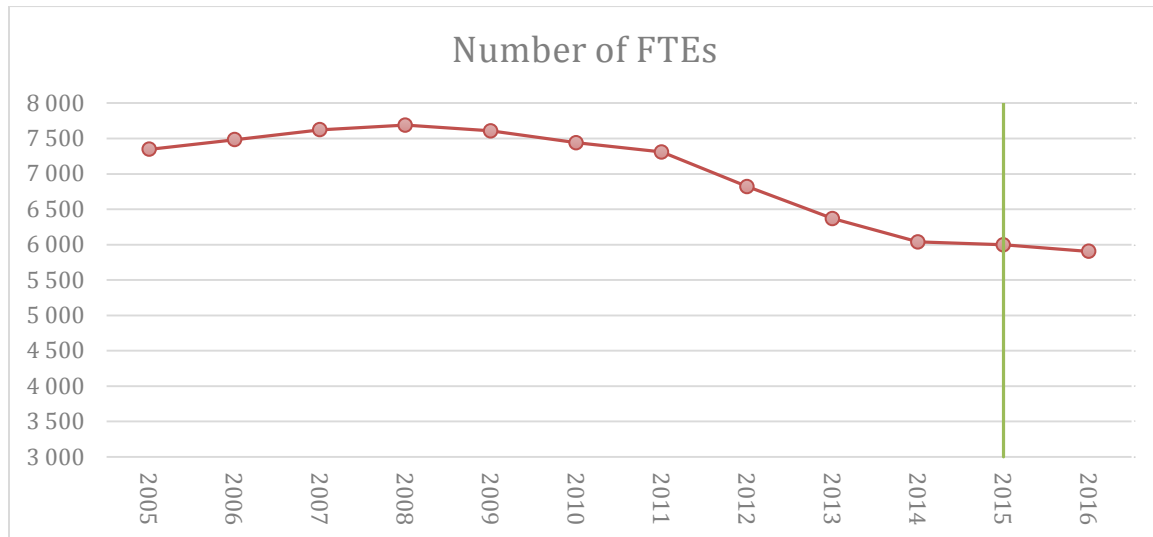
<sup>20</sup> Envelope Expenses: Company provided data;  
Inflation: StatCan Canada CPI (R-3934-2015-HQT-09-01).





This has been accomplished with a steady reduction in the company's workforce.

Figure 7: HQD Full Time Equivalent Employees



Data Source<sup>21</sup>

HQD has managed a 23% reduction in its workforce from 2008 levels.<sup>22</sup> This substantial decline was accomplished through the implementation of new technologies (the smart meters project) combined with the optimization of HQD's internal processes, but should not be assumed to be sustainable. This is reflected in current rate case (R-3933-2015) as HQD has proposed that it will not be able to achieve efficiency gains in the coming year. The ability to achieve efficiency gains in future years will also be impacted by this recent experience. Nonetheless, HQD's ability to manage costs under its control within the general level of inflation suggests an expansion of the existing parametric formula under an I-X framework may be a workable solution. These trends and characteristics of HQD assist in framing Concentric's recommended approach to an MRI.

## B. RECOMMENDED APPROACH FOR HQD

As described above, HQD serves millions of customers with fluctuating loads, and the majority of its expenses are beyond management's direct control. This suggests an MRI approach that both recognizes these distinctions and provides the efficiency incentives envisioned in the goals of Article 48.1. Based on the goals of Article 48.1 and HQD's unique characteristics, Concentric believes that an expansion of the existing parametric formula is a logical evolution of the company's regulatory framework. This I-X approach would

<sup>21</sup> Company provided data.

<sup>22</sup> R-3933-2014 HQD-01-01.



establish a target level of expenses for activities within the control of HQD. The formula would be comprehensive and apply to both operating and capital-related costs, taking into account that electricity, transmission and fuel costs would remain out of the formula. HQD would submit a multi-year filing for the term of the MRI plan.

Under the proposed plan, the “I” and “X” factors would have to be set according to the process adopted by the Régie. An expanded definition of operating costs under management’s control would be included under the formula, and include amortization, taxes and corporate expenses, even though not directly controllable by HQD. Consistent with existing practice and provisions of the *Act* regarding rate base additions, the Régie would continue to review and authorize capital investments less than, and greater than, \$10M as under the existing regulatory framework, and these investments would be placed in rate base when the assets are put in service. On balance, the proposed framework expands on the incentives under the existing formula, retains elements of the parametric formula familiar to both the Régie and HQD, and also responds to the third objective of Article 48.1, a streamlining of the process by which the Régie fixes rates.



The broad parameters of the proposed framework are outlined below.

