R-3398-98

Hearing on Procedure for the Implementation of Hydro-Québec's Supply Rates

Testimony of Peter Bradford

On Behalf of the
Regroupement national des
Conseils régionaux de l'environnement du Québec
(RNCREQ)

May 1, 1998

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1. Purpose of Testimony

The purpose of this testimony is to provide an overview of the Hydro-Québec proposal for the implementation of supply tariffs from the standpoint of regulatory practice as it has developed in the United States and as it is developing in other parts of the world, and to provide details of certain regulatory practices that may be pertinent to the Régie's deliberations.

2. Introduction

Electric systems throughout the world face restructuring. The general trends are from public to regulated private ownership, from monopoly to competition, from regulation based on costs to regulation based on performance, from vertical integration toward separation and/or divestiture of competitive units from those likely to remain monopolies. The Hydro-Quebec situation presents an unusual hybrid in that the utility proposes to remain a vertically integrated monopoly in most of Quebec while functioning as a competitive power supplier in a U.S. market that is evolving rapidly toward competition and divestiture of generation from transmission.

In all of these transitions, certain conditions are to be avoided. These include unregulated monopoly power, freedom for existing firms with dominant market shares to behave anti-competitively, prices that do not recover at least the operating costs of the electric system, price-setting systems that do not compel rigorous cost control, and regulatory systems that do not take their mission seriously or that take no account of the environmental implications of power generation. In addition, regulators in Quebec face the possibility that concepts and terminology appropriate to competitive markets will be invoked in order to justify a reduction in their regulatory powers even though Quebec customers will not have freedom to choose new suppliers if the results are unsatisfactory.

Only a dozen or so states in the U.S. have thus far stated an intention to bring about full retail competition. The U.S. Congress is considering legislation designed to require retail competition nationwide early in the next century, but several versions of this law permit individual states to opt out. No final action on this legislation is expected in 1998.

In most of these restructurings, the preferred approach is for the regulatory agency (or other governmental entity) to determine the goals to be served and then to decide on the methods best suited to attain those goals. This important process usually involves extensive consultations with various interested parties and decisions that carefully balance the many competing claims to which major electric supply systems are invariably subjected.

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[1] This testimony was prepared with the assistance of Tim Woolf of Synapse Energy Economics.

Restructurings in most of the world have been driven by some level of dissatisfaction with the performance of the existing system, either with the level of prices or with a lack of reliability coupled with an inability to attract needed capital for repairs or for expansion[2]. Québec is fortunate in that neither of these circumstances are characteristic of its electric system. It has the opportunity to draw on the best of U.S. and other experience without having to proceed in the atmosphere of real or simulated crisis that causes so many restructuring efforts to fall short of their intended objectives.

In particular, the Régie has the opportunity to review the costs of the Hydro-Québec system and the reasonableness of the proposed supply tariffs to each class of customers in light of those costs. If the Régie ultimately wants to replace cost of service regulation with a system of performance-based regulation (PBR), it can choose among several variations of that approach now under trial in the U.S. and elsewhere. Choosing a specific performance-based regulatory regime that creates incentives appropriate to the conditions, constraints and objectives particular to Québec will be a complex process.

In its proposal and in its answers to written questions, Hydro-Québec indicates no expectation that competition will set prices within Québec in the foreseeable future. Thus, until such time as an appropriate PBR system can be designed for Québec, a choice must be made between two fundamentally different alternatives. One approach would be for the new regulatory body to give its stamp of approval to existing rates, in effect taking as a given that they are just and reasonable. This is the approach embodied in the Hydro-Québec filing. Such an approach has been adopted by a number of jurisdictions making the transition from direct government control over rates to a regulatory regime. However, more often than not, these situations have been in countries (such as the former Soviet Republics) where the existing tariffs are known to be far below costs, making substantial rate increases likely in the near future.

In some cases, such as Great Britain and Brazil, inattention to other public concerns has led to embarrassment and a loss of credibility for the new economic regulator. In Britain rate freezes that paid no attention to costs and profits when regulation was first established in 1991 caused the Office of Electricity Regulation (OFFER) to have to reset rates to rearrange the distribution of benefits between the investors and the customers.[3] In Brazil, declining service quality has now called into question that nation's ambitious restructuring.[4]

The second alternative would be to establish cost-based regulation of Hydro-Québec's rates until such time as a decision is made to proceed to PBR, and an appropriate PBR regime can be

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[2] In some countries, restructuring has had a substantial ideological component. In Great Britain, for example, belief in the superiority of private ownership and competition led to the privatization of most state-owned enterprise, with electricity among the last. In addition, Prime Minister Thatcher was explicit in noting that restructuring would end the power of the coal unions to "hold the country to ransom". (John Surrey, *The British Electricity Experiment: Privatization - the Record, the Issues, the Lessons*, Earthscan Publications, 1996.)

[3] "In the area of monopoly regulation, OFFER has been much criticized for the very high profits of the RECs (regional electricity companies) accompanied by limited and slow falls in consumer prices" (Surrey 1996, op. cit. p. 119)

[4] Wall Street Journal, April 27, 1998, p. 1.

designed. In addition to avoiding the pitfalls just described, this approach would provide understanding of the utility's cost structure, which is essential to setting the baselines for any serious incentive regulation formula.

