BEFORE THE

RÉGIE DE L'ÉNERGIE

IN THE MATTER OF:

HYDRO QUÉBEC

Demande relative à la détermination du coût du service du Distributeur et à la modification des tarifs d'électricité
Pour les années 2002 et 2003

DEMANDE R-3492-2002

Responses to IRs from the Régie de l'énergie, Hydro-Québec Distribution and Union des consommateurs

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On Behalf of:

L'association québécoise des consommateurs industriels d'électricité (AQCIE)

L'association des industries forestières du Québec (AIFQ)

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Interrogatories from Régie de l'énergie

1. Référence : Rapport de Industrial Economics Incorporated, section 2.4, page 11.

Préambule :

L'AQCIE/AIFQ recommande que l'interfinancement historique soit mesuré en termes absolus plutôt qu'en pourcentage. Sachant que, d'une part, le taux d'inflation affecte les valeurs nominales et que, d'autre part, le coût de service et les revenus correspondant à chacune des catégories de consommateurs est appelée à évoluer dans le temps.

Demande :

1.1 Veuillez indiquer dans quelle mesure les sommes constatées et appliquées conserveraient leur pertinence au fil des ans ?

Response:

A fixed dollar subsidy such as that proposed in the IEc report could potentially be established on either a current dollar ("nominal") or inflation-adjusted ("real") basis. For the reasons detailed in the IEc report, either of these approaches is preferable to the percentage of cost approach. Note that costs incurred by HQD will vary for many reasons other than general inflation. However, if an inflation-adjusted approach is adopted, it is not clear either legally or economically what measure of inflation should be applied to the base cross-subsidy level.

From the residential customer perspective, it could be argued that any reduction in the residential cross-subsidy relative to the increase in the consumer price index (CPI) constitutes a reduction in the "real" value of the cross-subsidy. One problem with the CPI measure, however, is that the CPI tends to overstate the overall rate of inflation, due to the nature of a fixed-weight index. Moreover, even an accurate measure of consumer price inflation is likely to overstate the growth in price indices that apply to other stakeholders in this process.

Another possibile inflation measure would be average unit cost increases faced by Hydro Québec Distribution (HQD). Because the heritage pool generation costs are fixed in nominal terms by the Act, and because much of the transmission and distribution costs incurred by HQD relate to depreciation and return costs on cash expenditures that have already been made, it is likely that overall HQD unit costs will rise more slowly than overall consumer price indices and general economic inflation. Moreover, because each rate class uses a different mix of generation, transmission and distribution services, it might become necessary to establish different inflation rates for each function provided by HQD to accurately determine the impact of inflation on costs.

Finally, inflation indices based on conumer prices or HQD costs are not relevant for large industrial customers, whose product prices tend to be set in global markets. From a large industrial customer perspective, increases in cross-subsidy payments to the residential rate class that are not related to increases in world commodity prices for aluminum, steel, forest products, etc., constitute a "real" increase in the cross-subsidy provided by the class.

Thus, while an inflation adjustment could potentially be applied to base cross-subsidy levels, economic and equity considerations suggest that different inflation rates would need to be applied to different rate classes and possibly different customers. And, if different inflation rates are applied to the various rate classes, an adjustment mechanism would be necessary to "true-up" the cross-subsidy levels to be consistent with HQD's overall revenue requirement. Thus, in light of the Act's specification of a fixed "nominal" rate for average production charges for the heritage pool energy (2.79 cents per kWh), it does not seem unreasonable to also interpret the Act as establishing fixed current-dollar cross-subsidy levels.

2. Référence : Rapport de Industrial Economics Incorporated, section 2.4, page 12.

Préambule :

« Consistent with the practices of other jurisdictions (but adjusted for the specific legislation in Québec), the Régie may wish to establish a target range for revenue requirements. For example, the Régie may decide that each class' revenue requirement should be within (plus-or-minus) five percent of the cost target, where the cost target is set at allocated cost plus base subsidy. »

Demandes :

2.1 Un ajustement tarifaire autre que celui nécessaire pour faire coïncider le tarif avec le coût de service ajusté du montant de l'interfinancement en valeur absolue aurait-il pour effet de modifier l'interfinancement historique ?

Response:

Yes. However, for the reasons detailed below, IEc does not believe the Act requires that the only consideration permitted of the Régie for setting class revenue requirement levels is to exactly maintain historical levels of cross-subsidization.

2.2 Le cas échéant, comment concilier cette recommandation avec la disposition de la Loi à l'effet que la Régie ne peut modifier un tarif afin d'atténuer l'interfinancement ?