**Figure 8: HQD Proposed Plan Parameters**

<b>Plan Feature</b>	<b>Proposed Parameters*</b>
<b>Term</b>	3 forecast rate years
<b>Coverage</b>	OPEX (currently included in the present parametric formula) Corporate expenses Taxes Amortization expenses (excluding weather normalization and Energy efficiency programs)
<b>Capital Plan</b>	Capital projects approved as they are today: greater than \$10M approved on a project-by-project basis; less than \$10M as part of a yearly investment budget.
<b>Exclusions</b>	Specifically Tracked Items (OPEX beyond the control of the Distributor or other specific budgets) Energy efficiency programs (CAPEX) Return on rate base
<b>Revenue Requirement Determination</b>	Indexed-based revenue cap on covered expenses adjusted for customer growth plus exclusions, and adjustments for Y and Z factors
<b>Inflation factor</b>	Weighted combination of the Distributor's labor inflation and Canada's general inflation, similar to current inflation measure
<b>Productivity (X factor)</b>	Estimated with appropriate consideration of HQD's operating circumstances (see the following section)
<b>Variance/Deferral Accounts</b>	Y Factors to allow for annual adjustments in revenue requirements based on those currently recognized by the Régie (e.g., electricity purchases (pass-on), transmission costs, pension costs, weather normalization, fuel cost, etc.)
<b>Earnings Sharing</b>	To be aligned with the overall MRI ratemaking framework and linked to SQI results
<b>Off-Ramp</b>	Yes, expressed as +/-range from allowed ROE
<b>Service Quality Thresholds</b>	Yes, limited number of performance indicators to be linked to earnings sharing
<b>Autonomous Networks</b>	Covered under the I-X formula (as they are today under the parametric formula)
<b>Unanticipated Events</b>	Z Factors to allow for unanticipated/exogenous events outside of management's control

*\* Some other features, such as a carry-over mechanism, could be evaluated and incorporated in a subsequent term of HQD MRI.*



## C. TREATMENT OF AUTONOMOUS NETWORKS

Phase 1 must address the treatment of non-integrated or “autonomous” networks within the MRI framework for HQD. Service to these communities has unique historical, cultural, economic, and environmental “public interest” characteristics that merit attention. These communities are forced to rely on inefficient, expensive, and polluting diesel generation. Thus, service to these remote communities is costly, and is heavily subsidized through the ratemaking process as all HQD customers of the same category pay the same rates. Reducing the cost of service, without adversely affecting the reliability of service or public safety is a worthwhile goal, and improvements to the existing regulatory model (such as an MRI) merit consideration.

There are two possible MRI treatments for autonomous networks:

- 1) **Targeted MRI:** exclude the autonomous networks from the MRI for all other HQD activities and services (requiring separate tracking of expenses, investments, and revenues), and develop a targeted MRI that is focused on the unique circumstances of these networks, including an incentive to reduce pollutant emissions; and
- 2) **Include as an integral component of the HQD MRI:** include all costs and revenues associated with HQD’s services to the twenty-two communities served by autonomous networks as part of the regulatory framework that applies to all other customers will be treated within the new HQD MRI, and thus, subject to the same methodology including the productivity factor.

Concentric recommends that the Régie adopt option 2. It is certainly worthwhile providing HQD with a targeted incentive to reduce the cost of serving these customers. Developing a targeted MRI would potentially accommodate environmental goals within the overall MRI design, but would involve an incremental design and administrative accounting burdens that do not correspond to the relatively minor portion of annual revenue requirements (approximately 1.9%<sup>23</sup>) derived from these customers. Therefore, an appropriate initial step is to pursue this objective within the overall HQD MRI mechanism. HQD will have an incentive to pursue efficiencies to serve these customers, as long as the overall MRI framework, which includes an “X” factor, provides a meaningful incentive to achieve efficiencies.

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<sup>23</sup> R-3933-2015-HQD-01-04.



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## SECTION 4: MRI FOR HQT

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Similar to HQD, the appropriate MRI methodology for HQT is determined by applying the requirements of Article 48.1 to the particular circumstances of HQT. These circumstances include the drivers of HQT's revenues and costs, including distinctions between factors that are largely within the control of HQT and those that are not for both CAPEX that will impact rate base, amortization, and return as well as operating and other expenses. These circumstances, with particular focus on HQT's CAPEX that comprise the majority of its revenue requirements, are reviewed in this section, along with a presentation of Concentric's recommendation and the reasons why Concentric is proposing a different approach. The recommendation addresses the term of the plan, the manner in which future efficiency gains are built in, and the treatment of all other items.

### A. HQT'S SPECIFIC CHARACTERISTICS AND MRI

To accomplish its mission, HQT's business decision process is guided by its fundamental priorities which are to insure public and employee safety, to insure reliability of the network, to provide maximum availability of the network and to achieve an optimal cost equilibrium between OPEX and CAPEX.

HQT's MRI must take into account these priorities with a long-term view based on the capital intensiveness of its business and the life cycle of its PP&E that make up its network.

As a transmission company, HQT has an operating and cost profile that is much different from distribution or integrated utilities due to the capital-intensive nature of transmission. Just over three-quarters of HQT's total annual revenue requirement is directly related to the return on and of capital. The table below illustrates this point.