3. Regulatory Structures and The Evolution To Competitive Markets

3.1. Historical overview

An essential characteristic of the regulation in place in all jurisdictions in the United States is that it is based on a detailed knowledge of the costs of the existing electric system. U.S. regulation as it evolved over the last century almost invariably involved the allowance of a reasonable rate of return on the undepreciated investment in plant coupled with full recovery of reasonable operating expenses.

To support regulation of this type, a substantial and precise system for the regular reporting of costs and investments has been in place for many years. As a result of this system, regulators are aware quite quickly of significant changes in utility costs and can respond appropriately to them.

This system worked reasonably well for many years even in those parts of the U.S. that lacked the extraordinary resources that have been available in Québec or in our Pacific Northwest or in Texas and Louisiana. However, the strains of our nuclear construction experience coupled with the oil price run-ups and environmental controversies of the 1970s resulted in considerable disillusionment and reform.

This reform has led in two directions simultaneously: to improve regulation and to seek to establish competitive markets to obviate the need for regulation.

The first reaction to the regulatory shortcomings revealed by the problems of the late 1970s in the U.S. was to enhance the attention paid by U.S. regulators to monitoring and controlling costs under the conventional cost of service framework. Thus many states strengthened their commissions, required regular management and operational audits of problem utilities and problem areas, and mandated regulatory oversight of energy efficiency and integrated resource planning processes. Some also established public advocates and/or provided intervenor funding to allow public interest groups to participate fully in the regulatory process. In all cases, these approaches have included cost-based regulation of rates.

At the same time, the belief grew that competitive markets in electricity would replace cost of service regulation in some parts of the industry. Interest in retail electric competition was spurred partly by our gas and telephone experience and partly by the British electricity restructuring of 1991. Our key federal milestones were the *Energy Policy Act* of 1992 - which empowered our Federal Energy Regulatory Commission (FERC) to establish a competitive wholesale market for electricity while leaving retail competition to the states - and FERC's orders requiring open access to transmission services. Only when FERC finds competitive conditions to exist will it relieve utilities and other marketers of the obligation to justify their rates on the basis of costs.

The trend toward competition has also renewed interest in performance-based regulation (PBR), which simulates competitive pricing. PBR, which is described later in this report, can be used as

a transitional approach while competitive markets are being established or as a regulatory regime in lieu of competition in situations where cost-based regulation will not be replaced by competition.

Among the states that have decided to restructure, a small minority have made a clear commitment to adopt price cap regulation in the long term. Restructuring has often begun with rate decreases on the order of 10-20%, with a commitment to review desirable types of regulation in the period during which the reduced rates are to remain frozen.

In most PBR regulation in the United States, the starting point has been based on careful consideration of the utility's costs[5]. While Hydro-Québec has specified that its proposal is not modeled on price caps used elsewhere, it is from these initiatives that concepts such as the price freeze and pseudo-unbundling approach appear to be drawn. However, these concepts detached from their natural roots in cost-based ratesetting and in transitions toward competition lose much of their rationale. I know of no North American regulatory body which has allowed a public utility to set a price cap without a complete understanding of its costs, usually based on a substantial period of cost of service regulation.

3.2 Corporate and Tariff Structure

Before deciding on a particular form of price-cap or on whether or not to unbundle a supply price or to require structural separations and safeguards within a utility, most states (and other nations) have first set forth the goals to be achieved. In the U.S., these goals have included the creation of effective and informed customer choice where possible, improved regulation of the remaining monopoly sectors, increased efficiency in the production and use of energy, and preservation of environmental protection and other public benefits built into the existing system. In those states that have not opted for retail competition, there has not been much interest in unbundled tariffs or in structural separation within the utility.

In my experience, changes in corporate and tariff structure are best decided after fundamental decisions such as whether or not to resort to customer choice have been made. In the U.S. we have had extensive debates over 1) whether to divest generation from transmission and distribution (now under way in several states), 2) the nature and necessary powers for an independent operator of the transmission system if open access is to be secured in that way, 3) how to secure an adequate number of suppliers of generation services and also of power marketers, 4) the nature of the rules governing the interaction among competitive and monopoly parts of the same enterprise, 5) how best to inform customers about the price, conditions and environmental impacts of their power choices, and 6) the nature of the antimonopoly powers that should be available to regulators. Decisions as to revised corporate and tariff structures necessarily depend on the decisions made with regard to these more fundamental issues.

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[5] The sole exception has been a few merger approvals that have included rate freezes without a review of the costs of the combined companies. Of course, the costs of the two merging companies are well known at the time.

Issues of Corporate Structure

Functional separation involves the reorganization of a vertically integrated utility along functional lines, typically called business units. It is usually undertaken as a business decision within the utility in order to improve management and to develop a clearer sense of cost and profit responsibility in different areas of the enterprise. It is often undertaken in anticipation of competitive markets, although not necessarily at the retail level. It is also likely to be preferable, from the utility standpoint, to the measures of corporate separation or divestiture that a regulator may find necessary in order to prevent abuse of monopoly customers and to deter anticompetitive conduct.

Of course, regulators setting rates on a cost basis must require that the company be functionally separated for cost accounting purposes. The separation of company accounts into generation, transmission, distribution and administration is an important part of apportioning revenue responsibility among customer classes. For regulators seeking to erect structural safeguards against either customer abuse or anticompetitive conduct, either corporate separation (in the form of fully separated holding company subsidiaries operating under rigorous standards of conduct and pricing principles) or outright divestiture of competitive from monopoly operations may well be preferable. My own experience inclines me toward divestiture to provide effective safeguards against the interaffiliate abuses that have been a constant challenge for U.S. regulators.