Response:

The Act states that the Régie may not modify rates "in order to alleviate the cross-subsidization." IEc's (non-legal) interpretation of that clause is that the Act allows the Régie to apply other reasonable rate design criteria, which may cause a change in the

historical base level of cross-subsidy. As long as these changes that modify historical cross-subsidization levels are motivated by other reasonable rate design criteria, and are not motivated by the specific intent of the Régie to alleviate historical cross-subsidization, such adjustments appear to be consistent with the language of the Act.

2.3 Dans le présent contexte, est-il approprié d'envisager une fourchette de plus ou moins 5% ?

Response:

Yes. The target range of acceptable revenue-cost ratios (as adjusted for historical cross-subsidies) provides some guidance from the Régie to HQD and to the other intervenors as to how much variation in revenues due to factors other than cost plus cross-subsidy can reasonably result from rate design considerations.

Interrogatories from Hydro-Québec Distribution

1 Mémoire de l'AQCIE et de l'AIFQ

Références : Mémoire de L'AQCIE et de L'AIFQ, page 4

Question 1.1:

Qui a rédigé le mémoire de l'AQCIE et de l'AIFQ et qui témoignera à son soutien ?

Response:

Please see response from AQCIE/AIFQ.

2. Rapport de Industrial Economics, Incorporated

Références : Industrial Economics, Incorporated, pages 7 et 8

Préambule :

Dans votre mémoire vous affirmez :

IEc has prepared a series of illustrative quantitative examples, showing the impact of a "fixed" revenue-cost ratio metric on revenues required from each rate class group. These examples compare HQD's fixed revenuecost ratio proposal to two other potential methods: a fixed dollar crosssubsidy and a fixed per-MWh subsidy. (page 7)(notre souligné)

Note that, in this scenario and under HQD's proposal, commercial and industrial customers face rate increases despite the fact that they have experienced no change in load or allocated costs. As such, the HQD proposed method produces rate changes that are unrelated to cost causation, and which can be interpreted as being inequitable for the commercial and industrial rate classes.(page 8)(notre souligné)

Question 2.1:

Est-ce que votre compréhension de la pièce HQD-3, Document 4 est à l'effet que le ratio d'interfinancement proposé par le Distributeur est fixe ?

Response:

As stated in the IEc report, the HQD proposal appears to recommend that a fixed revenue-cost ratio metric be used, but that such a fixed metric will need to be adjusted in some manner to "true-up" class-revenues to the overall HQD revenue requirement.

Exhibit HQD 3 Document 4 appeared to suggest that such a true-up mechanism would be proportional to the system-wide unadjusted revenue-cost ratio. For example, Tableau 1 at page 10 of the referenced document scales up all rate classes for the shortfall in overall revenue-cost ratio to meet the revenue requirement. It was this adjustment mechanism that IEc assumed would apply, in developing the examples presented in the report. However, we note that the examples provided by HQD in response to interrogatory 5.1 from the Régie suggest that an alternative mechanism would be used to make such an adjustment. While we cannot determine for certain what algorithm is used in that response, it appears that the HQD adjustment, at least for those two examples, produces results identical to those proposed by IEc using a fixed dollar cross-subsidy methodology.

Question 2.2:

Dans l'affirmative, veuillez concilier cette affirmation avec l'extrait suivant de la pièce HQD-3, Document 4, page 9 et la réponse fournie à la question 5.1 de la Régie (HQD-10, Document 1, pages 13, 14 et 15).

Extrait de la pièce HQD-3, Document 4, page 9 :

"*L'interfinancement ne doit pas être évalué et fixé définitivement à un moment précis. Cette pratique serait d'ailleurs inconciliable avec la variabilité intrinsèque de plusieurs facteurs ayant un impact sur l'évaluation de l'interfinancement, que ce soit, par exemple, l'évolution des ventes, la méthode de répartition des coûts, les programmes commerciaux ou encore l'atteinte d'un rendement raisonnable.*"

Response:

The referenced text suggests that HQD generally agrees with IEc in its interpretation of the Act that HQD, the Régie and the other intervenors may consider other factors in developing class revenue requirements, even those causing actual cross-subsidy levels resulting from any particular rate proceeding to vary from historical base levels. (See IEc report at page 12, response to Regie-AQCIE/AIFQ-2.) However, IEc's reference to a "fixed" or "constant" level of cross-subsidy applies to the arithmetic calculation of the level of cross-subsidy that should be considered as part of the class cost basis in any rate proceeding. In particular, the IEc report addresses differences between computing the cross-subsidy applicable to a particular class on the basis of a historical percentage of allocated costs (the "fixed revenue-cost ratio" method) versus a cross-subsidy calculation on the basis of a historical dollar value (the "fixed dollar method"). Under either method, some variation for factors other than cost/cross-subsidy should be permitted.