Figure 9: HQT 2016 Revenue Requirement

Revenue Requirement, 2016	\$Millions, CAD	%
Return on Rate Base	\$1,348.8	42.8%
Amortization	\$1,035.0	32.9%
Operating Expenses	\$742.9	23.6%
Taxes	\$100.4	3.2%
Corporate Expenses	\$32.3	1.0%
Purchase of Transport Service	\$19.1	0.6%
Electricity Purchased	\$15.1	0.5%
Fuel Purchased	N/A	0.0%
Total Revenue Requirement	\$3,149.7	

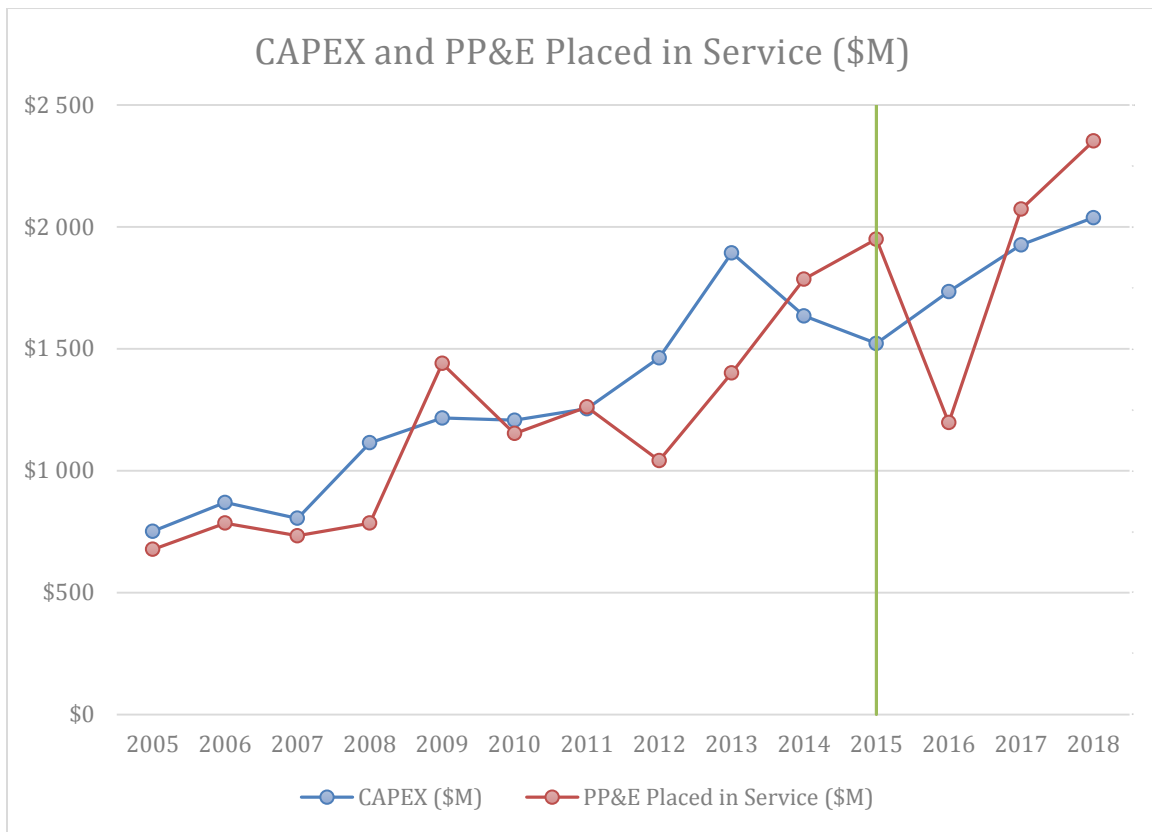
Source: R-3934-2015, HQT-05-01

Thus, the HQT depreciation and amortization expense (the recovery of capital invested), its return on rate base (the return on capital invested) and applicable taxes comprise 78.9% of the company's revenue requirements. This represents a challenge for an MRI program because capital is typically the most difficult expense to accommodate under these programs. CAPEX are often "lumpy", and influenced by large projects over many years and are often dictated by system requirements beyond management's direct control, such as the integration of new generation. These challenges are documented in the Elenchus report, and are present for distribution utilities as well, but even more so for transmission companies, such as HQT, where capital represents the vast majority of its revenue requirements. Concentric is not aware of any North American jurisdiction that has adopted an MRI program for a transmission specific entity. Where capital expenditures are large and uneven, a typical I-X program would be a poor fit. This suggests that the Régie should give very careful consideration to HQT's specific characteristics in choosing an MRI.

HQT's CAPEX are driven by a combination of: replacement of its aging infrastructure, growth in customer demand or integration of new generation resources, improvements in service quality, or external requirements (e.g., NERC or governmental regulations). Total CAPEX and related PP&E put in use vary considerably from year-to-year, depending on the mix of projects.