Additional restrictions, such as limitations on dividend payments, special auditing requirements or outright prohibitions on inter-affiliate transactions are sometimes necessary to remedy particular abuses. The New York and Maine Commissions have had to do all of these things in recent years. The U.S. experience with companies that combine competitive affiliates with vertically integrated monopolies suggests that abuse of the monopoly customers will be a frequent and pervasive problem

The proposed Hydro-Québec administrative structure appears consistent with similar undertakings by many U.S. utilities. However, it apparently contains none of the safeguards (standards of conduct, pricing provisions, independent transmission system operator) that would be necessary for regulatory reliance for pricing purposes. As long as the company remains a vertically integrated monopoly subject to cost of service regulation, this is not a critical area for attention by the Régie, but the proposed structure does not provide a basis for regulatory confidence in the supply tariff proposal.

Unbundled Rates

Existing electric utility bills typically provide little information to the customer about the costs of the various components of utility service. In the U.S. taxes are shown separately, as are capacity and energy costs for larger customers. However, with the onset of retail competition, all potentially competitive services need to be priced separately (i.e. unbundled) so that customers

may be able to compare the offerings of different suppliers[6] and potential suppliers may have accurate information about the prices in the markets that they are considering.

The unbundling process is meaningless if the rates do not accurately reflect the costs of the individual services. A supply rate set above cost (with transmission too low) will cause customers to switch and generators to dispatch (and even build) in uneconomic ways while causing under-investment in transmission. A supply price set too low will foreclose competition.

In New York and New England unbundling of rates for electricity, telephone and gas services has always come well after fundamental decisions to proceed to customer choice have been made. In the absence of a commitment to retail customer choice, unbundling serves no useful purpose. For a new regulatory agency confronted by many difficult decisions regarding its fundamental mission and priorities, with competition not considered a high priority, tariff unbundling is a distraction that can usefully be postponed.

4. Approaches to the Regulation of Generation

4.1 Cost of Service Regulation

As indicated above, all regulation in the U.S. has started with a detailed awareness of costs. The few experiments in long-term price cap plans earlier in this century foundered in times of high inflation (when the public would not tolerate automatic increases) or in the face of excessive earnings. The fundamental purposes of our regulation have been protection of customers (from monopoly abuse) and of investors/lenders (from fraud and political interference). Both goals require a reasonable relationship between costs and prices, which requires that the regulator be well aware of the costs of all aspects of the system.

To regulate effectively in a cost of service framework, the regulator must know the operating costs and the levels of investment, as well as the justification for management decisions. Our state laws are explicit in establishing the power of regulators to get such information[7]. There can be no question of the regulator's entitlement to this information nor of the right to other parties to have access to it. In the rare instances in which such information has a competitive significance that outweighs the right of the general public to be aware of the basis for monopoly rates, the fashioning of appropriate protective orders is not difficult. Even in U.S. states where decisions in favor of retail competition have been made, a great deal of information about the costs of utility operations is routinely available in annual reports (including the FERC Form 1, which must be filed by all but the smallest electric utilities)[8] and through processes of discovery.

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[6] Several U.S. jurisdictions, notably in the Northeast, also require unbundling by fuel source and environmental impact on a standard form. Thus customers know whether their supplier emphasizes nuclear, large hydro, coal, oil, or renewable energy sources in their portfolio. Many customers have indicated a willingness to pay somewhat more for energy from renewable resources.

[7] Indeed, Maine law gives each individual commissioner full access to information, including the right to be admitted to utility property to obtain it.

[8] To give a sense of the scope of the information that must be made available, selected pages of the 1996 Form 1 of Niagara Mohawk, a New York State utility, is attached to this report as Appendix I.

The regulator must exercise judgement as to a reasonable return on the investment as well as many other determinants of cost (such as reasonable depreciation rates). After an overall revenue requirement has been determined, it must be allocated to the various classes of customers. This too requires detailed knowledge of the costs of all phases of the business and leaves room for considerable judgement as to which costs are fairly borne by each class of customer. While the costs have usually been assessed on the basis of amounts actually spent, regulation over the last two decades has moved to modify these allocations in accordance with the marginal costs imposed by the different classes of customers and by usage at different times of day or season of the year.

Although cost of service regulation has been called into question by our nuclear construction experience and by theoretical arguments that it does not provide sufficient incentives to efficiency, it remains the most common approach in the U.S. in those areas that do not permit retail customer choice or that are in transition toward competition. Even in California and the U.S. northeast, where retail choice has been initiated, cost of service regulation is usually applied to the remaining monopoly areas, such as transmission and distribution, as well as to generation, until such time as retail markets are fully competitive.

In most of the states that have opted for retail competition, the price of generation to most customers is determined by a "standard offer". The standard offer represents an approximation of the operating costs of the generation sector, but the embedded costs are in large part recovered through a separate stranded investment charge. Furthermore, the relationship between the standard offer and actual costs is sometimes skewed by political imperatives to secure substantial rate reductions for all customers in the early years of restructuring. The standard offer concept does not describe the Hydro-Quebec proposal, since, as the word "offer" implies, the customers can choose among different suppliers.

Except under conditions where a truly competitive market imposes price discipline, regulation based closely on costs better enables capable regulators to prevent excessive earnings as well as to avoid subsidies to particular customer classes or among the different divisions or subsidiaries within a company. It also provides a superior ability to track cost trends within a company and thereby gives regulators early warnings of potential trouble spots. It also provides assurance of cost recovery of governmentally mandated expenses (such as taxes, environmental compliance, low-income assistance, economic development, and energy efficiency) in ways that may minimize resistance to such initiatives.

