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**RÉPONSES DU RNCREQ**  
**AUX DEMANDES DE RENSEIGNEMENTS**

**Régie de l'énergie**

**R-3473-01**

**PLAN GLOBAL D'EFFICACITÉ ÉNERGÉTIQUE (HYDRO-QUÉBEC)**

**3 mars 2003**

**Demande de renseignements no 1 de la Régie**

1. **Référence :** Joint Testimony of Timothy Woolf and Philip Raphals, page 17

**Préambule:**

« *The Technosim studies all used an estimate of current electricity prices as an avoided cost.* »

**Request :**

- 1.1 Please provide the reference in the Distributor's evidence that supports this affirmation.

**Answer :**

The Technosim studies do not clearly specify on what basis the cost effective potential was evaluated. Looking first at the residential study (RT-01-35), the introduction does indeed state (page 3) that, for electricity, the distributor's point of view has been considered in evaluating the technico-economic potential, by selecting those measures for which the cost is lower than the marginal cost of electricity, which varies with usage. It would thus appear at first glance Technosim used Hydro-Québec's avoided costs in its study.

However, there is no reference, either in the text or in the bibliography, to an avoided cost study or to any other Hydro-Québec document likely to contain this information. Nor is there any indication of the magnitude of these avoided costs or how they were obtained.

On the other hand, Table 1 (page 4) clearly indicates the average price of electricity, along with those of other fuels, with the indication: "Table 1 provides the average prices for the year 2000 used in this study" (emphasis added).<sup>1</sup> this led us to tentatively conclude that Technosim based its analysis on the price indicated in Table 1.

The study on the technico-economic potential in the small and medium industrial sector is somewhat more explicit. While once again affirming the principle of using the distributor's avoided cost, the study then indicates that a "nominal ceiling" of \$0.035/kWh was used to define the technico-economic potential. This figure closely resembles the average price per kWh for the industrial sector (\$0.035/kWh in 1999, increasing slightly in 2000 and 2001), much more than it does the avoided costs by end-

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<sup>1</sup> Appendix B, concerning the economic methodology, sheds no additional light on this question.

use for rate M provided in HQ Distribution's evidence,<sup>2</sup> which vary from 2.94¢ in 2003 to 4.37¢ in 2012 (for all usages), ranging up to 6 to 8¢/kWh for certain uses.

Finally, this study, unlike the others, provides a list of documents obtained from Hydro-Québec for the purposes of the study (page 2). None of them appear to include an avoided costs study.

This section thus reinforced our conclusion that Technosim's analysis was in fact based on the price of electricity as a measure of avoided cost.

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<sup>2</sup> HQD-2, doc. 3, page 5.

## **Demandes de renseignements du Distributeur**

### **Request #1**

Q. Please specify what you mean by « sufficient financial incentives ».

A. The amount of financial incentives that is sufficient to overcome the market barriers to energy efficiency measures depends upon the customer type and the efficiency measure. For example,

- With regard to low-income customers, it is often necessary to provide financial incentives that cover 100% of the efficiency costs, because these customers often do not have the ability to pay these costs themselves.
- With regard to commercial and industrial customers, larger customers may require less financial incentives than smaller customers. Large customers frequently have higher electric bills, greater access to financing, and greater internal resources to implement efficiency measures — though they may also require shorter payback periods.
- With regard to non-low-income residential customers, the financial incentives necessary to overcome market barriers will depend upon many factors including, for example, the availability of the efficiency measures in retail stores, the extent to which customers are aware of the efficiency measures and their benefits, the up-front cost of the efficiency measures in relation to their energy savings, the transaction costs associated with an efficiency measure.

### **Request #2**

Q. Please specify what you mean by « too much ».

A. This sentence refers to the balance that must be struck between educational materials and financial incentives. If the financial incentives are not sufficient, then most customers are unlikely to respond to the educational materials. When this happens, there is not enough emphasis on financial incentives, and therefore there is too much emphasis on educational materials.

### **Request #3**

Q. Please specify what promotional measures the Distributor should envisage “at the time of stock turnover” beyond those which are already planned.