Figure 10: HQT CAPEX and PP&E Placed in Service (2005-2018)



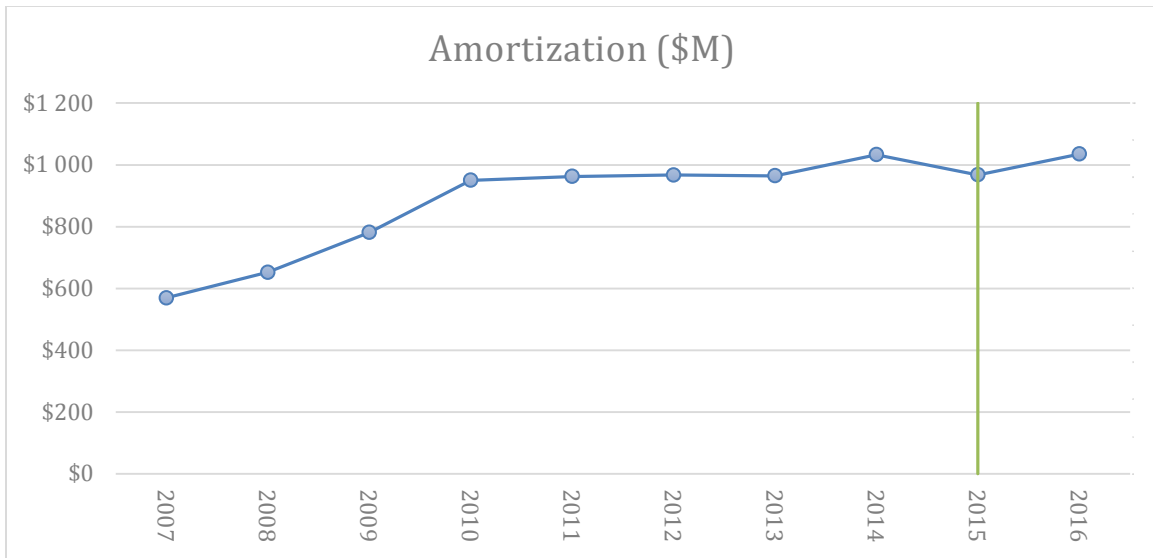
Data Source<sup>24</sup>

The impacts of HQT's capital investments flow through its amortization and return on rate base expenses. As seen below, HQT's amortization expense has grown significantly over the past decade, and is expected to continue. This is largely driven by replacement of its aging infrastructure and growth in customer demand or new generation resources connection to its system. As with HQD, the change in amortization methodology in 2010 resulted in an increase in amortization expense and the change to U.S. GAAP in 2015, if authorized by the Régie, would result in a decrease.

<sup>24</sup> CAPEX: 2005-2014: Company provided data;  
2015-2019: R-3934-2015 HQT-09-01;  
PP&E: Company provided data.



Figure 11: HQT Amortization 2007-2016



Data Source<sup>25</sup>

OPEX have generally tracked below the rate of inflation over the past decade, as seen in the first figure below, indexed to 2007. But, this trend reversed in 2013, suggesting these efficiency gains may be more difficult to find in future years, as illustrated in the second figure, indexed to 2012. HQT has recently introduced a new Asset Management Model designed to more fully utilize transmission assets for their useful life.<sup>26</sup> This new model is still being implemented and is creating upward pressure on operating expenses, as HQT spends more on maintenance in an effort to control the risk of equipment failure.

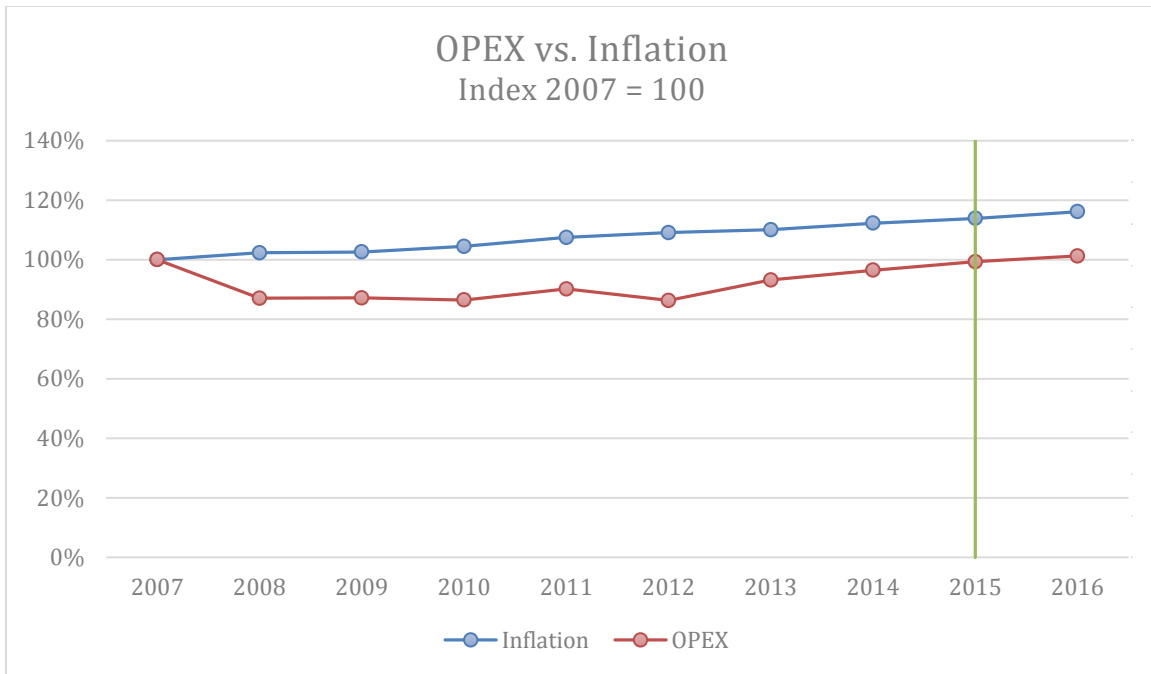
<sup>25</sup> Company provided data.