Many countries are seeking to create competitive utility markets where none have existed. The Hydro-Quebec proposal borrows selectively among their evolving concepts, but Hydro Quebec seeks the freedom of minimal regulation and flexible pricing without the discipline of competitive conditions to prevent abuse. In the absence of any move toward competition, more stringent regulation would normally be required, especially given the goal in the Hydro-Quebec strategic plan of substantially increasing earnings and dividends over the next four years.

4.2 Performance Based Regulation

Description, Rationale and Context for PBR

Performance-based regulation has received increasing attention as an alternative to cost of service regulation. PBR is specifically designed to encourage utilities to reduce costs or otherwise improve operational efficiency. Instead of determining all prudent costs plus a reasonable profit, PBR mechanisms provide utilities with a fixed price or a fixed level of revenues. As a result, utility profits depend in large part on how efficiently they plan and operate their systems. Regulation based on price more nearly approximates market conditions than does cost of service regulation. Therefore it may better prepare a utility for increasing competition and may better govern prices for entities such as nuclear generators that function in a competitive environment while themselves remaining price regulated.

The most commonly applied PBR mechanism is the price cap. Regulators set a utility's prices under both PBR and cost of service regulation, but price caps differ from cost of service regulation in two fundamental ways. First, prices tend to be put in place for longer periods of time (e.g., four to six years). The fixed prices over longer periods are intended to provide incentives to reduce costs. Second, utilities are allowed to lower their prices to customers that might otherwise leave the system, as long as all prices stay within the cap. This practice has mixed implications for emerging competition

Price caps can have pernicious effects as well unless they include carefully defined rules and criteria. Most price caps adjust for inflation and for increased productivity. PBR mechanisms also frequently include profit/loss sharing mechanisms to protect both company and customers from the risk of over- or under-recovery of revenues. In addition, some PBR mechanisms include "off-ramps" or triggers that require a modification or abandonment of the PBR if future conditions warrant.

A well-designed price cap scheme begins by setting the initial rates for each customer class fairly, based upon a detailed cost-of service study and an appropriate allocation of costs. The cap is then allowed to increase from year to year to allow for inflation, but is also required to decline over time to encourage increased productivity. The generic price cap formula that takes current rates as the ceiling can be defined as:

$$Price_{(t)} \leq Price_{(t-1)} * (1 + I - X) + Z$$

where $Price_{(t)}$ is the maximum price that can be charged to a customer class or classes for the period of the cap, $Price_{(t-1)}$ is the average price charged to the same class or classes during the previous period, "I" is the inflation factor, "X" the productivity factor, and "Z" represents any incremental costs that are not subject to the cap.

PBR mechanisms can also be designed using "revenue caps" instead of price caps. Revenue caps are based on the same principle as price caps – where the cap in one year is based on the previous year with adjustments for inflation and productivity – and can achieve many of the same objectives as price caps. However, revenue caps provide utilities with significantly different

incentives regarding energy efficiency and increased sales. (This point is discussed in more detail in Section 5.3.)

PBR mechanisms are said to be more appropriate for an increasingly competitive industry, because they reduce the regulatory oversight necessary to protect consumers. However, designing and implementing PBR mechanisms requires substantial regulatory analysis and oversight, because (a) the specific PBR design will have significant financial implications for the utility, (b) the mechanism may need to be designed to meet a number of regulatory objectives, (c) it is important to prevent any one aspect of the mechanism from creating unintended and undesirable consequences, and (d) PBR mechanisms sometimes need to be monitored over time to ensure that they are effectively achieving their original goals. Consequently, it is not yet clear how much less regulatory oversight PBR mechanisms will require relative to cost of service regulation.

Recent Experience of U.S. Electric Utilities With PBR

There have been various examples of targeted performance incentives in the U.S. electricity industry in the 1970s and earlier. However, the recent interest arises primarily from efforts to restructure the our industry.

In general, the interest in PBR mechanisms has developed in two phases. In the early 1990's several state regulatory commissions begin investigating PBR to improve the regulation of the monopoly electric enterprises. PBR mechanisms were considered as a means of providing utilities with market-like incentives, without necessarily establishing a competitive electricity market. Regulatory commissions in Maine, California and New York implemented a variety of types of PBR mechanisms at this time, and currently have the greatest amount of experience with this regulatory approach.

However, even these states have only had a few years of experience with PBR. It is too early to draw many long-term implications from their experiences. A recent review[9] of the PBR practices in these states found that:

- The experience thus far with four PBR mechanisms in New York is considered mixed, with concerns including the administrative burden of reviewing accounting procedures for cost allocation, the implications of flowing through "uncontrollable" costs, and unintended consequences resulting from the focus on particular topics.
- The experience with Central Maine Power's PBR is generally thought to be positive, although the situation is dominated by an extended nuclear plant outage.
- San Diego Gas & Electric's PBR is considered successful toward: (1) reducing operating costs and capital expenditures, (2) reducing regulatory costs, and (3) continuing demand-

[9] Synapse Energy Economics, Peter Bradford, Resource Insight and Jerrold Oppenheim, *Performance-Based Regulation in a Restructured Electricity Industry*, prepared for the National Association of Regulatory Utility Commissioners, November 1997.

side management activities. However, this PBR is generally viewed as being overly generous to shareholders with little of the savings going to customers.