3. Rapport de Industrial Economics, Incorporated

Références : Industrial Economics, Incorporated, pages 11 et 12, Section 2.4, IEc's Recommendation

Question 3.1:

Considérant que les revenus requis d'une catégorie de consommateurs varient d'une année à l'autre en fonction, par exemple, de l'évolution des ventes, de la méthode de répartition de coûts, des programmes commerciaux et des profils de consommation, comment la méthode recommandée par IEc assure-t-elle une stabilité tarifaire ? Élaborez votre réponse.

Response:

The various factors cited in the interrogatory are addressed differently in IEc's proposal.

First, instability in rates associated with changes in cost allocation methodology, unless they are justified by some specific change in the way that Hydro Québec incurs costs, are addressed by IEc's proposal to revamp the base cross-subsidy levels. (IEc report at page 4.) It would obviously be unfair and inconsistent with the intent of the Act to, for example, set cross-subsidy levels based on a 1 CP transmission cost classification methodology, and then modify that classification methodology to a peak-and-average approach while retaining historical cross-subsidies based on the 1 CP approach. If such an approach were adopted, intervenors could attempt to game the system by advocating one cost allocation methodology in the base period at which cross-subsidy levels are established, and then advocate a different methodology in subsequent proceedings once the cross-subsidy level is established. IEc's proposal both discourages any such gamesmanship andavoids costing methodology-related rate instability.

Second, relating to changes in sales, as detailed in IEc's report, the fixed dollar method of computing cross-subsidies, unlike the fixed revenue-cost ratio method, will not cause changes in rates for some classes associated with changes in volumes for other classes.

Third, regarding changes in the way HQD incurs costs and changes in consumer profiles, IEc's proposal allows the Régie to explicitly consider rate stability as one of the non-cost/subsidy criteria for developing class-revenue requirements. (See IEc report at page 12, Régie-AQCIE/AIFQ-2.)

Interrogatories from Union Consommateurs

Question 1

Préambule : Rapport de M. Robert D. Knecht de Industrial Economics Inc., page 2

> *« Such other methods include demand-only classification, demand-energy classification (the « peak and average » method), and a demand-customer classification based on « zero-intercept » analysis.* »

1.1 Veuillez nous fournir une liste des entreprises et des juridictions qui utilisent la méthode de répartition des coûts de réseau de distribution basée uniquement sur la puissance. Veuillez indiquer les références pertinentes.

Response:

Please note that the referenced text from the IEc report refers to methods proposed by experts representing both utilities and intervenors, and is not limited to cost classification methods specifically adopted by regulatory commissions. Further, IEc has not made a systematic study of methodologies that have been explicitly approved by regulatory authorities. (Often, regulatory proceedings are resolved by settlement, and no specific cost classification method need be approved.)

Based on regulatory proceedings in which IEc has been directly involved, the methods listed below were generally used to classify primary and secondary distribution plant costs by the utility filing the case. These methods were not necessarily those approved by the regulatory authority. Both electric and gas distribution utilities are included, because the conceptual arguments regarding classification of distribution costs are very similar for both types of utility. Note also that, in addition to classifying and allocating most distribution assets, many utilities will directly assign asset costs that are dedicated to individual customers or customer classes. Finally, please note that the methods refer to those presented in proceedings in which IEc participated; subsequent filings may have resulted in changes in methodology of which IEc is unaware.

Electric Distribution Assets:

Aquila Networks Canada (Alberta): Element by element direct assignment or 100 percent demand-based allocation to customers downstream of each particular distribution element; where downstream represents flow of power under normal operating conditions. Method results in significant direct assignment of assets to specific rate classes. Based on sample of ANCA feeders and not entire distribution system.

TransAlta Utilities (before sale to UNCA/ANCA) (Alberta): Primary (25 kV) assets classified as 100 percent demand. Secondary assets classified by location code methodology and minimum system analysis within location code cost pools.

Alberta Power/Atco (Alberta): Primary (25 kV) classified as 100 percent demand; secondary classified by combination of minimum system and zero-intercept methods.

Atlantic City Electric (New Jersey): 100 percent demand classification.

West Penn Power (Pennsylvania): Combination of zero-intercept and minimum system classification methods for both primary and secondary distribution assets.

Pennsylvania Power & Light (Pennsylvania): 100 percent demand classification for primary distribution; secondary distribution classified with minimum system study.

UGI Utilities, Electric Division (Pennsylvania): 100 percent demand classification.

Gas Distribution Assets

Gaz Metropolitain (Québec): Zero-intercept classification by region.

Natural Resource Gas, Ltd. (Ontario): 100 percent demand classification.

Philadelphia Gas Works (Pennsylvania): 100 percent demand classification.

PFG/North Penn Gas (Pennsylvania): 100 percent demand classification.

PG Energy (Pennsylvania): Primary distribution is classified as 100 percent demand. Secondary distribution classified using zero-intercept methodology.