<sup>26</sup> R-3823-2012, R-3903-2014; R-3934-2015, HQT-03-01.



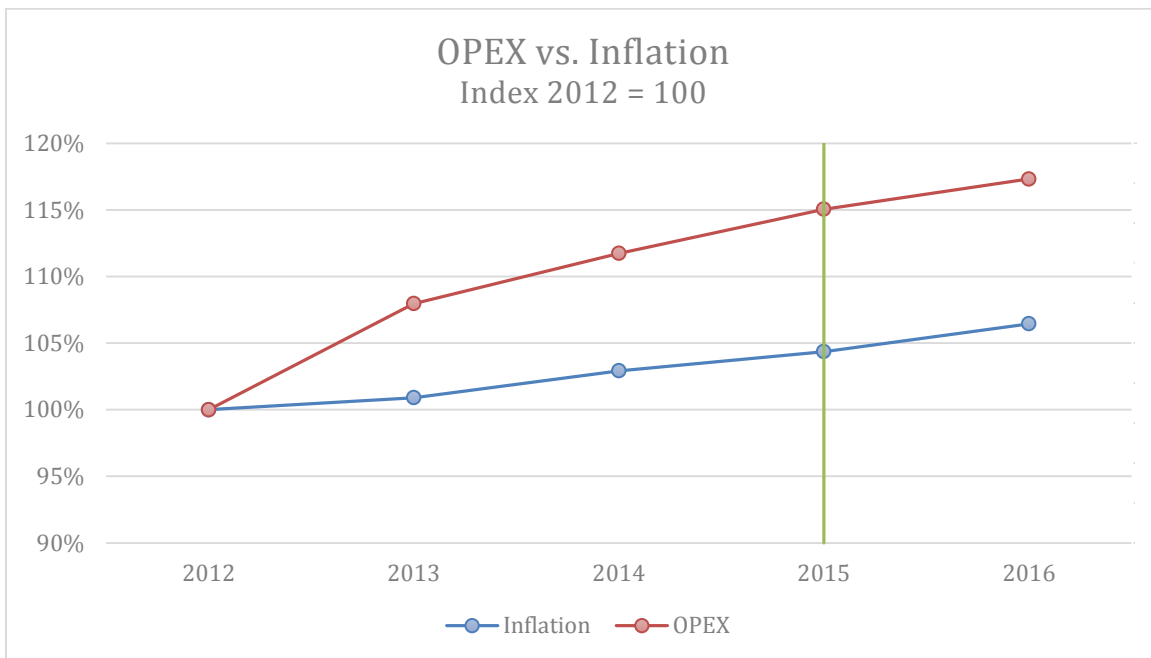


Figure 12: HQT OPEX vs. Inflation (Index 2007 = 100)



Data Source<sup>27</sup>

Figure 13: HQT OPEX vs. Inflation (Index 2012 = 100)



Data Source<sup>28</sup>

<sup>27</sup> OPEX R-3934-2015-HQT-06-02;  
Inflation: StatCan Canada CPI (R-3934-2015-HQT-09-01).



The combination of variability and magnitude of CAPEX, and recent trends in OPEX, suggest the need for an MRI approach that can both accommodate these needs while providing the efficiency incentives envisioned in the goals of Article 48.1.

## **B. RECOMMENDED APPROACH FOR HQT**

Based on the goals of Article 48.1 and HQT’s unique characteristics, Concentric recommends a “building block” MRI approach, which is a comprehensive “bottom-up” approach that sets a future revenue path based on a detailed forecast and review of capital and operating expenses. This approach recognizes the non-parametric nature of HQT’s CAPEX and OPEX that does not readily accommodate an I-X program as well as the obligation for HQT to maintain the long-term reliability of the system. The efficiency incentives sought under Article 48.1 could still be achieved by developing a multi-year rate plan that determines a future revenue cap.<sup>29</sup>

The building block approach, whereby HQT would prepare a multi-year filing for the term of the MRI plan, is comprehensive. This approach provides the Régie and stakeholders the opportunity to examine the revenue requirements and rate path, and the Régie would continue to review and approve CAPEX, the major driver of revenue requirements, as under the existing regulatory framework. Because building block is a “bottom-up” approach based on HQT’s own forecasts of operating and maintenance-related expenses, capital costs and revenue requirements, it is less of a blunt instrument than the “top-down” I-X approach, which sets a cap only in relation to inflation and a productivity offset. HQT would be required to continue showing evidence of productivity measures employed in its building block forecast of revenue requirements and to demonstrate that its forecasts are reasonable.

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<sup>28</sup> OPEX R-3934-2015-HQT-06-02;  
Inflation: StatCan Canada CPI (R-3934-2015-HQT-09-01).

<sup>29</sup> Building block approaches are typically used to create a revenue cap; whereas, I-X Formulas are applied with both price caps and revenue caps.