This same study pointed out, however, that it is difficult to determine how much of any productivity improvement by these utilities has been due to the PBR mechanism, as opposed to the pressures of operating in the more competitive context of recent years.

The second phase of interest in PBR has occurred in those states that have taken measures to restructure their electricity industries (e.g., California, Maine, Massachusetts, New Jersey, New York, Pennsylvania, and Vermont). In this phase, PBR is no longer considered an interim step towards restructuring, or as a proxy for competitive markets, but rather as one of options for regulating utilities in a fully competitive electricity market.

Generation in these states is to be provided on a competitive basis. Consequently, there is no need to apply any type of PBR to this service.

The price of transmission services is to be primarily regulated by the U.S. Federal Energy Regulatory Commission, and will be heavily influenced by the policies and practices of the regional Independent System Operators. As a result, state regulatory commissions have not focussed much attention on applying PBR to transmission services.

Most of the interest in PBR, therefore, has been on the regulation of the monopoly distribution company. Given that the role of PBR is limited to the distribution services in this context, regulators have not given it a high priority among the many other issues being discussed in the our contentious restructuring debates.

5. Critique of Hydro-Québec's Proposal

5.1. Hydro-Québec's Proposal Is Not Based on Cost of Service

Hydro Québec's proposed supply tariff is derived from the existing rate L. The filing makes no showing that it reflects the actual costs of generation or a fair return on the assets devoted to generation. There are many problems with this approach, of which the most serious are the potential for excess earnings, the potential for cross-subsidy and the extent to which the Régie is foreclosed from examining costs and cost trends in the important supply sector.

When a particular price is frozen in place for a number of years with no basis in costs, no possibility exists for sharing productivity savings with the customers. The Régie will have no way of knowing when excessive earnings are accruing to the company. Nor does the company proposal contain any of the standard adjustments to reflect expectations of increased productivity. Measuring productivity is in any case difficult in the absence of benchmark cost data.

Perhaps the shortcomings of the proposal would be tolerable if a move toward effective and pervasive wholesale competition were imminent. The supply price would soon be determined by the market. However, Québec's wholesale electricity market is almost exclusively dominated by Hydro-Québec. Retail competition in Québec is explicitly disavowed in this proposal. It

appears that Québec will have a vertically integrated monopoly, and no vigorous wholesale market, for the foreseeable future[10].

That being the case, a price freeze with no knowledge of underlying costs is far from being "in accordance with a method of regulation adapted to the context of the North American electric power industry and comparable to the latest practices in the regulation of generation."[11] Indeed, it has the potential to replicate the embarrassment of over-earnings that have accompanied similar undertakings in the U.S. (when mergers have produced price freezes with no review of the costs of the combined companies) and Britain (where existing prices were frozen following privatization with no attention to costs or to productivity). Such over-earnings can be hidden for a time in cost increases or construction projects that might not pass tests for external financing, but they are likely to show up eventually. When they do, they can cause considerable embarrassment for the regulators who have permitted them.

The Hydro-Québec supply price strategy is consistent with an approach that would freeze most Québec domestic electric prices higher than they need to be in order to help to finance participation in export markets. Furthermore, it could allow the assigning of excess general and administrative costs to the transmission rate, thereby further reducing the likelihood of customer choice in Québec.

Strategies based on high growth have a mixed history in the electric power industry. They have worked best at times when each new power plant lowered the average costs of the system. They have produced unfortunate customer impacts when each new plant raised overall costs. When plants are built for export, domestic customers are protected only if the export markets and/or investors absorb the full costs. When plants are built for both markets, the allocation of costs and profits among investors and domestic and export customers is a complex matter.

The Hydro-Québec proposal permits excessive allocation to domestic customers provided that the supply price is frozen until 2002. The Régie cannot determine on the basis of the information before it whether this is the best bargain for Québec customers when compared, for example, to a strategy that emphasized energy efficiency in Québec to free up power for sale in export markets.

Hydro-Québec has been very reluctant to provide even the most basic information about its costs and structure.[12] It asserts that competitive conditions in the U.S. compel this privacy, but this statement is not correct. U.S. utilities have recognized (and regulators have insisted) for many years that the provision of complete cost data to regulators and customers goes hand-in-hand with being granted a monopoly franchise. As a result, basic cost information is completely available for rate-setting purposes. Indeed, the rate-setting process cannot function without such

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[10] For a market to be considered competitive it should include 1) several suppliers, no one or two of whom are in a position to determine prices and all of whom can increase or decrease output without undue difficulty; 2) easy opportunities for entry and departure; 3) easy access by suppliers and customers to important market information; and 4) equal access to essential monopoly facilities (such as transmission lines).

[11] Hydro-Québec, *Procedure for the Determination and Implementation of Supply Rates: Hydro-Québec's Proposal*, Executive Summary, February 20, 1998.

[12] Hydro-Québec 1998, op. cit., Section 2.3.

information. When necessary, protective orders are issued to limit access to commercially sensitive information. These protective orders have become more common in some states contemplating competition, but the basic duty of a vertically integrated utility to provide all necessary information remains undiminished.

U.S. utility annual reports to the state commissions and to FERC provide extensive material of this sort, as do the fuel consumption reports to the Energy Information Agency. Additional material on costs is routinely required in regulatory proceedings. Such information may not be available for independent generators, but providing this material is the price that regulated utilities pay in return for the substantial advantages of a vertically integrated monopoly franchise. If requirements to provide information regarding supply costs become burdensome even with protective orders, the remedy is divestiture and competition, not secrecy and weak regulation.