TW Phillips Gas & Oil Company (Pennsylvania): 100 percent demand classification.

1.2 Veuillez nous fournir une liste des entreprises et des juridictions qui utilisent la méthode de répartition des coûts de réseau de distribution basée sur l'énergie et la puissance. Veuillez indiquer les références pertinentes.

Response:

Please note that the caveats detailed in the preceding response apply also to this response. Of the utilities listed in the preceding response, as best IEc can determine

from the materials currently available, no utilities used a peak-and-average method for allocating demand costs, and only PFG/North Penn Gas used an average and excess method for allocating demand costs. Please see the response to interrogatory 1.3 below.

1.3 Doit-on comprendre que la méthode « peak and average » est la même que la méthode « Average and Excess» couramment utilisée dans l'industrie ? Si non, veuillez expliquer les différences et similitudes des deux méthodes.

Response:

No, peak-and-average (P&A) and average-and-excess (A&E) methods are conceptually and arithmetically different. The P&A method uses a weighted average of energy and *demand* allocators. The A&E method uses a weighted average of energy and *excess demand* allocators, where excess demand is measured as the difference between a class' peak demand and its average energy demand. Both methods implicitly assume that energy consumption is a cost driver for distribution capacity. Unlike gas transmission pipeline capacity, however, IEc is unaware of any credible analysis that demonstrates that distribution capacity is sized to meet average energy use -- electric distribution systems would be most unreliable if capacity were put in place only to meet average energy consumption levels.

Algebraically, the allocators are defines as follows:

$$P\&A_i = (1 - w) * (P_i/P_T) + w * (E_i/E_T)$$

$$A\&E_i = (1 - v) * (P_i - E_i)/(P_T - E_T) + v * (E_i/E_T)$$

where w and v represent the weighting factors, P represents a measure of peak demand and E represents energy consumed.

Because the A&E allocator uses a measure of excess demand rather than a measure of peak demand in the average, it tends to allocate a higher percentage of demand costs to low load factor classes than the P&A allocator, if the same weighting factor is used (i.e., w = v). Thus, a 50/50 P&A allocator will assign more costs to high load factor classes than a 50/50 A&E allocator.

The allocation results from the A&E typically lie somewhere between those from a peak demand allocator and those from the P&A allocator. Under certain circumstances, however, the A&E allocator is identical to the peak demand allocator. In the A&E allocation method, the weighting factor used for the energy component of cost is often the load factor for the system (E_T/P_T). If that factor is substituted for v in the equation for the A&E allocator:

$$A\&E_i = (1 - E_T/P_T) * (P_i - E_i)/(P_T - E_T) + E_T/P_T * (E_i/E_T)$$

$$= (P_i - E_i)/P_T + (E_i/P_T) = P_i/P_T$$

In practice, the peak measure used to derive excess demand is NCP and the peak measure used in the weighting factor is CP. This use of different measures of peak tends to produce an allocator that generates a quantitative result lying between a peak demand and a P&A allocator. For example, a system with a load factor of 60 percent would have an allocator that is based on 60 percent energy, 40 percent *excess* demand. However, that allocator might be mathematically equal to an allocator based on 10 percent energy, 90 percent *peak* demand.

1.4 Dans la cause R-3401-98, certains experts et intervenants ont soutenu que certains coûts du réseau de transport d'Hydro-Québec peuvent être alloués comme de la production (G.R.T.A.) qui comporterait une proportion importante de la composante énergie. (Par exemple, le coût de l'électricité patrimoniale comporte environ 67% en énergie). D'un autre côté, dans le présent dossier, Hydro-Québec Distribution propose une répartition des coûts de transport entre les catégories tarifaires selon la méthode du 1-PC qui attribue 100% du coût à la puissance de pointe. Veuillez indiquer si selon vous l'utilisation des deux approches (G.R.T.A. et 1-CP) peut être cohérente dans le cas du réseau de transport d'Hydro-Québec.

Response:

IEc was not an active participant in the R-3401-98 proceedings. IEc understands the question to refer to a component of the transmission grid that is sometimes referred to as "generation integration" facilities; namely those transmission facilities that are essentially dedicated to specific generation units, including step up transformers and dedicated interconnection lines.

In responding to this question, IEc observes that the current proceeding is a distribution cost proceeding. Distribution utilities should simply pass on the costs it incurs in procuring services from other entities, such as energy and transmission services, in the manner in which it incurs these costs. Because HQD incurs transmission costs on a 1 CP basis, it is appropriate that it should pass those costs on using a 1 CP basis. To the extent that the Régie has directed that Hydro Québec/TransÉnergie expand its cost allocation study for transmission assets, it is IEc's understanding that this analysis will be undertaken in a separate proceeding.