The broad parameters of the proposed framework are outlined below:

**Figure 14: HQT Proposed Plan Parameters**

<b>Plan Feature</b>	<b>Proposed Parameters*</b>
<b>Term</b>	3 forecast rate years
<b>Coverage</b>	Comprehensive including full revenue requirements, with exceptions for costs beyond management's control
<b>Capital Plan</b>	Capital projects approved as they are today: greater than \$25M approved on a project-by-project basis; less than \$25M as part of a yearly investment budget.
<b>Revenue Requirement Determination</b>	Multi-year projection of full revenue over term of MRI plan, updated for changes in expenses beyond management's control and for demand for transmission services
<b>Inflation factor</b>	Embedded in revenue requirement forecast
<b>Productivity</b>	Embedded in revenue requirement forecast
<b>Variance/Deferral Accounts</b>	Y Factors to allow for annual adjustments in revenue requirements for costs beyond management's control based on what is currently recognized by the Régie (e.g., pension costs, point to point transmission service revenues, costs related to projects pending approval by the Régie, penalty revenues related to ancillary services.)
<b>Earnings Sharing</b>	To be aligned with the overall MRI ratemaking framework and linked to SQI results
<b>Off-Ramp</b>	Yes, expressed as +/-range from allowed ROE
<b>Service Quality Thresholds</b>	Yes, limited number of performance indicators to be linked to earnings sharing
<b>Unanticipated Events</b>	Z Factors to allow for unanticipated/exogenous events outside of management's control

*\* Some other features, such as a carry-over mechanism, could be evaluated and incorporated in a subsequent term of HQT MRI.*



## SECTION 5: PRODUCTIVITY STUDY

### A. METHODOLOGIES TO DETERMINE “X”

The Régie’s proposed schedule for the establishment of an MRI for HQD and HQT anticipates that a multifactor productivity study may be required in Phase 2.<sup>30</sup> Productivity studies differ with respect to the approaches and inputs utilized in measuring the efficiency of individual companies, industries, or the entire economy. In utility regulation, productivity studies are intended to derive an estimate that can inform the establishment of “X” when applying an “I-X” MRI methodology, as recommended for HQD. A building block approach, as recommended for HQT, relies on a multi-year forecast of expenses and rate base additions that incorporates efficiency gains, and thus does not require a specific estimate of “X”.

There are alternative ways to derive “X” that range from the application of judgment applied to past observed productivity gains to industry benchmarking studies to complex productivity studies. Both benchmarking studies and productivity analyses rely on large data sets comprised of data for utilities that are deemed to be sufficiently “comparable”. For a Canadian utility, this usually requires expanding the data set to include utilities from the United States in order to arrive at an acceptable sample size. A desire for a larger sample size in order to improve statistical validity and the desire for comparability tend to work against each other. This contributes to the controversy associated with productivity studies, particularly in Canada. In addition, these studies tend to add complexity and delays to the process, which goes against the streamlining goal of Article 48.1.

These alternative methodologies are summarized in the following table:

	Methodology	Description
1	<b>Total Factor Productivity (“TFP”) Study</b>	Measures the efficiency of a utility in converting all of its inputs (labor, capital, and materials) into outputs (customers serviced)
2	<b>Partial Factor Productivity (“PFP”) Study</b>	Focuses on a subset of these inputs – labor, materials, and other inputs that are deemed to be significantly within utility management’s control.
3	<b>Benchmarking</b>	Compares costs in aggregate (operating cost per MW) or at the disaggregated level (maintenance cost per line mile) across similar companies, with targets based on “best-of-class” performance.
4	<b>Judgment</b>	Established based on a survey of other MRIs, consideration of prior efficiency gains and assessment of the potential for future efficiency gains.

<sup>30</sup> D-2015-103, R-3897-2014, paragraph 11.



The productivity studies objectively apply data to a valid theoretical model but face several challenges that are widely recognized:

- selecting a valid comparison group;
- determining the study period (beginning and end years);
- compiling a vast amount of data, potentially from multiple sources;
- comparability of input and output data that is subject to varying accounting and regulatory accounting policies among jurisdictions;
- difficulty of controlling for external factors;
- need to specify numerous assumptions; and
- the specific algorithms that are used to estimate productivity.

Benchmarking studies face many of these same challenges. There is an important distinction, however. Benchmarking studies inform the determination of “X”, along with other relevant information and the application of judgment; productivity studies produce an estimate of “X” that frequently begins a lengthy, costly, and complicated discussion of all aspects of the study (or studies in many jurisdictions). Regulators are left in the position of sorting through and trying to make sense of a large and confusing record. This is not to suggest that productivity studies are necessarily better or worse than alternative methodologies, but this post-study engagement should be anticipated as part of the process.

The “Judgment” approach avoids many of the controversies over sample size, data sources, and quantitative methods while still providing an incentive to pursue efficiency gains.