Thus, much of the information that Hydro Québec declines to furnish for competitive reasons (see, for example, the response to RNCREQ Question 36c) is publicly available to all parties through routine filings under U.S. regulation. Consequently, Hydro-Québec is able to get much of the production cost information about U.S. utility competitors that it is declining to furnish to its own regulator and customers.

Of course, the proposed exit fees for municipal systems also cannot be justified without some sense of the generation costs being stranded by the departure of a municipality. Because such fees are by nature anti-competitive, regulators normally require that they be carefully justified – both as to amount and as to the reasonable expectations of the supplying entity.

5.2 Hydro-Québec's Proposal Does Not Include Necessary Consumer Protection Measures.

The price cap proposed by Hydro-Québec protects customers from price increases for the 1998-2002 period. However, other objectives and factors should be considered in designing a rate freeze. The Régie should be concerned about maintaining an appropriate balance between profits and prices. It is also important to consider the maintenance of reliable electricity supplies and high-quality customer service. Furthermore, it is important to ensure that providing an incentive to achieve a specific goal does not encourage the utility to pursue activities that threaten other regulatory goals.

Hydro-Québec's proposal does not address any of these important issues, and thus places customers at significant risk. The most critical issues that should be addressed in designing a fair PBR mechanism are summarized below.

Economic Changes Over Time. Most rate freeze or PBR mechanisms include both an adjustment for inflation and a productivity factor. The combination of these two adjustments is intended to provide the utility with an incentive to improve its efficiency and productivity. The inflation factor should be set at the rate at which inflation is expected to affect costs in the utility industry as a whole. However, an appropriate level of improved productivity is not easy to define. In

most cases, it is based upon historical or projected analyses of productivity gains by the utility and/or by the electric industry. The productivity factor can also be used to set more ambitious goals for the utility. Hydro-Québec's proposal does not include an inflation index or a productivity factor, and therefore does not reflect the reality of changing costs in the electricity industry .

Z-factors. This mechanism allows for recovery of specific costs that are not meant to be subject to the price (or revenue) cap. Z-factors usually include costs over which the utility has no control, such as increased tax rates or currency fluctuations. The costs that are chosen to be recovered through the Z-factor can have important planning implications. For example, the costs of complying with environmental regulations, even future regulations, should generally not be recovered through the Z-factor, in order to provide the utility with an incentive to minimize the costs of complying with future environmental regulations.

Profit/Loss Sharing Mechanism. Price (and revenue) cap schemes are frequently combined with profit/loss sharing mechanisms that are intended to protect both the company and customers from the risk of over- or under-recovery of revenues. Such sharing mechanisms kick in if the utility earns above or below a specified deadband around its allowed rate-of-return. Broad deadbands provide greater incentive for the companies to reduce their costs, but narrow deadbands decrease the likelihood of the company experiencing windfall gains or losses. Hydro-Québec's price cap proposal does not contain any mechanism for sharing profits or losses, and thus creates a risk that customers will end up paying higher prices than necessary. Improving profits is one of the goals of the Company's strategic plan.[13]

Targeted Incentives. Regulators may wish to focus utility management on areas of performance that deserve particular attention but would not be addressed -- or may be jeopardized -- under a simple price (or revenue) cap. Targeted incentives can be used to ensure that such areas of performance are addressed by the utility. Quality of service (e.g., billing, frequency of outages, duration of outages) is the most commonly targeted incentive. Under a simple price (or revenue) cap mechanism quality of service may deteriorate because utilities may be inclined to reduce workforce or preventive maintenance or even eliminate certain services. To prevent such deterioration, penalties are imposed on the utility if particular standards are not met. Targeted incentives and performance standards have also been applied to improve the performance of inefficient power plants. Lacking such precautions, Hydro-Québec's proposal increases the risk of service or other deterioration.

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[13] Hydro-Québec, *Hydro-Québec Strategic Plan: 1998-2002*, October 1997.

5.3 Hydro-Québec's Proposal Will Discourage Energy Efficiency, Integrated Resource Planning, and Sustainable Development.

The Role of Energy Efficiency and Integrated Resource Planning

The Québec government's new energy policy, as described in *Energy at the Service of Québec: A Sustainable Development Perspective*, makes energy efficiency and environmental protection among its highest priorities. The report notes that

> Energy efficiency measures therefore enable us, at one and the same time, to improve the quality of life of consumers, to reduce their energy bill, and to respect our communities on the environmental level. What is more, they contribute to the development of a new activity sector. For all these reasons the Québec government wants energy efficiency to be a pivotal part of the new energy policy.[14]

End-use energy efficiency is one of the cornerstones of sustainable development. Energy efficiency resources create little or no environmental damage. The primary regulatory mechanism to promote energy efficiency resources in Québec will apparently be through integrated resource planning (IRP). This process requires Hydro-Québec and other distributors to develop electricity plans that consider the full potential for cost-effective energy efficiency as an alternative to supply-side resources.

In order to determine the cost-effective potential for energy efficiency resources, it is important to compare the costs of demand-side management (DSM) programs with the costs of avoided generation, transmission and distribution. One of the problems with Hydro-Québec's current proposal is that it does not allow for an accurate and transparent separation and assessment of these avoided costs. In particular, the Company's supply price will not be based on the actual costs of generation, and therefore provides no information as to avoided generation costs.