A. The expression “at the time of stock turnover” refers to the point in time when an appliance or energy end-use device reaches the end of its natural life, and the customer purchases a new appliance or device. The most common promotional measure to address

stock turnover is to offer rebates for purchasing efficient measures. There are various options for offering such rebates and encouraging customers to take advantage of them. One option is to inform customers through bill stuffers of the rebates, and provide a mail-in rebate coupon. Another option is to develop energy efficiency measure catalogs, which contain a wide variety of efficiency measures that customers can order from the catalog, with the rebates built into the purchase price. Another option is to implement a “point-of-purchase” program, where retail stores will offer rebates at the time of purchase, along with promotional material to inform the customer of the efficiency and cost savings associated with the different measures in the store.

#### **Request #4**

Q. Can the RNCREQ’s experts evaluate the average cost of an intervention of this type and demonstrate, with references, its efficiency and optimality in cost/benefit terms?

A. The time and budget made available to us for this proceeding make it impossible to prepare such an assessment for HQD. This type of evaluation should be conducted by HQD in developing its Energy Efficiency Plan.

#### **Request #5**

Q.

- a) Please justify this affirmation, giving references.
- b) If possible, please provide examples where this commercial approach has worked on a large scale, as well as economic data demonstrating its cost effectiveness.

A.

- a) This affirmation is based on our experience with designing and reviewing energy efficiency programs. One example of a study that documents this effect is provided in our testimony on page 26, in footnote 18.
- b) In-home energy audits have frequently been used to deliver energy efficiency programs to residential customers. We are aware of such programs currently being used in Massachusetts, New York, Rhode Island and Connecticut; but this is by no means an exhaustive list.

#### **Request #6**

Q.

- a) Do these two references refer to the same diagnostic analysis?
- b) Do the follow-up audits presuppose a second visit?

A.

- a) Yes. For the sake of clarity, the question on page 20 should be modified to read:

**Q. Please explain why the Energy Diagnosis Program, as proposed by HQD, is likely to achieve only a small portion of the residential energy efficiency potential.**

- b) No. The “follow-up audit” would be subsequent to the use of the diagnostic tool. Thus, there would only be one home visit, in those cases judged to present the greatest energy efficiency opportunities.

**Request #7**

Q. Please provide, for the two examples mentioned in the citation, calculations of the unit costs of these measures as well as optimal level of financial assistance that it is recommended by offered for each of these two types of appliances. Please support your calculations with specific references (make and model number) for these appliances (old and new).

A. As noted above, the time and budget made available to us for this proceeding make it impossible to carry out the requested analysis, which in any case would be impossible without reliable avoided cost figures and access to data kept confidential by HQD.<sup>3</sup>

As noted in our written testimony, detailed technical information by make and model number of efficient appliances can be found on the US EPA’s ENERGY STAR web site. The financial assistance necessary to support either efficient refrigerators or new clotheswashers will depend upon the extent to which the markets for these measures have developed in a particular region; e.g., the extent to which the efficiency products are easily available, and the extent to which customers are aware of and familiar with the products.

**Request #8**

Q. Please specify and justify the incentives that HQ Distribution should envisage and the additional energy gains that would result.

A. The amount of financial incentive necessary to support residential efficiency measures will depend upon many factors, as described in response to Request #1. As noted above, we do not have the resources to specify the precise amount of incentives that should be offered to support these measures in Québec. On page 27 of our testimony a list of financial incentives that are typically offered by utilities in the US is provided to illustrate the types of incentives that HQD should consider for its customers.

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<sup>3</sup> Only studies published before 1998 were made available for consultation.

HQD should conduct its own detailed analysis of the financial incentives that would be most effect in overcoming the market barriers that its customers face in adopting efficiency measures. This analysis should account for the different types of barriers and transaction costs that are faced by different types of customers. This analysis should also account for the extent to which the market for each efficiency product has been developed – e.g., efficiency measures that are easily available in stores and are generally understood and accepted by customers require less financial incentives that those that are not. HQD’s analysis should also consider the incremental cost of the efficiency measures – those measures with greater incremental costs may require greater financial incentives. Finally, the size of the financial incentive should account for the potential electricity savings from the efficient measure – those measures offering greater savings may have room for higher financial incentives. HQD may find that experience from US utilities on these issues is useful in developing its own set of financial incentives.