Elenchus recognized these challenges in their report:

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*IR/PBR seeks to reduce the regulatory burden overall and over the long term, but specific proceedings may well be more resource intensive than a one-year cost of service proceeding. As well, the analytical work to establish productivity measures and assess efficiency performance can be significant. For example, total factor productivity (“TFP”) studies require a significant investment in data and analysis. It is important to consider cost and revenue data carefully – on an aggregated and disaggregated basis – and for both the utility and for a peer group; historical and projected. (Performance Based Regulation, A Review of Design Options as Background for the Review of PBR for Hydro Québec Distribution and Transmission Divisions, Elenchus Research Associates, January 2015, p. 27).*

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## B. RECOMMENDATION

Concentric is recommending a “building block” approach for HQT for reasons that are described in Section 4. With the building block, it will be incumbent on HQT to reflect efficiency in its business plan. This does not require a productivity study. If we had recommended an I-X approach, it would have been challenging to develop a valid and sufficiently large sample size for either a benchmarking or TFP approach as such a group of comparators does not exist for HQT.

Given the lack of history in applying productivity studies for HQD, the prior experience with the parametric formula (with a productivity factor), and evidence that HQD has realized significant efficiency gains over the past few years, Concentric suggests that reliance on a TFP study to determine “X” is not necessary in the determination of the appropriate model parameters. Parties may wish to cite evidence presented in other jurisdictions or adopted by other regulators. HQD may cite to its past record of productivity in relation to inflation, and project its ability to continue this trend. Some may wish to conduct a TFP or benchmarking study as a basis for recommendations for “X”, with supporting evidence and reasoning. These submissions should ultimately inform the Régie’s judgment regarding appropriate productivity expectations. This takes some of the focus off of the need to resolve the many issues with TFP and PFP studies at the outset if Concentric’s recommendation is accepted, while preserving an appropriate role for judgment by both the experts and the Régie. Concentric therefore recommends that the Régie rely upon its judgment, with input from the parties, on setting the appropriate productivity factor for HQD. A benefit of this approach is the further streamlining of the hearings process through the avoidance of a costly, contentious and time-consuming Phase 2 focused on a TFP study.



## SECTION 6: ESM AND SQI

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### A. ESM

The purpose of an ESM is to share earnings with customers that deviate from the level of earnings that was reflected in the calculation of rates and to provide an incentive for performance improvement. It is probable that revenues, costs, and rate base will each deviate from the assumptions that are used as the basis for calculating rates whether the ratemaking approach is based on an historical test year with post-test period adjustments or whether, as in the case of HQD and HQT, rate calculations are based on a forward-looking test year. Thus, it is probable that the realized ROE will be higher or lower than the authorized ROE. The ESM apportions this deviation in earnings between customers and the utility based on a prescribed formula.

It is appropriate to revisit the design of the ESM in Phase 3 to ensure that the sharing of cost reductions is aligned with the overall MRI ratemaking framework for HQD and HQT and to assess the related impact, if any, on the current authorized ROE. An ESM can have the potential to dampen the incentive to pursue efficiencies, and it should be reviewed with this in mind. For example, the term of the MRI can have an impact on the incentive to pursue efficiency gains and the ESM can be adjusted to help balance this impact and achieve the overall objectives established by Article 48.1. One recognized challenge with MRIs is that the utility may not fully exploit efficiencies just prior to rebasing for the next program period. This can be addressed through an “efficiency carry-over mechanism” that rewards the utility for actions leading to efficiency gains in subsequent plan periods.

### B. SERVICE QUALITY INDICATORS

Service Quality Indicators (SQI) are a standard component of an MRI<sup>31</sup> and are a way to measure a utility’s performance from a variety of perspectives. An explicit objective of Article 48.1 is continued improvement of performance and SQIs may be necessary to remove a utility’s incentive to reduce maintenance or defer CAPEX in order to increase efficiency gains under an MRI formula.<sup>32</sup> HQD and HQT can meet this objective by gradually transitioning from their existing scorecard performance measures to a regime which incorporates indicators with financial impacts.

The current scorecard indicators measure customer satisfaction, service reliability, quality of service, safety, and environmental performance. HQD currently tracks eight measures across five categories (customer satisfaction, reliability, electric supply, customer service and public and employee safety), while HQT currently tracks several measures across four categories (customer satisfaction, reliability, costs evolution, environmental indicators).

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<sup>31</sup> Elenchus Report, p. 21-22.

<sup>32</sup> Elenchus Report, p. 78.



The transition from scorecard to financial incentives should be gradual and fit with HQD's and HQT's OPEX and CAPEX drivers. Service quality plans require great care in defining the performance to be measured, the determination of the financial impacts to be associated with the performance level target, and the calculation to be applied to each indicator.

Service quality indicators should apply only to utility performance metrics, not policy goals that are beyond the influence of the utility. The indicators should be within the control of the utility, and easily and accurately measurable and verifiable. Targets should be reasonably achievable and reflect consideration of the tradeoff between performance outcomes and the incremental costs necessary to achieve them.

Possible indicators with financial impact for HQT could include performance areas such as security, reliability, and network availability, which are critical dimensions of the division's basic mission. HQD indicators could address performance areas such as customer satisfaction, a more targeted service quality metric, reliability, and safety. HQD and HQT will propose specific metrics in Phase 3.