Hydro-Quebec's assertion that its avoided costs are precisely equal to its supply tariff[15] cannot be verified without the cost information that the utility declines to supply. It is not useful to compare DSM costs with the internal transfer price "paid" by the distribution unit of a vertically integrated utility, as this fictional price does not represent actual costs that would be avoided by the program under consideration. Such comparisons must be based on the actual costs of the avoided new plant.

In order to assess the cost-effective potential for Hydro-Québec's DSM programs, it will be necessary to identify the appropriate standard for measuring cost-effectiveness. In the U.S., state regulatory commissions have considered four different cost-effectiveness standards, based on different perspectives of the stakeholders affected by DSM programs.

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[14] Government of Québec, Ministry of Natural Resources, *Energy at the Service of Québec: A Sustainable Development Perspective*, 1996, pages 29-30.

[15] Response 15.2 to the Régie.

- The utility perspective compares the utility's cost of implementing the DSM program to the utility's avoided supply-side costs.
- The participant perspective compares the costs and benefits to the customers that participate in the DSM programs.
- The rate impact perspective considers the impact that utility DSM programs will have on electricity rates. This standard is frequently referred to as the rate impact measure test.
- The societal perspective compares the total costs of implementing DSM programs with the total benefits to society, including environmental and societal benefits. This standard is frequently referred to as the total resource cost test.

Most U.S. state regulatory commissions have chosen to measure DSM cost-effectiveness using either the utility perspective or the total resource cost test. Whatever test is used, knowledge of avoided generation costs is essential.

Hydro-Québec's Proposal Will Create Financial Barriers to Energy Efficiency

Despite Hydro-Québec's obligation to implement energy efficiency resources, the Company's supply rate proposal provides powerful financial incentives to do the opposite. Hydro-Québec's proposal ensures that its profits will be reduced as a consequence of successful DSM programs -- even those that are cost-effective. As a result, Hydro-Québec will have an incentive not to design and implement successful DSM programs.

One of the primary lessons learned from our experience in the U.S. is that utilities must be provided with appropriate financial incentives if they are to be successful in designing and implementing energy efficiency resources. If energy efficiency programs do not contribute to a utility's profitability, then they will not receive corporate priority and support.

Under traditional cost of service regulation utilities have a financial incentive to promote electricity sales between rate cases. Whenever a utility's marginal cost of production is lower than its electricity price, it will be able to increase profits through increased sales. This incentive to increase electricity sales creates a significant financial barrier to utility DSM programs. This barrier exists even when a DSM program is cost-effective from the utility's perspective and society's perspective.

Price caps or freezes exacerbate these financial barriers to DSM, for two reasons. First, price caps tend to be applied for longer time periods than those that occur between cost of service rate cases. The longer period increases the "regulatory lag" which allows utilities to profit from increased sales even if customer bills remain higher than necessary because of inefficient and unnecessary use. Second, price freezes can put pressure on a utility's profits if costs rise over time. In this context, a utility will have two general strategies to increase (or even maintain) its profit levels: to lower costs or to increase sales. Given that reducing costs beyond a certain point will be difficult, utilities are likely to rely on increased sales to maintain or increase profits.

Since 1988, the U.S. organization of regulatory commissioners has urged its members to make cost effective DSM at least as profitable as supply-side investments. In the 1992 Energy Policy Act, our federal government also encouraged state regulators to design electric utility rates in such a way that cost effective utility DSM investments are "at least as profitable, giving appropriate consideration to income lost from reduced sales," as investments in supply-side equipment.[16] In both New York and Maine, stalemates that had developed between the utility and the regulators around DSM programs declined once these reforms were implemented.

The importance of removing financial barriers to energy efficiency programs is also highlighted in Hydro-Québec's proposal for determining supply rates. The Company's proposal notes that it may submit to the Régie resource plans including energy efficiency measures, but that "an adjustment to the supply price or to the financing conditions must be established by the Regié so that Hydro-Québec will not be penalized" for such measures.[17] While this proposal may well be sensible, the reasonableness of the "adjustment" cannot be determined without knowledge of the costs of the avoided generation.

Regulatory Options for Removing the Financial Barriers to Energy Efficiency

In order to remove the financial barriers to a regulated utility's energy efficiency programs, it is necessary to (a) allow the utility to recover net lost revenues, and (b) remove or reduce the financial incentive to increase electricity sales. Under cost of service regulation, utilities can be allowed to recover their lost revenues through periodic adjustments to rates. Under performance-based regulation, revenue caps can be used to both allow the recovery of lost revenues and remove the financial incentive to increase electricity sales. This method was implemented for the Consolidated Edison Company of New York when I chaired the New York PSC. It has also recently been proposed for Pacificorp by the Oregon Public Utilities Commission.

Revenue caps are based on the same general approach as price caps, but focus on allowed revenues rather than allowed prices. The regulatory commission begins by setting an allowed level of revenues based on actual costs for a test year. Over time, the allowed level of revenues can be adjusted to account for inflation and productivity, similar to price cap mechanisms. The fundamental difference between revenue caps and price caps is that the allowed level of revenues may change to reflect changes to sales levels. If revenues collected deviate significantly from those allowed, the difference will be returned to, or recovered from, customers through periodic reconciliation adjustments.