### **Request #9**

Q. Please provide the studies and polls that support this affirmation for Quebec residential clients.

A. We are not aware of any such polls or studies. However, there are many energy efficiency programs in the US that are based on this premise, and years of experience that support it. One example of a study that supports this provided in our testimony on page 26, in footnote 18. We are not aware of any evidence to suggest that – in this regard – residential customers in Québec are fundamentally different than residential customers elsewhere.

### **Request #10**

Q. Please provide the specific modalities (\$ according to size and consumption) of this type of program for the companies that offer it, associated budgets per intervener (e.g. company, State, manufacturer, retailers, participating clients), the duration of the program and the results that have been obtained in relation to the original objectives, with references.

A. Refrigerator rebates similar to those described are offered by electric utilities in Massachusetts. These rebates vary according to the size and the electricity consumption of the refrigerator being replaced; greater rebates are offered when higher efficiency savings are achieved. There is currently some debate in Massachusetts over redesigning these rebates. The current proposal is to provide a flat \$300 rebate per qualifying refrigerator. In order to qualify for a rebate, the *existing* refrigerator must meet certain usage levels, for a given size. The *new* refrigerator must at least meet the efficiency standards of ENERGY STAR refrigerators.

**Request #11**

Q.

- a) According to the RNCREQ's experts, should the cost of these audits be assumed by the participating clients?
- b) How much do the RNCREQ's experts estimate to be the cost of such an audit?

A.

- a) It may be appropriate to require the customer to pay for at least part of the cost of the audit, in order to ensure that the customer is seriously interested in learning about and adopting energy efficiency measures. A better approach is to require the customer to pay for the audit, but reimburse this cost for those customers that adopt significant energy efficiency measures. This provides an additional incentive for customers to adopt the efficiency measures. If HQD decides to require the customer to pay for the cost of the audit, it should monitor customers' response over time. If only a small number of customers choose to have an energy audit after the first year of operation, then HQD should consider paying all or a portion of the audit cost in order to increase participation.
- b) The cost of an audit can vary, depending upon the home and the type of measures assessed. However, based on the U.S. experience, audits can be assumed to cost roughly USD \$150 per home on average.

**Request #12**

Q.

- a) Please specify what you mean by "substantial energy savings" with respect to this program.
- b) What is the useful life of these measures?

A.

- a) According to the data in HQD's evidence, it appears that these measures would result in saving 827 kWh per all-electric residence, roughly equivalent to the amount that would result from changing all the thermostats to electronic ones.<sup>4</sup> According to the Technosim study, the technico-economic potential for these measures appears to be 54 GWh.<sup>5</sup>

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<sup>4</sup> HQD-3, doc. 1.1, p. 55.

<sup>5</sup> Technosim RT-01-35, p. 14.

- b) While some infiltration measures (e.g. caulking, weatherstripping) last for several years, the useful life of others may be somewhat shorter.<sup>6</sup> Nevertheless, the very low unit cost of these measures makes them attractive energy saving measures. Furthermore, it can be expected that a certain percentage of clients who benefit from a utility program of this type would weatherproof their dwellings on their own in subsequent years.

**Request #13**

Q.

- a) Please specify the level of financial assistance (expressed in \$ or in percent of the cost of the work) that the RNCREQ's experts propose and the expected additional energy gains, making a distinction between homeowners and construction contractors for the AEE Inspection Plus program.
- b) Please specify on what client decision-making criterion your calculation is based.

A.

- a) As noted above, the resources available to us make it impossible to specify the precise amount of financial incentives that should be offered to support these measures in Québec, nor the estimated energy gains.
- b) See answer to (a).

**Request #14**

Q.

- a) Please specify the level of financial assistance (expressed in \$ or in percent of the cost of the work) that the RNCREQ's experts propose and the expected additional energy gains, making a distinction between homeowners and construction contractors for the AEE Novoclimat program.
- b) Please specify on what client decision-making criterion your calculation is based.

A.

- a) See the answer to question 13 a), above.
- b) See answer to (a).

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<sup>6</sup> While the type of window plastic commonly sold in Quebec must be replaced every year, products are now available which can be reused for several years.