### C. SQI AND THE ESM

One way to link SQI with ESM is to reduce or retain post-ESM surplus earnings based on performance against targets. An example of such option, and one that is familiar to the Régie, is the model employed by Gazifère.<sup>33</sup> Upside earnings sharing that would otherwise be retained by Gazifère is reduced by the average of metric performance relative to their respective targets when this average is less than 90%. If the average is greater than 90%, Gazifère retains 100% of its share of the earnings under the ESM. If the average is less than 80%, customers receive 100% of any surplus earnings. The Gazifère approach results in a reduction of earnings when mean SQI results fall below a target threshold, providing a strong incentive to achieve the SQI targets while pursuing efficiency gains.

HQD and HQT will propose a specific approach to both the ESM and SQI. The requirement to seek an improvement in service quality will be reflected in proposed targets, along with an assessment of any incremental investment and expenses that may be required to improve performance.

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<sup>33</sup> D-2006-158.





## SECTION 7: REGULATORY PROCESS AND FILING REQUIREMENTS FOR THE MRI

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### A. REGULATORY PROCESS AND STREAMLINING

Article 48.1 establishes an administrative efficiency or regulatory process streamlining objective: “streamlining of the process by which the Régie fixes or modifies the rates the electric power carrier and electric power distributor charge consumers or a class of consumers.” At the outset, this third objective of Article 48.1 can be met in Phase 3 at the design stage of the MRI, by favoring, for example, simple approaches and a limited number of parameters.

Once the MRI has been established, there are several opportunities for streamlining the regulatory process as it relates to the need to establish a new set of rates at the end of each year of the program. In addition to eliminating the “line by line” review of items covered in the formula, the process can be further streamlined by implementing a set of accepted regulatory practices:

- 1) A single “compliance” filing that presents the new rates;
- 2) The filing is based on accounting and service quality results for the prior year that are routinely reported by HQD and HQT;
- 3) All calculations are presented in the filing;
- 4) The precise form of the filing is determined by the Régie in this proceeding;
- 5) The new rates take effect after a short period that allows the Staff of the Régie to confirm the calculations; and
- 6) The Régie indicates its approval through a decision.

This regulatory process will result in streamlining as compared to annual rate case filings. The ability to deliver on the streamlining objective is achieved by agreeing to the form of the annual rate change filing and avoiding unnecessary discovery and hearings to “litigate” the compliance filing.

In addition, having MRIs’ initial term start in alternate years for HQD and HQT would further streamline the regulatory process for a particular year.



## B. REPORTING UNDER THE PROPOSED MRI

Even though Hydro-Québec is moving toward a multi-year rate filing, HQD and HQT continue to provide annual filings. For each division those filings would include pre-defined templates that could incorporate the following items:

Annual filings for HQD:

- Updates to rates based on changes in the inflation factor
- Updates of Specifically tracked items and Energy efficiency programs
- Updates to rates based on changes in deferral and variance accounts
- Results of service quality indicators

Annual filings for HQT:

- Updates to rates based on changes in forecasted rate path submitted as part of its initial MRI
- Updates to rates based on changes in deferral and variance accounts, expenses beyond management's control, demand for transmission services or unanticipated events
- Results of service quality indicators

These filings would be managed through a written consultation. They are required in order to fulfill objective 3 under Article 48.1, a streamlining of the process by which the Régie fixes or modifies the rates the electric power carrier and electric power distributor charge consumers or a class of consumers.



## SECTION 8: CONCLUSIONS AND SUMMARY OF RECOMMENDATIONS

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The appropriate MRI methodology for HQD and HQT should reflect their respective circumstances and achieve the requirements of Article 48.1. Concentric recommends an “I-X” approach for HQD that expands the coverage of the current parametric formula. HQT’s circumstances warrant a building block approach to achieve the requirements of the Article 48.1 due to its capital-intensive profile and the fact that its CAPEX are comprised of large, longer-term projects that can result in wide variations from year-to-year in PP&E that is added in rate base, and also specific circumstances (aging network) that warrant OPEX increases unrelated to inflation (e.g., Asset Management Model). The Régie will continue to review the capital plans of HQD and HQT on an annual basis for smaller investments, and a project specific basis for larger investments. Concentric does not recommend that “X” be established for HQD through the development of a productivity study, but rather rely on informed judgment that can consider the prospects for future efficiency gains based on HQD-specific evidence. This approach avoids the many shortcomings of these studies and is in line with the third objective of Article 48.1.

Concentric proposes a rebasing of rates, followed by a two-year MRI term for both HQD and HQT. Concentric proposes that the specific SQI plan be developed in Phase 3, including metric definitions and targets. The ESM should also be established in Phase 3 because it must be aligned with the overall MRI mechanism, including its parameters. At this time, Concentric recommends that the Régie consider the approach that has been taken by Gazifère, with service quality performance impacting the level of earnings to be retained by HQD and HQT.

These recommendations address the first two objectives of Article 48.1. The third objective, regulatory streamlining, is addressed through the avoidance of two annual rate cases, through the choice of defining elements and parameters and through a series of recommendations that relate to the annual filings that will be required to adjust HQD and HQT rates.

In summary, Concentric believes that these recommendations comply with the letter and intent of Article 48.1, provide a strong incentive for HQD and HQT to pursue efficiency gains and improvements in service quality, and provide for regulatory streamlining. They represent an appropriate first step toward implementation of an MRI for HQT and HQD.