Because of this reconciliation process, revenue caps remove the financial disincentives to utility-run energy efficiency programs. If a utility were to reduce its sales through DSM programs, its revenues would not suffer a corresponding reduction. In other words, there would be no lost revenues from successful DSM programs. Conversely, if a utility were to increase its sales through load building, then it would not be able to keep the extra revenues and related profits. In

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[16] U.S. Congress, *Energy Policy Act of 1992*, Subtitle B, Sec. 111(a)(8).

[17] Hydro-Québec 1998, op. cit., page 23.

this way, revenue caps ensure that DSM and load promotion programs are revenue neutral, and therefore profit neutral.

Put another way, programs that decrease customers' bills by decreasing usage will be implemented even if they increase prices slightly. This would not be the case under a price cap plan.

Furthermore, revenue caps ensure that utility's profits will not be jeopardized by energy efficiency initiatives undertaken by other entities. As the energy services market matures, energy efficiency initiatives may be pursued by a number of different entities, such as distribution companies, energy service companies, and the customers themselves.

6. Conclusions and Recommendations

These initial tariff setting proceedings will be crucial in establishing the nature of the regulatory relationship that will exist in Québec. U.S. utilities often claim entitlements based on a "regulatory compact" tracing back to the beginnings of regulation. While there is reason to challenge many of these claims, the Régie should be aware that it will be setting important precedents in its initial decisions.

The shortcomings in the Hydro-Québec proposal are clear. It leaves the regulator unaware of supply costs and unable to regulate supply decisions in a meaningful way, even though supply is the largest single component of the customer bills and the supply market in Quebec will apparently be dominated by a vertically integrated monopoly for the foreseeable future. Furthermore, it is not satisfactory as a performance-based tariff because it lacks an initial basis in costs, lacks any productivity index, lacks any measure for sharing the benefits with the customers and lacks any measures to mitigate the inevitable adverse impacts of a price cap on service quality or on energy efficiency. Finally, Hydro-Québec declines to furnish even the most basic information to the intervening public, terming such information irrelevant or commercially sensitive.

Regulation in the U.S. and in other countries has too often been a placebo, by which the public is given the illusion of independent control of a monopoly activity while, in fact, the regulator does little or nothing to check monopoly power. This is a particularly easy trap to fall into when costs are low and declining, for little public attention is then paid to regulatory processes. These conditions prevailed in the U.S. in the 1960s, and the regulatory laxity that they induced was one of the fundamental causes of the turmoil in our utility industry in the 1970s.

If the Régie accepts the Hydro-Québec proposal as filed, the message within the utility will be that nothing much has changed and that regulation will not be a serious factor in asserting and protecting the public interest. As long as rates are kept level or increased below the rate of inflation, the utility will set its own agenda and the public will have a difficult time learning even the most basic information.

To avoid such an unfortunate beginning to its crucial mission, I recommend that the Régie undertake the following steps:

- Regulation of Hydro-Québec should recognize that the Québec market for generation services is not now competitive, and is not likely to be for the near- to mid-term future.
- Regulation for Hydro-Québec should begin with an accurate accounting of the company's costs -- generation, transmission and distribution. Hydro-Québec's proposal, which is neither cost-based nor performance-based, does not provide an adequate basis for setting its supply tariffs, based on standard regulatory theory and practice.
- At this point in time, cost of service regulation is probably most appropriate for Hydro-Québec, because the generation market is not competitive, and the Régie should start with utility costs as the basis for regulation.
- If cost of service ratemaking is adopted, then financial barriers to energy efficiency should be removed by allowing Hydro-Québec to recover lost revenues that are caused by DSM programs.
- If any form of freeze or cap is to be adopted, the financial barriers to energy efficiency should be removed by establishing a revenue cap instead of a rate cap. Hydro-Québec should also be allowed to recover reasonable expenses for cost effective DSM programs.

7. Statement of Qualifications

Peter Bradford has served as chair of the New York State Public Service Commission (1987-1995) and the Maine Public Utilities Commission (1974-75, 1982-1987), two U.S. utility regulatory commissions. He has also been a commissioner on the U.S. Nuclear Regulatory Commission. All told, he regulated utilities in the U.S. for 25 years, having first been appointed to the Maine PUC in 1971. He has participated in the deciding of more than 1000 utility rate proceedings and has testified before the U.S. Congress and state legislative bodies on utility regulatory matters more than 100 times.

Since leaving the New York PSC in 1995, he has been a fellow of the Regulatory Assistance Project (1995-96) and has consulted, advised, testified and taught on regulatory matters in many U.S. states and several other countries. He currently teaches utility law at the Vermont Law School.

His articles on utility regulation have been published in leading U.S. journals and newspapers. He is also the author of Fragile Structure: A Story of Oil Refineries, National Security and the Coast of Maine, a book published by Harper's Magazine Press in 1975.

Peter Bradford was assisted in the preparation of this testimony by Tim Woolf, a Senior Associate with Synapse Energy Economics, a consulting firm located in Cambridge, Massachusetts providing technical and policy assistance to state agencies, utilities, consumer advocates, and environmental organizations on electricity restructuring issues. Prior to joining Synapse, Mr. Woolf was a Senior Scientist at Tellus Institute. He has published articles on electric utility competition and regulation in Public Utilities Fortnightly, The Electricity Journal, Utilities

Policy, Energy and Environment, and the Review of European Community and Environmental Law. He holds an MBA from Boston University and a Diploma in Economics from the London School of Economics, as well as a BS in Mechanical Engineering and a BA in English from Tufts University.

APPENDIX A

EXCERPTS FROM FERC FORM 1

NIAGARA MOHAWK, 1996